



(A Joint Venture Company of RSPCL and GAIL Gas Limited  
Jaipur, Rajasthan (India)

**CITY GAS DISTRIBUTION PROJECT IN KOTA GA  
(OPEN DOMESTIC COMPETITIVE BIDDING)**

**TENDER DOCUMENT FOR**

**PROCUREMENT OF 2 NOS. OF 400 SCMH COMPOSITE CNG DISPENSING  
UNIT & COMPREHENSIVE O&M SERVICES FOR 5 YEARS**

Tender No.: RSGL/KOTA/C&P/PROJ/2025-26/NIT-14 DATE: 02-01-2026

**DUE DATE & TIME FOR  
BID SUBMISSION** : **27-01-2026/ 1400 HRS (IST)**

**DUE DATE & TIME FOR UN-PRICED BID OPENING: 27-01-2026 1500 HRS. IST**

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## **SECTION-I**

### **INVITATION FOR BID (IFB)**

**BID DOCUMENT  
FOR  
PROCUREMENT OF 2 NOS. OF 400 SCMH  
COMPOSITE CNG DISPENSING UNIT &  
COMPREHENSIVE O&M SERVICES FOR 5 YEARS**

**SECTION-I**

**"INVITATION FOR BID (IFB)"**

**RSGL/KOTA/C&P/PROJ/2025-26/NIT-14**

**Date: 02-01-2026**

To,  
Prospective Bidders

**SUB: BID DOCUMENT FOR PROCUREMENT OF 2 NOS. OF 400 SCMH COMPOSITE CNG DISPENSING UNIT & COMPREHENSIVE O&M SERVICES FOR 5 YEARS**

**Dear Sir/Madam,**

RAJASTHAN STATE GAS LIMITED (RSGL), a state incorporated Joint Venture company of RSPCL & GAIL Gas Limited for CITY GAS DISTRIBUTION PROJECT is supplying Piped Natural Gas (PNG) to Domestic consumers in KOTA G.A. RSGL is expanding its network for setting up of Mother / Online CNG Stations and Daughter Booster Stations (DBS) and providing PNG connectivity to 1,00,000 Domestic Households in KOTA G.A., Rajasthan.

Presently, Rajasthan State Gas Limited (RSGL) is developing CNG & City Gas Distribution Networks (CGDN) at Kota in the state of Rajasthan to supply Natural Gas to Domestic, Commercial, Industrial and Automobile consumers.

**1.0 *The brief details of the tender are as under:***

(A)	NAME OF WORK / BRIEF SCOPE OF WORK/JOB	BID DOCUMENT FOR PROCUREMENT OF 2 NOS. OF 400 SCMH COMPOSITE CNG DISPENSING UNIT & COMPREHENSIVE O&M SERVICES FOR 5 YEARS		
(B)	TENDER NO. & DATE	<b>RSGL/KOTA/C&amp;P/PROJ/2025-26/NIT-14</b> <b>Date: 02-01-2026</b>		
(C)	TYPE OF BIDDING SYSTEM	SINGLE BID SYSTEM		
(D)	TYPE OF TENDER	E-TENDER		
		MANUAL	✓	
		<b>Open Domestic Competitive Bidding</b>		



(E)	<p><b>COMPLETION PERIOD:</b></p> <p>i) Design, Engineering, Manufacture, Inspection, Factory Testing &amp; Supply Delivery shall be made within 1 year time from date the date of LOA in two lots upon receiving instruction/intimation by EIC. for each lot. The delivery period shall be 08 weeks from instruction/intimation by EIC and not completing the delivery with 08 weeks from date of instruction/intimation by EIC will be subjected to Price Reduction Schedule (PRS). Prices to be valid till 6 months beyond the Delivery Completion date. (i.e. 1 year &amp; 6 months time from date of LOA )</p> <p>ii) Installation, Testing and Commissioning Within 4 Weeks from date of issuance of letter forreadiness of site.</p>			
(F)	<p><b>BID SECURITY / EARNEST MONEYDEPOSIT (EMD)</b></p>	<p>MR Item No.</p>	<p><b>Description of item</b></p>	<p><b>EMD</b></p> <p><b>INR</b></p>
			<p>1. Supply, Installation, Commissioning and FPT (Field Performance Test) of 2 Nos. of 400 SCMH COMPOSITE CNG Dispensing Unit (CCDU) complete with PLC, Flame Detector, Gas Detector, CO2 Flooding System And Three Bank Priority Panel Enclosed In Acoustic Enclosure including annual operation, repair &amp; comprehensive maintenance charges for the first year during Warranty period</p> <p>2. Lump sum annual operation, repair &amp; comprehensive maintenance charges per Booster Compressor Package including air compressor for second, Third, Fourth and fifth year i.e. after first year of warranty period inclusive of all manpower, spare parts, lubricants etc.</p> <p>The Delivery Location of two Compressor shall be KOTA ( Rajasthan)</p>	<p><b>INR 4,20,000/-</b></p>
(G)	<p><b>AVAILABILITY OF TENDER DOCUMENT ON WEBSITE(S)</b></p>	<p><b>From 02-01-2026 on following websites:</b></p> <p>(i) <b>RSGL's Tender Website – <a href="https://rsgl.rajasthan.gov.in">https://rsgl.rajasthan.gov.in</a> &amp; <a href="https://rsgl.rajasthan.gov.in/Tenders.aspx">https://rsgl.rajasthan.gov.in/Tenders.aspx</a></b></p> <p>(ii) <b><u>State Public Procurement Portal of Rajasthan Govt.</u></b></p>		

(H)	DATE, TIME & VENUE OF PRE-BIDMEETING	<p><b>Date &amp; Time:</b> <b>At 1500 hrs. (IST) on 09-01-2026</b></p> <p><b>Venue:</b> <b>Rajasthan State Gas Ltd.</b> <b>3<sup>rd</sup> floor,</b> <b>Khaniz Bhawan, Tilak Marg,</b> <b>C-Scheme, Jaipur - 302005</b></p>
(I)	DUE DATE & TIME OF BID-SUBMISSION	<b>Upto 1400 hrs. (IST) on 27-01-2026</b>
(J)	DATE AND TIME OF UN-PRICED BIDOPENING	<p><b>At 1500 hrs. (IST) on 27-01-2026</b></p> <p><b>Venue:</b> <b>Rajasthan State Gas Ltd.</b> <b>Room no. 215,</b> <b>Khaniz Bhawan, Tilak Marg,</b> <b>C-Scheme, Jaipur -302005</b></p>
(K)	CONTACT DETAILS	Name : Vivek Srivastava Designation: DGM (C&P) Phone No. & Extn : 0141-2994081 e-mail : viveks.rsgl@rajasthan.gov.in

- 2.0 In case of the days specified above happens to be a holiday in RSGL, the next working day shall be implied.
- 3.0 Bid must be submitted strictly in accordance with Clause No. 11 of ITB depending upon Type of Tender [refer Clause no. 2.0 (D) above]. The IFB is an integral and inseparable part of the Tender Document.
- 4.0 In case of Manual Bids, bids complete in all respect should reach at the address specified in BDS on or before the Due Date & Time of Bid Submission. Bids received after the due date and time shall be considered as late bid and will not be evaluated.
- 5.0 Bidder(s) are advised to submit their bid strictly as per terms and conditions of the Tender Documents and not to stipulate any deviations/exceptions.
- 6.0 Any bidder, who meets the Bid Evaluation Criteria (BEC) and wishes to quote against this Tender Document, may download the complete Tender Document along with its Amendment(s) & Clarification(s), if any from websites [refer Clause No. 2.0 (G) above] and submit their Bid

complete in all respect as per terms & conditions of Tender Document on or before the Due Date & Time of Bid Submission.

7.0 Bid(s) received from bidders to whom tender/information regarding this Tender Document has been issued as well as offers received from the bidder(s) by downloading Tender Document from above mentioned website(s) shall be taken into consideration for evaluation & award provided that the Bidder is found responsive and subject to provisions contained in Clause No. 2 of Instructions to Bidders.

The Tender Document calls for offers on single point "Sole Bidder" responsibility basis (and in total compliance of Scope of Supply /Specification(s) as specified in Tender Document.

9.0 Clarification(s)/Corrigendum(s) if any shall also be available on above referred websites. Any revision, clarification, addendum, corrigendum, time extension, etc. to this Tender Document will be hosted on the above mentioned website(s) only. Bidders are requested to visit the website regularly to keep themselves updated.

10.0 All the bidders including those who are not willing to submit their bid are required to submit F-11 (Acknowledgement cum Consent letter) duly filled within 7 days from receipt of tender information.

11.0 SAP generated Request for Quotation (RFQ), if any shall also form an integral part of the Tender Document.

12.0 RSGL reserves the right to reject any or all the bids received at its discretion without assigning any reason whatsoever.

For & on behalf of  
Rajasthan State Gas Ltd.

(Authorized Signatory)

Name : .....

Designation : .....

E-mail ID : .....

Contact No. : .....

**CUT-OUT SLIP**

**DO NOT OPEN - THIS IS A QUOTATION**

**Bid Document No.** : **Tender No. RSGL/KOTA/C&P/PROJ/2025-26/NIT-14**

**Item Description** : **PROCUREMENT OF 2 NOS. OF 400 SCMH COMPOSITE CNG DISPENSING UNIT & COMPREHENSIVE O&M SERVICES FOR 5 YEARS**

**Due Date & Time** : **Up to 1400 Hrs. (IST) on 27-01-2026**

**From:** **To:**

**DGM C&P**

Rajasthan State Gas Ltd.

3<sup>rd</sup> floor

Khaniz Bhawan, Tilak Marg

C-Scheme Jaipur-302005

**To be pasted on the envelope containing Bid**

## **SECTION – II**

### **BID EVALUATION CRITERIA & EVALUATION METHODOLOGY**

### **BID DOCUMENT FOR**

**PROCUREMENT OF 2 NOS. OF 400 SCMH COMPOSITE CNG DISPENSING UNIT &  
COMPREHENSIVE O&M SERVICES FOR 5 YEARS**

## SECTION - II

### BID EVALUATION CRITERIA & EVALUATION METHODOLOGY

#### 1.0 BID EVALUATION CRITERIA (BEC)

##### 1.1 Technical Criteria

- 1.1.1 The bidder shall be a manufacturer / packager and supplier of integrated / composite CNG dispensing package ( an integrated unit comprising of CNG cascade, CNG compressor and CNG dispensing unit integrally attached with each other and installed inside an enclosure box) /electrical or Gas driven CNG compressors handling natural gas with single point responsibility
- 1.1.2 The COMPOSITE CNG Dispensing Model offered by the bidder for supply must submit valid PESO Certificate along with the Bid Documents.
- 1.1.3 The bidder, in the last 7 years reckoned from bid due date, should have manufactured / packaged and supplied to customers from the proposed facility of manufacturing / packaging, at least 01 no. of Integrated/Composite CNG Dispensing Package of average 400 SCMH capacity or more at inlet pressure range 14-19 kg/cm<sup>2</sup>, driven by electric motor with discharge pressure of 255 kg/cm<sup>2</sup> (g)

OR

The bidder, in the last 07 years reckoned from bid due date, should have designed, engineered, manufactured/packaged, tested and supplied to customers from the proposed facility of manufacturing/packaging, at least 01 nos. of CNG compressor of capacity 400 SCMH (avg.) and above driven by electric motor with discharge pressure of 250 Kg/cm<sup>2</sup>(g) and same should have been successfully commissioned and under satisfactory operation for at least 6 months individually without any major breakdown as on the bid due date..

- 1.1.4 The above Compressor/ Integrated/Composite CNG Dispensing Package model shall be from the existing regular manufacturing range of the Compressor manufacturer. At least 1 compressors/Integrated/Composite CNG Dispensing Package identical to the above compressor models in terms of number of stages, number of throws, frame power and process gas (i.e. natural gas) must have been manufactured, tested and supplied to customers from the proposed manufacturing plant in the last 07 years and same should have been successfully commissioned and under satisfactory operation for at least 6 months individually without any major breakdown as on the bid due date.
- 1.1.5 In case, an organization, which owns a separate manufacturing company and keeps their exclusive marketing rights of the product, can also submit the bid. Wherever, if manufacturer is not submitting bid directly as per their company policy, in that case their marketing organizationowned by manufacturer can also submit the bid. In such case, the manufacturer of Compressorshall give a certificate that they shall not quote directly as a matter of policy and the bidder hasexclusive marketing right of their product. The manufacturer shall, however stands warranty / guarantee including quality of their product. A letter to this effect is mandatory from the Manufacturer along with the bid.
- 1.1.5 Bidder should not be blacklisted/ banned/put on Holiday list by M/s GAIL India Limited/M/s GAIL Gas Limited/M/s Rajasthan State Gas limited.

**Note:**

Bidder's to note that a Job executed by a bidder for its own plant/projects cannot be considered as experience for the purpose of meeting requirement of above BEC. However, jobs executed for Subsidiary/Fellow subsidiary/ Holding company will be considered as experience for the purpose of meeting BEC subject to submission of tax paid invoice (s) duly certified by Statutory Auditor of the bidder or chartered accountant with its seal and membership no. towards payments of statutory tax in support of the job executed for Subsidiary/Fellow subsidiary/ Holding company. Such bidders to submit these documents in addition to these documents specified in the bidding document to meet above BEC

## **1.2 Financial Criteria**

### **1.2.1 Annual turnover**

The minimum annual turnover of the bidder as per the audited financial statements in any one of the three preceding financial years shall be **INR 113 Lakhs.**

### **1.2.2 Net Worth**

Net worth of the bidder should be positive as per the last audited annual financial year.

(“Net worth” shall mean the aggregate value of the paid up capital and all reserves created out of the profits and securities premium account, after deducting the aggregate value of the accumulated losses, deferred expenditure and miscellaneous expenditure not written off, as per the audited balance sheet, but does not include reserves created out of revaluation of assets, write-back of depreciation and amalgamation)

### **1.2.3 Working Capital**

The minimum working capital of the bidder as per the last audited annual financial statement shall be **INR 22.60 Lakhs.**

If the bidder's working capital is inadequate, the bidder shall supplement this with a letter from the bidder's bank, having net worth not less than Rs.100 Crore, confirming the availability of the line of credit to cover the inadequacy of working capital required as above.

**1.2.4** In case of tenders having bid submission date up to 30th September of the relevant financial year, and audited financial results of the immediate three preceding financial years are not available, the bidder has an option to submit the audited financial results of the three years immediately prior to that. Wherever the closing date of the bid is after 30th September of the relevant financial year, bidder has to compulsorily submit the audited financial results for the immediate three preceding financial years.

## **1.3 DOCUMENTS REQUIRED WITH BID PERTAINING TO BID EVALUATION CRITERIA (STIPULATED AT SL. NO. 1.1 & 1.2 ABOVE):**

In support of Technical criteria of Bid Evaluation criteria (BEC), bidder is required to submit the following:-

Sl. No.	Description	Documents Required
<b>Document required in support of BEC (Technical) - 1.1</b>		

In	1.1	Document in support of clause 1.1.1 under technical criteria	Copy of Factory Registration certificate/ Excise registration certificate/ NSIC certificate/ ISO certificate indicating Gas engine driven CNG Booster/Variable input pressure (VIP) Integrated Dispensing Unit / CNG Mobile Refilling Units (MRU) /CNG Compressors or any other document evidencing the bidder as manufacturer of said items.
		Document in support of clause 1.1.2 under technical criteria	Certificate as per valid PESO Certificate as per relevant clause
		Document in support of clause 1.1.3 under technical criteria	a. Copy of Purchase / Work Order.  b. Completion / Performance Certificate / Commissioning Report issued by end user / owner linked with above Purchase /Work Order.  c. Confirmation by end user/ owner w.r.t commissioning of compressor package.
	<b>Note : Bidder to Note that all documents in support of Technical criteria of bid evaluation criteria (BEC) to be furnished by the bidders shall necessarily be duly certified / attested by Chartered Engineer and notary public with legible stamp.</b>		
<b>Document required in support of BEC (Financial) - 1.2</b>			
No.	Description	Documents Required	
Cl. no. 1.2.1	Annual Turn-over	Bidder(s) shall submit copy of Audited Annual Financial Statement [Balance Sheet and Profit & Loss Account Statement] along with Audit Report of three (3) preceding Financial Year(s) along with un-price bid.	
Cl. no. 1.2.2	Net Worth	Bidder(s) shall submit copy of Audited Annual Financial Statement [Balance Sheet and Profit & Loss Account Statement] along with Audit Report of last Financial Year along with un-price bid.	
Cl. no. 1.2.3	Working Capital	Bidder(s) shall submit copy of Audited Annual Financial Statement [Balance Sheet and Profit & Loss Account Statement] along with Audit Report for the last audited Financial Year along with un-price bid.  If the bidder's working capital is negative or inadequate, the bidder shall submit a letter from their bank having net worth not less than Rs.100 crores confirming the availability of line of credit for the respective amount specified in formats of tender document' for certificate from Bank for Line of Credit).	

support of Financial criteria of Bid Evaluation criteria (BEC) bidder is required to submit Details of Financial capability of bidder" in prescribed format [Format - 16] duly signed & stamped by a chartered accountant.

Further, a copy of Audited Annual Financial Statements submitted in bid shall be duly certified / attested by notary public with legible stamp.

In absence of requisite documents RSGL reserves the right to reject the bid without making any reference to bidders.

## **BID EVALUATION METHODOLOGY**

Bid shall be evaluated as per Bid Evaluation criteria of the tender document. Bidder must quote for full quantity against each item of SOR. Bids with part quantity shall be rejected. Evaluation shall be done on Overall basis.

The Owner will evaluate and compare the bids which have been determined to be substantially responsive. Prices shall be evaluated (after Loading of prices) to arrive at the lowest evaluated cost to Owner and work shall be awarded to lowest bidder for the item (s).

Bids shall be evaluated on the basis of landed cost as given below:-

- i) Ex-works price quoted by the bidder (including packing, forwarding, and GST on components, raw materials and third party inspection charges but excluding Inland Transportation to Delivery Location)
- ii) Inland Transportation to Delivery Location as given in SOR
- iii) GST (CGST & SGST/UTGST or IGST) on the finished goods including inland transportation(i.e. on sl. no. i and ii above). given in SOR.
- iv) Technical Loading as Specified In Technical Volume. Please refer Section – VI, Technical Volume (Specifications, Scope Of Work And Drawings), Technical Specification For Composite CNG Dispensing Unit (CCDU)S as per below

### **a. LOADING AGAINST PACKAGE GAS LOSS**

The bidder shall design the compressor package so that no venting and leakage of gas takes place. Bidder shall indicate actual vent & leakage losses through the compressor package. If package loss is quoted more than 1% of suction capacity gas consumption than bid shall be rejected. This quoted figure will be used for evaluation and total quoted price for all compressor towards supply, special tools and tackles, erection and commissioning will be loaded as per following formulas:

$$F = G \times H \times I \times N \times Df$$

Where,

F = Loading amount in Rupees

G = Vent/Leakage rate quoted in percentage (e.g. In case the package gas loss quoted is 0.04 % then the value of G shall be 0.0004)

H = Prevailing rates of CNG per Kg

I = Avg. no. of running hours per year i.e. @ 3650 hours (Considering 10 hours per day @365 days)

N = Number of machines

Df = Discounting factor @ 10 % to arrive at Net Present value (NPV) based on 5 Years i.e. 3.791

For calculation purpose 1kg of CNG =1.37 SCM

### **b. LOADING AGAINST ENERGY CONSUMPTION**

The compressor package shall be designed in such a way that Energy Consumption (KWH/Kg) should be minimum for production of CNG.

Bidder shall indicate actual Energy consumption for their compressor package. This quoted figure will be used for evaluation and total quoted price for all compressors towards supply, special tools& tackles, erection and commissioning will be loaded as per following formulas:

$$F = (G-Q) \times H \times I \times N \times Df$$

Where,

F = Loading amount in Rupees

G = Bidder's Energy consumption rate quoted in KWH for every 400 SCMH of CNG produced

Q = Lowest Energy consumption rate quoted in KWH for every 400 SCMH of CNG produced

H = Cost of Energy @ INR 11/Kwh

I = Avg. no. of running hours per year i.e. @ 3650hours (Considering 10 hours per day @365 days)

N = Number of machines

Df = Discounting factor @ 10 % to arrive at Net Present value (NPV) based on 5 Years i.e. 3.791 Note: Cumulative loading on gas loss and Energy consumption limited to 10% of the supply value of compressor package

- iii) Other loading, if any, as specified in Tender Document.
- iv) Other prices as defined in SOR.
- v) No price and purchase preference is available for this ten
- vi) **NOTE :**

- a. Bidders are required to quote charges for item nos. 2 and 3.1 to 3.4 of MR not less than the value arrived based on item-wise percentages specified in SOR (Section VII), Vol. I. In case, bidder's quoted price(s) for year-wise Comprehensive Operations & comprehensive maintenance are lower than the amount arrived based on minimum percentages specified, the total shortfall in quoted charges for Operations & comprehensive maintenance (with respect to percentages specified for 1st to 5th year) shall be compensated from the total amount of supply items (incl. freight, GST, etc).
- b. Thus, the value of year wise charges for Operations and comprehensive maintenance shall be increased to value arrived based on minimum percentages specified & quoted price of supply item (whose percentages are specified) and value of supply items shall be decreased proportionately during order placement, so that gross quoted price including GST of the bidder remains the same. This shall be done only for the items for which the quoted price is lower than the minimum percentages specified.

- c. The percentages are re-produced hereinbelow for ready reference:

SOR Itemno.	Percentages corresponding to minimum charges.
<b>2</b>	The quoted Annual rate (E) for this item must be equal to or more than 8% of rate of Item no. 1 (Column -10 i.e. Total Price including all taxes & duties) quoted by the bidder.
<b>3.1</b>	The quoted Annual rate (E) for this item must be equal to or more than 9% of rate of Item no. 1 (Column -10 i.e. Total Price including all taxes & duties) quoted by the bidder.
<b>3.2</b>	The quoted Annual rate (E) for this item must be equal to or more than 10% of rate of Item no. 1 (Column -10 i.e. Total Price including all taxes & duties) quoted by the bidder.
<b>3.3</b>	The quoted Annual rate (E) for this item must be equal to or more than 11% of rate of Item no. 1 (Column -10 i.e. Total Price including all taxes & duties) quoted by the bidder.
<b>3.4</b>	The quoted Annual rate (E) for this item must be equal to or more than 12% of rate of Item no. 1 (Column -10 i.e. Total Price including all taxes & duties) quoted by the bidder.

### AWARD CRITERIA:

The Purchaser will award the contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined to be the lowest evaluated bid (after Loading of prices), provided further that the Bidder is determined to be qualified to perform the contract satisfactorily.

## **SECTION – III**

### **INSTRUCTION TO BIDDERS FORMS & FORMATS ANNEXURES**

### **BID DOCUMENT FOR PROCUREMENT OF 2 NOS. OF 400 SCMH COMPOSITE CNG DISPENSING UNIT & COMPREHENSIVE O&M SERVICES FOR 5 YEARS**

## SECTION-III

### INSTRUCTION TO BIDDERS INDEX

#### [A] GENERAL:

1. SCOPE OF BID
2. ELIGIBLE BIDDERS
3. BID FROM CONSORTIUM / JOINT VENTURE
4. ONE BID PER BIDDER
5. COST OF BIDDING
6. SITE-VISIT

#### [B] TENDER DOCUMENT:

7. CONTENTS OF TENDER DOCUMENT
8. CLARIFICATION OF TENDER DOCUMENT
9. AMENDMENT OF TENDER DOCUMENT

#### [C] PREPARATION OF BID:

10. LANGUAGE OF BID
11. DOCUMENTS COMPRISING THE BID
12. BID PRICES
13. GST (CGST & SGST/ UTGST or IGST )
14. BID CURRENCIES
15. BID VALIDITY
16. EARNEST MONEY DEPOSITE (EMD)
17. PRE-BID MEETING
18. FORMAT AND SIGNING OF BID
19. ZERO DEVIATION & REJECTION CRITERIA
20. E-PAYMENT

#### [D] SUBMISSION OF BIDS:

21. SUBMISSION, SEALING AND MARKING OF BID
22. DEADLINE FOR SUBMISSION OF BID
23. LATE BID
24. MODIFICATION AND WITHDRAWAL OF BID

#### [E] BID OPENING AND EVALUATION:

25. PURCHASER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS
26. BID OPENING
27. CONFIDENTIALITY
28. CONTACTING THE PURCHASER
29. EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS
30. CORRECTION OF ERRORS

31. CONVERSION TO SINGLE CURRENCY FOR COMPARISON OF BIDS
32. EVALUATION AND COMPARISON OF BIDS
33. QUANTITY VARIATION
34. PURCHASE PREFERENCE

**[F] AWARD OF CONTRACT:**

35. AWARD
36. NOTIFICATION OF AWARD / FAX OF ACCEPTANCE [FOA]
37. DISPATCH SCHEDULE
38. CONTRACT PERFORMANCE SECURITY / SECURITY DEPOSIT
39. PROCEDURE FOR ACTION IN CASE CORRUPT/ FRAUDULENT/COLLUSIVE/COERCIVE PRACTICES
40. PUBLIC PROCUREMENT POLICY FOR MICRO AND SMALL ENTERPRISE
41. PACKING INSTRUCTIONS
42. VENDOR PERFORMANCE EVALUATION
43. MENTIONING OF PAN NO. IN INVOICE/BILL
44. SETTLEMENT OF COMMERCIAL DISPUTES BETWEEN PUBLIC SECTOR ENTERPRISE(S) INTER-SE AND PUBLIC SECTOR ENTERPRISE(S) AND GOVERNMENT DEPARTMENT (S) THROUGH PERMANENT MACHINERY OF ARBITRATION (PMA) IN THE DEPARTMENT OF PUBLIC ENTERPRISE
45. DISPUTE RESOLUTION
46. REPEAT ORDER
47. PROMOTION OF PAYMENT THROUGH CARDS AND DIGITAL MEANS
48. QUARTERLY CLOSURE OF THE CONTRACT

**[G] ANNEXURES:**

1. ANNEXURE-I: PROCEDURE FOR ACTION IN CASE CORRUPT/FRAUDULENT/COLLUSIVE/COERCIVE PRACTICES
2. ANNEXURE-II: PROCEDURE FOR EVALUATION OF PERFORMANCE OF VENDORS/ SUPPLIERS/ CONTRACTORS/ CONSULTANTS
3. ANNEXURE-III: BIDDING DATA SHEET (BDS)

## INSTRUCTIONS TO BIDDERS [ITB]

### **1 SCOPE OF BID**

#### **[A] GENERAL**

- 1.1 The Purchaser as defined in the "General Conditions of Contract-Goods [GCC-Goods]", wishes to receive bids as described in this invitation to offer (the "**Tender Document /Bid Document**") issued by the Purchaser. Purchaser/Owner occurring herein under shall be considered synonymous.
- 1.2 **SCOPE OF BID:** The scope of Supply shall be as defined in the Tender Document.
- 1.3 The successful Bidder (the "**Supplier**") shall complete delivery of goods alongwith its incidental services (if any) as per Specification, Scope of Supply/Job within the period stated in Special Conditions of Contract.
- 1.4 Throughout the Tender Documents, the terms 'Bid', 'Tender' & 'Offer' and their derivatives [Bidder/Tenderer, Bid/Tender/Offer etc.] are synonymous. Further, 'Day' means 'Calendar Day' and 'Singular' also means 'Plural'.

### **2 ELIGIBLE BIDDERS**

- 2.1 The Bidder shall not be under a declaration of ineligibility by Purchaser for Corrupt/ Fraudulent/ Collusive/ Coercive practices, as defined in ITB, Clause No. 39" (Action in case Corrupt/ Fraudulent/ Collusive/ Coercive Practices).
- 2.2 The Bidder is not put on 'blacklisted/ banned/put on Holiday list by M/s GAIL India Limited/M/s GAIL Gas Limited/M/s Rajasthan State Gas limited on due date of submission of bid. Further, neither bidder nor their allied agency/(ies) (as defined in the Annexure-I, Procedure for Action in case of Corrupt/ Fraudulent/ Collusive/ Coercive Practices) are on banning list of blacklisted/ banned/put on Holiday list by M/s GAIL India Limited/M/s GAIL Gas Limited/M/s Rajasthan State Gas limited

If the Tender Document is/was issued inadvertently to such Bidder/ downloaded from website by such Bidder, then Bid submitted by such Bidder shall not be considered for opening/ evaluation/ award and in case of Manual Tendering, such Bid will be returned immediately to the Bidder.

In case there is any change in status of the declaration prior to award of Contract (the '**Contract / Purchase Order**'), the same has to be promptly informed to RSQL by the Bidder.

It shall be the sole responsibility of the bidder to inform RSQL in case the bidder is put on 'blacklisted/ banned/put on Holiday list by M/s GAIL India Limited/M/s GAIL Gas Limited/M/s Rajasthan State Gas limited on due date of submission of bid and during the course of finalization of the tender. Concealment of the facts shall tantamount to misrepresentation of facts and shall

lead to action against such Bidders as per clause 39 of ITB.

2.3 Bidder shall not be affiliated with a firm or entity:

- (i) that has provided consulting services related to the work to the Purchaser during the preparatory stages of the work or of the project of which the works/services forms a part of or
- (ii) that has been hired (proposed to be hired) by the Purchaser as an Engineer/ Consultant for the Contract.

2.4 Neither the firm/entity appointed as the Project Management Consultant (PMC) for a Project (except feasibility report) nor its affiliates shall be allowed to participate in the tendering process in same project.

2.5 Pursuant to qualification criteria set forth in the Tender Document, the Bidder shall furnish all necessary supporting documentary evidence to establish Bidder's claim of meeting qualification criteria.

2.6 Power of Attorney:

- For Single Bidder:

In case of a Single Bidder, Power of Attorney issued by the Board of Directors/ Chairman/CEO / MD / Company Secretary of the Bidder/all partners in case of Partnership firm/any person authorized in terms of Deed of LLP/Proprietor in favour of the authorised employee(s) of the Bidder, in respect of the particular tender for signing the Bid and all subsequent communications, agreements, documents etc. pertaining to the tender and to act and take any and all decision on behalf of the Bidder, is to be submitted.

**3 BID FROM "CONSORTIUM"/"JOINT VENTURE**

Not Applicable

**4 ONE BID PER BIDDER**

4.1 A Bidder shall submit only 'one [01] Bid' in the same Bidding Process. A Bidder who submits or participates in more than 'one [01] Bid', will cause all the Bids in which the Bidder has participated to be disqualified.

4.2 Alternative Bids shall not be considered.

## 5 **COST OF BIDDING**

5.1 The Bidder shall bear all costs associated with the preparation and submission of the Bid including but not limited to Documentation Charges, Bank charges, all courier charges, translation charges, authentication charges and any associated charges including taxes & duties thereon. Further, RSGL will in no case, be responsible or liable for these costs, regardless of the outcome of the bidding process.

## 6 **SITE VISIT**

6.1 The Bidder is advised to visit and examine the site and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a Contract for the required supply/job. The costs of visiting the site shall be borne by the Bidder.

6.2 The Bidder or any of its personnel or agents shall be granted permission by the Purchaser to enter upon its premises and land for the purpose of such visits, but only upon the express conditions that the Bidder, its personnel and agents will release and indemnify the Purchaser and its personnel, agents from and against all liabilities in respect thereof, and will be responsible for death or injury, loss or damage to property, and any other loss, damage, costs, and expenses incurred as a result of inspection.

6.3 The Bidder shall not be entitled to hold any claim against RSGL for non-compliance due to lack of any kind of pre-requisite information as it is the sole responsibility of the Bidder to obtain all the necessary information with regard to site, surrounding, working conditions, weather etc. on its own before submission of the Bid.

## [B] **TENDER DOCUMENT**

## 7 **CONTENTS OF TENDER DOCUMENT**

7.1 The contents of Tender Document are those stated below, and should be read in conjunction with any 'Addendum / Corrigendum and Clarification(s) ' issued in accordance with "ITB: Clause- 8 & 9":

- Section-I : Invitation for Bid [IFB]
- Section-II : Bid Evaluation Criteria [BEC] & Evaluation methodology
- Section-III : Instructions to Bidders [ITB]  
Annexure Forms &Format
- Section-IV : General Conditions of Contract [GCC]

- Section-V : Special Conditions of Contract [SCC]
- Section-VI : Technical Specifications , Drawing (wherever applicable) and scope for incidental services (wherever applicable)
- Section-VII : Price Schedule/ Schedule of Rates

7.2 The Bidder is expected to examine all instructions, forms, terms & conditions of the Tender Document. The RFQ & IFB together with all its attachments thereto, shall be considered to be read, understood and accepted by the Bidders. Failure to furnish all information required by the Tender Document or submission of a Bid not substantially responsive to the Tender Document in every respect will be at Bidder's risk and may result in the rejection of his Bid.

## **8 CLARIFICATION OF TENDER DOCUMENT**

8.1 A prospective Bidder requiring any clarification(s) of the Tender Document may notify RSGL in writing or by fax or email in the format "F-18" at RSGL's mailing address indicated in the IFB/BDS no later than 02 (two) days prior to pre-bid meeting (in cases where pre-bid meeting is scheduled) or 05 (five) days prior to the bid closing date in cases where pre-bid meeting is not held. RSGL reserves the right to ignore the bidders request for clarification if received after the aforesaid period. RSGL may respond in writing to the request for clarification. RSGL's response including an explanation of the query, but without identifying the source of the query will be uploaded on Websites as mentioned at clause no. 2.0 (G) of IFB/ communicated to prospective bidders by e-mail/ fax.

8.2 Any clarification or information required by the Bidder but same not received by the Purchaser as per instructions at clause 8.1 above is liable to be considered as "no clarification / information required".

## **9 AMENDMENT OF TENDER DOCUMENT**

9.1 At any time prior to the 'Due Date & Time of Bid Submission', Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder(s), modify the Tender Document by addenda/ corrigendum.

9.2 Any addendum/ corrigendum thus issued shall be integral part of the Tender Document and shall be hosted on the websites as provided at clause no. 2.0 (G) of IFB /communicated to prospective bidders by e-mail/ fax. Bidders have to take into account all such addendum/ corrigendum before submitting their Bid.

9.3 The Purchaser, if consider necessary, may extend the date of submissions of Bid in order to allow the Bidders a reasonable time to furnish their most competitive bid taking into account the addenda/ corrigendum issued thereof.

## [C] **PREPARATION OF BID**

### **10 LANGUAGE OF BID:**

The bid prepared by the Bidder and all correspondence, drawing(s), document(s), certificate(s) etc. relating to the Bid exchanged by Bidder and RSLG shall be written in English language only. In case a document, certificate, printed literature etc. furnished by the Bidder is in a language other than English, the same should be accompanied by an English translation duly authenticated by the Chamber of Commerce of Bidders Country, in which case, for the purpose of interpretation of the Bid, the English translation shall govern.

### **11. DOCUMENTS COMPRISING THE BID**

11.1 In case the bids are invited under the Manual Two Bid System, the Bid prepared by the Bidder shall comprise of the following components sealed in 2 different envelopes:

#### **11.1.1 PART-I: "TECHNO-COMMERCIAL / UN-PRICED BID"**

Part-I of the Bid shall be submitted in Envelope - I and shall contain the following:

- (a) 'Covering Letter' on Bidder's 'Letter head' clearly specifying the enclosed contents.
- (b) 'Bidder's General Information', as per 'Form F- (1)
- (c) 'Bid Form', as per 'Form F-2'
- (d) Copies of documents required as per 'Form F-3' and as mentioned elsewhere in the Tender Document
- (e) Copy of Price Schedule/ Schedule of Rate (SOR) with prices blanked out but mentioning "Quoted" / "Not Quoted" (as applicable) written against each item, in support of having submitted prices in the Priced Bid/SOR strictly in the format provided in the Tender document.
- (f) 'Letter of Authority' on the Letter Head, as per 'Form F-5'
- (g) 'No Deviation Confirmation', as per 'Form F-6'
- (h) 'Declaration regarding Holiday/Banning, in 'Form F-7'
- (i) 'Certificate for Non-Involvement of Government of India' from Bidder, as per 'Form F-8'
- (j) 'Agreed Terms and Conditions', as per 'Form F-10A'
- (k) Duly certified / attested documents in accordance with the "Bid Evaluation Criteria [BEC]", Section II of Tender Document.
- (l) Undertaking on the Letter Head of Bidder, as per the Form F-12.
- (m) Power of Attorney /copy of Board Resolution, in favour of the authorized signatory of the Bid, as per clause no.2.7 of ITB.

- (n) Any other information/details required as per Tender Document
- (o) EMD in original as per Clause 16 of ITB (Not Applicable)
- (p) All other forms and Formats including Annexures.
- (q) Tender Document, its Corrigendum/Amendment/Clarification(s) Duly signed on each page by the Authorized Signatory holding POA.
- (r) Additional document specified in BDS, SCC, Scope of Supply or mentioned elsewhere in the Tender Document.

**Note:** All the pages of the Bid must be signed by the "Authorized Signatory" of the Bidder holding POA.

### 11.1.2 PART-II: Price Bid

Part-II of the Bid shall be submitted in Envelope -II and shall contain Price Bid only. The Prices are to be submitted strictly in the Price Schedule/ Schedule of Rate (SOR) format of the Tender Document. RSGL shall not be responsible for any failure on the part of the bidder to follow the instructions given in the Note below.

Note:

- i) Bidders are advised NOT to mention Rebate/Discount separately, either in the SOR format or anywhere else in the Bid. In case Bidder(s) intend to offer any Rebate/Discount, they should include the same in the item rate(s) itself under the "Price Schedule/ Schedule of Rates (SOR)" and indicate the discounted unit rate(s) only.
- ii) If any unconditional rebate has been offered in the quoted rate the same shall be considered in arriving at evaluated price. However, no cognizance shall be taken for any conditional discount for the purpose of evaluation of the Bid.
- iii) In case, it is observed that any of the Bidder(s) has/have offered *suo-moto* Discount/Rebate after opening of unpriced bid but before opening of price bid, such discount /rebate(s) shall not be considered for evaluation. However, in the event of the Bidder emerging as the lowest evaluated Bidder without considering the discount/rebate(s), then such discount/ rebate(s) offered by the Bidder shall be considered for Award and the same will be conclusive and binding on the Bidder.
- iv) In the event as a result of techno-commercial discussions or pursuant to seeking clarifications / confirmations from Bidder, while evaluating the un-priced part of the Bid, any of the bidders offers upward revised prices; such Bidder(s) will be requested to withdraw the revised prices failing which the bid will not be considered for further evaluation.

## 12 BID PRICES

12.1 Bidders shall indicate the following in the Price Schedule/SOR format:-

- A) Ex-works Price including packing, forwarding and TPIA charges (such price to include all costs as well as duties and taxes paid or payable on components and raw materials incorporated or to be incorporated in the goods).
- B) **GST (CGST & SGST/UTGST or IGST) on the finished goods including inland transportation** (which will be payable on the finished goods, if this Contract is awarded).
- C) Inland transportation up to Delivery Location and other costs incidental to delivery.

The material is required to be delivered through a reliable bank approved Road Transport Company and who is a registered common carrier as per section 3 of Carriage by the Road Act 2007.

Also, RSGL reserves the right to transport the material with it's own transporter.

- D) Charges for incidental services and **GST (CGST & SGST/UTGST or (IGST) on these services** as per the Price Schedule/ Schedule of Rates.

- 12.2 It shall be the endeavour of the bidder to arrange transit insurance (refer BDS for details). For the purpose of arranging transit insurance of the goods dispatched / shipped, vendors are required to furnish the dispatch / shipping particulars to the Insurance Company giving complete details of dispatches along with Policy No. etc.
- 12.3 Prices must be filled exactly in the format for "Price Schedule/ Schedule of Rates [SOR]" enclosed as part of Tender Document. If quoted in separate typed sheets and any variation in item description, unit, quantity, any conditions of SOR etc. is noticed, the Bid is liable to be rejected.
- 12.4 The delivery basis of the goods is mentioned in BDS. The date of LR/GR shall be considered as date of delivery. Other terms shall be interpreted as per INCOTERMS®2010 or its latest version.
- 12.5 All duties, taxes and other levies (if any) payable by the Seller under the Contract or for any other cause, except **GST (CGST & SGST/UTGST or IGST)** on finished product & on the incidental services, shall be included inthe rates / prices and the total bid-price submitted by the Bidder. The quoted rate of **GST (CGST & SGST/UTGST or IGST)** on finished product & on the incidental services shall be indicated in F-10 and the bid prices. Bidders arerequired to quote the prices after carefully reading the provisions mentioned in tender document including SCC, GCC, Scope of Work, etc.
- 12.6 Prices quoted by the Bidder, shall remain firm and fixed and valid until completion of the Contract and will not be subject to variation on any account, whatsoever.

- 12.7 The Bidder shall quote the rates in 'figures' & 'words', as per Price schedule /SOR format provided in the Tender Document. There should not be any discrepancy between the prices indicated in figures and in words. In case of any discrepancy, the same shall be dealt as per clause no. 30 of ITB.
- 12.8 Further, Bidder shall also mention the Harmonized System Nomenclature (HSN) at the designated place in Price schedule.

### **13 TAXES & DUTIES**

- 13.1 Within the contractual delivery period, the statutory variation in applicable **GST (CGST & SGST/UTGST or IGST)** on supply and on incidental services, shall be to RSGL's account.

Beyond the contractual delivery period, in case RSGL is not entitled for input tax credit of **GST (CGST & SGST/UTGST or IGST)**, then any increase in the rate of **GST (CGST & SGST/UTGST or IGST)** beyond the contractual delivery period shall be to Supplier's account whereas any decrease in the rate **GST (CGST & SGST/UTGST or IGST)** shall be passed on to the Purchaser.

Beyond the contractual delivery period, in case RSGL is entitled for input tax credit of **GST (CGST & SGST/UTGST or IGST)**, then statutory variation in applicable **GST (CGST & SGST/UTGST or IGST)** on supply and on incidental services, shall be to RSGL's account.

The base date for the purpose of applying statutory variation shall be the Bid Due Date.

- 13.2 In case of statutory variation(s) in the taxes & duties mentioned at clause no. 13.1 above, the Supplier shall submit a copy of the 'Government Notification' to evidence the rate as applicable on the Bid Due Date and on the date of revision. Claim for payment of Statutory variation should be raised preferably along with the Invoice. Any claim for arrears on account of statutory variation shall be submitted to Purchaser within two [02] months from the date of issue of such 'Government Notification', otherwise such claim may not be entertained.
- 13.3 **New Taxes & duties:** Any new taxes & duties, if imposed by the State/ Central Govt. of India on the finished goods after the due date of bid submission but before the Contractual Delivery/Completion Date, shall be reimbursed to the Supplier on submission of copy of notification(s) issued from State/ Central Govt. Authorities along with documentary evidence for proof of payment of such taxes & duties, but only after ascertaining its applicability with respect to the Contract.
- 13.4 Deemed Export benefits are not applicable and Bidder should furnish prices without considering the same.
- 13.5 Supplier shall ensure timely submission of correct invoice(s), **as per GST rules/ regulation**, with all required supporting document(s) within a period specified

in Contract to enable RSGL to avail input credit of **GST (CGST & SGST/UTGST or IGST)**. Further, returns and details required to be filled under GST laws & rules should be timely filed by Supplier of Goods / Services with requisite details.

If input tax credit is not available to RSGL for any reason not attributable to RSGL, then RSGL shall not be obligated or liable to pay or reimburse **GST (CGST & SGST/UTGST or IGST)** claimed in the invoice(s) and shall be entitled to deduct/ setoff/recover such **GST (CGST & SGST/UTGST or IGST)** together with all penalties and interest, if any, against any amounts paid or payable by RSGL to the Supplier.

- 13.6 The supplier shall mention the particulars of RSGL, (place specified in BDS) on the Invoice . Besides, if any other particulars of RSGL are required to be mentioned, under **GST rules/ regulations** on the date of dispatch, the same shall also be mentioned on the Invoice.
- 13.7 In case CBEC (Central Board of Excise and Customs)/ any equivalent Central Government agency/ State Government agency brings to the notice of RSGL that the Supplier of Goods / Services (Service Provider) has not remitted the amount towards **GST (CGST & SGST/UTGST or IGST)** collected from RSGL to the government exchequer, then, that Supplier of Goods / Services (Service Provider) shall be put under Holiday list of RSGL for period of six months as mentioned in Procedure for Evaluation of Performance of Vendors/ Suppliers/Contractors/ Consultants.
- 13.8 RSGL will prefer to deal with registered supplier of goods/ services under GST. Therefore, bidders are requested to get themselves registered under GST, if not registered yet.

However, in case any unregistered bidder is submitting their bid, their prices will be loaded with applicable **GST (CGST & SGST/UTGST or IGST)** during evaluation of bid (if applicable as per Govt. Act/ Law in vogue). Where RSGL is entitled for input credit of **GST (CGST & SGST/UTGST or IGST)**, the same will be considered for evaluation of bid as per evaluation methodology of tender document.

- 13.9 In case the GST rating of vendor on the GST portal / Govt. official website is negative / black listed, then the bids may be rejected by RSGL. Further, in case rating of bidder is negative / black listed after award of work for supply of goods / services, then RSGL shall not be obligated or liable to pay or reimburse **GST (CGST & SGST/UTGST or IGST)** to such vendor and shall also be entitled to deduct / recover such **GST (CGST & SGST/UTGST or IGST)** along with all penalties / interest, if any, incurred by RSGL.

#### **13.10 Anti-profiteering clause**

As per Clause 171 of GST Act, it is mandatory to pass on the benefit due to reduction in rate of tax or from input tax credit to the consumer by way of commensurate reduction in prices. The Service Provider may note the above and

quote their prices accordingly.

**13.11 GST (CGST & SGST/UTGST or IGST) is implemented w.e.f. 01.07.2017 which subsumed various indirect taxes and duties applicable before 01.07.2017. Accordingly, the provisions of General Condition of Contract relating to taxes and duties which are subsumed in GST are modified to aforesaid provisions mentioned in clause no. 12 and 13 of ITB.**

**14 BID CURRENCIES:**

Bidders must submit Bid in Indian Rupees only.

**15 BID VALIDITY:**

15.1 Bid shall be kept valid for period specified in BDS from the final ‘Bid Due Date’. A Bid valid for a shorter period may be rejected by RSGL as ‘non-responsive’.

15.2 In exceptional circumstances, prior to expiry of the original ‘Bid Validity Period’, the Purchaser may request the Bidder to extend the ‘Period of Bid Validity’ for a specified additional period. The request and the responses thereto shall be made in writing or by fax/email. A Bidder may refuse the request without forfeiture of his ‘Bid Security’. A Bidder agreeing to the request will not be required or permitted to modify his Bid, but will be required to extend the validity of its ‘Bid Security’ for the period of the extension and in accordance with “ITB: Clause-16” in all respects.

**16 EARNEST MONEY DEPOSIT (EMD)**

16.1 Bid must be accompanied with earnest money (i.e. **Earnest Money Deposit (EMD)** also known as **Bid Security**) in the form of ‘**Demand Draft**’ /‘**Banker’s Cheque**’ [in favour of **Rajasthan State Gas Ltd.** payable at place mentioned in **BDS**] or ‘**Bank Guarantee**’ or ‘**Letter of Credit**’ strictly as per the format given in form F 4/ F- 4A (as the case may be) of the **Tender Document**. Bidder shall ensure that EMD submitted in the form of ‘**Bank Guarantee**’ or ‘**Letter of Credit**’ should have a validity of at least ‘two [02] months’ beyond the validity of the Bid. EMD submitted in the form of ‘**Demand Draft**’ or ‘**Banker’s Cheque**’ should be valid for three months.

Bid not accompanied with EMD, or EMD not in requisite format shall be liable for rejection. The EMD shall be submitted in Indian Rupees only.

16.2 The EMD is required to protect RSGL against the risk of Bidder’s conduct, which would warrant the forfeiture of EMD, pursuant to clause-16.7 of ITB.

16.3 RSGL shall not be liable to pay any documentation charges, Bank charges, commission, interest etc. on the amount of EMD. In case EMD is in the form of a ‘Bank Guarantee’, the same shall be from any Indian scheduled Bank or a branch of an International Bank situated in India and registered with ‘Reserve Bank of India’ as Scheduled Foreign Bank. However, in case of ‘Bank

Guarantee' from Banks other than the Nationalized Indian Banks, the Bank must be commercial Bank having net worth in excess of Rs. 100 Crores [Rupees One Hundred Crores] and a declaration to this effect should be made by such commercial Bank either in the 'Bank Guarantee' itself or separately on its letterhead.

- 16.4 Any Bid not secured in accordance with "ITB: Clause-16.1 & Clause-16.3" may be rejected by RSGL as non- responsive.
- 16.5 Unsuccessful Bidder's EMD will be discharged/ returned as promptly as possible, but not later than 'thirty [30] days' after finalization of tendering process.
- 16.6 The successful Bidder's EMD will be discharged upon the Bidder's acknowledging the 'Award' and signing the 'Agreement' (if applicable) and furnishing the 'Contract Performance Security (CPS)/ Security Deposit' pursuant to clause no. 38 of ITB.
- 16.7 Notwithstanding anything contained herein, the EMD may also be forfeited in any of the following cases:
  - (a) If a Bidder withdraws his Bid during the 'Period of Bid Validity'
  - (b) If a Bidder has indulged in corrupt/fraudulent /collusive/coercive practice
  - (c) If the Bidder modifies Bid during the period of bid validity (after Due Date and Time for Bid Submission).
  - (d) Violates any other condition, mentioned elsewhere in the Tender Document, which may lead to forfeiture of EMD.
  - (e) In the case of a successful Bidder, if the Bidder fails to:
    - (i) to acknowledge receipt of the "Notification of Award" / Fax of Acceptance[FOA]",
    - (ii) to furnish "Contract Performance Security / Security Deposit", in accordance with "ITB: Clause-38"
    - (iii) to accept 'arithmetical corrections' as per provision of the clause 30 of ITB.
- 16.8 In case EMD is in the form of 'Bank Guarantee' or 'Letter of Credit', the same must indicate the Tender Document No. and the name of Tender Document for which the Bidder is quoting. This is essential to have proper correlation at a later date.
- 16.9 MSEs (Micro & Small Enterprises) are exempted from submission of EMD in accordance with the provisions of PPP-2012 and Clause 40 of ITB. However, Traders/Dealers/ Distributors /Stockiest /Wholesaler are not entitled for exemption of EMD.. The Government Departments/PSUs are also exempted from the payment of EMD

## **17 PRE-BID MEETING**

- 17.1 The Bidder(s) or his designated representative are invited to attend a “Pre-Bid Meeting” which will be held at Date, Time & Venue as specified in IFB. It is expected that a Bidder shall not depute more than 02 representatives for the meeting.
- 17.2 Purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.. The Bidder must submit their queries / clarifications to RSGL/VCS in the format “F-18”, as mentioned at clause no. 8.0 of ITB.
- 17.3 The text of the questions raised and the responses that may become necessary as a result of the Pre-Bid Meeting, will be prepared in the form of Addendum / Corrigendum /Clarification to the Tender Document and will be uploaded on websites of RSGL, Govt. and VCS and not through the minutes of the Pre-Bid Meeting.
- 17.4 Non-attendance of the Pre-Bid Meeting will not be a cause for disqualification of Bidder.

## **18 FORMAT AND SIGNING OF BID**

- 18.1 The original and all copies of the Bid shall be typed or written in indelible ink [in the case of copies, photocopies are also acceptable] and shall be signed by a person(s) duly authorized to sign on behalf of the Bidder (as per POA). The name and position held by each person signing, must be typed or printed below the signature. All pages of the Bid except for un-amended printed literature where entry(s) or amendment(s) has been made, shall be initialled by the person or persons signing the Bid.
- 18.2 The Bid shall contain no alterations, omissions, or additions, unless such corrections are initialled by the person(s) signing the Bid.

## **19 ZERO DEVIATION AND REJECTION CRITERIA**

- 19.1 **ZERO DEVIATION:** Deviation to terms and conditions of Tender Document may lead to rejection of Bid. RSGL will accept Bid based on terms & conditions of Tender Document only. Bidder may note, RSGL will determine the substantial responsiveness of each bid to the Tender Document pursuant to provision contained in clause 29 of ITB. For purpose of this, a substantially responsive bid is one which conforms to all terms and conditions of the Tender Document without deviation(s) or exception n(s). RSGL’s determination of a Bid’s responsiveness is based on the content of the Bid itself without recourse to extrinsic evidence. RSGL reserves the right to raise technical and/or commercial query(ies) to the Bidder(s), if required . The response(s) to the same shall be in writing, and no change in the price(s) or substance of the Bid shall be sought, offered or permitted. The substance of the Bid includes but not limited to prices, completion/delivery period, scope, technical specifications etc. Bidder is requested not to take any deviation(s)/exception(s) to the terms & conditions of

Tender Document, and submit all requisite documents as mentioned in this Tender Document, failing which their Bid will be liable for rejection. If a Bidder does not reply to the queries in the permitted time frame then its Bid shall be evaluated based on the documents available in the Bid.

## **19.2 REJECTION CRITERIA:**

Notwithstanding the above, deviation to the following clauses of Tender Document shall lead to summarily rejection of Bid:

- (a) Firm Price
- (b) Earnest Money Deposit
- (c) Specifications
- (d) Schedule of Rates / Price Schedule / Price Basis
- (e) Delivery Period / Period of Contract/ Completion schedule
- (f) Period of Validity of Bid
- (g) Price Reduction Schedule
- (h) Contract Performance Security / Security Deposit
- (i) Warranty/ Guarantee
- (j) Arbitration / Resolution of Dispute/Jurisdiction of Court
- (k) Force Majeure & Applicable Laws
- (l) Integrity Pact, if Applicable
- (m) Any other condition specifically mentioned in the Tender Document elsewhere that non-compliance of the clause lead to rejection of Bid

Note: Further, it is once again reminded not to mention any condition in the Bid which is contradictory to the terms & conditions of Tender Document.

## **20 E-PAYMENT**

- 20.1 Payments to Suppliers will be made electronically, through 'e-banking'. The successful bidder should give the details of his bank account as per the bank mandate form.
- 20.2 Further, to promote cashless transactions, the onward payments by Contractors to their employees, service providers, sub-contractors and suppliers may be made through Cards and Digital means to the extent possible.

## **[D] SUBMISSION OF BIDS**

## **21 SUBMISSION, SEALING AND MARKING OF BID**

- 21.1 Bid must be submitted in sealed envelope. If the envelope is not sealed & marked as per Clause No. 11 of ITB, the Purchaser will assume no responsibility for misplacement or pre-mature opening of the Bid.
- 21.3 The Bid shall be addressed to the Purchaser at address specified in IFB.
- 21.4 Bids submitted under the name of AGENT/CONSULTANT/ REPRESENTATIVE /RETAINER/ ASSOCIATE etc. on behalf of a

Bidder/Affiliate shall not be accepted.

## **22 DEADLINE FOR SUBMISSION OF BID**

- 22.1 In case of manual tender, EMD along with Bid must be submitted within the Due Date & Time of Bid submission at the address/Venue specified in the Tender Document.
- 22.2 RSGL may, in exceptional circumstances and at its discretion, extend the Due Date & Time for Bid submission through a Corrigendum as per clause no. 9.0 of ITB. In which case all rights and obligations of RSGL and the Bidder, previously subject to the original Due Date & Time will thereafter be subject to the Due Date & Time as extended. Such Corrigendum for extension of Due Date & Time of Bid submission will be uploaded on websites of RSGL and Govt. and VCS and will be communicated to the prospective bidders.

## **23 LATE BID**

- 23.1 Any Bid received after the Due Date & Time of Bid submission of tenders will be treated as late bids.
- 23.2 Bid(s) received by RSGL after Due Date & Time of Bid Submission shall not be considered. Such late bids shall be returned to the Bidder within “10 days” in ‘unopened conditions’. The EMD of such Bidder shall be returned along with the un-opened bid.
- 23.3 Unsolicited Bids or Bids received to address other than one specifically stipulated in the Tender Document will not be considered for evaluation/opening/award if not received to the specified destination within stipulated date & time.

## **24 MODIFICATION AND WITHDRAWAL OF BID**

- 24.1 The Bidder may withdraw or modify its Bid after bid submission but before the Due Date & Time for Bid submission provided that the written modification/ substitution/ notice of the withdrawal is received by RSGL prior to the Due Date & Time for Bid submission.
- 24.2 The modification shall also be prepared, sealed, marked and dispatched in accordance with the provisions of the clause 11 & 22 of ITB with relevant ‘Cut-Out Slip’ duly pasted and mentioning on top of the envelope as “MODIFICATION”. In case of withdrawal of bid, the Envelope containing withdrawal letter duly superscribing the envelope as “WITHDRAWAL” and “Tender Document number :....”/ communication regarding withdrawal of bid with “Tender Document number :....”/ must reach concerned dealing official of RSGL within Due date & Time of submission of Bid. No bid shall be modified/ withdrawn after the Due Date & Time for Bid submission.
- 24.3 Any withdrawal/ modification/substitution of Bid in the interval between the

Due Date & Time for Bid submission and the expiration of the period of bid validity specified by the Bidder in their Bid shall result in the Bidder's forfeiture of EMD pursuant to clause 16 of ITB and rejection of Bid.

24.4 The latest Bid submitted by the Bidder shall be considered for evaluation and all other Bid(s) shall be considered to be unconditionally withdrawn.

## [E] BID OPENING AND EVALUATION:

### 25 **PURCHASER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS**

RSGL reserves the right to accept or reject any Bid, and to annul the Bidding process and reject all Bids, at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder(s) or any obligations to inform the affected Bidder(s) of the ground for RSGL's action. However, Bidder if so desire may seek the reason (in writing) for rejection of their Bid to which RSGL shall respond quickly.

### 26 **BID OPENING**

#### 26.1 **Unpriced Bid Opening:**

RSGL will open bids, in the presence of Bidders' designated representatives who choose to attend, at date, time and location stipulated in the BDS. The Bidders' representatives, who are present shall sign a Bid Opening Register evidencing their attendance.

#### 26.2 **Priced Bid Opening:**

26.2.1 RSGL will open the price bids of those Bidders who meet the qualification requirement and whose bid is determined to be technically and commercially responsive. Bidders selected for opening of their price bid shall be informed about the date & time of price bid opening. Bidders may depute their authorized representative to witness the price bid opening. The Bidders' representatives, who are present shall sign a Price Bid Opening Register evidencing their attendance and may be required to be present on a short notice.

26.2.2 The price bids of those Bidders who were not found to be techno-commercially responsive shall not be opened. The envelope containing Price Bid shall be returned unopened after opening of the price bids of techno-commercially responsive Bidders.

26.3 In case of Bids invited under the Single Bid System, Bid shall be opened on the Due Date & Time of Bid Opening as specified in the Tender Document.

## 27 **CONFIDENTIALITY**

Information relating to the examination, clarification, evaluation and comparison of Bids, and recommendations for the award of a Contract, shall not be disclosed to Bidder(s) or any other persons not officially concerned withsuch process.

## 28 **CONTACTING THE PURCHASER**

- 28.1 From the time of Bid opening to the time of placement of order, if any Bidder wishes to contact the Purchaser on any matter related to the Bid, it should do so in writing. Information relating to the examination, clarification, evaluation & recommendation for award shall not be disclosed.
- 28.2 Any effort by a Bidder to influence the Purchaser in the Purchaser's processing of Bid(s) including 'Bid Evaluation', 'Bid Comparison', or 'Contract Award' decisions may result in the rejection of the Bidder's Bid and action shall be initiated as per the RSGL's procedure in this regard.

## 29 **EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS**

- 29.1 The purchaser's determination of a bid's responsiveness is based on the content of the bid only. Prior to the detailed evaluation of Bids, the Purchaser will determine whether each Bid:-
  - (a) meets the "Bid Evaluation Criteria" of the Tender Document;
  - (b) has been properly signed;
  - (c) is accompanied by the required EMD;
  - (d) is substantially responsive to the requirements of the Tender Document; and
  - (e) provides any clarification and/or substantiation that the Purchaser may require to determine responsiveness pursuant to "ITB: Clause-29.2"
- 29.2 A substantially responsive Bid is one which conforms to all the terms & conditions, specifications etc. of the Tender Document without any material deviation or reservation or omission, for this purpose Purchaser defines the foregoing terms below:-
  - a) "Deviation" is departure from the requirement specified in the Tender Documents.
  - b) "Reservation" is the setting of limiting condition(s) or withholding from complete acceptance of the requirement in the Tender Documents.
  - c) "Omission" is the failure to submit part or all of the information or documentation required in the Tender Document.
- 29.3 A material deviation, reservation or omission is one that,

- a) If accepted would,
  - i) affect in any substantial way the scope, quality or performance of the job as specified in Tender Document.
  - ii) limit, in any substantial way, inconsistent with the Tender Document, the Purchaser's rights or the Bidder's obligation under the proposed Contract.
- b) If rectified, would unfairly affect the competitive position of other bidders presenting substantially responsive bids.

29.4 The Purchaser shall examine all aspects of the Bid to confirm that all requirements have been met without any material deviation, reservation or omission.

29.5 If a Bid is not substantially responsive, it may be rejected by the Purchaser and may not subsequently be made responsive by correction or withdrawal of theof material deviation, reservation or omission.

**30 CORRECTION OF ERRORS**

30.1 Bids determined to be substantially responsive will be checked by the Purchaser for any arithmetic errors. Errors will be corrected by the Purchaser as follows:

- (i) When there is a difference between the rates in figures and words, the rate which corresponds to the amount worked out by the Bidder (by multiplying the quantity and rate) shall be taken as correct.
- (ii) When the rate quoted by the Bidder in figures and words tallies but the amount is incorrect, the rate quoted by the contractor shall be taken as correct and not the amount and the amount shall be re-calculated/ corrected accordingly.
- (iii) When it is not possible to ascertain the correct rate, in the manner prescribed above, the rate as quoted in words shall be adopted and the amount worked out, for comparison purposes

30.2 The amount stated in the Bid will be adjusted by the Purchaser in accordance with the above procedure for the correction of errors. If the Bidder does not accept the corrected amount of Bid, its Bid will be rejected, and the EMD shall be forfeited.

**31 CONVERSION TO SINGLE CURRENCY FOR COMPARISON OF BIDS**

Not Applicable. All bids submitted must be in the currency specified at clause 14 of ITB.

## **32 EVALUATION AND COMPARISON OF BIDS**

Bid shall be evaluated as per Evaluation Methodology mentioned in Section-II of Tender Document (refer clause 7.0 of ITB).

## **33 QUANTITY VARIATION**

NOT APPLICABLE

## **34 PURCHASE PREFERENCE**

Purchase preference to Central Government Public Sector Undertaking, Micro & Small Enterprises (MSEs) and Domestically Manufactured Electronic Products (DMEP) shall be allowed as per Government instructions in vogue, as applicable.

## **[F] AWARD OF CONTRACT**

### **35 AWARD**

Subject to “ITB: Clause-29.0”, RSGL will place order to the successful Bidder whose Bid has been determined to be substantially responsive and has been determined as the lowest provided that Bidder, is determined to be qualified to satisfactorily perform the Contract.

***“RSGL intent to place the order/contract directly on the address from where Goods are produced/ dispatched or Services are rendered. In case, bidder wants order/ contract at some other address or supply of Goods/ Services from multiple locations, bidder is required to provide in their bid address on which order is to be placed”.***

## **36 NOTIFICATION OF AWARD / FAX OF ACCEPTANCE [FOA]**

36.1 Prior to the expiry of ‘Period of Bid Validity’, Notification of Award for acceptance of the Bid will be intimated to the successful Bidder by RSGL either by Fax / E - mail /Letter or like means defined as the “Fax of Acceptance(FOA)”. The Contract shall enter into force on the date of FOA and the same shall be binding on RSGL and successful Bidder (i.e. Supplier/Seller). The Notification of Award/FOA will constitute the formation of a Contract. The detailed Purchase Order /Contract shall be issued thereafter incorporating terms & conditions of Tender Document, Corrigendum, Clarification(s), Bid and agreed variation(s)/acceptable deviation(s), if any. RSGL may choose to issue Notification of Award in form of detailed Purchase Order without issuing FOA and in such case the Contract shall enter into force on the date of detailed Purchase Order only.

36.2 Contract/ Delivery/Completion Period shall commence from the date of Notification of Award/FOA/Date of intimation by EIC or as mentioned there in IFB.

36.3 Upon the successful Bidder's / Supplier's furnishing of 'Contract Performance Security / Security Deposit', pursuant to "ITB: Clause-38", RSGL will promptly discharge his EMD, pursuant to "ITB: Clause-16".

### **37.0 DISPATCH SCHEDULE**

37.1 If Purchase Order issued based on FOT (Free on Truck) / FOR (Free on Rail) project site basis, materials shall be delivered at the destination on freight prepaid & door delivery basis and for the cases where order(s) are finalized on Ex-works basis the transportation will be arranged by supplier(s) / RSGL on 'freight to pay' basis and the freight will be paid at the destination.

Seller shall submit the following details of goods/cargo within 15 days from Notification of Award to the designated authority as per Purchase Order:

- (i) Shipments Schedule
- (ii) Dimension details of packages
- (iii) Detailed technical write-up along with Catalogue (if applicable)
- (iv) Any other document/details, if mentioned in Purchase Order

37.2 *The consignment should be handed over to transporter with E-way bill, wherever required as per law/act. In case such e-way bill is required to be issued by RSGL, the concerned designated order issuing authority may be contacted in this regard. It will be the responsibility of the supplier to ensure the compliance of the provisions relating to E-Way bill before dispatch of the consignment and any financial implication arising due to non-compliance in this regard will be to the account of the supplier.*

37.3 It shall be responsibility of the seller to send intimation immediately on dispatch of the material so that necessary arrangements can be made at site. Delays on account of the same shall solely be attributable to the Supplier.

### **38 CONTRACT PERFORMANCE SECURITY / SECURITY DEPOSIT**

38.1 Within 30 days of the receipt of the notification of award/ FOA from RSGL, the successful Bidder shall furnish the Contract Performance Security/Security Deposit (CPS) in accordance with of General Conditions of the Contract. The CPS shall be in the form of either Banker's Cheque or Demand Draft or Bank Guarantee or Letter of Credit and shall be in the currency of the Contract. However, CPS shall not be applicable in cases wherein the individual order value as specified in Notification of Award is less than INR 5 Lakh (exclusive GST).

38.2 The CPS shall be for an amount as specified in BDS towards faithful

performance of the contractual obligations and performance of equipment/material. For the purpose of CPS, Contract/Order Value shall be exclusive of **GST (CGST & SGST/UTGST or IGST)** to be reimbursed by Purchaser as per provision of contract.

Bank Guarantee towards CPS shall be from any Indian scheduled bank or a branch of an International bank situated in India and registered with Reserve bank of India as scheduled foreign bank. However, in case of bank guarantees from banks other than the Nationalized Indian banks, the bank must be a commercial bank having net worth in excess of Rs 100 crores and a declaration to this effect should be made by such commercial bank either in the Bank Guarantee itself or separately on its letterhead. This bank guarantee shall be valid for a period as three months beyond the Warranty/ Guarantee Period specified in Tender Document.

- 38.3 Failure of the successful Bidder to comply with the requirements of this article shall constitute sufficient grounds for the annulment of the award and forfeiture of the EMD.
- 38.4 Further, the bidder can submit CPBG on line through issuing bank to RSGL directly as per Ministry of Finance (MOF) Department of financial service direction vide letter ref number F.No.7/112/2011-BOA dated 17<sup>th</sup> July 2012. In such cases confirmation will not be sought from issuing banker by RSGL.

### **39    PROCEDURE FOR ACTION IN CASE CORRUPT/ FRAUDULENT /COLLUSIVE/ COERCIVE PRACTICES**

- 39.1 Procedure for action in case Corrupt/ Fraudulent/Collusive/Coercive Practices is enclosed at Annexure-I.
- 39.2 **NON-APPLICABILITY OF ARBITRATION CLAUSE IN CASE OF BANNING OF VENDORS/ SUPPLIERS / CONTRACTORS/BIDDERS/ CONSULTANTS INDULGED IN FRAUDULENT/ COERCIVE PRACTICES**

Notwithstanding anything contained contrary in GCC or elsewhere in the Purchase Order, in case it is found that the Bidder/ Supplier indulged in fraudulent/ coercive practices at the time of bidding, during execution of the Contract and/or on other grounds as mentioned in RSGL's "Procedure for action in case Corrupt/ Fraudulent/ Collusive/Coercive Practices" (Annexure- I), the Bidder/Supplier shall be banned (in terms of aforesaid procedure) from The date of issuance of such order by RSGL to such Bidder/Supplier.

The Bidder /Supplier / understands and agrees that in such cases where Bidder /Supplier has been banned (in terms of aforesaid procedure) from the date of issuance of such order by RSGL, such decision of RSGL shall be final and

binding on the Bidder /Supplier and the 'Arbitration Clause' mentioned in the GCC or elsewhere in the Purchase Order shall not be applicable for any consequential issue /dispute arising in the matter.

#### **40 EXEMPTION TO MSES FROM PAYMENT OF EMD.**

In case Bidder is a Micro or Small Enterprise under the Micro, Small and Medium Enterprises Development Act, 2006, the Bidder shall submit the Documentary evidence that the Bidder is a Micro or Small Enterprises registered with District Industries Centers or Khadi and Village Industries National Small Industries Corporation or Directorate of Handicrafts and Handloom or any other body specified by Ministry of Micro, Small and Medium Enterprises or Udyog Aadhar Memorandum. The document(s) submitted by the Bidder shall be duly certified by the Chartered Accountant (not being an employee or a Director or not having any interest in the bidder's company/firm) and notary public with legible stamp.

#### **41 PACKING INSTRUCTIONS**

- 41.1 Packing shall be strong and sturdy such that it can withstand loading/unloading & pushing by mechanical devices. All packaging shall be done in such a manner as to reduce volume and weight as much as possible without jeopardizing the safety of the material. All packing materials shall be new.
- 41.2 Fragile articles should have special packing materials depending on type of materials.
- 41.3 All soft and delicate surfaces on equipment/material should be carefully protected / painted with suitable coating and wrapped to prevent rusting and damage. All mechanical and electrical equipment and other heavy articles should be securely fastened to the bottom of the case, to avoid damage.
- 41.4 Attachments and spare parts of equipment and all small pieces shall be packed separately in wooden cases with adequate protection inside the case and sent along with main equipment. Each item shall be tagged so as to identify it with the main equipment and part number and reference number shall be indicated.
- 41.5 All protrusions shall be suitably protected and openings shall be blocked by wooden/steel covers as may be required.
- 41.6 Detailed case wise packing list in water proof envelope shall be inserted in each package together with equipment/material. One copy of 'Detailed PackingList' shall be fastened outside of the package in waterproof envelope and covered by metal cover.
- 41.7 Each package shall be marked on three sides with proper paints/indelible waterproof ink as follows:

**PURCHASER:**

**DESTINATION :**

Purchase Order No.....

Net Wt..... Kgs, Gross Wt.....Kgs.

Dimensions.....X.....X. CM.

Package No. (Sl. No. of total packages)

.....

Seller's Name

.....

41.8 Permits are to be obtained separately for entry/use of vehicles/trailers etc. inside the plant. The following requirements are to be met to obtain vehicle permit:-

- a) Vehicle/Equipment etc. should be brought to site in good conditions.
- b) Valid Road Tax Certificate, fitness certificate and insurance policy from Competent Authority
- c) Valid operating/driving license of driver/operator
- d) Any other requirement mentioned elsewhere in Tender Document

**42 VENDOR PERFORMANCE EVALUATION**

The procedure for evaluation of performance of Supplier containing provisions for putting a Bidder / Supplier on suspension and/or holiday list (as the case may be) is enclosed as Annexure II to ITB herewith.

**43. MENTIONING OF PAN NO. IN INVOICE/BILL**

As per CBDT Notification No. 95/2015 dated 30.12.2015, mentioning of PAN no. is mandatory for transactions related to procurement of goods / services/ exceeding Rs. 2 Lacs per transaction.

Accordingly, Supplier should mention their PAN no. in their invoice/ bill for any transaction exceeding Rs. 2 lakhs. As provided in the notification, in case Supplier do not have PAN no., they have to submit declaration in Form 60 along with invoice/ bill for each transaction.

Payment of Supplier shall be processed only after fulfilment of above requirement.

**44. SETTLEMENT OF COMMERCIAL DISPUTES BETWEEN PUBLIC SECTOR ENTERPRISE(S) INTER-SE AND PUBLIC SECTOR ENTERPRISE(S) AND GOVERNMENT DEPARTMENT (S) THROUGH PERMANENT MACHINERY OF ARBITRATION (PMA) IN THE DEPARTMENT OF PUBLIC ENTERPRISES**

In the event of any dispute or difference relating to the interpretation and application of the provisions of the Contracts, such dispute or difference shall be

referred by either party for Arbitration to the sole Arbitrator in the Department of Public Enterprises to be nominated by the Secretary to the Government of India in-charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 shall not be applicable to arbitrator under this clause. The award of the Arbitrator shall be binding upon the parties

to the dispute, provided, however, any party aggrieved by such award may make a further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law & Justice, Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary / Additional Secretary, when so authorized by the Law Secretary, whose decision shall bind the Parties finally and conclusively. The parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator.

## **45 DISPUTE RESOLUTION**

### **DISPUTE RESOLUTION (ADDENDUM TO PROVISION REGARDING APPLICABLE LAWS AND SETTLEMENT OF DISPUTES OF GCC) (GAIL Gas Limited has framed the Conciliation Rules 2013 which shall be applicable for RSGL in context of RSGL)**

45.1 GAIL Gas Limited/RSGL has framed the Conciliation Rules 2013 in conformity with supplementary to Part – III of the Indian Arbitration and Conciliation Act 1996 for speedier, cost effective and amicable settlement of disputes through conciliation. A copy of the said rules made available on GAIL Gas/RSGL's web site [www.gailgas.com](http://www.gailgas.com) for reference. Unless otherwise specified, the matters where decision of the Engineer-in-Charge is deemed to be final and binding as provided in the Agreement and the issues/disputes which cannot be mutually resolved within a reasonable time, all disputes shall be settled in accordance with the Conciliation Rules 2013.

45.2 Any dispute(s)/difference(s)/issue(s) of any kind whatsoever between/ amongst the Parties arising under/out of/in connection with this contract shall be settled in accordance with the afore said rules

3.0 In case of any dispute(s)/difference(s)/issue(s), a Party shall notify the other Party (ies) in writing about such a dispute(s)/ difference(s) / issue(s) between / amongst the Parties and that such a Party wishes to refer the dispute(s)/difference(s)/issue(s) to Conciliation. Such

45.3 Invitation for Conciliation shall contain sufficient information as to the dispute(s)/difference(s)/issue(s) to enable the other Party (ies) to be fully informed as to the nature of the dispute(s)/difference(s)/issue(s), the amount of monetary claim, if any, and apparent cause(s) of action.

45.4 Conciliation proceedings commence when the other Party(ies) accept(s) the invitation to conciliate and confirmed in writing. If the other Party (ies) reject(s) the invitation, there will be no conciliation proceedings.

45.5 If the Party initiating conciliation does not receive a reply within thirty days from the date on which he/she sends the invitation, or within such other period of time as specified in the invitation, he/she may elect to treat this as a rejection of the invitation

to conciliate. If he/she so elects, he/she shall inform the other Party(ies) accordingly.

45.6 Where Invitation for Conciliation has been furnished, the Parties shall attempt to settle such dispute(s) amicably under Part-III of the Indian Arbitration and Conciliation Act, 1996 and GAIL Gas Limited/RSGL Conciliation Rules, 2013. It would be only after exhausting the option of Conciliation as an Alternate Dispute Resolution Mechanism that the Parties hereto shall go for Arbitration. For the purpose of this clause, the option of „Conciliation“ shall be deemed to have been exhausted, even in case of rejection of „Conciliation“ by any of the Parties.

45.7 The cost of Conciliation proceedings including but not limited to fees for Conciliator(s), Airfare, Local Transport, Accommodation, cost towards conference facility etc. shall be borne by the Parties equally.

45.8 The Parties shall freeze claim(s) of interest, if any, and shall not claim the same during the pendency of Conciliation proceedings. The Settlement Agreement, as and when reached/agreed upon, shall be signed between the Parties and Conciliation proceedings shall stand terminated on the date of the Settlement Agreement.

**46 REPEAT ORDER (NOT APPLICABLE)**

PURCHASER reserves the right, within 6 months of order to place repeat order up to of the original ordered quantity (s) without any change in unit price or other terms and conditions.

**47 PROMOTION OF PAYMENT THROUGH CARDS AND DIGITAL MEANS**

To promote cashless transactions, the onward payments by Contractors to their employees, service providers, sub-contractors and suppliers may be made through Cards and Digital means to the extent possible

**48 QUARTERLY CLOSURE OF THE CONTRACT**

Not Applicable

**49. PRICE REDUCTION FOR DELAYED DELIVERY**

“As mentioned in GCC, in case delay in supply/ execution of contract, supplier/ contractor/ service provider will raise invoice for reduced value as per Price Reduction Clause. If supplier/ contractor/ service provider has raised the invoice for full value, then supplier/ contractor/ service provider will issue Credit Note towards the applicable PRS amount.

In case supplier/ contractor/ service provider fails to submit the invoice for reduced value or does not issue credit note as mentioned above, RSGL will release the payment to supplier/ contractor/ service provider after effecting the PRS clause.

In the event of any financial implication arises on RSGL due to issuance of invoice without reduction in price or non-issuance of Credit Note, the same shall be to the account of supplier/ contractor/ service provider.”

**PROCEDURE FOR ACTION IN CASE**  
**CORRUPT/FRAUDULENT/COLLUSIVE/COERCIVE PRACTICES**

**A Definitions:**

A.1 “Corrupt Practice” means the offering, giving, receiving or soliciting, directly or indirectly, anything of value to improperly influence the actions in selection process or in contract execution.

“Corrupt Practice” also includes any omission for misrepresentation that may mislead or attempt to mislead so that financial or other benefit may be obtained or an obligation avoided.

A2 “Fraudulent Practice” means and include any act or omission committed by an agency or with his connivance or by his agent by misrepresenting/ submitting false documents and/ or false information or concealment of facts or to deceive in order to influence a selection process or during execution of Contract/ order.

A3 “Collusive Practice amongst bidders (prior to or after bid submission)” means a scheme or arrangement designed to establish Bid prices at artificial non-competitive levels and to deprive the Purchaser of the benefits of free and open competition.

A.4 “Coercive practice” means impairing or harming or threatening to impair or harm directly or indirectly, any agency or its property to influence the improperly actions of an agency, obstruction of any investigation or auditing of a procurement process.

A.5 “Vendor/Supplier/Contractor/Consultant/Bidder” is herein after referred as “Agency” in this Annexure.

A.6 “Appellate Authority” shall mean Committee of Directors of RSGL consisting of Director (Finance) and Director (BD) for works centers under Director (Projects). For all other cases committee of Directors shall consist of Director (Finance) & Director (Projects).

A.7 “Competent Authority” shall mean the authority of RSGL, who is competent to take final decision for Suspension of business dealing with an Agency( ies) and Banning of business dealings with Agency(ies) and shall be the “Director” concerned.

A.8 “Allied Agency” shall mean all the concerns within the sphere of effective influence of banned/ suspended agencies. In determining this, the following factors may be taken into consideration:

- (a) Whether the management is common;
- (b) Majority interest in the management is held by the partners or directors of banned/ suspended firm.
- (c) substantial or majority shares are owned by banned/ suspended agency and by virtue of this it has a controlling voice.

A.9 “Investigating Agency” shall mean any department or unit of RSGL investigating into the conduct of Agency/ party and shall include the Vigilance Department of the RSGL, Central Bureau of Investigation, State Police or any other agency set up by the Central or State Government having power to investigate.

**B Actions against Bidder(s) indulging in corrupt /fraudulent/ collusive/ Coercive practices.**

**B.1 Irregularities noticed during the evaluation of the bids:**

If it is observed during bidding process/ bids evaluation stage that a bidder has indulged in corrupt/fraudulent /collusive/coercive practice, the bid of such bidder (s) shall be rejected and its EMD shall be forfeited.

Further, such agency shall be banned for future business with RSGL for a period specified in para B 2.2 below from the date of issue of banning order.

**B.2 Irregularities noticed after award of Contract**

**(i) During execution of Contract:**

If an agency, is found to have indulged in corrupt/fraudulent/ collusive /coercive practices, during execution of Contract, the agency shall be banned for future business with RSGL for a period specified in para B 2.2 below from the date of issue of banning order.

The concerned Order (s)/ Contract(s) where corrupt/ fraudulent/ collusive practices is observed, shall be suspended with immediate effect by Engineer-in-Charge (EIC)/ Employer whereby the supply/ work/ service and payment etc. will be suspended. The action shall be initiated for putting the agency on banning.

After conclusion of process, the Order(s)/ Contract(s) where it is concluded that such irregularities have been committed, shall be terminated and Contract cum Performance Bank Guarantee (CPBG)/ Contract Performance Security (CPS) submitted by agency against such Order(s)/ Contract(s) shall also be forfeited. The amount that may have become due to the Contractor/Supplier on account of work/supplies already executed by him shall be payable to the Contractor/Supplier and

this amount shall be subject to adjustment against any amounts due from the Contractor/Supplier under the terms of the contract.

No risk and cost provision will be enforced in such cases.

**(ii) After execution of contract and during Defect Liability Period (DLP)/Warranty/Guarantee Period:**

If an Agency is found to have indulged in corrupt/fraudulent/ collusive /coercive practices, after execution of Contract and during DLP/ Warranty/Guarantee Period, the Agency shall be banned for future business with RSGL for a period specified in para B 2.2 below from the date of issue of banning order. Further, the CPBG/CPS submitted by Agency against such Order(s)/Contract(s) shall be forfeited.

**(ii) After expiry of DLP/ Warranty/Guarantee Period**

If an Agency is found to have indulged in corrupt/fraudulent/ collusive /coercive practices, after expiry of DLP/ Warranty/Guarantee Period, the Agency shall be banned for future business with RSGL for a period specified in para B 2.2 below from the date of issue of banning order.

### **B.2.2 Period of Banning**

The period of banning of agencies indulged in Corrupt/Fraudulent/Collusive/Coercive Practices shall be as under and to be reckoned from the date of banning order:

<b>S. No.</b>	<b>Description</b>	<b>Period of banning from the date of issuance of Banning order</b>
1	<p>Misrepresentation/False information other than pertaining to BEC of tender but having impact on the selection process.</p> <p>For example, if an agency confirms not being in blacklisted/ banned/put on Holiday list by M/s GAIL India Limited/M/s GAIL Gas Limited/M/s Rajasthan State Gas limited, liquidation, bankruptcy &amp; etc. and subsequently it is found otherwise, such acts shall be considered in this category.</p>	02 years
2	Corrupt/Fraudulent (pertaining to BEC of tender) /Collusive/Coercive Practices	03 years

2.1	If an agency again commits Corrupt/Fraudulent (pertaining to BEC of tender) /Collusive/ Coercive Practices in subsequent cases after their banning, such situation of repeated offense to be dealt with more severity and following shall be the period of banning:	
	(v) Repeated once	7 years (in addition to the period already served)
	(vi) Repeated twice or more	15 years (in addition to the period already served)
3	Indulged in unauthorized disposal of materials provided by RSLK	7 years
4	If act of vendor/ contractor is a threat to the National Security	15 years

## C Effect of banning on other ongoing contracts/ tenders

C.1 If an Agency is put on Banning, such agency should not be considered in ongoing tender(s)/future tender(s).

C.2 However, if such an Agency is already executing other order(s)/contract (s) where no corrupt/fraudulent/ collusive/coercive practice is found, the Agency should be allowed to continue till its completion without any further increase in scope except those incidental to original scope mentioned in the contract.

C.3 If an Agency is put on the Banning List during tendering and no irregularity is found in the case under process:

C.3.1 after issue of the Tender Document but before opening of Part-I/Technical Bid, the bid submitted by the Agency shall be ignored.

C.3.2 after opening Part-I/Technical bid but before opening the Price bid, the Price bid of the Agency shall not be opened and EMD submitted by the Agency shall be returned to the Agency.

C.3.3 after opening of price (Part-II), EMD submitted by the Agency shall be returned; the offer of the Agency shall be ignored & will not be further evaluated. If the agency is put on banning list for fraud/ mis-appropriation of

facts committed in the same Tender Document/other tender where errant Agency emerges as the lowest (L1), then such tendering process shall also be cancelled and re-invited.

## **D. Procedure for Suspension of Bidder**

### **D.1 Initiation of Suspension**

Action for suspension business dealing with any Agency(ies) shall be initiated by Corporate C&P Department, RSGL when :-

- (i) Corporate Vigilance Department, RSGL based on the fact of the case gathered during investigation by them recommend for specific immediate action against the Agency.
- (ii) Corporate Vigilance Department, RSGL based on the input from Investigating agency, forward for specific immediate action against the Agency.
- (iii) Non performance of Vendor/Supplier/Contractor/Consultant leading to termination of Contract/Order.

### **D.2 Suspension Procedure:**

- D.2.1 The order of suspension would operate initially for a period not more than 6 (six) months and is to be communicated to the Agency and also to Corporate Vigilance Department, RSGL. Period of suspension can be extended with the approval of the Competent Authority by 1 (one) month at a time with a ceiling of 6(six) months pending a conclusive decision to put the Agency on banning list.
- D.2.2 During the period of suspension, no new business dealing may be held with the Agency.
- D.2.3 Period of suspension shall be accounted for in the final order passed for banning of business with the Agency.
- D.2.4 The decision regarding suspension of business dealings should also be communicated to the Agency.
- D.2.5 If a prima-facie, case is made out that the agency is guilty on the grounds which can result in banning of business dealings, proposal for issuance of suspension order and show cause notice shall be put up to the Competent Authority. The suspension order and show cause notice must include that (i) the Agency is put on suspension list and (ii) why action should not be taken for banning the Agency for future business from RSGL.

The Competent Authority to approve the suspension will be same as that for according approval for banning.

**D 3 Effect of Suspension of business:**

Effect of suspension on other on-going/future tenders will be as under:

- D.3.1 No enquiry/bid/tender shall be entertained from an Agency as long as the name of Agency appears in the Suspension List.
- D.3.2 If an Agency is put on the Suspension List during tendering process:
  - D.3.2.1 after issue of the Tender Document but before opening of Part-I/Technical Bid, the Bid submitted by the Agency shall be ignored.
  - D.3.2.2 after opening Part-I/ Technical Bid but before opening of Part-II/ Price bid, the Price bid of the Agency shall not be opened and EMD submitted by the Agency shall be returned to the Agency.
  - D.3.2.3 after opening of price, EMD submitted by the Agency shall be returned; the Offer/Bid of the Agency shall be ignored & will not be further evaluated. If the Agency is put on Suspension list for fraud/ mis-appropriation of facts conducted in the same/other tendering process where errant Agency emerges as the lowest (L1), then such tendering process shall also be cancelled and re-invited.
- D.3.3 The existing contract (s)/ order (s) under execution shall continue.
- D.3.4 The Bidder confirms/undertake that (i) neither the Bidder themselves nor their allied Agency(ies) are on banning list of RSGL or the Ministry of Petroleum and Natural Gas and (ii) Bidder is not banned by any Government department/ Public Sector.

**F. Appeal against the Decision of the Competent Authority:**

- F.1 The Agency may file an appeal against the order of the Competent Authority for putting the Agency on banning list. The Appeal shall be filed to Appellate Authority of RSGL. Such an appeal shall be preferred within one month from the date of receipt of banning order.
- F.2 Appellate Authority would consider the appeal and pass appropriate order which shall be communicated to the party as well as the Competent Authority.
- F.3 Appeal process may be completed within 45 days of filing of appeal with the Appellate Authority.
- G. Wherever there is contradiction with respect to terms of 'Integrity pact', GCC and 'Procedure for action in case of Corrupt/Fraudulent/ Collusive/Coercive Practice', the provisions of 'Procedure for action in case of Corrupt/Fraudulent/ Collusive/Coercive Practice' shall prevail.

## Annexure-II

### **PROCEDURE FOR EVALUATION OF PERFORMANCE OF VENDORS/SUPPLIERS/ CONTRACTORS/ CONSULTANTS**

#### **1.0 OBJECTIVE**

The objective of Evaluation of Performance aims to recognize and develop reliable Vendors/ Suppliers/Contractors/ Consultants so that they consistently meet or exceed expectations and requirements.

The purpose of this procedure is to put in place a system to monitor performance of Vendors/ Suppliers/Contractors/ Consultants associated with RSGL in Projects and in O&M so as to ensure timely completion of various projects, timely receipt of supplies including completion of works & services for operation and maintenance of operating plants and quality standards in all respects.

#### **2.0 METHODOLOGY**

##### **i) Preparation of Performance Rating Data Sheet (PRDS)**

PRDS for each and every Vendor/ Supplier/Contractor/ Consultant for all Order/Contract with a value of Rs. 7 Lakhs and above is recommended to be drawn up. These PRDS are to be separately prepared for orders/ contracts related to Projects and O&M. Format, Parameters, Process, responsibility for preparation of PRDS are separately mentioned.

##### **ii) Measurement of Performance**

Based on the parameters defined in PRDS, Performance of concerned Vendor/ Supplier/Contractor/ Consultant would be computed and graded accordingly. The measurement of the performance of the Party would be its ability to achieve the minimum scoring of 60% points in the given parameters.

##### **iii) Initiation of Measures:**

Depending upon the Grading of Performance, corrective measures would be initiated by taking up the matter with concerned Vendor/ Supplier/ Contractor/ Consultant. Response of Vendor/ Supplier/ Contractor/ Consultant would be considered before deciding further course of action.

##### **iv) Implementation of Corrective Measures:**

Based on the response of Vendor/ Supplier/Contractor/ Consultant, concerned Engineer-in-Charge for the Projects and/or OIC in case of O&M would recommend for continuation or discontinuation of such party from the business of RSGL.

##### **v) Orders/contracts placed on Proprietary/OEM basis for O&M will be evaluated and, if**

required, corrective action will be taken for improvement in future.

### **3.0 PROCESS OF EVALUATION OF PERFORMANCE OF VENDORS/ SUPPLIERS/ CONTRACTORS/ CONSULTANTS**

#### **3.1 FOR PROJECTS**

- i) Evaluation of performance of Vendors/Suppliers/Contractors/ Consultants in case of Projects shall be done immediately with commissioning of any Project.
- ii) On commissioning of any Project, EIC (Engineer-in-charge)/ Project-in- charge shall prepare a PRDS (Format at Annexure-1) for all Orders and Contracts.
- iii) Depending upon the Performance Rating, following action need to be initiated by Engineer-in-charge/Project-in-charge:

Sl.No.	Performance Rating	Action
1	POOR	Seek explanation for Poor performance
2	FAIR	Seek explanation for Fair performance
3	GOOD	Letter to the concerned for improving performance in future
4	VERY GOOD	No further action

- iv) Reply from concerned Vendor/ Supplier/Contractor/ Consultant shall be examined. In case of satisfactory reply, PRDS to be closed with a letter to the concerned for improving performance in future.
- v) When no reply is received or reasons indicated are unsatisfactory, the following actions need to be taken:
  - A) Where Performance rating is “POOR”:

Recommend such defaulting Vendor/ Supplier/Contractor/ Consultant for putting on Holiday for a period from one to three years as given below:

- (i) Poor Performance due to reasons other than Quality **One Year**
- (ii) Poor Performance on account of Quality (if any mark obtained against Quality parameter is less than 30): **Two Years**
- (iii) Poor Performance leading to termination of contract or Offloading of contract due to poor performance solely attributable to Vendor/ Supplier/Contractor/ Consultant or Repeated Offence: **Three Years**

Non-performance of a Vendor/ Supplier/ Contractor/ Consultant leading to termination of Contract/ Order, such Vendor/ Supplier/ Contractor/Consultant are also to be considered for Suspension.

In all such cases, concerned site will put up recommendation for issuance of SCN and putting the party on suspension list as per process defined for suspension in “Procedure for Action in case of Corrupt/ Fraudulent/ Collusive/ Coercive Practices”

(B) Where Performance rating is “FAIR”:

Recommend for issuance of warning to such defaulting Vendor/ Supplier/Contractor/ Consultant to improve their performance.

### 3.2 FOR CONSULTANCY JOBS

Monitoring and Evaluation of consultancy jobs will be carried out in the same way as described in para 3.1 for Projects.

### 3.3 FOR OPERATION & MAINTENANCE

- i) Evaluation of performance of Vendors/Suppliers/Contractors/ Consultants in case of Operation and Maintenance, shall be done immediately after execution of Order/Contract.
- ii) After execution of Orders, a PRDS (Format at Annexure-2) shall be prepared for Orders by Site C&P and for Contracts/Services by respective Engineer-In-Charge.
- iii) Depending upon Performance Rating, following action need to be initiated by Site C&P:

Sl. No.	Performance Rating	Action
1	<b>POOR</b>	Seek explanation for Poor performance
2.	<b>FAIR</b>	Seek explanation for Fair performance
3	<b>GOOD</b>	Letter to the concerned for <del>improving</del> improving performance in future.

- iv) Reply from concerned Vendor/ Supplier/Contractor/ Consultant shall be examined. In case of satisfactory reply, PRDS to be closed with a letter to the concerned for improving performance in future.
- v) When no reply is received or reasons indicated are unsatisfactory, the following actions need to be taken:
  - A) Where performance rating is “POOR”

Recommend such defaulting Vendor/Supplier/Contractor/ Consultant for putting on Holiday for a period from one to three years as given below:

- (i) Poor Performance due to reasons other than Quality : **One Year**
- (ii) Poor Performance on account of Quality (if any mark obtained against Quality parameter is less than 30): **Two Years**
- (iii) Poor Performance leading to termination of contract or Offloading of contract due to poor performance solely attributable to Vendor/ Supplier/ Contractor/ Consultant or Repeated Offence: **Three Years**

Non-performance of a Vendor/Supplier/Contractor/Consultant leading to termination of Contract/ Order such Vendor/ Supplier/ Contractor/Consultant are also to be considered for Suspension.

In all such cases, concerned site will put up recommendation for issuance of SCN and putting the party on suspension list as per process defined for suspension in “Procedure for Action in case of Corrupt/ Fraudulent/ Collusive/ Coercive Practices”

- (B) Where Performance rating is “FAIR”  
Recommend for issuance of warning to such defaulting Vendors / Contractors/ Consultants to improve their performance.

#### **4.0 EXCLUSIONS:**

The following would be excluded from the scope of evaluation of performance of Vendors/ Suppliers/Contractors/ Consultants:

- i) Orders/Contracts below the value of Rs. 7 Lakhs.
- ii) One time Vendor/ Supplier/Contractor/ Consultant.
- iii) Orders for Misc./Administrative items/ Non stock Non valued items.

However, concerned Engineer-in-Charge /OICs will continue to monitor such cases so as to minimize the impact on Projects/O&M plants due to non-performance of Vendors/ Suppliers/Contractors/ Consultants in all such cases.

#### **5.0 REVIEW & RESTORATION OF PARTIES PUT ON HOLIDAY**

**5.1** An order for Holiday passed for a certain specified period shall be deemed to have been automatically revoked on the expiry of that specified period and it will not be necessary to issue a specific formal order of revocation.

Further, in case Vendor/ Supplier/Contractor/ Consultant is put on holiday due to quality, and new order is placed on Bidder after restoration of Vendor/ Supplier/Contractor/ Consultant, such order will be properly monitored during execution stage by the concerned site.

**6.0 EFFECT OF HOLIDAY**

**6.1** If a Vendor/ Supplier/Contractor/ Consultant is put on Holiday, such Vendor/ Supplier/Contractor/Consultant should not be considered in ongoing tendering process/future tenders.

**6.2** However, if such Vendor/ Supplier/Contractor/ Consultant is already executing any other order/ contract and their performance is satisfactory in terms of the relevant contract, should be allowed to continue till its completion without any further increase in scope except those incidental to original scope mentioned in the contract. In such a case CPBG/CPS will not be forfeited and payment will be made as per provisions of concerned Contract. However, this would be without prejudice to other terms and conditions of the Contract.

**6.3** Effect on other ongoing tendering process:

6.3.1 after issue of the Tender Document but before opening of Part-I/Technical Bid, the Bid submitted by the party shall be ignored.

6.3.2 after opening of Part-I/Technical Bid but before opening the Part-II/Price Bid, the Price Bid of the party shall not be opened and EMD submitted by the party shall be returned to the party.

6.3.3 after opening of Part-II/Price Bid, EMD submitted by the party shall be returned; the Bid of the party shall be ignored & will not be further evaluated. If errant party emerges as the lowest (L1), then such Tender Document shall also be cancelled and re-invited.

7.0 While putting the Vendor/ Supplier/Contractor/ Consultant on holiday as per the procedure, the holding company, subsidiary, joint venture, sister concerns, group division of the errant Vendor/ Supplier/Contractor/ Consultant shall not be considered for putting on holiday list.

Any bidder, put on holiday, will not be allowed to bid through consortium route also against any Tender Document during the period of holiday.

8.0 If an unsuccessful Bidder makes any vexatious, frivolous or malicious complaint against the tender process with the intention of delaying or defeating any procurement or causing loss to RSGL or any other bidder, such Bidder will be

put on holiday for a period of six months, if such complaint is proved to be vexatious, frivolous or malicious, after following the due procedure.

**9. APPEAL AGAINST THE DECISION OF THE COMPETENT AUTHORITY:**

- (a) The party may file an appeal against the order of the Competent Authority for putting the party on Holiday list. The appeal shall be filed to Appellate Authority. Such an appeal shall be preferred within one month from the date of receipt of Holiday order.
- (b) Appellate Authority would consider the appeal and pass appropriate order which shall be communicated to the party as well as the Competent Authority.
- (c) Appeal process may be completed within 45 days of filing of appeal with the Appellate Authority.
- (d) “Appellate Authority” shall mean Committee of Directors consisting of Director (Finance) and Director (BD) for works centers under Director (Projects). For all other cases committee of Directors shall consist of Director (Finance) & Director (Projects).

**10. ERRANT BIDDER**

In case after price bid opening, the lowest evaluated bidder (L1) is not awarded the job for any mistake committed by him in tendering process or withdrawal of Bid or modification of Bid or varying any term in regard thereof leading to re-tendering, RSGL shall forfeit EMD submitted by the Bidder and such Bidders shall be debarred from participation in re-tendering of the same job(s)/item(s).

Further, such Bidder will be put on holiday for a period of six months after following the due procedure.

**11. In case CBEC (Central Board of Excise and Customs)/ any equivalent Central Government agency/ State Government agency brings to the notice of RSGL that the Supplier of Goods / Services (Service Provider) has not remitted the amount towards **GST (CGST & SGST/UTGST or IGST)** collected from RSGL to the government exchequer, , then party will be put on holiday for a period of six months after following the due procedure**

**Annexure-1**

**RSGL PERFORMANCE RATING DATA SHEET [PRDS] (FOR PROJECTS/  
CONSULTANCY JOBS)**

- i) Project/Work Centre :
- ii) Order/ Contract No. & date :
- iii) Brief description of Items Works/Assignment :
- iv) Order/Contract value (Rs.) :
- v) Name of Vendor/Supplier/ : Contractor/ Consultant
- vi) Contracted delivery/ : Completion  
Schedule
- vii) Actual delivery/ : Completion date

Performance Parameter	Delivery/ Completion Performance	Quality Performance	Reliability Performance#	Total
Maximum Marks	40	40	20	100
Marks Allocated				

Note:

Remarks (if any)

PERFORMANCE RATING (\*\*)

Note :

(#) Vendor/Supplier/Contractor/Consultant who seek repeated financial assistance or deviation beyond contract payment term or seeking direct payment to the sub-vendor/ sub-contractor due to financial constraints, then '0' marks should be allotted against Reliability Performance.

(\*) Allocation of marks should be as per enclosed instructions(\*\*)

Performance rating shall be classified as under:

Sl. No.	Range (Marks)	Rating
1	60 & below	POOR
2	61-75	FAIR
3	76-90	GOOD
4	More than 90	VERY GOOD

Signature of  
Authorised Signatory:

Name:

Designation:

### Instructions for allocation of marks

1. Marks are to be allocated as under:

#### 1.1 DELIVERY/ COMPLETION PERFORMANCE 40 Marks

Delivery Period/ Completion Schedule	Delay in Weeks	Marks
a) Upto 3 months	Before CDD	40
	Delay up to 4 weeks	35
	"    8 weeks	30
	"    10 weeks	25
	"    12 weeks	20
	"    16 weeks	15
	More than 16 weeks	0
b) Above 3 months	Before CDD	40
	Delay up to 4 weeks	35
	"    8 weeks	30
	"    10 weeks	25
	"    16 weeks	20
	"    20 weeks	15
	"    24 weeks	10
	More than 24 weeks	0

#### 1.2 QUALITY PERFORMANCE 40 Marks

For Normal Cases : No Defects/ No Deviation/ No failure: 40 marks

i) Rejection/Defects Marks to be allocated on 10 marks  
prorata basis for acceptable quantity as compared to total quantity for  
normal cases

ii) When quality Failure of severe nature 0 marks  
failure endanger Moderate nature 5 marks system integration  
and safety of the system low severe nature 10-25 marks

iii) Number of

1. No deviation	5 marks
2. No. of deviations $\leq 2$	2 marks
3. No. of deviations $> 2$	0 marks

### 1.3 RELIABILITY PERFORMANCE 20 Marks

#### A. FOR WORKS/CONTRACTS

i)	Submission of order acceptance, agreement, CPS/PBG, Drawings and other documents within time	4 marks
ii)	Mobilization of resources as per Contract and in time	4 marks
iii)	Liquidation of Check-list points	4 marks
iv)	Compliance to statutory and HS&E requirements or Reliability of Estimates/Design/Drawing etc. in case of Consultancy jobs	4 marks
v)	Timely submission of estimates and other documents for Extra, Substituted & AHR items	4 marks
<b>B.</b>	<b>FOR SUPPLIES</b>	
i)	Submission of order acceptance, CPS/PBG, Drawings and other documents within time	5 marks
ii)	Attending complaints and requests for after sales service/ warranty repairs and/ or query/ advice (up to the evaluation period).	5 marks
iii)	Response to various correspondence and conformance to standards like ISO	5 marks
iv)	Submission of all required documents including Test Certificates at the time of supply	5 marks

## RSGL PERFORMANCE RATING DATA SHEET [PRDS] (FOR O&M)

i) Location :  
ii) Order/ Contract No. & date :  
iii) Brief description of Items :  
  
Works/Assignment  
iv) Order/Contract value (Rs.) :  
v) Name of Vendor/Supplier/ : Contractor/ Consultant  
vi) Contracted delivery/ : Completion  
Schedule  
vii) Actual delivery/ : Completion date

Performance Parameter	Delivery Performance	Quality Performance	Reliability Performance#	Total
Maximum Marks	40	40	20	100
Marks Allocated (*)				

Remarks (if any)

PERFORMANCE RATING (\*\*)

Note :

(#) Vendor/Supplier/Contractor/Consultant who seek repeated financial assistance or deviation beyond contract payment term or seeking direct payment to the sub-vendor/sub-contractor due to financial constraints, then '0' marks should be allotted against Reliability Performance

(\*) Allocation of marks should be as per enclosed instructions

(\*\*) Performance rating shall be classified as under :

Sl. No.	Range (Marks)	Rating
1	60 & below	POOR
2	61-75	FAIR
3	76-90	GOOD
4	More than 90	VERY GOOD

Signature of  
Authorised  
Signatory:

Name:

Designation:

## Instructions for allocation of marks (For O&M)

1. Marks are to be allocated as under :

### 1.1 DELIVERY/ COMPLETION PERFORMANCE 40 Marks

<b>Delivery Period/ Completion Schedule</b>	<b>Delay in Weeks</b>	<b>Marks</b>
a) Upto 3 months	Before CDD	40
	Delay up to 4 weeks	35
	"    8 weeks	30
	"    10 weeks	25
	"    12 weeks	20
	"    16 weeks	15
	More than 16 weeks	0
b) Above 3 months	Before CDD	40
	Delay up to 4 weeks	35
	"    8 weeks	30
	"    10 weeks	25
	"    16 weeks	20
	"    20 weeks	15
	"    24 weeks	10
	More than 24 weeks	0

### 1.2 QUALITY PERFORMANCE 40 Marks

For Normal Cases : No Defects/ No Deviation/ No failure: 40 marks

i) Rejection/Defects	Marks to be allocated on prorata basis for acceptable quantity as compared to total quantity for normal cases	10 marks
ii) When quality failure endanger system integration marks and safety of the system	Failure of severe nature - Moderate nature - low severe nature	0 marks 5 marks 10-25
iii) Number of deviations	1. No deviation 2. No. of deviations $\leq 2$ 3. No. of deviations $> 2$	5 marks 2 marks 0 marks

### 1.3 RELIABILITY PERFORMANCE

**20 Marks**

<b>A.</b>	<b>FOR WORKS/CONTRACTS</b>	
i)	Submission of order acceptance, agreement, CPS/PBG, Drawings and other documents within time	4 marks
ii)	Mobilization of resources as per Contract and in time	4 marks
iii)	Liquidation of Check-list points	4 marks
iv)	Compliance to statutory and HS&E requirements or Reliability of Estimates/Design/Drawing etc. in case of Consultancy jobs	4 marks
v)	Timely submission of estimates and other documents for Extra, Substituted & AHR items	4 marks
<b>B.</b>	<b>FOR SUPPLIES</b>	
i)	Submission of order acceptance, CPS/PBG, Drawings and other documents within time	5 marks
ii)	Attending complaints and requests for after sales service/ warranty repairs and/ or query/ advice (up to the evaluation period).	5 marks
iii)	Response to various correspondence and conformance to standards like ISO	5 marks
iv)	Submission of all required documents including Test Certificates at the time of supply	5 marks

**ANNEXURE-III**  
**BIDDING DATA SHEET (BDS)**

**ITB TO BE READ IN CONJUNCTION WITH THE FOLLOWING:**

ITB clause	Description				
<b>A. GENERAL</b>					
1.1	The Purchaser is: <b>RAJASTHAN STATE GAS LIMITED</b>				
1.2	The Invitation for Bid/ Tender is for : PROCUREMENT OF 2 NOS. OF 400 SCMH COMPOSITE CNG DISPENSING UNIT & COMPREHENSIVE O&M SERVICES FOR 5 YEARS				
General	<p>The Purchaser is: <b>RAJASTHAN STATE GAS LIMITED</b></p> <p><b><u>Delivery Locations</u></b></p> <p>The Delivery Location of one Compressor shall be KOTA (Rajasthan)</p> <p>(Exact Location shall be provided at the time of dispatch)</p>				
3	<p>Bid From a Consortium/ Joint Venture</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">APPLICABLE</td><td style="text-align: center;">X</td></tr> <tr> <td style="text-align: center;">NOT APPLICABLE</td><td style="text-align: center;">✓</td></tr> </table>	APPLICABLE	X	NOT APPLICABLE	✓
APPLICABLE	X				
NOT APPLICABLE	✓				
<b>B. TENDER DOCUMENT</b>					
8.1	<p>For <b><u>clarification purposes</u></b> only, the communication address is: <b>DGM (C&amp;P)</b></p> <p><b>Rajasthan State Gas Ltd., Room no. 215, Khaniz Bhawan, Tilak Marg, C- Scheme, Jaipur – 302005 <a href="mailto:viveks.rsgl@rajasthan.gov.in">viveks.rsgl@rajasthan.gov.in</a> Contact no.-0141-2994081</b></p>				
<b>C. PREPARATION OF BID</b>					
11.1.1 (u)	The Bidder shall submit with its Part-I (Techno-commercial/ Unpriced bid) the following additional documents (SCC Refers): <b>NIL</b>				
12 &	Additional Provision for Price Schedule/ Schedule of Rate/ Bid Price are as under: <b>NIL</b>				

13	Whether RSGL will be able to avail input tax credit in the instant tender-- NO	YES	X		
		NO	√		
12.3	Transit/marine Insurance shall be arranged by :-				
	RSGL		X		
	SUPPLIER		√		
	Bidders: Shall be informed at the time of award.				
12.5	Delivery basis shall be FOT/FOR Site, KOTA(Rajasthan)				
13.7 & 13.8	Details of Buyer:				
	Consignee	<b>Rajasthan State Gas Ltd.</b>			
	GST No.	08AAGCR7499P1Z7			
	PAN No.	AAGCR7499P			
14	The currency of the Bid shall be INR				
15	The bid validity period shall be 03 (Three) months from final 'Bid Due Date'.				
16.1	<u>In case 'Earnest Money / Bid Security' is in the form of 'Demand Draft', the same should be favor of <b>Rajasthan State Gas Ltd.</b> , payable at Jaipur</u>				
		<b>ICICI BANK</b>			
	Bank Account No.	<b>678605600349</b>			
	Bank Address:	<b>Khanij Bhawan, Tilak Marg, C-Scheme-Jaipur-302005 (Raj).</b>			
	IFSC CODE	<b>ICIC0006786</b>			
<b>D. SUBMISSION AND OPENING OF BIDS</b>					
18	In addition to the original of the bid, the number of copies required is one.				
22	The Tender No. of this bidding process is: <b>RSGL/KOTA/C&amp;P/PROJ/2025-26/NIT-14</b>				

<b>22.2 and 4.0 of IFB</b>	For <b><u>bid submission purposes</u></b> only, the Owner's address is : Attention: DGM(Contract and Procurement)  Address: Rajasthan State Gas Ltd. 3 <sup>rd</sup> Floor, Khaniz Bhawan, Tilak Marg, C- Scheme, Jaipur -302005 Ph.-0141-2994081
<b>27</b>	<b>The bid opening shall take place at:</b> Rajasthan State Gas Ltd. 3 <sup>rd</sup> Floor, Khaniz Bhawan, Tilak Marg, C- Scheme, Jaipur -302005
<b>E. EVALUATION, AND COMPARISON OF BIDS</b>	
<b>33</b>	Evaluation Methodology is mentioned in Section-II.
<b>F. AWARD OF CONTRACT</b>	

36	<p>The following designated authority shall be contacted after receipt of Notification of Award for all contractual matters:-</p> <p>DGM(Contract and Procurement) Room no. 215, Khaniz Bhawan, Tilak Marg, C- Scheme, Jaipur -302005 +91-9650055638</p>				
38	<p>Contract Performance Security (CPS)/ Security Deposit</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">APPLICABLE</td> <td style="width: 50%; text-align: center;">√</td> </tr> <tr> <td>NOT APPLICABLE</td> <td style="text-align: center;">X</td> </tr> </table>	APPLICABLE	√	NOT APPLICABLE	X
APPLICABLE	√				
NOT APPLICABLE	X				
	<p>The value/ amount of Contract Performance Security/ Security Deposit SD / CPBG @ 10 % of Order / Contract value to be submitted within 30 days of FOA/notification of award.</p>				
	<p>Contract Performance Guarantee / Security Deposit :APPLICABLE</p> <p>“10% of Total Order / Contract value in case contract period is less than one year or 10% of Annualized Order / Contract value in case contract period is more than one year.”</p> <p>In addition to existing specified form (i.e. Demand Draft (DD)/ Banker's Cheque/ Bank Guarantee/Letter of Credit) mentioned in tender documents for submission of Security Deposit/ Contract Performance Guarantee, the successful bidder can also submit the Security Deposit/ Contract Performance Guarantee through online banking transaction i.e. IMPS/NEFT/RTGS etc.</p>				
	<ul style="list-style-type: none"> <li>• For this purpose, the details of RSGL Bank Account is as under:</li> </ul> <p>Account : <b>ICICI BANK Bank Account No. 678605600349</b></p> <p><b>Bank Address: Khanij Bhawan, Tilak Marg, CScheme-Jaipur-302005 (Raj).</b></p> <p><b>IFSC CODE ICIC0006786</b></p> <p><i>While remitting, the bidder must indicate "Security Deposit/ Contract Performance Guarantee against FOA/LOA/PO no._</i></p>				
	<hr/> <p><i>(contractor/ vendor to specify the FOA/LOA/PO No.)" under remarks column of respective bank portal. The contractor/vendor shall be required to submit the successful transaction details to the concerned C&amp;P officer(s) immediately and necessarily within 30 days from the date of Fax of Acceptance. "</i></p> <p>While issuing bank Guarantee applicant must mention receiver's details as ICICI Bank account No. 678605600349, IFSC ICIC0006786, Branch__Khaniz Bhawan -Tilak Marg, C-scheme Jaipur, in BG text at which SFMS IFN 760 message to be send by issuing bank, to establish the authenticity of given BG.</p>				
40	Whether tendered item is splitable or divisible : YES				

<b>48</b>	Quarterly Closure of Contract : NOT APPLICABLE
<b>49</b>	PRICE REDUCTION FOR DELAYED DELIVERY :APPLICABLE

## **FORMS & FORMATS**

**LIST OF FORMS & FORMATS**

<b>Form No.</b>	<b>Description</b>
F-1	BIDDER'S GENERAL INFORMATION
F-2	BID FORM
F-3	LIST OF ENCLOSURES
F-4	PROFORMA OF "BANK GUARANTEE" FOR "EARNEST MONEY DEPOSIT / BID SECURITY" (NOT APPLICABLE)
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**F-1**  
**BIDDER'S GENERAL INFORMATION**

To,  
 M/s RSGL

TENDER NO:

1	Bidder Name:	
2	Number of Years in Operation	
3	Address of Registered Office	City: _____ District: _____ State: _____ PIN/ZIP : _____
4A	Bidder's address where order/contract is to be placed *	_____ City: _____ District: _____ State: _____ PIN/ZIP : _____
4B	Address from where Goods/ Services are to be dispatched/ provided along with GST no. <i>(For Indian Bidder: In case supply of Goods/ Services are from multiple locations, addresses and GST no. of all such locations are to be provided).</i>	City: District: State: PIN/ZIP: GST No.:
5	Telephone Number of address where order is to be placed	(Country Code) (Area Code) (Telephone Number)
6	E-mail address	
7	Fax Number	(Country Code) (Area Code) (Telephone Number)
8	Website	
9	Name & Designation of Contact Person	
10	ISO Certification, if any <i>{If yes, please furnish details}</i>	

11	Bid Currency	
12	Port of shipment	
13	Whether Supplier / Manufacturer Dealer / Trader / Contractor	
14	Type of Material Supplies	
15	Banker's Name	
16	Branch	
17	Branch Code	
18	Bank Account Number	
19	PAN No	
20	Status of Firm (Indian Bidder only)	Proprietorship Firm/Partnership firm/ Limited/Others If Others Specify: _____ [Enclose relevant certificates / partnership deed/certificate of Registration, as applicable]
21	GST No. (Indian Bidder only) (refer sl. no. 4B above)	[Enclose copy of GST Certificate]
22	Whether Micro or Small Enterprise (Indian Bidder only)	Yes / No (If Yes, Bidder to submit requisite documents as specified in ITB: Clause No. 40)
23	Type of Entity (Indian Bidder only)	Corporate/ Non-Corporate (As per CGST/SGST/UTGST Act). (In case of Non-Corporate Entity, bidder will submit documentary evidence for same).

**\* For Indian Bidder:** RSGL intent to place the order/contract directly on the address from where Goods are produced/dispatched are Services are rendered. In case, bidder wants order/ contract at some other address or supply of Goods/ Services from multiple locations, bidder is required to provide in their bid address on which order is to be placed.

Place: [Signature of Authorized Signatory of Bidder]

Date: Name:  
Designation:  
Seal:

**F-2**

**BID FORM**

To,

M/s RSGL

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SUB:

TENDER NO:

Dear Sir,

After examining / reviewing the Tender Document for the above mentioned Tender Document number for \_\_\_\_\_, including "Technical Specifications & Scope of Work", "General Conditions of Contract [GCC]", "Special Conditions of Contract [SCC]" and "Price Schedule/Schedule of Rates [SOR]", etc. the receipt of which is hereby duly acknowledged, we, the undersigned, are pleased to offer to execute the whole part of the job and in conformity with the said Tender Document, including Addenda / Corrigenda Nos.\_\_\_\_\_.

We confirm that this Bid is valid for a period of as defined in BDS from the date of opening of "Techno-Commercial / Un-priced Bid", and it shall remain binding upon us and may be accepted by any time before the expiry of that period.

If our Bid is accepted, we will provide the "Contract Performance Security / Security Deposit" for Amount and Validity as mentioned in Tender Document for the due performance within "thirty [30] days" of such Award.

Until a detailed Purchase Order/Contract document is prepared and issued, the Tender Document (including addenda/ corrigenda) together with the Bid and "Notification of Award" shall constitute a binding agreement between us.

We understand that Tender Document is not exhaustive and any action and activity not mentioned in Tender Document but may be inferred to be included to meet the intend of the Tender Document shall be deemed to be mentioned in Tender Document unless otherwise specifically excluded and we confirm to perform for fulfillment of Contract and completeness of the supplies in all respects within the time frame and agreed price.

We understand that you are not bound to accept the lowest priced or any Bid that you may receive.

Place: [Signature of Authorized Signatory of Bidder]

Date: Name:

Designation:

Seal:

F-3

**LIST OF ENCLOSURES**

To,

M/s RSGL

SUB:

TENDER NO:

**Dear Sir,**

We are enclosing the following documents as part of the bid:

Sl. No.	Section, Clause No. & Description of Tender Document	Detail(s) of Document(s) required	Detail (s) of Document(s) submitted by the Bidder	File Name (in case e-Tender) and Total number of Pages
1.	Section III, 11.1.1 (m)	Power of Attorney		
2.	Section I, 4.0	Despatch Details of Document (Courier name and POD/ tracking No.)		
3.	Section II (C)	Documents applicable for Startup		
4.	Section II 1.1	Documents against Technical Criteria of BEC		
5.	Section II 1.2	Documents against Financial Criteria of BEC		
6.	Section III, 2, 3.1(if applicable), and 11.1.1	Submission of All documents , Forms & Formats duly filled & signed		
7	Section III, 10.0 (if applicable),	List of Documents not in English language and its corresponding English Translation		
8	F-1, Point No. 20	Relevant certificates / Partnership Deed/ Certificate of Registration, as applicable		
9	F-1, Point No. 19	Copy of PAN Card		
10	F-1, Point No. 21	Copy of GST Certificate		
11	F-1, Point No. 22	Copy of the Entrepreneurs Memorandum (EM)		

Place: [Signature of Authorized Signatory of Bidder]

 Date: Name:  
 Designation:  
 Seal:

**FORMAT F-4**

**PROFORMA OF "BANK GUARANTEE" FOR "EARNEST MONEY DEPOSIT / BID SECURITY"**

(To be stamped in accordance with the Stamp Act)

Ref.....

Bank Guarantee No.....

Date.....

To.....

M/s RSGL

SUB:

TENDER NO:

**Dear Sir(s),**

In accordance with Tender Document under your reference No \_\_\_\_\_ M/s.  
having their Registered / Head Office at \_\_\_\_\_ (hereinafter called the Tenderer/Bidder),  
wish to participate in the said tender for  
As an irrevocable Bank Guarantee against Earnest Money Deposit for the amount of  
is required to be submitted by the bidder as a condition precedent for participation  
in the said Tender Document which amount is liable to be forfeited on the happening of any  
contingencies mentioned in the Tender Document.

We, the \_\_\_\_\_ Bank at \_\_\_\_\_  
having our Head Office \_\_\_\_\_  
(Local Address) guarantee  
and undertake to pay immediately on demand without any recourse to the Bidder by RSGL., the  
amount \_\_\_\_\_ without any reservation, protest, demur and  
recourse. Any such demand made by RSGL., shall be conclusive and binding on us irrespective of  
any dispute or difference raised by the Bidder.

This guarantee shall be irrevocable and shall remain valid up to \_\_\_\_\_ [this date should be  
two (02) months beyond the validity of the bid]. If any further extension of this guarantee is required,  
the same shall be extended to such required period on receiving instructions from Bidder M/s.  
on whose behalf this guarantee is issued.

In witness whereof the Bank, through its authorized officer, has set its hand and stamp on this  
day of \_\_\_\_\_ 20 \_\_\_\_\_ at \_\_\_\_\_.

**WITNESS:**

(SIGNATURE)  
(NAME)

(SIGNATURE)  
(NAME)

Designation with Bank Stamp

(OFFICIAL ADDRESS)

Attorney as per  
Power of Attorney No. \_\_\_\_\_  
Date: \_\_\_\_\_

## **INSTRUCTIONS FOR FURNISHING "BID SECURITY DEPOSIT/ EARNEST MONEY" BY "BANK GUARANTEE"**

1. The Bank Guarantee by Bidders will be given on non-judicial stamp paper as per "Stamp Duty" applicable. The non-judicial stamp paper should be in the name of the issuing Bank. In case of foreign Bank, the said Bank's Guarantee to be issued by its correspondent Bank in India on requisite non-judicial stamp paper
2. The expiry date should be arrived at in accordance with "ITB: Clause-15.1".
3. The Bank Guarantee by bidders will be given from Bank as specified in "ITB".
4. A letter from the issuing Bank of the requisite Bank Guarantee confirming that said Bank Guarantee / all future communication relating to the Bank Guarantee shall be forwarded to the Purchaser at its address as mentioned at "ITB".
5. Bidder must indicate the full postal address of the Bank along with the Bank's E-mail / Fax / Phone from where the Bank Guarantee has been issued.
6. If a Bank Guarantee is issued by a commercial Bank, then a letter to be submitted to Purchaser confirming its net worth is more than Rs. 1,000,000,000.00 [Rupees One Hundred Crores] or equivalent along with documentary evidence.

F-4A (NOT APPLICABLE)

PROFORMA OF "LETTER OF CREDIT" FOR "EARNEST MONEY DEPOSIT / BID SECURITY"

To,  
M/s RSGL

SUB:  
TENDER NO:

Irrevocable and confirmed Letter of Credit No. ....Amount: Rs. ....

Validity of this Irrevocable:.....(in India)  
Letter of Credit (2 months beyond validity of Offer)

Dear Sir,

1. You are here by authorized to draw on ..... (Name of Applicant/Bidder with full address) for a sum not exceeding .....available by your demand letter (draft) on them at sight drawn for Rs. .... accompanied by a certificate by RSGL, with the Tender No. duly incorporated therein, that one or more of the following conditions has/have occurred, specifying the occurred condition(s):
  - (i) The Bidder withdraws its Bid during the period of Bid validity or any extension thereof duly agreed by the Bidder.
  - (ii) The Bidder varies or modifies its Bid in a manner not acceptable to RSGL during the period of bid validity or any extension thereof duly agreed by the Bidder.
  - (iii) The Bidder, having been notified of the acceptance of its Bids,
    - (a) Fails or refuses to execute the Supply Order/Contract
    - (b) Fails or refuses to furnish the Contract Performance Security within 30 days before expiry of Bid Security.
    - (c) Fails to accept arithmetic corrections as per tender conditions.
  - (iv) The Bidder defaults w.r.t. any terms & conditions of Tender Document which call for forfeiture of Earnest Money Deposit (EMD).
2. This Irrevocable Letter of Credit has been established towards EMD/Bid Security against Tender No ..... for .....(Name of Tender Document)
3. We hereby guarantee to protect the Drawers, Endorsers and bona fide holders from any consequences, which may arise in the event of the non-acceptance or non-payment of Demand Letter (draft) in accordance with the terms of this credit.
4. This Credit is issued subject to the Uniform Customs and Practices for Documentary Credits (1993 Revised) International Chamber of Commerce brochure No. 500.
5. Please obtain reimbursement as under: .....
6. All foreign as well as Indian bank charges will be on the account of M/s. .... (Applicant/Bidder)

FOR .....

Authorized Signature  
(Original Bank)

Counter Signature

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F-5

LETTER OF AUTHORITY

[Pro forma for Letter of Authority for Attending 'Pre-Bid Meetings' /'Un-priced Bid Opening' / 'Price Bid Opening']

Ref:  
To,  
M/s RSGL

Date:

SUB:  
TENDER NO:

**Dear Sir,**

I/We, \_\_\_\_\_ hereby authorize the following representative(s) for attending 'Pre-Bid Meeting', 'Un-priced Bid Opening', 'Price Bid Opening' against the above Tender Document:

[1] Name & Designation \_\_\_\_\_ Signature \_\_\_\_\_  
Phone/Cell:  
Fax:  
E-mail: ..... @ .....

[2] Name & Designation \_\_\_\_\_ Signature \_\_\_\_\_  
Phone/Cell:  
Fax:  
E-mail: ..... @ .....

We confirm that we shall be bound by all commitments made by aforementioned authorised representative(s).

Place: \_\_\_\_\_ [Signature of Authorized Signatory of Bidder]  
Date: \_\_\_\_\_ Name:  
Designation:  
Seal:

Note: This "Letter of Authority" should be on the "**letter head**" of the Firm / Bidder and should be signed by a person competent and having the 'Power of Attorney' to bind the Bidder. Not more than 'two [02] persons per Bidder' are permitted to attend "Techno-commercial / Un-priced" & "Price Bid" Openings. Bidders authorized representative is required to carry a copy of this authority letter while attending the un-priced and priced bid opening, the same shall be submitted to RSGL.

F-6

**"NO DEVIATION" CONFIRMATION**

To,

M/s RSGL

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SUB:  
TENDER NO:

**Dear Sir,**

We understand that any 'deviation / exception' in any form may result in rejection of Bid. We, therefore, certify that we have not taken any 'exception / deviation' anywhere in the Bid and we agree that if any 'deviation / exception' is mentioned or noticed, our Bid may be rejected.

Place:

[Signature of Authorized Signatory of Bidder]

Date:

Name:

Designation:

Seal:

**F-7**

**DECLARATION REGARDING HOLIDAY / BANNING**

To,

M/s RSGL

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SUB:

TENDER NO:

**Dear Sir,**

We hereby confirm that we are not on 'blacklisted/ banned/put on Holiday list by M/s GAIL India Limited/M/s GAIL Gas Limited/M/s Rajasthan State Gas limited as on due date of submission of bid.

Further, we confirm that neither we nor our allied agency/(ies) (as defined in the Procedure for Action in case of Corrupt/ Fraudulent/ Collusive/ Coercive Practices) are on banning list of blacklisted/ banned/put on Holiday list by M/s GAIL India Limited/M/s GAIL Gas Limited/M/s Rajasthan State Gas limited

In case it comes to the notice of RSGL that the bidder has given wrong declaration in this regard, the same shall be dealt as 'fraudulent practices' and action shall be initiated as per the Procedure for action in case of Corrupt/ Fraudulent/ Collusive/ Coercive Practices.

Further, we also confirm that in case there is any change in status of the declaration prior to placement of order or till complete execution of the order, the same will be promptly informed to RSGL by us.

Place:  
Date:

[Signature of Authorized Signatory of Bidder]  
Name:  
Designation:  
Seal:

F-8

CERTIFICATE FOR NON-INVOLVEMENT OF GOVT. OF INDIA

To,

M/s RSGL

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SUB:

TENDER NO:

**Dear Sir,**

If we become a successful Bidder and pursuant to the provisions of the Tender Document, award is given to us against subject Tender Document, the following Certificate shall be automatically enforceable:

"We agree and acknowledge that the Purchaser is entering into the Contract/Agreement solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood & agreed that the Government of India is not a party to the Contract/Agreement and has no liabilities, obligations or rights thereunder. It is expressly understood and agreed that the Purchaser is authorized to enter into Contract/Agreement, solely on its own behalf under the applicable laws of India. We expressly agree, acknowledge and understand that the Purchaser is not an agent, representative or delegate of the Government of India. It is further understood and agreed that the Government of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the Agreement. Accordingly, we hereby expressly waive, release and forego any and all actions or claims, including cross claims, VIP claims or counter claims against the Government of India arising out of the Agreement and covenants not to sue to Government of India as to any manner, claim, cause of action or things whatsoever arising of or under the Agreement."

Place:

[Signature of Authorized Signatory of Bidder]

Date:

Name:

Designation:

Seal:

**PROFORMA OF "BANK GUARANTEE" FOR "CONTRACT PERFORMANCE SECURITY / SECURITY DEPOSIT"**

**(ON NON-JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)**

To,  
M/s RSGL

**Dear Sir(s),**

M/s. \_\_\_\_\_ having registered office at \_\_\_\_\_ (herein after called the "contractor/supplier" which expression shall wherever the context so require include its successors and assignees) have been placed/ awarded the job/work of \_\_\_\_\_ vide PO/LOA /FOA No. \_\_\_\_\_ dated \_\_\_\_\_ for RSGL having registered office at Rajasthan State Gas Ltd., Room no. 215, Khaniz Bhawan, Tilak Marg, C- Scheme, Jaipur - 302005 (herein after called the "RSGL" which expression shall wherever the context so require include its successors and assignees).

The Contract conditions provide that the SUPPLIER/CONTRACTOR shall pay a sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_) as full Contract Performance Guarantee in the form therein mentioned. The form of payment of Contract Performance Guarantee includes guarantee executed by Nationalized Bank/Scheduled Commercial Bank, undertaking full responsibility to indemnify RSGL, in case of default.

The said M/s. \_\_\_\_\_ has approached us and at their request and in consideration of the premises we having our office at \_\_\_\_\_ have agreed to give such guarantee as hereinafter mentioned.

1. We \_\_\_\_\_ hereby undertake to give the irrevocable & unconditional guarantee to you that if default shall be made by M/s. \_\_\_\_\_ in performing any of the terms and conditions of the tender/order/contract or in payment of any money payable to RSGL we shall on first demand pay without demur, contest, protest and/ or without any recourse to the contractor to RSGL in such manner as RSGL may direct the said amount of Rupees \_\_\_\_\_ only or such portion thereof not exceeding the said sum as you may require from time to time.
2. You will have the full liberty without reference to us and without affecting this guarantee, postpone for any time or from time to time the exercise of any of the powers and rights conferred on you under the order/contract with the said M/s. \_\_\_\_\_ and to enforce or to forbear from endorsing any powers or rights or by reason of time being given to the said M/s. \_\_\_\_\_ and such postponement forbearance would not have the effect of releasing the bank from its obligation under this debt.
3. Your right to recover the said sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_) from us in manner aforesaid is absolute & unequivocal and will not be affected or suspended by reason of the fact that any dispute or disputes have been raised by the said M/s. \_\_\_\_\_ and/or that any dispute or disputes are pending before any officer, tribunal or court or arbitrator

or any other authority/forum and any demand made by you in the bank shall be conclusive and binding. The bank shall not be released of its obligations under these presents by any exercise by you of its liberty with reference to matter aforesaid or any of their or by reason or any other act of omission or commission on your part or any other indulgence shown by you or by any other matter or changed what so ever which under law would, but for this provision, have the effect of releasing the bank.

4. The guarantee herein contained shall not be determined or affected by the liquidation or winding up dissolution or changes of constitution or insolvency of the said supplier/contractor but shall in all respects and for all purposes be binding and operative until payment of all money due to you in respect of such liabilities is paid.
5. This guarantee shall be irrevocable and shall remain valid up to \_\_\_\_\_ (this date should be 90 days after the expiry of defect liability period/ Guarantee period) \_\_\_\_\_. The bank undertakes not to revoke this guarantee during its currency without your previous consent and further agrees that the guarantee shall continue to be enforceable until it is discharged by RSGL in writing. However, if for any reason, the supplier/contractor is unable to complete the supply/work within the period stipulated in the order/contract and in case of extension of the date of delivery/completion resulting extension of defect liability period/guarantee period of the supplier/contractor fails to perform the supply/work fully, the bank hereby agrees to further extend this guarantee at the instance of the supplier/contractor till such time as may be determined by RSGL. If any further extension of this guarantee is required, the same shall be extended to such required period on receiving instruction from M/s. \_\_\_\_\_ (contractor) on whose behalf this guarantee is issued.
6. Bank also agrees that RSGL at its option shall be entitled to enforce this Guarantee against the bank (as principal debtor) in the first instant, without proceeding against the supplier/contractor and notwithstanding any security or other guarantee that RSGL may have in relation to the supplier's/contractor's liabilities.
7. The amount under the Bank Guarantee is payable forthwith without any delay by Bank upon the written demand raised by RSGL. Any dispute arising out of or in relation to the said Bank Guarantee shall be subject to the exclusive jurisdiction of courts at Jaipur.
7. Therefore, we hereby affirm that we are guarantors and responsible to you on behalf of the Supplier/Contractor up to a total amount of \_\_\_\_\_ (amount of guarantees in words and figures) and we undertake to pay you, upon your first written demand declaring the Supplier/Contractor to be in default under the order/contract and without caveat or argument, any sum or sums within the limits of (amounts of guarantee) as aforesaid, without your needing to prove or show grounds or reasons for your demand or the sum specified therein.
8. We have power to issue this guarantee in your favor under Memorandum and Articles of Association and the undersigned has full power to do under the Power of Attorney, dated \_\_\_\_\_ granted to him by the Bank.

Yours faithfully,  
\_\_\_\_\_  
Bank by its Constituted Attorney

Signature of a person duly  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Authorized to sign on behalf of the  
Bank

---

**INSTRUCTIONS FOR FURNISHING "CONTRACT PERFORMANCE SECURITY / SECURITY DEPOSIT" BY "BANK GUARANTEE"**

1. The Bank Guarantee by successful Bidder(s) will be given on non-judicial stamp paper as per 'stamp duty' applicable. The non-judicial stamp paper should be in name of the issuing bank. In case of foreign bank, the said Bank Guarantee to be issued by its correspondent bank in India on requisite non-judicial stamp paper and place of Bid to be considered as Jaipur.
2. The Bank Guarantee by Bidders will be given from bank as specified in Tender.
3. A letter from the issuing bank of the requisite Bank Guarantee confirming that said Bank Guarantee and all future communication relating to the Bank Guarantee shall be forwarded to Purchaser.
4. If a Bank Guarantee is issued by a commercial bank, then a letter to Purchaser and copy to Consultant (if applicable) confirming its net worth is more than Rs. 100,00,00,000.00 [Rupees One Hundred Crores] or its equivalent in foreign currency alongwith documentary evidence.

**F-10A**  
**AGREED TERMS & CONDITIONS FOR INDIAN BIDDER**

To,

M/s RSGL

---

SUB:

TENDER NO:

This Questionnaire duly filled in, signed & stamped must form part of Bidder's Bid and must be submitted in Part –I (Un-priced Bid). Clauses confirmed hereunder need not be repeated in the Bid.

SI.	DESCRIPTION	BIDDER'S CONFIRMATION
1	Bidder's name, Vendor Code of RSGL (if any) and address (FOA/Order shall be released in this name)	Bidder's name : Vendor Code: Address:
2.	Please confirm the currency of quoted prices.	
3.	Confirm quoted prices will remain firm and fixed till complete execution of the order.	
4.	i) Confirm quoted prices are on FOT dispatch point basis inclusive of P&F. ii) Confirm firm freight charges up to site are quoted in Price Schedule.	
5	Please specify the Dispatch Point	
6.	i) Confirm acceptance of relevant Terms of Payment specified in the Bid Document. ii) In case of delay, the bills shall be submitted after deducting the price reduction due to delay (refer PRS Clause).	
7.	Confirm that Contract Performance Security/ Security Deposit (CPS) will be furnished as per Bid Document.	
8.	Confirm that CPS shall be from any Indian scheduled bank or a branch of an International bank situated in India and registered with Reserve bank of India as scheduled foreign bank. However, in case of bank guarantees from banks other than the Nationalised Indian banks, the bank must be a commercial bank having net worth in excess of Rs 100 crores and a declaration to this effect shall be made by such commercial bank either in the Bank Guarantee itself or separately on its letterhead.	
9.	Confirm compliance to Delivery/ Completion Period as specified in Bid Document. Confirm Delivery/ Completion Period shall be reckoned from the date of Fax of Acceptance (FOA).	
10.	Confirm acceptance of Price Reduction Schedule (PRS) as specified in Bid Document.	

SI.	DESCRIPTION	BIDDER'S CONFIRMATION
11.	a) Confirm acceptance of all terms and conditions of Bid Document (all sections & enclosures). b) Confirm that printed terms and conditions of Bidder are not applicable.	
12.	Confirm your offer is valid for 3 months from Final/Extended Due Date of opening of Techno-commercial Bids.	
13.	Please furnish EMD/Bid Security details : a) EMD/ Bid Security No. & date b) Value c) Validity	
14.	Confirm acceptance to all provisions of ITB read in conjunction with Bid Data Sheet (BDS).	
15.	Confirm that Annual Reports for the last three financial years are furnished along with the Un-priced Bid (wherever applicable).	
16.	Confirm that, in case of contradiction between the confirmations provided in this format and terms & conditions mentioned elsewhere in the offer, the confirmations given in this format shall prevail.	
17.	Confirm that none of Directors of bidder is a relative of any Director of purchaser or the bidder is a firm in which any Director of purchaser/ RSGL or his relative is a partner.	
18.	All correspondence must be in ENGLISH language only.	
19.	Purchaser reserves the right to make any change in the terms & conditions of the Tender Document and to reject any or all bids.	
20.	Confirm that all Bank charges associated with Bidder's Bank shall be borne by Bidder.	
21	We hereby confirm that the quoted price is in compliance with the Section 171 of CGST Act/ SGST Act as mentioned as clause no. 13.1.11 of ITB.	
22	Rate of applicable <b>GST (CGST &amp; SGST/ UTGST or IGST )</b>	CGST: .....% Plus SGST/UTGST .....% Total .....% Or IGST: .....%
23.	Harmonized System Nomenclature (HSN) of Supply items: Service Accounting Codes (SAC) of Incidental Services (if any, refer Price Schedule):	
24.	Confirm any variation in GST at the time of supplies for any reasons, other than statutory, including variations due to turnover, shall be borne by bidder.	
25	Confirm that quoted freight rate is exclusive of GST and GST has been indicated separately in Price Schedule	

SI.	DESCRIPTION	BIDDER'S CONFIRMATION
26	Confirm any error of interpretation of applicability of rate of <b>GST (CGST &amp; SGST/ UTGST or IGST )</b> on components of an item and/or various items of tender by bidder shall be to bidder's account	
27	<p><b>Part Order:</b></p> <p>(a) Confirm acceptance to Part Order.</p> <p>(c) Confirm any charges quoted extra as lumpsum shall be applicable prorata on value basis in the event of part order.</p>	
28	<p><b>Testing and Inspection charges:</b></p> <p>Confirm goods and services are subject to stage-wise and final Inspection by Owner / Owner's Authorized representative. Travel, Living and Personnel expenses of Owner / Authorized representative shall be borne by Owner / authorized representative.</p>	

Place: [Signature of Authorized Signatory of Bidder]

Date: Name:  
Designation:  
Seal:

**F-10 B**

**AGREED TERMS & CONDITIONS FOR FOREIGN BIDDER- NOT APPLICABLE**

To,

M/s RSGL

---

SUB:

TENDER NO:

This Questionnaire duly filled in, signed & stamped must form part of Bidder's Bid and must be submitted in Part –I (Un-priced Bid). Clauses confirmed hereunder need not be repeated in the Bid.

<b>SI.</b>	<b>DESCRIPTION</b>	<b>BIDDER'S CONFIRMATION</b>
1.	Bidder's name, Vendor Code of RSGL (if any) and address (FOA/Order shall be released in this name)	Bidder's name : Vendor Code: Address:
2.	Please confirm the currency of quoted prices.	
3.	Confirm quoted prices will remain firm and fixed till complete execution of the order.	
4.	Indicate international Seaport of Exit.	
5.	Confirm you have quoted prices on FOB and CFR Port of Entry in India.	
6.	i) Confirm acceptance of relevant Terms of Payment specified in the Bid Document. ii) Letter of Credit shall be opened after receipt of unconditional order acknowledgement along with Contract Performance Security. iii) Letter of Credit shall be opened through a Govt. of India Nationalised/ Scheduled Bank and hence need not be confirmed. <b>OR</b> However, if you still insist for confirmed L/C, confirmation charges shall be borne by you, confirm.	
7.	Confirm that Contract Performance Security/ Security Deposit (CPS) will be furnished as per Bid Document.	
8.	Confirm that CPS shall be from any Indian scheduled bank or a branch of an International bank situated in India and registered with Reserve bank of India as scheduled foreign bank. However, in case of bank guarantees from banks other than the Nationalised Indian banks, the bank must be a commercial bank having net worth in excess of Rs 100 crores/Equivalent USD and a declaration to this effect shall be made by such commercial bank either in the Bank Guarantee itself or separately on its letterhead.	
9.	Confirm compliance to Delivery/ Completion Period as specified in Bid Document. Confirm Delivery/ Completion	

S.I.	DESCRIPTION	BIDDER'S CONFIRMATION
	Period shall be reckoned from the date of Fax of Acceptance (FOA).	
10.	<p>a) Confirm acceptance of Price Reduction Schedule (PRS) as specified in Bid Document.</p> <p>b) In case of delay, the bills shall be submitted after deducting the price reduction due to delay (refer PRS Clause).</p>	
11.	<p>a) Confirm acceptance of all terms and conditions of Bid Document (all sections &amp; enclosures).</p> <p>b) Confirm that printed terms and conditions of Bidder are not applicable.</p>	
12.	Confirm your offer is valid for period specified in BDS from Final/Extended Due Date of opening of Techno-commercial Bids.	
13.	<p>Please furnish EMD/Bid Security details :</p> <p>d) EMD/ Bid Security No. &amp; date</p> <p>e) Value</p> <p>f) Validity</p>	
14.	Confirm acceptance to all provisions of ITB read in conjunction with Bid Data Sheet (BDS).	
15.	Confirm that Annual Reports for the last three financial years are furnished along with the Un-priced Bid (wherever applicable).	
16.	Confirm that, in case of contradiction between the confirmations provided in this format and terms & conditions mentioned elsewhere in the offer, the confirmations given in this format shall prevail.	
17.	Confirm that none of Directors of bidder is a relative of any Director of purchaser or the bidder is a firm in which any Director of purchaser/ RSGL or his relative is a partner.	
18.	All correspondence must be in ENGLISH language only.	
19.	Purchaser reserves the right to make any change in the terms & conditions of the Tender Document and to reject any or all bids.	
20.	All Bank charges and stamp duties payable outside India in connection with payments to be made under this Purchase Order, if placed, shall be borne by bidder. All bank charges and stamp duties payable in India shall be borne by the Purchaser.	
21.	Export permit/License if required shall be bidder's responsibility and any expenditure towards the same shall be borne by the bidder.	
22.	Prices quoted must exclude marine insurance from FOB international port of exit. However, all transit insurance charges up to FOB International port of exit must be included by vendor in quoted prices.	
23.	Indicate Country of origin of offered goods.	

SI.	DESCRIPTION	BIDDER'S CONFIRMATION
24.	Confirm quoted prices include all charges towards inspection & testing of offered Goods, In the event of inspection by RSGL or its authorized representative, confirm no extra charges shall be payable to vendor.	
25.	<b>Part Order:</b> (a) Confirm acceptance to Part Order. (b) Confirm any charges quoted extra as lumpsum shall be applicable prorata on value basis in the event of part order.	
26.	Confirm Direct offer without intermediary of an Indian Agent is submitted.	
27.	a) In case vendor envisages that participation of Indian Agent is must, no correspondence with Indian Agent will be entertained. However, if Indian Agent are involved, the bidder shall provide reason/justification. The payments to overseas suppliers (i.e. the principals) shall be released through L/C after deducting the Indian agent's commission, if any, from the quoted prices.	
	b) Indicate the name of the Indian Agent, with his full address and percentage of commission included in your offer.	
	c) Indian Agent Commission will be paid directly by Owner to Indian Agent in equivalent Indian Rupees (on conversion rate as applicable on the date of payment to Vendor) after satisfactory completion of the order. A valid registration certificate should also exist at the time of agency commission being paid directly by RSGL. Confirm acceptance.	
28.	Confirm to bear the Withholding Tax (WHT) as per the provision of Income Tax Act 1961 (please refer clause no.48 of ITB).	
29.	<b>Rate of applicable GST (CGST &amp; SGST/ UTGST or IGST) on services in case bidder is having the permanent establishment/ tax residency in India as per the provision of Income Tax Act 1961</b>	CGST: ..... % Plus SGST/UTGST..... % Total ..... % Or IGST: ..... %

Place: \_\_\_\_\_ [Signature of Authorized Signatory of Bidder]

Date: \_\_\_\_\_ Name: \_\_\_\_\_  
Designation: \_\_\_\_\_  
Seal: \_\_\_\_\_

**F-11**

**ACKNOWLEDGEMENT CUM CONSENT LETTER**

**(On receipt of Tender Document/information regarding the tender, Bidder shall acknowledge the receipt and confirm his intention to bid or reason for non-participation against the enquiry /tender through e-mail/fax to Purchase Officer in RSGL who issued the Tender Document, by filling up the Format)**

To,

M/s RSGL

---

SUB:  
TENDER NO:

Dear Sir,

We hereby acknowledge receipt of a complete set of Tender Document along with enclosures for subject item/job and/or the information regarding the subject tender.

- We intend to bid as requested for the subject item/job and furnish following details with respect to our quoting office:

Postal Address with Pin Code : .....  
Telephone Number : .....  
Fax Number : .....  
Contact Person : .....  
E-mail Address : .....  
Mobile No. : .....  
Date : .....  
Seal/Stamp : .....

- We are unable to bid for the reason given below:

Reasons for non-submission of bid:

---

Agency's Name : .....  
Signature : .....  
Name : .....  
Designation : .....  
Date : .....  
Seal/Stamp : .....

**F-12**

**UNDERTAKING ON LETTERHEAD**

To,

M/s RSGL

---

SUB:

TENDER NO:

Dear Sir

We hereby confirm that "The contents of this Tender Document No. \_\_\_\_\_ have not been modified or altered by M/s. ....( Name of the bidder with complete address). In case, it is found that the Tender Document has been modified / altered by the Bidder, the Bid submitted by M/s.....(Name of the Bidder) shall be liable for rejection".

Place:

[Signature of Authorized Signatory of Bidder]

Date:

Name:

Designation:

Seal:

**BIDDER'S EXPERIENCE**

To,

M/s RSGL

SUB:

TENDER NO:

Sl. No	Description of the Supply/ Services	PO/ Contract No. and date	Full Postal Address & phone nos. of Client.	Value of Contract/Order (Specify Currency Amount )	Date of Commencement	Scheduled Completion/Delivery Period (Months)	Date of Actual Completion	Reasons for delay in execution, if any
(1)	(2)	(3)	(5)	(6)	(7)	(8)	(9)	(10)

Place:

[Signature of Authorized Signatory of Bidder]

Date:

Name:

Designation:

Seal:

**F-14**  
**CHECK LIST**

Bidders are requested to duly fill in the checklist. This checklist gives only certain important items to facilitate the Bidder to make sure that the necessary data/information as called for in the Tender Document has been submitted by them along with their offer/Bid. This, however, does not relieve the Bidder of his responsibilities to make sure that his Bid is otherwise complete in all respects.

Please ensure compliance and tick (✓) against following points:

S. No.	DESCRIPTION	CHECK BOX	REFERENCE PAGE NO. OF THE BID SUBMITTED
1.0	Digitally Signing (in case of e-Tender)/ Signing and Stamping (in case of manual bidding) on eachsheet of offer, original bidding document including Specification/ SCC, ITB, GCC, Price Schedule/SOR drawings, addendum (if any)		
2.0	Confirm that the following details have been submitted in the Un-priced part of the Bid		
i	Covering Letter, Letter of Submission		
ii	Bid Security		
iii	Signed and stamped original copy of Tender Document along with drawings and addendum (if any)		
iv	Power of Attorney in the name of person signing the bid.		
v	Copies of documents defining constitution or legal status, place of registration and principal place of business of the company		
vi	Bidders declaration that regarding, Holiday/ Banning.		
vii	Details and documentary proof required against qualification criteria along with complete documents establishing ownership of equipment (if applicable as per SCC) are enclosed		
viii	Confirm submission of document along with techno-commercial bid as per bid requirement.		
3.0	Confirm that all forms duly filled in are enclosed with the bid duly signed by authorised person(s)		
4.0	Confirm that the price part as per Price Schedule format submitted with Tender Document		

7.0	Confirm that annual reports for last three financial years & duly filled in Form 16 are enclosed in the offer for financial assessment (where financial criteria of BEC is applicable).		
8.0	Bidder has read, understood the Tender Document and its Corrigendum/ Clarification(s) and submit complete Bid in line of requirement of Tender Document.		

Place: [Signature of Authorized Signatory of Bidder]

Date: Name:  
Designation:  
Seal:

F-15

**FORMAT FOR CERTIFICATE FROM BANK FOR LINE OF CREDIT**

(To be provided on Bank's letter head)

Date:

To,  
M/s. RSGL

-----  
-----  
-----

Dear Sir,

This is to certify that M/s ..... (name of the bidder with address) (hereinafter referred to as Customer) is an existing customer of our Bank.

The Customer has informed that they wish to bid for RSGL's RFQ/Tender no. .... dated ..... for..... (Name of the supply/work/services/consultancy) and as per the terms of the said RFQ/Tender they have to furnish a certificate from their Bank confirming the availability of line of credit.

Accordingly M/s..... (name of the Bank with address) confirms availability of line of credit to M/s ..... (name of the bidder) for at least an amount of Rs./USD \_\_\_\_\_

It is also confirmed that the net worth of the Bank is more than Rs. 100 Crores (or Equivalent USD) and the undersigned is authorized to issue this certificate.

Yours truly

for ..... (Name & address of Bank)

(Authorized signatory)  
Name of the signatory:  
Designation :  
Stamp

**FORMAT FOR CHARTERED ACCOUNTANT CERTIFICATE/ CERTIFIED PUBLIC  
ACCOUNTANT (CPA) FOR FINANCIAL CAPABILITY OF THE BIDDER**

We have verified the Audited Financial Statements and other relevant records of M/s...  
 .....(Name of the bidder) and certify the following:

**A. AUDITED ANNUAL TURNOVER\* OF LAST 3 YEARS:**

Year	Amount (Currency)
Year 1:	
Year 2:	
Year 3:	

**B. NETWORTH\* AS PER LAST AUDITED FINANCIAL STATEMENT:**

Description	Year _____
	Amount (Currency)
1. Net Worth	

**C. WORKING CAPITAL\* AS PER LAST AUDITED FINANCIAL STATEMENT :**

Description	Year _____
	Amount (Currency)
1. Current Assets	
2. Current Liabilities	
3. Working Capital (Current Assets-Current liabilities)	

**\*Refer Instructions**

**Note: It is further certified that the above mentioned applicable figures are matching with the returns filed with Registrar of Companies (ROC) [Applicable only in case of Indian Companies]**

Name of Audit Firm:  
 Chartered Accountant/CPA  
 Date:

[Signature of Authorized Signatory]  
 Name:  
 Designation:  
 Seal:  
 Membership No.:

**Instructions:**

1. The Separate Pro-forma shall be used for each member in case of JV/ Consortium.
2. The financial year would be the same as one normally followed by the bidder for its Annual Report.
3. The bidder shall provide the audited annual financial statements as required for this Tender document. Failure to do so would result in the Proposal being considered as non- responsive.
4. For the purpose of this Tender document:
  - (i) **Annual Turnover** shall be "Sale Value/ Operating Income"
  - (ii) **Working Capital** shall be "Current Assets less Current liabilities" and
  - (iii) **Net Worth** shall be Paid up share capital plus Free Reserves & Surplus less accumulated losses, deferred expenditure and miscellaneous expenditure not written off, if any.
5. **Above figures shall be calculated after considering the qualification, if any, made by the statutory auditor on the audited financial statements of the bidder including quantified financial implication.**
6. This certificate is to be submitted on the letter head of Chartered Accountant/CPA.

## F-17 - NOT APPLICABLE

### FORMAT FOR CONSORTIUM/JV AGREEMENT (ON NON- JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)

#### CONSORTIUM/JV AGREEMENT

This Consortium/JV Agreement executed on this ..... Day of ..... Between M/s ....., a company incorporated under the law of ..... and having its registered/ principal office at... ..... (herein after called the "Member-I" / 'Lead Member' which expression shall include its successors, executors and permitted assigns) and M/s ....., a company incorporated under the laws of ....., and having its registered/principal office at ..... (herein after called the 'Member – II' / 'Second Member' which expression shall include its successors, executors and permitted assigns) ..... 'and M/s ....., a company incorporated under the laws of ....., and having its registered/principal office at ..... (herein after called the 'Member – III' / 'Third Member' which expression shall include its successors, executors and permitted assigns), for the purpose of making a bid and entering into a contract (in case of award) in response to Tender Document no..... for the supply/work of .....  
.....(Name of Tender Document) .....of M/s ..... (herein after called the 'Owner/RSGL').

WHEREAS, the Owner invited bids vide its Tender Document no .....for the work of .....

AND WHEREAS as per Tender Document, Consortium/JV entities will also be considered by the Owner provided they meet the specific requirements in that regard. As a pre-condition of Tender Documents, the Consortium/JV bidder shall provide in its bid a Consortium/JV Agreement in an acceptable format in which the Members to the Consortium/JV are jointly and severally liable to the Owner to bind themselves to the bid conditions accept the contract award, if selected and perform all the contractual obligations thereto.

AND WHEREAS the bid is being submitted to the Owner vide our proposal dated..... based on the Consortium/JV Agreement being these presents and the bid with its bid forms and submission documents, in accordance with the requirement of tender conditions and requirements have been signed by both the Members and submitted to the Owner.

#### NOW THIS INDENTURE WITNESSETH AS UNDER:

In consideration of the above premises and agreements all the Members to this Consortium/JV do hereby now agree as follows:

1. We the Members in the Consortium/JV hereby confirm that the name and style of the Consortium/JV shall be..... Consortium/JV.
2. In consideration of the bid submission by us to the Owner and the award of Contract by the Owner to the Consortium/JV (if selected by the Owner), we the Members to the Consortium/JV, hereby agree that the Member-I (M/s.....) shall act as the lead Member for self, and for and on behalf of Member-II/ Member-III and further declare and confirm that we shall jointly and severally be bound unto the Owner for execution of the contract in accordance with the contract terms and shall jointly and severally be

liable to the Owner to perform all contractual obligations including technical guarantees. Further, the lead Member is authorized to incur liabilities and receive instructions for and on behalf of any or both Members of the Consortium/JV and the entire execution of the Contract.

3. In case of any breach of the said Contract by any of the Members of the CONSORTIUM/JV, we hereby agree to be fully responsible for the successful execution/performance of the Contract in accordance with the terms of the Contract.
4. Further, if the Owner suffered any loss or damage on account of any breach of the Contract or any shortfall in the completed equipment/plant, meeting the guaranteed performance parameters as per the technical specifications/ contract documents, the Second & Third Member of these presents undertakes to promptly make good such loss or damage caused to the Owner, on the Owner's demand without any demur. It shall neither be necessary nor obligatory on the part of the Owner to proceed against the Lead Member to these presents before proceeding against the Second & Third Member.
5. The financial liability of the Member (s) to this Consortium/JV Agreement, to the Owner with respect to the any or all claims arising out of the performance or non-performance of the Contract shall, however be not limited in any way so as to restrict or limit the liabilities of either of the Member.
6. Division of responsibilities of Scope of work among different Consortium/JV members is as per **APPENDIX I (Responsibility Matrix)** to this Consortium/JV Agreement.
7. It is expressly understood and agreed between the Members to this agreement that the responsibilities and obligations of each of the Members shall be as delineated in '**APPENDIX I**' to this agreement. It is further agreed by the Members that the above sharing of responsibilities and obligations shall not in any way be a limitation of the joint and several responsibilities of the Members under the Contract.
8. This Consortium/JV Agreement shall be governed, construed and interpreted in accordance with Laws of India courts of Jaipur shall have exclusive jurisdiction in all matters arising thereunder.
9. In case of award of contract, we the Member s to this Consortium/JV Agreement do hereby agree that we shall furnish the contract performance security/ security deposit in favour of the Owner from a bank acceptable / approved by the Owner for a value as stipulated in the Contract Award and such guarantee shall be in the names of Consortium/JV.
10. It is further agreed that this CONSORTIUM/JV Agreement shall be irrevocable and shall form an integral part of the Contract and shall continue to be enforceable till the Owner discharges the same. It shall be effective date first above mentioned for all purposes and intents.
11. In case bid submitted by Joint Venture, the details of equity partnership and assets of the JV shall be attached as a separate annexure to this agreement.
12. This agreement remains in force till the end of Defects Liability Period.



IN WITNESS WHEREOF, the Members to this Consortium/JV agreement have, through their respective authorized representatives, have executed these presents and affixed their hands and common seal of their respective companies on the day, month and year first abovementioned.

1. Seal of

M/s.

has been affixed in my/our presence  
pursuant to Board Resolution dated

.....  
Signature .....  
Designation

1. Seal of

M/s.

has been affixed in my/our presence  
pursuant to Board Resolution dated

.....  
Signature .....  
Designation

1. Seal of

M/s.

has been affixed in my/our presence  
pursuant to Board Resolution dated

.....

For M/s. (..... Member

.....  
(Signature of authorised Representative)

Name:

Designation:

For M/s. (.....Member-II

.....  
(Signature of authorised Representative)

Name:

Designation:

For M/s. (.....Member-III

.....  
(Signature of authorised Representative)

Name:

**BIDDER'S QUERIES FOR PRE BID MEETING**

To,  
M/s RSGL

Sub :  
Tender No. :

SL. NO.	REFERENCE OF TENDER DOCUMENT				BIDDER'S QUERY	RSGL'S REPLY
	SEC. NO.	Page No.	Clause No.	Subject		

**NOTE: The Pre-Bid Queries may be sent by fax / e-mail before due date for receipt of  
Bidder's queries in terms of Clause No. 8.1 of ITB.**

SIGNATURE OF AUTHORISED REPRESENTATIVE OF BIDDER:

NAME OF BIDDER : \_\_\_\_\_

**F-19**

**E-Banking Mandate Form**

(To be issued on vendors letter head)  
(Applicable for Indian Bidder only)

1. Vendor/customer Name :
2. Vendor/customer Code:
3. Vendor /customer Address:
4. Vendor/customer e-mail id:
5. Particulars of bank account
  - a) Name of Bank
  - b) Name of branch
  - c) Branch code:
  - d) Address:
  - e) Telephone number:
  - f) Type of account (current/saving etc.)
  - g) Account Number:
  - h) RTGS IFSC code of the bank branch
  - i) NEFT IFSC code of the bank branch
  - j) 9 digit MICR code

I/We hereby authorize RSGL(India) Limited to release any amount due to me/us in the bank account as mentioned above. I/We hereby declare that the particulars given above are correct and complete. If the transaction is delayed or lost because of incomplete or incorrect information, we would not hold the RSGL responsible.

(Signature of vendor/customer)

**BANK CERTIFICATE**

We certify that ----- has an Account no-----with us and we confirm that the details given above are correct as per our records.  
Bank stamp

Date

(Signature of authorized officer of bank)

### FREQUENTLY ASKED QUESTIONS (FAQs)

SL.NO.	QUESTION	ANSWER
1.0	Can any Bidder quote for subject Tender?	Yes. A Bidder has to meet Bid Evaluation Criteria given under Section II of Tender Document in addition to other requirements.
2.0	Should the Bid Evaluation Criteria documents be attested?	Yes. Please refer Section II of Tender Document
3.0	Is attending Pre Bid Meeting mandatory.	No. Refer Clause No. 17 of Instruction to Bidders of Tender Document. However attending Pre Bid Meeting is recommended to sort out any issue before submission of bid by a Bidder.
4.0	Can a bidder submit more than 1 offer?	No. Please refer Clause No. 4 of Instruction to Bidders of Tender Document.
5.0	Are there any MSE (Micro & Small Enterprises) benefits available?	Yes. Refer Clause No. 40 of Instructions to Bidders of Tender Document.

All the terms and conditions of Tender remain unaltered.

F-21

**POWER OF ATTORNEY**  
**(To be submitted on the letter-head of company)**

Tender No.:

Item Description:

Name of Bidder:

"The undersigned \_\_\_\_\_ (Name of LEGAL PERSON\*) is lawfully authorized to represent and act on behalf of the company M/s \_\_\_\_\_ (Name of bidder) whose registered address is \_\_\_\_\_ and does hereby appoint Mr / Ms \_\_\_\_\_ [name of authorized person(s)] \_\_\_\_\_ (Designation) of M/s \_\_\_\_\_ (Name of bidder) whose signature appears below to be the true and lawful attorney(s) and authorize him/her to sign the bid (**both digitally and manually**) and **all subsequent communications, agreements, documents etc.**, in the name and on behalf of the company in connection with the tender no. for.....(Name of work). The signature of the authorized person(s) herein constitutes unconditional obligations of M/s (Name of bidder).

This Power of Attorney shall remain valid and in full force and effect before we withdraw it in writing (by fax, or mail or post). All the documents signed (within the period of validity of the Power of Attorney) by the authorized person(s) herein shall not be invalid because of such withdrawal.

**SIGNATURE OF THE LEGAL PERSON**

---

(Name of Person with Company Seal)

**SIGNATURE OF THE AUTHORIZED PERSON(S)**

---

(Name of Person)

E-mail ID: \_\_\_\_\_

Digital Token No. used for uploading the bid: \_\_\_\_\_

**(\*) In case of a Single Bidder, Power of Attorney issued by the Board of Directors / CEO / MD / Company Secretary of the Bidder / all partners in case of Partnership firm / Proprietor (for Proprietorship firm) in favour of the authorized employee(s) of the Bidder, in respect of the particular tender for signing the Bid and all subsequent communications, agreements, documents, etc. pertaining to the tender and to act and take any and all decision on behalf of the Bidder, is to be submitted.**

## FORMAT F-22

### DETAILS OF P.F REGISTRATION

To,  
**RSGL,**

**Sub: Tender No.\_\_\_\_\_ (E-Tender No.\_\_\_\_\_ ) for \_\_\_\_\_**

Dear Sir (s),

We confirm that the following PF account is under operation and shall be used for all PF related activities for the labour engaged by us for the work (if awarded to us).

PF Registration No.:

District and State:

SIGNATURE OF THE BIDDER: \_\_\_\_\_

NAME OF THE BIDDER: \_\_\_\_\_

Note: Please submit the copy of PF Registration Certificate

## FORMAT F-23

## DETAILS OF SPECIFIC EXPERIENCE

Bidder shall furnish their experience details with reference to the Work, which pre-qualify them in line with Bid Evaluation Criteria mentioned in IFB.

## **DETAILS OF SIMILAR WORK EXECUTED BY BIDDER (COMPLYING REQUIREMENT OF IFB)**

**Note:**

1. Bidder should indicate details of similar experience separately for each part, which they consider suitable in line with Bid evaluation criteria, stipulated in IFB. Detail of more Projects may be furnished in the same format. Bidder to note that non-submission of relevant documents may lead to rejection of their bid. Owner reserves the right to evaluate the bids on the details furnished without seeking any subsequent additional information.

**SIGNATURE OF THE BIDDER :**

**NAME OF THE BIDDER :**

## FORMAT F-24

### CERTIFICATE INDEMNIFYING GOVERNMENT OF INDIA

To,  
RSGL

SUB:

TENDER NO:

Dear Sir,

If we become a successful Bidder and pursuant to the provisions of the Tender Document, award is given to us against subject Tender Document, the following Certificate shall be automatically enforceable:

"We agree and acknowledge that the Purchaser is entering into the Contract/Agreement solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood & agreed that the Government of India is not a party to the Contract/Agreement and has no liabilities, obligations or rights thereunder. It is expressly understood and agreed that the Purchaser is authorized to enter into Contract/Agreement, solely on its own behalf under the applicable laws of India. We expressly agree, acknowledge and understand that the Purchaser is not an agent, representative or delegate of the Government of India. It is further understood and agreed that the Government of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the Agreement. Accordingly, we hereby expressly waive, release and forego any and all actions or claims, including cross claims, VIP claims or counter claims against the Government of India arising out of the Agreement and covenants not to sue to Government of India as to any manner, claim, cause of action or things whatsoever arising of or under the Agreement."

**SIGNATURE OF THE BIDDER :** \_\_\_\_\_

**NAME OF THE BIDDER :** \_\_\_\_\_

**Note : This should be submitted in the Letter Head of the Bidder**

#### F-25 (INDEMNITY BOND)

WHEREAS Rajasthan state Gas Limited Ltd. (hereinafter referred to as "**Rajasthan state Gas Limited**") which expression shall, unless repugnant to the context include its successors and assigns, having its corporate office at Khaniz Bhawan, Tilak Marg, C-scheme Jaipur and registered office at C-89-90 Janpath , Lal-Kothi Scheme , Jaipur has entered into a contract with M/s\*..... (hereinafter referred to as the "**Contractor**") which expression shall unless repugnant to the context include its representatives, successors and assigns, having its registered office at \*.....

and on the terms and conditions as set out, inter-alia in the [ *mention the work order/LOA/Tender No.*] and various documents forming part thereof, hereinafter collectively referred to as the '**CONTRACT**' which expression shall include all amendments, modifications and / or variations thereto.

Rajasthan state Gas Limited has also advised the Contractor to execute an Indemnity Bond in general in favour of Rajasthan state Gas Limited indemnifying Rajasthan state Gas Limited and its employees and Directors from all consequences which may arise out of any prospective litigation or proceedings filed or may be initiated by any third party, including any Banker / financial institution / worker(s) /vendor(s)/ subcontractor(s) etc. who may have been associated or engaged by the Contractor directly or indirectly with or without consent of Rajasthan state Gas Limited for above works.

NOW, THEREFORE, in consideration of the promises aforesaid, the Contractor hereby irrevocably and unconditionally undertakes to indemnify and keep indemnified Rajasthan state Gas Limited and all its employees, Directors, including Independent Directors, from and against all/any claim(s), damages, loss, which may arise out of any litigations/ liabilities that may be raised by the Contractor or any third party against RAJASTHAN STATE GAS LIMITED under or in relation to this contract. The Contractor undertakes to compensate and pay to Rajasthan state Gas Limited and/or any of its employees, Directors forth with on demand without any protest the amount claimed by Rajasthan state Gas Limited for itself and for and on behalf of its employees, Directors together with direct/indirect expenses including all legal expenses incurred by them or any of them on account of such litigation or proceedings.

AND THE CONTRACTOR hereby further agrees with Rajasthan state Gas Limited that:

- (i) This Indemnity shall remain valid and irrevocable for all claims of Rajasthan state Gas Limited and/or any of its employees and Directors arising out of said contract with respect to any such litigation / court case for which Rajasthan state Gas Limited and/or its employees and Directors has been made party until now or here-in-after.
- (ii) This Indemnity shall not be discharged/revoked by any change/ modification /amendment/assignment of the contract or any merger of the Contractor with other

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entity or any change in the constitution/structure of the Contractor's firm/Company or any conditions thereof including insolvency etc. of the Contractor, but shall be in all respects and for all purposes binding and operative until any/all claims for payment of Rajasthan state Gas Limited are settled by the Contractor and/or Rajasthan state Gas Limited discharges the Contractor in writing from this Indemnity.

The undersigned has full power to execute this Indemnity Bond for and on behalf of the Contractor and the same stands valid.

SIGNED BY :

For [Contractor] Authorised Representative

Place:

Dated:

Witnesses:

1.

2.

## PROFORMA FOR CONTRACT AGREEMENT

LOA No.

dated -----

Contract Agreement for the work of ----- of RAJASTHAN STATE GAS LIMITED made on ----- between (Name and Address)----- , hereinafter called the “CONTRACTOR” (which term shall unless excluded by or repugnant to the subject or context include its successors and permitted assignees) of the one part and RAJASTHAN STATE GAS LIMITED hereinafter called the “EMPLOYER” (which term shall, unless excluded by or repugnant to the subject or context include its successors and assignees) of the other part.

### WHEREAS

- A. The EMPLOYER being desirous of having provided and executed certain work mentioned, enumerated or referred to in the Tender Documents including Letter Inviting Tender, General Tender Notice, General Conditions of Contract, Special Conditions of Contract, Specifications, Drawings, Plans, Time Schedule of completion of jobs, Schedule of Rates, Agreed Variations, other documents has called for Tender.
- B. The CONTRACTOR has inspected the SITE and surroundings of WORK specified in the Tender Documents and has satisfied himself by careful examination before submitting his tender as to the nature of the surface, strata, soil, sub-soil and ground, the form and nature of site and local conditions, the quantities, nature and magnitude of the work, the availability of labour and materials necessary for the execution of work, the means of access to SITE, the supply of power and water thereto and the accommodation he may require and has made local and independent enquiries and obtained complete information as to the matters and thing referred to, or implied in the tender documents or having any connection therewith and has considered the nature and extent of all probable and possible situations, delays, hindrances or interferences to or with the execution and completion of the work to be carried out under the CONTRACT, and has examined and considered all other matters, conditions and things and probable and possible contingencies, and generally all matters incidental thereto and ancillary thereof affecting the execution and completion of the WORK and which might have influenced him in making his tender.
- C. The Tender Documents including the Notice Letter Inviting Tender, General Conditions of Contract, Special Conditions of Contract, Schedule of Rates, General Obligations, SPECIFICATIONS, DRAWINGS, PLANS, Time Schedule for completion of Jobs, Letter of

Acceptance of Tender and any statement of agreed variations with its enclosures copies of which are hereto annexed form part of this CONTRACT though separately set out herein and are included the expression "CONTRACT" wherever herein used.

**AND WHEREAS**

The EMPLOYER accepted the Tender of the CONTRACTOR for the provision and the execution of the said WORK at the rates stated in the schedule of quantities of the work and finally approved by EMPLOYER (hereinafter called the "Schedule of Rates") upon the terms and subject to the conditions of CONTRACT. NOW THIS AGREEMENT WITNESSETH AND IT IS HEREBY AGREED AND DECLARED AS FOLLOWS:-

1. In consideration of the payment to be made to the CONTRACTOR for the WORK to be executed by him, the CONTRACTOR hereby covenants with EMPLOYER that the CONTRACTOR shall and will duly provide, execute and complete the said work and shall do and perform all other acts and things in the CONTRACT mentioned or described or which are to be implied there from or may be reasonably necessary for the completion of the said WORK and at the said times and in the manner and subject to the terms and conditions or stipulations mentioned in the contract.
  
2. In consideration of the due provision execution and completion of the said WORK, EMPLOYER does hereby agree with the CONTRACTOR that the EMPLOYER will pay to the CONTRACTOR the respective amounts for the WORK actually done by him and approved by the EMPLOYER at the Schedule of Rates and such other sum payable to the CONTRACTOR under provision of CONTRACT, such payment to be made at such time in such manner as provided for in the CONTRACT.

**A N D**

3. In consideration of the due provision, execution and completion of the said WORK the CONTRACTOR does hereby agree to pay such sums as may be due to the EMPLOYER for the services rendered by the EMPLOYER to the CONTRACTOR, such as power supply, water supply and others as set for in the said CONTRACT and such other sums as may become payable to the EMPLOYER towards the controlled items of consumable materials or towards loss, damage to the EMPLOYER'S equipment, materials construction plant and machinery, such payments to be made at such time and in such manner as is provided in the CONTRACT.

It is specifically and distinctly understood and agreed between the EMPLOYER and the CONTRACTOR that the CONTRACTOR shall have no right, title or interest in the SITE made available by the EMPLOYER for execution of the works or in the building, structures or work executed on the said SITE by the CONTRACTOR or in the goods, articles, materials etc.,

brought on the said SITE (unless the same specifically belongs to the CONTRACTOR) and the CONTRACTOR shall not have or deemed to have any lien whatsoever charge for unpaid bills will not be entitled to assume or retain possession or control of the SITE or structures and the EMPLOYER shall have an absolute and unfettered right to take full possession of SITE and to remove the CONTRACTOR, their servants, agents and materials belonging to the CONTRACTOR and lying on the SITE.

The CONTRACTOR shall be allowed to enter upon the SITE for execution of the WORK only as a licensee simpliciter and shall not have any claim, right, title or interest in the SITE or the structures erected thereon and the EMPLOYER shall be entitled to terminate such license at any time without assigning any reason.

The materials including sand, gravel, stone, loose, earth, rock etc., dug up or excavated from the said SITE shall, unless otherwise expressly agreed under this CONTRACT, exclusively belong to the EMPLOYER and the CONTRACTOR shall have no right to claim over the same and such excavation and materials should be disposed off on account of the EMPLOYER according to the instruction in writing issued from time to time by the ENGINEER-IN-CHARGE.

In Witness whereof the parties have executed these presents in the day and the year first above written.

Signed and Delivered for and on  
behalf of EMPLOYER.

Signed and Delivered for and  
on behalf of the CONTRACTORs.

**RAJASTHAN STATE GAS LIMITED**

**(NAME OF THE CONTRACTOR)**

Date : \_\_\_\_\_ Place: \_\_\_\_\_ Date : \_\_\_\_\_ Place: \_\_\_\_\_

## **SECTION – IV**

### **GENERAL CONDITIONS OF CONTRACTS – GOODS**

### **BID DOCUMENT FOR**

**PROCUREMENT OF 2 NOS. OF 400 SCMH COMPOSITE CNG DISPENSING UNIT  
& COMPREHENSIVE O&M SERVICES FOR 5 YEARS**

## General Conditions of Contract-GOODS

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## 1. Definitions

In this document, General Conditions of Contract (GCC Goods), the following terms shall have the following respective meanings:

- 1.0 BIDDER : Designates the individual or legal entity which has made a proposal, a tender or a bid with the aim of concluding a Contract with the PURCHASER.
- 1.1 CONSULTANT *[if engaged]* shall mean M/s.....having its registered office at..... The term consultant includes successors, assigns of M/s. ....
- 1.2 CONTRACT shall mean Purchase Order/Contract and all attached exhibits and documents referred to therein and all terms and conditions thereof together with any subsequent modifications thereto.
- 1.3 CONTRACT PRICE shall mean the price payable to the Seller under the Contract for the full and proper performance of his contractual obligations.
- 1.4 COMPLETION DATE shall mean the date on which the goods are successfully commissioned by the Seller and handed over to the PURCHASER.
- 1.5 COMMERCIAL OPERATION shall mean the condition of the operation in which the complete equipment covered under the Contract is officially declared by the PURCHASER to be available for continuous operation at different loads up to and including rated capacity.
- 1.6 DELIVERY terms shall be interpreted as LR/GR.
- 1.7 DRAWINGS shall mean and include Engineering drawings, sketches showing plans, sections and elevations in relation to the Contract together with modifications and/or revisions thereto.
- 1.8 ENGINEER or Engineer-in-Charge of the Project SITE shall mean the person designated from time to time by PURCHASER/CONSULTANT at SITE and shall include those who are expressly authorized by him to act for and on his behalf for operation of this CONTRACT.
- 1.9 FINAL ACCEPTANCE shall mean the PURCHASER's written acceptance of the Works performed under the Contract after successful completion of performance and

guarantee test.

1.10 GOODS shall mean articles, materials, equipment, design and drawings, data and other property to be supplied by Seller to complete the contract.

1.11 INSPECTOR shall mean any person or outside Agency nominated by PURCHASER/CONSULTANT through CONSULTANT to inspect equipment, stagewise as well as final, before dispatch, at SELLER's works and on receipt at SITE as per terms of the CONTRACT.

1.12 INITIAL OPERATION shall mean the first integral operation of the complete equipment covered under the Contract with sub-systems and supporting equipment in service or available for service.

1.13 PURCHASER shall mean RSGL having its registered office at *Room no. 215, Khaniz Bhawan, Tilak Marg, C- Scheme, Jaipur - 302005* The term PURCHASER includes successors, assigns of RSGL.

1.14 PERFORMANCE AND GUARANTEE TESTS shall mean all operational checks and tests required to determine and demonstrate capacity, efficiency and operating characteristics as specified in the Contract documents.

PROJECT designates the aggregate of the Goods and/or Services to be provided by one or more Contractors. Quantities – Bills of quantities Bills of quantities

Designate the quantity calculations to be taken into account when these calculations are made from detailed or construction drawings, or from work actually performed, and presented according to a jointly agreed breakdown of the Goods and/or Services.

1.15 SELLER shall mean the person, firm or company with whom PURCHASE ORDER/CONTRACT is placed/ entered into by PURCHASER for supply of equipment, materials and services. The term Seller includes its successors and assigns.

1.16 SERVICE shall mean erection, installation, testing, commissioning, provision of technical assistance, training and other such obligations of the Seller covered under the Contract.

- 1.17 SITE designates the land and/or any other premises on, under, in or across which the Goods and/or Services have to be supplied, erected, assembled, adjusted, arranged and/or commissioned.
- 1.18 SPECIFICATIONS shall mean and include schedules, details, description, statement of technical data, performance characteristics, standards (Indian as well as International) as applicable and specified in the Contract.
- 1.19 SUB-CONTRACT shall mean order placed by the Seller, for any portion of the contracted work, after necessary consent and approval of PURCHASER.
- 1.20 SUB-CONTRACTOR shall mean the person named in the CONTRACT for any part of the work or any person to whom any part of the CONTRACT has been sub-let by the SELLER with the consent in writing of the CONSULTANT/PURCHASER and will include the legal representatives, successors, and permitted assigns of such person.
- 1.21 START-UP shall mean the time period required to bring the equipments covered under the Contract from an inactive condition, when construction is essentially complete to the state of readiness for trial operation. The start-up period shall include preliminary inspection and check out of equipment and supporting subsystems, initial operation of the complete equipments covered under the Contract to obtain necessary pre-trial operation data, perform calibration and corrective action, shutdown inspection and adjustment prior to the trial operation period.
- 1.22 TESTS shall mean such process or processes to be carried out by the Seller as are prescribed in the Contract or considered necessary by PURCHASER or his representative in order to ascertain quality, workmanship, performance and efficiency of equipment or part thereof.
- 1.23 TESTS ON COMPLETION shall mean such tests as prescribed in the Contract to be performed by the Seller before the Works are taken over by the PURCHASER.

<b>2. Seller To Inform</b>	2.1 The Seller shall be deemed to have carefully examined all contract documents to his entire satisfaction. Any lack of information shall not in any way relieve the Seller of his responsibility to fulfill his obligation under the Contract.
<b>3. Application</b>	3.1 These General Conditions of Contract (GCC- Goods) shall apply to the extent that they are not superseded by provisions of other parts of the Contract.
<b>4. Country of Origin</b>	4.1 For purposes of this Clause "origin" means the place where the Goods were mined, grown or produced, or from which the services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembling of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.
<b>5. Scope of Contract</b>	<p>5.1 Scope of the CONTRACT shall be as defined in the PURCHASE ORDER/CONTRACT specifications, drawings and Annexure thereto.</p> <p>5.2 Completeness of the EQUIPMENT shall be the responsibility of the SELLER. Any equipment, fittings and accessories which mentioned in the specifications or drawings, but which are usual or necessary for the satisfactory functioning of the equipment (successful operation and functioning of the EQUIPMENT being SELLER's responsibility) shall be provided by SELLER without any extra cost.</p> <p>5.3 The SELLER shall follow the best modern practices in the manufacture of high grade EQUIPMENT notwithstanding any omission in the specifications. The true intent and meaning of these documents is that SELLER shall in all respects, design, engineer, manufacture and supply the equipment in a thorough workmanlike manner and supply the same in prescribed time to the entire satisfaction of PURCHASER.</p> <p>5.4 The SELLER shall furnish twelve (12) copies in English language of Technical documents, final drawings, preservation instructions, operation and maintenance manuals, test certificates, spare parts catalogues for all equipments to the PURCHASER.</p> <p>5.5 The documents once submitted by the SELLER shall be firm and final and not subject to subsequent changes. The SELLER shall be responsible for any loss to the PURCHASER/CONSULTANT consequent to furnishing of incorrect data/drawings.</p>

5.6 All dimensions and weight should be in metric system.

5.7 All equipment to be supplied and work to be carried out under the CONTRACT shall conform to and comply with the provisions of relevant regulations/Acts(State Government or Central Government) as may be applicable to the type of equipment/work carried out and necessary certificates shall be furnished.

5.8 The Seller shall provide cross sectional drawings, wherever applicable, to identify the spare part numbers and their location. The size of bearings, their make and number shall be furnished.

5.9 Specifications, design and drawings issued to the SELLER along with RFQ and CONTRACT are not sold or given but loaned. These remain property of PURCHASER/CONSULTANT or its assigns and are subject to recall by PURCHASER/CONSULTANT. The SELLER and his employees shall not make use of the drawings, specifications and technical information for any purpose at any time except for manufacture against the CONTRACT and shall not disclose the same to any person, firm or corporate body, without written permission of PURCHASER/CONSULTANT. All such details shall be kept confidential.

5.10 SELLER shall pack, protect, mark and arrange for dispatch of EQUIPMENT as per instructions given in the CONTRACT.

**6. Standards**

6.1 The GOODS supplied under the CONTRACT shall conform to the standards mentioned in the Technical Specifications, or such other standards which ensure equal or higher quality, and when no applicable standard is mentioned, to the authoritative standard appropriate to the GOODS' country of origin and such standards shall be the latest issued by the concerned institution.

**7. Instructions, Direction & Correspondence**

7.1 The materials described in the CONTRACT are to be supplied according to the standards, data sheets, tables, specifications and drawings attached thereto and/or enclosed with the CONTRACT, itself and according to all conditions, both general and specific enclosed with the contract, unless any or all of them have been modified or cancelled in writing as a whole or in part.

a. All instructions and orders to SELLER shall,

excepting what is herein provided, be given by PURCHASER/CONSULTANT.

- b. All the work shall be carried out under the direction of and to the satisfaction of PURCHASER/CONSULTANT.
- c. All communications including technical/commercial clarifications and/or comments shall be addressed to CONSULTANT in quintuplicate with a copy to PURCHASER and shall always bear reference to the CONTRACT.
- d. Invoices for payment against CONTRACT shall be addressed to PURCHASER.
- e. The CONTRACT number shall be shown on all invoices, communications, packing lists, containers and bills of lading, etc.

**8. Contract Obligations**

- 8.1 If after award of the contract, the Seller does not acknowledge the receipt of award or fails to furnish the performance guarantee within the prescribed time limit, the PURCHASER reserves the right to cancel the contract and apply all remedies available to him under the terms and conditions of this contract.
- 8.2 Once a contract is confirmed and signed, the terms and conditions contained therein shall take precedence over the Seller's bid and all previous correspondence.

**9. Modification In Contract**

- 9.1 All modifications leading to changes in the CONTRACT with respect to technical and/or commercial aspects including terms of delivery, shall be considered valid only when accepted in writing by PURCHASER/CONSULTANT by issuing amendment to the CONTRACT. Issuance of acceptance or otherwise in such cases shall not be any ground for extension of agreed delivery date and also shall not affect the performance of contract in any manner except to the extent mutually agreed through a modification of contract.
- 9.2 PURCHASER/CONSULTANT shall not be bound by any printed conditions or provisions in the SELLER's Bid Forms or acknowledgment of CONTRACT, invoices, packing list and other documents which purport to impose any conditions at variance with or supplemental to CONTRACT.

**10. Use of Contract Documents & Information**

- 10.1 The SELLER shall not, without the PURCHASER's prior written consent, make use of any document or information enumerated in Article 10.1. except for purpose of performing the CONTRACT
- 10.2 The Seller shall not, without the PURCHASER's/CONSULTANT's prior written consent, disclose the CONTRACT or any provision thereof, or any specification, plan, drawing, pattern, sample or information

furnished by or on behalf of the PURCHASER in connection therewith, to any person other than a person employed by the SELLER in the performance of the CONTRACT. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purpose of such performance.

## 11. Patent Rights, Liability & Compliance of Regulations

- 11.1 SELLER hereby warrants that the use or sale of the materials delivered hereunder will not infringe claims of any patent covering such material and SELLER agrees to be responsible for and to defend at his sole expense all suits and proceedings against PURCHASER based on any such alleged patent infringement and to pay all costs, expenses and damages which PURCHASER and/or CONSULTANT may have to
- 11.2 The SELLER shall indemnify the PURCHASER against all third party claims of infringement of patent, trade mark or industrial design rights arising from use of the GOODS or any part thereof in the PURCHASER's country. The SELLER shall indemnify the PURCHASER against all third party claims of infringement of patent, trade mark or industrial design rights arising from use of the GOODS or any part thereof pay or incur by reason of any such suit or proceedings.
- 11.3 SELLER shall also protect and fully indemnify the PURCHASER from any claims from SELLER'S workmen/employees or their heirs, dependents, representatives, etc. or from any other person/persons or bodies/companies etc. for any acts of commissions or omission while executing the CONTRACT.
- 11.4 SELLER shall be responsible for compliance with all requirements under the laws and shall protect and indemnify completely the PURCHASER from any claims/penalties arising out of any infringements.

## 12. Performance Guarantee

- 12.1 Within 15 days after the SELLER's receipt of notification of award of the CONTRACT, the SELLER shall furnish Performance Guarantee in the form of Bank Guarantee/irrevocable Letter of Credit to the PURCHASER, in the form provided in the Bidding Documents, for an amount equivalent to 10% of the total value of the CONTRACT.
- 12.2 The proceeds of Performance Guarantee shall be appropriated by the PURCHASER as compensation for any loss resulting from the SELLER's failure to complete his obligations under the CONTRACT without prejudice to any

of the rights or remedies the PURCHASER may be entitled to as per terms and conditions of CONTRACT. The proceeds of this Performance Guarantee shall also govern the successful performance of Goods and Services during the entire period of Contractual Warrantees/Guarantee.

- 12.3 The performance guarantee shall be denominated in the currency of the CONTRACT.
- 12.4 The Performance Guarantee shall be valid for the duration of 90 days beyond the expiry of Warrantees/Guarantee period. The Bank Guarantee will be discharged by PURCHASER not later than 6 months from the date of expiration of the Seller's entire obligations, including any warranty obligations, under the CONTRACT

### **13. Inspection, Testing & Expediting**

- 13.1 The PURCHASER or its representative shall have the right to inspect and/or to test the GOODS to confirm their conformity to the CONTRACT specifications. The special conditions of CONTRACT and/or the Technical Specifications shall specify what inspections and tests the PURCHASER requires and where they are to be conducted. The PURCHASER shall notify the SELLER in writing the identity of any representative(s) retained for these purposes.
- 13.2 The inspections and tests may be conducted on the premises of the SELLER or his subcontractor(s), at point of DELIVERY and/or at the GOODS' final destination. When conducted on the premises of the SELLER or his subcontractor (s), all reasonable facilities and assistance including access to the drawings and production data shall be furnished to the inspectors at no charge to the PURCHASER.
- 13.3 Should any inspected or tested GOODS fail to conform to the specifications, the PURCHASER may reject them and the SELLER shall either replace the rejected GOODS or make all alterations necessary to meet Specifications' requirements, free of cost to the PURCHASER.
- 13.4 The PURCHASER's right to inspect, test and where necessary reject the GOODS after the GOODS' arrival in the PURCHASER's country shall in no way be limited or waived by reason of the GOODS having previously been inspected, tested and passed by the PURCHASER, or their representative prior to the GOODS shipment from the country of origin.
- 13.5 The INSPECTOR shall follow the progress

of the manufacture of the GOODS under the CONTRACT to ensure that the requirements outlined in the CONTRACT are not being deviated with respect to schedule and quality.

- 13.6 SELLER shall allow the INSPECTOR to visit, during working hours, the workshops relevant for execution of the CONTRACT during the entire period of CONTRACT validity.
- 13.7 SELLER shall place at the disposal of the INSPECTOR, free of charge, all tools, instruments, and other apparatus necessary for the inspection and/or testing of the GOODS. The INSPECTOR is entitled to prohibit the use and dispatch of GOODS and/or materials which have failed to comply with the characteristics required for the GOODS during tests and inspections.
- 13.8 SELLER shall advise in writing of any delay in the inspection program at the earliest, describing in detail the reasons for delay and the proposed corrective action.
- 13.9 ALL TESTS and trials in general, including those to be carried out for materials not manufactured by SELLER shall be witnessed by the INSPECTOR. Therefore, SELLER shall confirm to PURCHASER by fax or e-mail about the exact date of inspection with at least 30 days' notice. SELLER shall specify the GOODS and quantities ready for testing and indicate whether a preliminary or final test is to be carried out.
- 13.10 If on receipt of this notice, PURCHASER should waive the right to witness the test, timely information will be given accordingly.
- 13.11 Any and all expenses incurred in connection with tests, preparation of reports and analysis made by qualified laboratories, necessary technical documents, testing documents and drawings shall be at SELLER's cost. The technical documents shall include the reference and numbers of the standards used in the construction and, wherever deemed practical by the INSPECTOR, copy of such standards.
- 13.12 Nothing in Article-13 shall in any way release the SELLER from any warranty or other obligations under this CONTRACT.
- 13.13 Arrangements for all inspections required by Indian Statutory Authorities and as specified in technical specifications shall be made by SELLER.

13.14 **Inspection & Rejection of Materials by consignees** When materials are rejected by the consignee, the supplier shall be intimated with the details of such rejected materials, as well as the reasons for their rejection, also giving location where such materials are lying at the risk and cost of the contractor/supplier. The supplier will be called upon either to remove the materials or to give instructions as to their disposal within 14 days and in the case of dangerous, infected and perishable materials within 48 hours, failing which the consignee will either return the materials to the contractor freight to pay or otherwise dispose them off at the contractor's risk and cost. The PURCHASER shall also be entitled to recover handling and storage charges for the period, during which the rejected materials are not removed @ 5% of the value of materials for each month or part of a month till the rejected materials are finally disposed off

#### **14. Time Schedule & Progress Reporting**

- 14.1 Time Schedule Network/Bar Chart
  - 14.1.1 Together with the Contract confirmation, SELLER shall submit to PURCHASER, his time schedule regarding the documentation, manufacture, testing, supply, erection and commissioning of the GOODS.
  - 14.1.2 The time schedule will be in the form of a network or a bar chart clearly indicating all main or key events regarding documentation, supply of raw materials, manufacturing, testing, delivery, erection and commissioning.
  - 14.1.3 The original issue and subsequent revisions of SELLER's time schedule shall be sent to PURCHASER.
  - 14.1.4 The time schedule network/bar chart shall be updated at least every second month.
- 14.2 Progress Trend Chart/Monthly Report
  - 14.2.1 SELLER shall report monthly to PURCHASER, on the progress of the execution of CONTRACT and achievement of targets set out in time bar chart.
  - 14.2.2 The progress will be expressed in percentages as shown in the progress trend chart attached to the Time Schedule specification.

14.2.3 The first issue of the Progress Trend Chartwill be forwarded together with the time bar chart along with CONTRACT confirmation.

14.3.1 PURCHASER's/CONSULTANT's representatives shall have the right to inspect SELLER's premises with a view to evaluating the actual progress of work on the basis of Seller's time schedule documentation.

14.3.2 Irrespective of such inspection, SELLER shall advise CONSULTANT, with copy to PURCHASER, at the earliest possible date of any anticipated delay in the progress

14.4 Notwithstanding the above, in case progress on the execution of contract at various stages is not as per phased time schedule and is not satisfactory in the opinion of the PURCHASER/CONSULTANT which shall be conclusive or SELLER shall neglect to execute the CONTRACT with due diligence and expedition or shall contravene the provisions of the CONTRACT, PURCHASER/CONSULTANT may give notice of the same in writing to the SELLER calling upon him to make good the failure, neglect or contravention complained of. Should SELLER fail to comply with such notice within the period considered reasonable by PURCHASER/CONSULTANT, the PURCHASER/ CONSULTANT shall have the option and be at liberty to take the CONTRACT wholly or in part out of the SELLER's hand and make alternative arrangements to obtain the requirements and completion of CONTRACT at the SELLER's risk and cost and recover from the SELLER, all extra cost incurred by the PURCHASER on this account. In such event PURCHASER/ CONSULTANT shall not be responsible for any loss that the SELLER may incur and SELLER shall not be entitled to any gain. PURCHASER/CONSULTANT shall, in addition, have the right to encash Performance Guarantee in full or part

## 15 Delivery & Documents

15.1 Delivery of the GOODS shall be made by the SELLER in accordance with terms specified in the CONTRACT, and the goods shall remain at the risk of the SELLER until delivery has been completed.

15.2 Delivery shall be deemed to have been made :

a) In the case of FOB, CFR & CIF Contracts, when the Goods have been put on board the ship, at the specified port of loading and a

clean Bill of Lading is obtained. The date of Bill of Lading shall be considered as the delivery date.

- b) In case of FOT dispatch point contract (For Indian bidder), on evidence that the goods have been loaded on the carrier and a negotiable copy of the GOODS receipt obtained. The date of LR/GR shall be considered as the date of delivery.
- c) In case of FOT site (for Indian bidders) on receipt of goods by PURCHASER/Consultant at the designated site(s).

15.3 The delivery terms are binding and essential and consequently, no delay is allowed without the written approval of PURCHASER/CONSULTANT. Any request concerning delay will be void unless accepted by PURCHASER/CONSULTANT through a modification to the CONTRACT.

15.4 Delivery time shall include time for submission of drawings for approval, incorporation of comments, if any, and final approval of drawings by PURCHASER/ CONSULTANT.

15.5 In the event of delay in delivery, Price Reduction Schedule as stipulated in Article – 26 shall apply.

15.6 The documentation, in English Language, shall be delivered in due time, in proper form and in the required number of copies as specified in the contract.

15.7 The additional copies of final drawings and instructions will be included in the package of goods, properly enveloped and protected.

15.8 The SELLER should comply with the Packing, Marking and Shipping Documentation Specifications enclosed.

## 16. Transit Risk Insurance

16.1 All goods supplied under the contract shall be fully insured in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery.

16.2 Where delivery is on FOB or CFR basis, marine insurance shall be the responsibility of the bidder. Insurance Requirements : Indigenous Bidders : Transit risk insurance from F.O.T. dispatch point onwards shall be arranged and borne by bidder. The SELLER shall ensure that in effecting dispatch of

materials, the primary responsibility of the carriers for safe movement is always retained so that the PURCHASER's interests are fully safeguarded and are in no way jeopardized. The Seller shall furnish the cost of materials against each equipment.

16.3 *[The name and address-as mentioned under SCC]*

## 17. Transportation

17.1 Where the SELLER is required under the CONTRACT to deliver the GOODS FOB, transport of the GOODS until delivery, that is, up to and including the point of putting the GOODS on board the export conveyance at the specified port of loading, shall be arranged and paid for by the SELLER and the cost thereof shall be included in the Contract price.

17.2 Where the SELLER is required under the CONTRACT to deliver the GOODS CFR or CIF, transport of the Goods to the port of discharge or such other point in the country of destination as shall be specified in the CONTRACT shall be arranged and paid for by the SELLER and the cost thereof shall be included in the Contract price.

## 18. Incidental Services

18.1 The Seller may be required to provide any or all of the following services:

18.1.1 Performance or supervision of onsite assembly and/or start-up of the supplied Goods:

18.1.2 Furnishing tools required for assembly and/or maintenance of the supplied Goods:

18.1.3 Performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Seller of any warranty/guarantee obligations under the Contract.

18.1.4 Training of the Purchaser's personnel at the Seller's plant and/or at Site, in assembly, start-up operation, maintenance and/or repair of the supplied Goods at no extra cost. However, Purchaser will bear boarding, lodging & personal expenses of Trainees.

18.2 Prices charged by the Seller for the preceding incidental services, shall not exceed the prevailing rates charged to other parties by the Seller for similar services.

18.3 When required, Seller shall depute necessary personnel for supervision and/or erection of the Equipment at site for duration to be specified by Purchaser on mutually agreed terms. Seller's personnel shall be available at

Site within seven days for emergency action and twenty- one days for medium and long-term assistance, from the date of notice given by Purchaser.

18.4 The cost of incidental services shall not be included in the quoted prices. The cost of applicable incidental services should be shown separately in the price schedules

**19. Spare Parts, Maintenance Tools, Lubricants**

19.1 Seller may be required to provide any or all of the following materials and notification pertaining to spare parts manufactured or distributed by the Seller.

19.1.1 Such spare parts as the Purchaser may opt to purchase from the Seller, provided that his option shall not relieve the Seller of any warranty obligations under the Contract, and

19.1.2 In the event of termination of production of the spare parts:

i) Advance notification to the Purchaser of the pending termination, in sufficient time to permit the following such termination, furnishing at no cost to the Purchaser, the blue prints, drawings and specifications of the spare parts, if any when requested.

19.2 Seller shall supply item wise list with value of each item of spare parts and maintenance tools requirements Purchaser to procure needed requirements, and along with full details of manufacturers/vendors for such spares/maintenance tools for :

19.2.1 The construction, execution and commissioning.

19.2.2 Two years operation and maintenance.

19.3 Spare parts shall be new and of first class quality as per engineering standards/ codes, free of any defects (even concealed), deficiency in design, materials and workmanship and also shall be completely interchangeable with the corresponding parts.

19.4 Type and sizes of bearings shall be clearly indicated.

19.5 Spare parts shall be packed for long storage under tropical climatic conditions in suitable cases, clearly marked as to intended purpose.

19.6 A list of special tools and gauges required for normal maintenance and special handling and lifting appliances, if any, for the Goods shall be submitted to Purchaser.

19.7 Bidders should note that if they do not

comply with Clause 19.2 above, their quotation may be rejected.

19.8 Lubricants

19.8.1 Whenever lubricants are required, Seller shall indicate the quantity of lubricants required for the first filling, the frequency of changing, the quantity of lubricants required for the one year's continuous operation and the types of recommended lubricants indicating the commercial name (trade-mark), quality and grade.

19.8.2 If Seller is unable to recommend specific oil, basic recommended characteristics of the lubricants shall be given.

19.8.3 Seller shall indicate various equivalent lubricants available in India.

## 20. Guarantee

20.1 All Goods or Materials shall be supplied strictly in accordance with the specifications, drawings, data sheets, other attachments and conditions stated in the Contract. No deviation from such specifications or alterations or of these conditions shall be made without PURCHASER'S/ CONSULTANT'S agreement in writing which must be obtained before any work against the order is commenced. All materials supplied by the SELLER pursuant to the Contract (irrespective of whether engineering, design data or other information has been furnished, reviewed or approved by PURCHASER/CONSULTANT) are guaranteed to be of the best quality of their respective kinds (unless otherwise specifically authorised in writing by PURCHASER/CONSULTANT) and shall be free from faulty design, workmanship and materials, and to be of sufficient size and capacity and of proper materials so as to fulfil in all respects all operating conditions, if any, specified in the Contract. If any trouble or defect, originating with the design, material, workmanship or operating characteristics of any materials, arises at any time prior to twelve(12) months from the date of the first commercial operation of the Plant for which the materials supplied under the Contract form a part thereof, or twenty four (24) months from the date of last shipment whichever period shall first expire, and the SELLER is notified thereof, SELLER shall, at his own expense and as promptly as possible, make such alterations, repairs and replacements as may necessary to permit the materials to function in accordance with the specifications and to fulfil the foregoing guarantees.

PURCHASER/CONSULTANT may, at his option, remove such defective materials, at SELLER'S expense in which event SELLER shall, without cost to PURCHASER/CONSULTANT and as promptly as possible, furnish and install proper materials. Repaired or replaced materials shall be similarly guaranteed by the SELLER for a period of no less than twelve (12) months from the date of replacement/repair.

In the event that the materials supplied do not meet the specifications and/or not in accordance with the drawings data sheets or the terms of the Contract and rectification is required at site, PURCHASER/ CONSULTANT shall notify the SELLER giving full details of differences. The SELLER shall attend the site within seven (7) days of receipt of such notice to meet and agree with representatives of PURCHASER/ CONSULTANT, the action required to correct the deficiency. Should the SELLER fail to attend meeting at Site within the time specified above, PURCHASER/ CONSULTANT shall immediately rectify the work/ materials and SELLER shall reimburse PURCHASER all costs and expenses incurred in connection with such trouble or defect.

## 20.2 PERFORMANCE GUARANTEE OF EQUIPMENT

- 20.2.1 SELLER shall guarantee that the performance of the EQUIPMENT supplied under the CONTRACT shall be strictly in conformity with the specifications and shall perform the duties specified under the CONTRACT.
- 20.2.2 If the SELLER fails to prove the guaranteed performance of the EQUIPMENT set forth in the specification, the SELLER shall investigate the causes and carry out necessary rectifications/modifications to achieve the guaranteed performance. In case the SELLER fails to do so within a reasonable period, the SELLER shall replace the EQUIPMENT and prove guaranteed performance of the new equipment without any extra cost to PURCHASER.
- 20.2.3 If the SELLER fails to prove the guarantee within a reasonable period, PURCHASER/CONSULTANT shall have the option to take over the EQUIPMENT and rectify, if possible, the EQUIPMENT to fulfil the guarantees and/or to make necessary additions to make up the deficiency at Seller's risk and cost. All expenditure incurred by the PURCHASER

## 21. Terms of Payment

- 21.1 The method of payment to be made to the SELLER under this CONTRACT shall be specified in the Special Conditions of Contract.
- 21.2 The type(s) of payment to be made to the SELLER under this CONTRACT shall be specified in the Special Conditions of Contract.
- 21.3 The SELLER's request(s) for payment shall be made to the PURCHASER in writing accompanied by an invoice describing, as appropriate, the Goods delivered and services performed, and by shipping documents submitted, and upon fulfillment of other obligations stipulated in the Contract
- 21.4 Payment will be made in the currency or currencies in which the Contract Price has been stated in the SELLER's bid, as well as in other currencies in which the SELLER had indicated in his bid that he intends to incur expenditure in the performance of the Contract and wishes to be paid. If the requirements are stated as a percentage of the bid price along with exchange rates used in such calculations these exchange rates shall be maintained

### General Notes:

- i) For dispatches on FOT dispatch point (in India) basis, the payment shall be through PURCHASER's bank. Payment through Bank, wherever applicable, shall be released as per normal banking procedures.
- ii) Payment shall be released within 30 days after receipt of relevant documents complete in all respects.
- iii) Unless otherwise specifically stated in bid document, all payments shall be made in the currency quoted.
- iv) No interest charges for delay in payments, if any, shall be payable by PURCHASER.
- v) In case of Indian bidder, variation, if any, on account of customs duty on their built-in-import content, as per terms of bid document, shall be claimed separately by bidder after receipt of goods at site (s). However, any price benefits to the PURCHASER, on account of such variation as per terms specified in the bid document, shall be passed on to the PURCHASER along with invoicing itself

## 22. Prices

- 22.1 Prices charged by the SELLER for Goods delivered and services performed under the CONTRACT shall not, with the exception of

### **23. Subletting & Assignment**

any price adjustments authorized by the Contract vary from the prices quoted by the SELLER in his bid

### **24. Time As Essence of Contract**

23.1 The contractor shall not without previous consent in writing of the PURCHASER authority, sublet, transfer or assign the contract or any part thereof or interest therein or benefit or advantage thereof in any manner whatsoever. Provided, nevertheless, that any such consent shall not relieve the contractor from any obligation, duty or responsibility under the contract

24.1 The time and date of delivery/completion of the GOODS/SERVICES as stipulated in the Contract shall be deemed to be the essence of the Contract.

### **25. Delays In The Seller's Performance**

25.1 If the specified delivery schedule is not adhered to or the progress of manufacture or supply of the items is not satisfactory or is not in accordance with the progress schedule the PURCHASER has the right to:

- i) hire for period of delay from elsewhere goods which in PURCHASER's opinion will meet the same purpose as the goods which are delayed and SELLER shall be liable without limitation for the hire charges; or
- ii) cancel the CONTRACT in whole or in part without liability for cancellation charges. In that event, PURCHASER may procure from elsewhere goods which PURCHASER's opinion would meet the same purpose as the goods for which CONTRACT is cancelled and SELLER shall be liable without limitations for the difference between the cost of such substitution and the price set forth in the CONTRACT for the goods involved; or
- iii) hire the substitute goods vide (i) above and if the ordered goods continue to remain undelivered thereafter, cancel the order in part or in full vide (ii) above.

25.1 Any inexcusable delay by the SELLER or his sub- contractor shall render the SELLER liable, without prejudice to any other terms of the Contract, to any or all of the following sanctions: forfeiture of Contract performance guarantee, imposition of price reduction for delay in delivery and termination of the contract for default.

### **26. Price Reduction Schedule For Delayed Delivery**

26.1 Subject to Article -29, if the SELLER fails to deliver any or all of the GOODS or performance the services within the time period (s) specified in the CONTRACT, the PURCHASER shall, without prejudice to his other remedies under the CONTRACT, deduct from the CONTRACT PRICE, a sum calculated on the basis of the CONTRACT PRICE, including subsequent modifications.

26.1.1 Deductions shall apply as per following formula: In case of delay in delivery of equipment/materials or delay in completion, total contract price shall be reduced by  $\frac{1}{2}$  % (half percent) of the total contract price per complete week of delay or part thereof subject to a maximum of 5% (five percent) of the total contract price.

26.2 In case of delay in delivery on the part of Seller, the invoice/document value shall be reduced proportionately for the delay and payment shall be released accordingly.

26.3 In the event the invoice value is not reduced proportionately for the delay, the PURCHASER may deduct the amount so payable by SELLER, from any amount falling due to the SELLER or by recovery against the Performance Guarantee. Both seller and PURCHASER agree that the above percentages of price reduction are genuine pre estimates of the loss/damage which the PURCHASER would have suffered on account of delay/breach on the part of the SELLER and the said amount will be payable on demand without there being any proof of the actual loss/or damage caused by such breach/delay. A decision of the PURCHASER in the matter of applicability of price reduction shall be final and binding

## 27. Rejections, Removal of Rejected Equipment & Replacement

27.1 Preliminary inspection at SELLER's works by INSPECTOR shall not prejudice PURCHASER's/ CONSULTANT's claim for rejection of the EQUIPMENT on final inspection at SITE or claims under warranty provisions.

27.2 If the EQUIPMENTS are not of specification or fail to perform specified duties or are otherwise not satisfactory the PURCHASER/CONSULTANT shall be entitled to reject the EQUIPMENT/MATERIAL or part thereof and ask free replacement within reasonable time failing which obtain his requirements from elsewhere at

SELLER's cost and risk.

- 27.3 Nothing in this clause shall be deemed to deprive the PURCHASER AND/OR AFFECT ANY rights under the Contract which it may otherwise have in respect of such defects or deficiencies or in any way relieve the SELLER of his obligations under the Contract.
- 27.4 EQUIPMENT rejected by the PURCHASER/ CONSULTANT shall be removed by the Seller at his cost within 14 days of notice after repaying the amounts received against the SUPPLY. The PURCHASER shall in no way be responsible for any deterioration or damage to the EQUIPMENT under any circumstances whatsoever.
- 27.5 In case of rejection of EQUIPMENT, PURCHASER shall have the right to recover the amounts, if any, from any of CONTRACTOR'S invoices pending with.

## 28 Termination of Contract

- 28.1 Termination for Default
  - 28.1.1 The PURCHASER may, without prejudice to any other remedy for breach of CONTRACT, by written notice of default sent to the SELLER, terminate the CONTRACT in whole or in part
    - A) If the SELLER fails to deliver any or all of the GOODS within the time period(s) specified in the CONTRACT; or
    - B) If the SELLER fails to perform any other obligation(s) under the CONTRACT, and
    - C) If the SELLER, in either of the above circumstances, does not cure his failure within a period of 30 days (or such longer period as the PURCHASER may authorize in writing) after receipt of the default notice from the PURCHASER.
  - 28.1.2 In the event the PURCHASER terminates the CONTRACT in whole or in part, pursuant to Article 28.1.1, the PURCHASER may procure, upon such terms and in such manner as it deems appropriate, goods similar to those undelivered and the SELLER shall be liable to the PURCHASER for any excess costs for such similar GOODS. However, the SELLER shall continue performance of the CONTRACT to the extent not terminated.
  - 28.1.3 In case of termination of CONTRACT herein set forth (under clause 28) except under conditions of Force Majeure and termination after expiry of

contract, the VENDOR shall be put under holiday [i.e. neither any enquiry will be issued to the party by RSGL Against any type of tender nor their offer will be considered by RSGL against any ongoing tender (s) where contract between RSGL and that particular VENDOR (as a bidder) has not been finalized] for three years from the date of termination by RSGL to such VENDOR.

#### 28.2 Termination for Insolvency

28.2.1 The PURCHASER, may at any time, terminate the CONTRACT by giving written notice to the SELLER, without compensation to the SELLER, if the SELLER becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the PURCHASER.

#### 28.3 Termination for Convenience

28.3.1 The PURCHASER may, by written notice sent to the SELLER, terminate the CONTRACT, in whole or part, at any time for his convenience. The notice of termination shall specify that termination is for the PURCHASER's convenience, the extent to which performance of work under the CONTRACT is terminated and the date upon which such termination becomes effective.

28.3.2 The GOODS that are complete and ready for shipment within 30 days after the SELLER's receipt of notice of termination shall be purchased by the PURCHASER at the CONTRACT terms and prices. For the remaining GOODS, the PURCHASER may opt:

- a) to have any portion completed and delivered at the CONTRACT terms and prices, and /or
- b) to cancel the remainder and pay to the SELLER an agreed amount for partially completed GOODS and for materials and parts previously procured by the SELLER.

### 29. Force Majeure

29.1 Shall mean and be limited to the following:

- a) War/hostilities
- b) Riot or Civil commotion
- c) Earthquake, flood, tempest, lightening or other natural physical disaster.
- d) Restrictions imposed by the Government or other Statutory bodies which prevents or delays the execution of the Contract by the SELLER.

The SELLER shall advise PURCHASER/ CONSULTANT by a registered letter duly

certified by the local Chamber of Commerce or statutory authorities, the beginning and end of the above causes of delay within seven (7) days of the occurrence and cessation of such Force Majeure Conditions. In the event of delay lasting over one month, if arising out of causes of Force Majeure, PURCHASER/CONSULTANT reserves the right to cancel the Contract and the provisions governing termination stated under Article 28.0 shall apply.

For delays arising out of Force Majeure, the SELLER shall not claim extension in completion date for a period exceeding the period of delay attributable to the causes of Force Majeure and neither PURCHASER/CONSULTANT nor SELLER shall be liable to pay extra costs provided it is mutually established that Force Majeure Conditions did actually exist.

SELLER shall categorically specify the extent of Force Majeure Conditions prevalent in their works at the time of submitting their bid and whether the same have been taken into consideration or not in their quotations. In the event of any force majeure cause, the SELLER or the PURCHASER shall not be liable for delays in performing their obligations under this order and the delivery dates will be extended to the SELLER without being subject to price reduction for delayed deliveries, as stated elsewhere within seven (7) days of the occurrence and cessation of such Force Majeure Conditions. In the event of delay lasting over one month, if arising out of causes of Force Majeure, PURCHASER/CONSULTANT reserves the right to cancel the Contract and the provisions governing termination stated under Article 28.0 shall apply.

For delays arising out of Force Majeure, the SELLER shall not claim extension in completion date for a period exceeding the period of delay attributable to the causes of Force Majeure and neither PURCHASER/CONSULTANT nor SELLER shall be liable to pay extra costs provided it is mutually established that Force Majeure Conditions did actually exist.

SELLER shall categorically specify the extent of Force Majeure Conditions prevalent in their works at the time of submitting their bid and whether the same have been taken into consideration or not in their quotations. In the event of any force majeure cause, the SELLER or the PURCHASER shall not be liable for delays in performing their obligations under this order and the delivery dates will be

### 30. Resolution of Disputes/ Arbitration

30.1 The PURCHASER and the SELLER shall make every effort to resolve amicably by direct informal negotiations any disagreement or dispute arising between them under or in connection with the contract.

30.2 If, after thirty days from the commencement of such informal negotiations, the PURCHASER and the SELLER have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred for resolution to the formal mechanism as specified hereunder.

30.3 **Legal Construction**  
The Contract shall be, in all respects be construed and operated as an Indian Contract and in accordance with Indian Laws as in force for the time being and is subject to and referred to the Court of Law situated in Jaipur

30.4 **Arbitration**  
All disputes, controversies, or claims between the parties (except in matters where the decision of the Engineer-in-Charge is deemed to be final and binding) which cannot be mutually resolved within a reasonable time shall be referred to Arbitration by a sole arbitrator. The PURCHASER (RSGL) shall suggest a panel of three independent and distinguished persons to the Seller to select any one among them to act as the sole Arbitrator.  
In the event of failure of the Seller to select the Sole Arbitrator within 30 days from the receipt of the communication suggesting the panel of arbitrators, the right of selection of Sole Arbitrator by the other party shall stand forfeited and the PURCHASER shall have discretion to proceed with the appointment of the Sole Arbitrator. The decision of the PURCHASER on the appointment of Sole Arbitrator shall be final and binding on the parties.  
The award of the Sole Arbitrator shall be final and binding on the parties and unless directed/awarded otherwise by the Sole Arbitrator, the cost of arbitration proceedings shall be shared equally by the parties. The arbitration proceeding shall be in English language and the venue shall be at Jaipur

extended to the SELLER without being subject to price reduction for delayed deliveries, as stated elsewhere

India.

Subject to the above, the provisions of (Indian) Arbitration & Conciliation Act, 1996 and the rules framed thereunder shall be applicable. All matters relating to this contract are subject to the exclusive jurisdiction of the Courts situated in Jaipur (Rajasthan)

Seller may please note that the Arbitration & Conciliation Act 1996 was enacted by the Indian Parliament and is based on United nations Commission on International Trade Law (UNCITRAL model law), which were prepared after extensive consultation with Arbitral Institutions and centers of International Commercial Arbitration. The United Nations General Assembly vide resolution 31/98 adopted the UNCITRAL Arbitration rules on 15 December 1996

The WORK under the CONTRACT shall, however, continue during the Arbitration proceedings and no payment due or payable to the Seller shall be withheld on account of such proceedings

### **31. Governing Language**

31.1 The Contract shall be written in English language as specified by the PURCHASER/CONSULTANT in the Instruction to Bidders. All literature, correspondence and other documents pertaining to the Contract which are exchanged by the parties shall be written in English language. Printed literature in other language shall only be considered, if it is accompanied by an English translation. For the purposes of interpretation, English translation shall govern and be binding on all parties.

### **32. Notices**

- 32.1 Any notice given by one party to the other pursuant to the Contract shall be sent in writing or by telegram or fax, telex/cable confirmed in writing
- 32.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later

### **33 Taxes & Duties**

- 33.1 A foreign Seller shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the PURCHASER's country
- 33.2 A domestic Seller shall be entirely responsible for all taxes, duties, license fees etc. incurred until the delivery of the contracted goods to the PURCHASER. However, Sales Tax and Excise duty on finished products shall be reimbursed by PURCHASER.

33.3 Customs duty payable in India for imported goods ordered by PURCHASER on foreign Seller shall be borne and paid by PURCHASER

33.4 Any income tax payable in respect of supervisory services rendered by foreign Seller under the Contract shall be as per the Indian Income Tax Act and shall be borne by SELLER. It is up to the bidder/seller to ascertain the amount of these taxes and to include them in his bid price

#### 34. Books & Records

34.1 SELLER shall maintain adequate books and records in connection with Contract and shall make them available for inspection and audit by PURCHASERCONSULTANT or their authorized agents or representatives during the terms of Contract until expiry of the performance guarantee. Fixed price (lumpsum or unit price) Contract will not be subject to audit as to cost except for cost reimbursable items, such as escalation and termination claims, transportation and comparable requirements.

#### 35. Permits & Certificates

35.1 SELLER shall procure, at his expense, all necessary permits, certificates and licenses required by virtue of all applicable laws, regulations, ordinances and other rules in effect at the place where any of the work is to be performed, and SELLER further agrees to hold PURCHASER and/or CONSULTANT harmless from liability or penalty which might be imposed by reason of any asserted or established violation of such laws, regulations, ordinances or other rules. PURCHASER will provide necessary permits for SELLER's personnel to undertake any work in India in connection with Contract.

#### 36. General

36.1 In the event that terms and conditions stipulated in the General Conditions of Contract should deviate from terms and conditions stipulated in the Contract, the latter shall prevail.

36.2 Losses due to non-compliance of Instructions Losses or damages occurring to the PURCHASER owing to the SELLER's failure to adhere to any of the instructions given by the PURCHASER/CONSULTANT in connection with the contract execution shall be recoverable from the SELLER.

36.3 Recovery of sums due  
All costs, damages or expenses which the PURCHASER/CONSULTANT may have paid, for which under the CONTRACT SELLER is liable, may be recovered by the PURCHASER(he is hereby irrevocably

authorized to do so) from any money due to or becoming due to the SELLER under this Contract or other Contracts and/or may be recovered by action at law or otherwise. If the same due to the SELLER be not sufficient to recover the recoverable amount, the SELLER shall pay to the PURCHASER, on demand, the balance amount.

36.4 Payments, etc. not to affect rights of the PURCHASER No sum paid on account by the PURCHASER nor any extension of the date for completion granted by the PURCHASER/CONSULTANT shall affect or prejudice the rights of the PURCHASER against the SELLER or relieve the SELLER of his obligation for the due fulfillment of the CONTRACT.

36.4 Cut-off Dates  
No claims or correspondence on this Contract shall be entertained by the PURCHASER/Consultant after 90 days after expiry of the performance guarantee (from the date of final extension, if any).

36.6 Paragraph heading  
The paragraph heading in these conditions shall not affect the construction thereof

**37. Import License**

37.1 No import license is required for the imports covered under this document.

**38. Fall Clause**

38.1 The price charged for the materials supplied under the order by the supplier shall in no event exceed the lowest price at which the supplier or his agent/principal/dealer, as the case may be, sells the materials of identical description to any Persons/Organizations including the Purchaser or any Department of the Central Govt. or any Department of a State Govt. or any Statutory Undertaking of the Central or State Govt. as the case may be, during the currency of the order

38.2 If at any time during the raid period, the supplier or his agent/principal/dealer, as the case may be, reduces the sale price, sells or offers to sell such materials to any persons/organizations including the Purchaser or any Deptt. Of Central Govt. or State Govt. as the case may be, at a price lower than the price chargeable under the order, he shall forthwith notify such reduction or sale or offer of sale to the Purchase Authority who has issued this order and the price payable under the order for the materials supplied after the

date of coming into force of such reduction or sale or offer of sale shall stand correspondingly reduced.

The above stipulation will, however, not apply to:

- a) Exports by the Contractor/Supplier or
- b) Sale of goods as original equipment at prices lower than the prices charged for normal replacement
- c) Sale of goods such as drugs which have expiry dates.

38.3 The supplier shall furnish the following certificate to the concerned Paying Authority along with each bill for payment for supplies made against this order:-

"I/We certify that there has been no reduction in sale price of the items/goods/materials of description identical to those supplied to the RSGL under the order herein and such items/goods/materials have not been offered/sold by me/us to any person/organizations including the Purchaser or any Deptt. of Central Govt. or any Deptt. of State Govt. or any Statutory Undertaking of the Central or State Govt. as the case may be up to the date of bill/during the currency of the order whichever is later, at a price lower than the price charged to the RSGL under the order". Such a certificate shall be obtained, except for quantity of items/goods/materials categories under sub-clause (a), (b) & (c) of sub-para 38.2 above, of which details shall be furnished by the supplier

#### **39. Publicity & Advertising**

39.1 Seller shall not without the written permission of PURCHASER/CONSULTANT make a reference to PURCHASER/CONSULTANT or any Company affiliated with PURCHASER/CONSULTANT or to the destination or the description of goods or services supplied under the contract in any publication, publicity or advertising media

#### **40. Repeat Order**

40.1 PURCHASER reserves the right, within 6 months of order to place repeat order up to 50% of the total order value without any change in unit price or other terms and conditions.

#### **41. Limitation of Liability**

41.1 Notwithstanding anything contrary contained herein, the aggregate total liability of Seller under the Agreement or otherwise shall be limited to 100% of Agreement / Order price. However, neither party shall be liable to the other party for any indirect and consequential damages, loss of profits or loss of production.

## **SECTION – V**

## **SPECIAL CONDITIONS OF CONTRACT**

### **BID DOCUMENT FOR SUPPLY OF 400 SCMH BOOSTER CNG COMPRESSOR**

## SPECIAL CONDITIONS OF CONTRACT

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## SPECIAL CONDITIONS OF CONTRACT

### 1.0 GENERAL

The following article shall supplement the General conditions of Contract. Where any portion of the General Conditions of Contract and Instruction to Bidders is repugnant to or at variance with any provisions of the Special conditions of contract, then unless a different intention appears, the provision (s) of the Special Conditions of Contract shall be deemed to override the provision (s) of General Conditions of Contract to bidders, only to the extent that such repugnancy of variations in the Special Conditions of Contract as are not possible reconciled with the provisions of General Condition of Contract to Bidders. Other terms and condition will be applicable as specified elsewhere as “General Condition of Contract” in the tender document.

### 2.0 SPECIAL TERMS OF THE CONTRACT

**2.1** Overall evaluation shall be carried out on total quoted prices including applicable (**GST(CGST & SGST/UTGST or IGST)**).

**2.1.1** The prices shall remain firm and fixed till complete execution of intimations/ release orders/ purchase orders placed and will not be subject to any variation except for statutory variations as per provisions of the tender document.

**2.1.2** RSGL shall issue intimation letter / release order / purchase order for the compressor as and when required during the contract period.

When intimation letter / release order / purchase order is issued before expiry of contract period, the rates shall remain valid up to the execution of that particular intimation letter / release order / purchase order and shall not subject to variation on any account except statutory variations.

**2.1.3** The Compressors being purchased shall be delivered at RSGL stores / sites as per project requirements.

**2.2** Bidder shall furnish dispatch particulars of the consignment immediately to RSGL & PMC and Insurance Company after dispatch of the material.

**2.3** **SCOPE OF WORK & SCOPE OF SUPPLY** The detailed scope of work shall be as specified in Technical Volume II of II & tender / addendum / corrigendum document and in SOR

**2.4** The bidder shall indicate bid prices on the appropriate formats for “Schedule of Rates (SOR) / Price Schedule” enclosed as part of Bidding Document. If quoted in separate typed sheets and any variation in item description, unit or quantity is noticed; the bid is liable to be rejected.

**2.4.1 Evaluation Methodology:**  
Please refer section – II of Bid Document

- 2.5 Bidder must quote for full quantity of SOR items.
- 2.6 The bidder's break-up of price components in accordance with above sub-clauses will be solely for the purpose of facilitating the comparison of bids and will not in any way, limit the Purchaser's right to contract on different terms.
- 2.7 The quoted prices shall be inclusive of all Inspection / testing charges as called for in scope of work and specifications attached elsewhere. Bidder to ensure that no charges shall be quoted extra / outside the unit rate. All the testing / inspection charges as applicable shall be included in the item-wise unit price.
- 2.8 Inspection shall be done by RSGL / PMC for which no extra charges shall be payable. All personal expenses including boarding, lodging, tickets etc. of inspectors shall be borne by the purchaser.

### **3 TERMS OF PAYMENT**

#### **3.1 SUPPLY:**

- 3.1.1 85% of supply value as applicable will be paid progressively by Owner within 30 days against receipt of material/ equipment at site & submission of the following documents:-
  - i. Invoice in triplicate (As per GST Act/ Rules)
  - ii. Inspection Certificate cum Release note issued by inspection agency
  - iii. GR/ LR
  - iv. Packing List
  - v. Insurance cover note covering transit insurance
  - vi. A certificate from manufacturer that all items/ equipment under supply including its component or raw material used with manufacturing are new and conform to the tender requirement. In case manufacturer is not the contractor this certificate will duly be endorsed by the contractor owning overall responsibility.
  - vii. Copy of Performance Bank Guarantee(s) of appropriate value (as per order) as already submitted by supplier.
  - viii. In case of delay in receipt of material at site the invoice value shall be reduced to take care of stipulation of PRS clause of the contract
- 3.1.2 Balance 10% payment: Progressively on completion of Installation, erection & commissioning of CNG Online Compressor unit and against submission of invoice and acceptance by owner. However, if, erection is not started within 90 days after supply due to non-availability of site/gas, payment against erection and commissioning shall be released against receipt of bank guarantee of the said amount to initially remain valid for a period of 1 year after completion of 90 days; i.e.; 15 months from the date of FOT site (actual) & shall be extended further, if required.
- 3.1.3 5% payment: Progressively on Testing and completion of Field Performance Test of

CNG Compressor unit, all other works & final acceptance by the owner and submission following additional document: -

- Acceptance certificate
- Clearance from ESIC, PF and labour authority, if applicable
- Work completion certificate
- GST assessment certificate, If applicable
- No claim certificate
- In case of delay in erection and commissioning, the invoice value shall be reduced to take care of PRS clause.

3.1.4 Payment of O&M services shall be paid on monthly basis after deducting penalty, if any during the month. Monthly bill to be submitted to Engineer-in-Charge for certifying along with all necessary statutory documents, log book, maintenance report, worker's payment sheet, fuel consumption of engine, compressor loss etc.

### 3.2 DEDUCTION AT SOURCE:

3.2.1 Purchaser will release the payment to the Seller after effecting deductions as per applicable law in force.

3.2.2 Purchaser will release payments to the Contractor / Supplier after offsetting all dues to the Purchaser payable by the Contractor / Supplier under the Contract.

### 3.3 PAYING AUTHORITY

CFO  
Rajasthan State Gas Ltd.  
Khaniz Bhawan, Tilak Marg  
C-Scheme Jaipur-302005

## 4 COMPLETION PERIOD (DELIVERY SCHEDULE)

- 1) Design, Engineering, Manufacture, Inspection, Factory Testing & Supply Delivery shall be made within 1 year time from the date of LOA in two lots upon receiving instruction/intimation by EIC. for each lot. The delivery period shall be 08 weeks from instruction/intimation by EIC and not completing the delivery with 08 weeks from date of instruction/intimation by EIC will be subjected to Price Reduction Schedule (PRS). Prices to be valid till 6 months beyond the Delivery Completion date. (i.e. 1 year & 6 months time from date of LOA )
- 2) Delivery of goods shall be based on FOT site basis from the date of Fax of acceptance. Date of receipt of materials at site shall be considered as the completion of delivery.
- 3) The materials to be supplied, in the scope of the bidder, shall be shipped as per the following schedule:
- 4) For each individual WO, delivery / completion shall be counted from the date of Letter of Acceptance (LOA) issued by RSGL.
  - i. Design, Engineering, Manufacture, Inspection, Factory Testing & Supply Delivery shall be made within 1 year time from the date of LOA in two lots upon receiving instruction/intimation by EIC. for each lot. The delivery period shall be 08 weeks from instruction/intimation by EIC.
  - ii. Installation, Testing and Commissioning within 2 weeks from date of issuance of letter for readiness of site

- 5) Failure to meet delivery schedule will be subjected to Price Reduction Schedule.
- 6) Delivery period as above shall be essence of agreement and no variation shall be permitted, except with prior authorisation in writing by RSGL.

## 5 PRICE REDUCTION SCHEDULE :

- 5.1 If the Bidder fails to deliver any or all of materials or performance of the work and service within the time period (s) specified in the Order/ Contract, RSGL shall without prejudice to any other remedy(ies) under the order/ contract, reduce a sum calculated on the under mentioned basis.

Price Reduction will be calculated as under.

Price Reduction will be applicable @  $\frac{1}{2}\%$  of the total order/ contract value per week of delay or part thereof in supply/ completion of work subject to a maximum (ceiling) of 5% of total order/ contract value.

In a supply contract, the portion of supply completed in all respect which can be used for commercial operation shall not be considered for applying PRS, if delivered within contractual delivery period. The remaining supplies which are completed beyond the contractual delivery shall attract price reduction schedule @ $\frac{1}{2}\%$  per week of delay or part thereof of the delayed delivery value maximum up to 5% of the total order value.

The PRS shall be applicable in the same way where individual release order shall be taken as independent order.”

The value referred in PRS Clause is excluding taxes and duties.

- 5.2 For penalty and Loading Criteria Please refer Section – VI, Technical Volume (Specifications, Scope Of Work And Drawings), Technical Specification For Composite CNG Dispensing Unit (CCDU)

## 6 GUARANTEE

The materials/goods supplied within the scope of this contract shall be guaranteed for a period of twelve (12) months from the date of commissioning or twenty four (24) months from the date of delivery at RSGL's store / site; whichever is earlier.

### **Contract Performance Bank Guarantee (CPBG):**

SD / CPBG @ 10% of the annualised Contract value to be submitted within 30 days of FOA/notification of award. The CPBG/ SD may be submitted in two parts:

- 6.1 For Supply, Erection, Testing, Commissioning: SD/CPBG @ 10% of Annualized Order/Contract value (excluding the value of Annual operation repair & comprehensive Maintenance) to be submitted within 30 days of FOA/notification of award. Validity of this CPBG shall be till Three months beyond completion of Defect liability period.
- 6.2 For Annual operation repair & comprehensive Maintenance: SD/CPBG @ 10% of

Annualized Order/Contract value (excluding the value of Supply, Erection, Testing, Commissioning) to be submitted before 30 days of start date. Validity of this CPBG shall be till three months beyond completion of Annual operation repair & comprehensive Maintenance period.

## 7 TESTS AND INSPECTION

- 7.1 The bidder shall carry out the various tests as enumerated in the technical specifications of this tender document and the technical documents that will be furnished to them during the performance of the work and no separate payment shall be made unless otherwise specified in schedule of rates.
- 7.2 All the tests either on the field or at outside laboratories concerning the execution of the work and supply of materials by the Bidder shall be carried out by Bidder at his own cost.
- 7.3 The work is subject to inspection at all times by the RSGL. The Bidder shall carry out all instructions given during inspection and shall ensure that the work is being carried out according to the technical specifications of this tender, the technical documents and the relevant codes of practice furnished to him during the performance of the work.
- 7.4 The Bidder shall provide for purpose of inspection, access ladders, lighting and necessary instruments at their own cost including Low Voltage (24 V) lighting equipments for inspection work. Compressed air, Nitrogen, flange/ fittings, PGs, consumables etc. for carrying out works shall be arranged by the Bidder at their own cost.
- 7.5 Any work not conforming to the execution drawings, specifications or codes shall be rejected forthwith and the Bidder shall carryout the rectifications at his own cost.
- 7.6 All results of inspection and tests will be recorded in the inspection reports, proforma of which will be approved by RSGL. These reports shall form part of the completion documents.
- 7.7 Inspection and acceptance of the supplies / work shall not relieve the Bidder from any of his responsibilities under this Contract.
- 7.8 Third Party Inspectors shall be deployed by the bidder at their own cost. Vendor to propose minimum 3 TPI agencies from which one shall be selected with RSGL's approval. TPI appointed by the bidder shall be present during stage wise inspection, Hydro-test, FAT also.
- 7.9 All inspections and tests shall be made as required by the specifications forming part of this contract. Bidder shall advise RSGL in writing at least 7 days in advance of the date of final inspection/tests (FAT). Signed copy of FAT report after carrying out internal inspection shall be submitted by the bidder along with the FAT call. Manufacturer's inspection or testing certificates for equipment and materials supplied may be considered for acceptance at the discretion of RSGL. All costs towards testing etc. shall be borne by the bidder within their quoted rates. All inspection of various items shall be carried out based on Quality Assurance Plan, which will be submitted by the Bidder and duly approved by RSGL.

## 8 STATUTORY APPROVALS

- 8.1 Bidder to submit all the documents as per tender specifications. Approval of documents submitted by the bidder shall not relieve the bidder from any of his responsibilities under this contract. Inspection and acceptance of the work by statutory authorities shall not relieve the bidder from any of his responsibilities under this contract.
- 8.2 Any changes/additions required to be made to meet the requirements of statutory

authorities, shall be carried out by the bidder, within the contract price, and to no additional cost to RSGL.

## 9 PROJECT SCHEDULING & MONITORING

The following schedules/ documents/ reports shall be prepared and submitted by the Bidder for review/ approval after the award of contract.

### (i) Overall Project Schedule

The Bidder shall submit within 1 week of Fax of Acceptance, a sufficiently detailed overall Project Schedule in the activity network form, clearly indicating the major milestones, interrelationship/ interdependence between various activities together with analysis of critical path and floats.

The network will be reviewed and approved by Engineer- in-Charge and the comments if any shall be incorporated in the network before issuing the same for implementation. The network thus finalised shall form part of the contract document and the same shall not be revised without the prior permission from Engineer-in- Charge during the entire period of contract.

### (ii) Progress Reports

(i)	<p>BIDDER shall make every effort to keep the RSGL adequately informed as to the progress of the WORK throughout the CONTRACT period.</p> <p>BIDDER shall keep the RSGL informed well in advance of the fabrication schedule so as to permit the RSGL to arrange for requisite inspection to be carried out in such a manner as to minimize interference with progress of WORK. It is imperative that close coordination be maintained with the RSGL during all phases of WORK.</p>
(ii)	<p>Once a fortnight, BIDDER shall submit a summary of the WORK accomplished during the preceding weeks in form of percentage completion of the various phases of the WORK, to the RSGL.</p>

## 10 QUALITY ASSURANCE / QUALITY CONTROL PROGRAMME

- 10.1 Bidder shall include in his offer the Quality assurances Programme containing the overall quality management and procedures which is required to be adhered to during the execution of bidder. After the award of the contract detailed quality assurance programme to be followed for the execution of contract under various divisions of work will be mutually discussed and agreed to.
- 10.2 The Bidder shall establish document and maintain an effective quality assurance system as outlines in recognised codes.
- 10.3 Quality Assurance system plans/procedures of the Bidder shall be furnished in the form of a QA manual. This document should cover details of the personnel responsible for the Quality Assurance, plans or procedures to be followed for quality control in respect of design, Engineering, Procurement, Supply, Installation, Testing and Commissioning. The

quality assurance system should indicate organizational approach for quality control and quality assurance of the fabrication activities, at all stages of work at site as well as the manufacturer's works and dispatch of materials.

**11** The RSGL/Consultant or their representative reserve the right to inspect witness, review any or all stages of work at shop/site as deemed necessary for quality assurance.**MAKE OF MATERIAL / BOUGHT OUT ITEMS**

An annexure of approved vendors for various major items is enclosed with this tender specification. The bidder shall consider such names only as indicated in the aforesaid list and clearly indicate in the bid the name as selected against these items. However, for any other item not covered in the list enclosed with this tender document, prior approval shall be obtained by the bidder for its make/ supplier's name as per Note mentioned in the list of vendors for bought out items.

**12 TRANSIT INSURANCE**

12.1 The price quoted must include transit Insurance charges transit Insurance shall be arranged and borne by the bidder. Dispatch particulars [as per Packing, Marking and Shipping Instructions shall be furnished and addressed to insurance agency immediately on dispatch. Details of insurance agency & policy Nos. shall be informed to RSGL.

**13 GENERAL INFORMATION**

i) Name & Address of the Bankers : **ICICI BANK**  
Khanij Bhawan, Tilak Marg, C-Scheme-Jaipur-302005 (Raj)

iii) Preferred mode of dispatch : Domestic: By Road

iii) GST Invoice to be raised to : OIC, RSGL,  
Respective sites (to be confirmed during placement of firm order/ later)

**14. LIEN**

Seller shall ensure that the Scope of Supply supplied under the Agreement shall be free from any claims of title/liens from any third party. In the event of such claims by any party, Seller shall at his own cost defend, indemnify and hold harmless Purchaser or its authorized representative from such disputes of title/liens, costs, consequences etc.

**15. RECOVERY OF CUSTOMS DUTY, AND GST**

In case, the statutory variation entitles the Employer to recover the amount (irrespective of Contractual Delivery) such amount will be recovered from any bill of the Contractor / Supplier, immediately on enforcement of such variation, under intimation to the Contractor / Supplier.

**16. REJECTION**

16.1 Any materials/goods covered under scope of supply, which during the process of inspection by appointed third party, at any stage of manufacture/fabrication and subsequent stages, prior to dispatch is found not conforming to the

requirements/specifications of the Purchase Requisition/Order, shall be liable for immediate rejection.

16.2 Supplier shall be responsible and liable for immediate replacement of such material with acceptable material at no extra cost or impact on the delivery schedule to EMPLOYER.

**17. LIMITATION OF LIABILITY**

Notwithstanding anything contrary contained herein, the aggregate total liability of Supplier under the Contract or otherwise shall be limited to 100% of contract value. However, neither party shall be liable to the other party for any indirect and consequential damages, loss of profits or loss of production.

**18. GOVERNING LAW**

Laws of India will govern the Agreement and Jaipur courts will have exclusive jurisdiction on all matters related to Agreement.

**19. EMPLOYER'S RIGHTS AND REMEDIES**

Without prejudice to EMPLOYER's right and remedies under Agreement, if SUPPLIER fails to commence delivery as per agreed schedule and/or in reasonable opinion of the EMPLOYER, CONTRACTOR / SUPPLIER is not in a position to makeup the delay to meet the intended purpose, the EMPLOYER may terminate the

AGREEMENT in full or part at SUPPLIER's default and may get supplies from other sources at SUPPLIER's risk and cost.

**20. ORIGIN OF GOODS**

NA

**21. SUBMISSION OF FALSE / FORGED DOCUMENT**

21.1 Bidder is required to furnish the complete and correct information/documents required for evaluation of their bids. If the information/documents forming basis of evaluation is found to be false/forged, the same shall be considered adequate ground for rejection of Bids and forfeiture of Earnest Money Deposit (Bid Security).

21.2 In case, the information/document furnished by the vendor/contractor forming basis of evaluation of his bid is found to be false/forged after the award of the contract, RSGL shall have full right to terminate the contract and get the remaining job executed at the risk & cost of such vendor/contractor without any prejudice to other rights available to RSGL under the contract such as forfeiture of CPBG/Security Deposit, withholding of payment etc.

21.3 In case this issue of submission of false document comes to the notice after execution of work, RSGL shall have full right to forfeit any amount due to the vendor/contractor along with forfeiture of CPBG/Security Deposit furnished by the vendor/contractor.

21.4 Further, such bidder/vendor/contractor shall be put on Blacklist/Holiday List of RSGL debarring them from future business with RSGL.

**22. DISPUTE RESOLUTION-** As per Clause 45 of ITB of this tender.

## **23. SETTLEMENT OF DISPUTE BETWEEN CPSEs OR CPSEs & GOVERNMENT DEPARTMENTS**

In the event of any dispute or difference relating to the interpretation and application of the provisions of the contracts, such dispute or difference shall be referred by either party for Arbitration to the sole Arbitrator in the Department of Public Enterprises to be nominated by the Secretary to the Government of India in-charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 shall not be applicable to arbitration under this clause. The award of the Arbitrator shall be binding upon the parties to the dispute, provided, however, any party aggrieved by such award may make a further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law & Justice, Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary/Additional Secretary, when so authorized by the Law Secretary, whose decision shall bind the Parties finally and conclusively. The Parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator.

## **24. TRANSPORTATION OF GOODS**

As per Section 3 of the "Carriage by Road Act 2007", no person can engage in the business of a common carrier unless granted a certificate of registration to do so and any transportation of goods through unregistered common carrier is illegal. Therefore, goods must be transported only through registered common carriers.

## **25. INCOME TAX**

RSGL's PAN No. **AAGCR7499P**

*"As per CBDT Notification No. 95/2015 dated 30.12.2015, mentioning of PAN no. is mandatory for procurement of goods / services/works/consultancy services exceeding Rs. 2 Lacs per transaction.*

*Accordingly, supplier/ contractor/ service provider/ consultant should mention their PAN no. in their invoice/ bill for any transaction exceeding Rs. 2 lakhs. As provided in the notification, in case supplier/ contractor/ service provider/ consultant do not have PAN no., they have to submit declaration in Form 60 along with invoice/ bill for each transaction.*

*Payment of supplier/ contractor / service provider/ consultant shall be processed only after fulfilment of above requirement".*

## **26. REPEAT ORDER (NOT APPLICABLE)**

PURCHASER reserves the right, within 6 months of order to place repeat order up to 50% of the total order value without any change in unit price or other terms and conditions.

## **27. PACKING, MARKING, SHIPPING AND DOCUMENTATION SPECIFICATIONS – AS PER ATTACHMENT – 1**

## **ATTACHMENT - 1**

### **1.0 General**

- 1.1** This specification forms an integral part of the relevant Purchase Order, in addition to the specifications, drawings and instructions explicitly listed in the Purchase Order.
- 1.2** Seller shall strictly comply with all applicable prescriptions in the specifications. Lack of relevant information and/or documents shall not absolve the Seller of his responsibilities and any loss arising out of non-compliance shall be to supplier's account.

### **2.0 Project/Job**

Name of Purchaser, Project/Job location and some other relevant information are as per Bid document/Annexure.

### **3.0 Packing**

- 3.1** The packing specifications incorporated herein are supplementary to the internal and external packing methods and standards as per current rules of IRCA goods tariff Part-I. All packing shall be done in such a manner so as to reduce volume as much as possible. Fragile articles should be packed with special packing materials depending on the type of materials.
- 3.2** Items shipped in bundles must be securely tied with steel wire or strapping. Steel reinforcing rods, bars, pipes, structural materials, etc. shall be bundled in uniform lengths and the weight shall be within the breaking strength of the securing wire or strapping.
- 3.3** All delicate surfaces on equipment/materials should be carefully protected and painted with protective paint/compound and wrapped to prevent rusting and damage.
- 3.4** All mechanical and electrical equipment and other heavy articles shall be securely fastened to the case bottom and shall be blocked and braced to avoid any displacement/shifting during transit.
- 3.5** Attachments and spare parts of equipment and all small pieces shall be packed separately in wooden cases with adequate protection inside the case and wherever possible should be sent along with main equipment. Each item shall be suitably tagged with identification of main equipment, item denomination and reference number of respective assembly drawing. Each item of steel structure and equipments shall be identified with two erection markings with minimum lettering height of 15 mm. Such marking will be followed by connection numbers in indelible ink/paint. A copy of the packing list shall accompany the material in each package.
- 3.6** All protrusions shall be suitably protected by providing a cover comprising of tightly bolted wooden discs on the flanges.
- 3.7** Wherever required, equipments/materials/instruments shall be enveloped in

polyethylene bags containing silicagel or similar dehydrating compound.

- 3.8** Detailed packing list in waterproof envelope shall be inserted in the package together with equipment/material. One copy of the detailed packing list shall be fastened outside the package in waterproof envelope and covered by metal cover.
- 3.9** The Seller shall be held liable for all damages or breakages to the goods due to the defective or insufficient packing as well as for corrosion due to insufficient protection.
- 3.10** Packaged equipment or material showing damage, defects or shortages resulting from improper packaging material or packing procedures or having concealed damage or shortages, at the time of unpacking shall be to the seller's account.

#### **4.0 Marking**

- 4.1** Each package shall be marked on three sides with proper paints/indelible waterproof ink as follows:

PURCHASER: RAJASTHAN STATE GAS LIMITED

PROJECT/PLANT:

DESTINATION:

Purchase Order No.....

Net Wt..... Kgs      Gross Wt ..... Kgs.

Dimensions..... X..... X..... CM.

Package No. (Sl. No. of total packages).....

Seller's Name.....

- 4.2** Additional marking such as 'HANDLE WITH CARE', 'THIS SIDE UP', 'FRAGILE' or any other additional indications for protection and safe handling shall be added depending on the type of material.
- 4.3** Specific marking with paint for 'SLINGING and 'CENTRE OF GRAVITY' should be provided for all heavy lifts weighing 5 Tons and above.
- 4.4** In case of bundles/bags or other packages, wherever marking cannot be stencilled, the same shall be embossed on metal or similar tag and wired securely at two convenient points.

#### **5.0 Shipment**

- 5.1** Dispatch of materials shall be made in accordance with the relevant terms of the Purchase Order. Any change in mode of transport shall be resorted to only after prior approval in writing. Seller shall ensure dispatch of equipments/materials immediately after they are inspected and released. All consignments shall be booked in the name of

Purchaser and not under self-basis.

### 5.3 Dispatch by Road

- (a) The Seller shall be responsible for dispatch of materials on DOOR-DELIVERY basis through a reliable Bank-Approved transport company unless otherwise the transport company is named by PURCHASER/ PMC.
- (b) The SELLER shall ensure with Transport Company the delivery of materials within a reasonable transit period. SELLER shall also obtain from transporter, particulars of Lorry Number, Transporter's Challan Number, destination of lorry (if transshipment is involved), Transporter's Agent at destination, if any, etc. and intimate same to RSGL/PMC EIC (respective Project Site).

### 5.4 Dispatch by Rail

#### 5.3.1 The SELLER shall be responsible for:

- (a) Dispatch by the shortest possible route. The Seller shall as far as possible, dispatch the materials by the fastest goods train like QTS, Super Express Goods, etc. wherever such facilities exist.
- (b) Correct classification of goods and freight charges.
- (c) Obtaining clean Railway Receipts without any qualifying remarks.  
Should there be any restriction for movement by a particular route, the Railway authorities should be requested to move goods by the next alternative route, subject to prior consent of RSGL/PMC.

#### 5.3.2 As "SMALLS"

When the materials that are ready do not make up a wagonload by weight/volume or for minimum freight payable for a wagon the dispatch should be affected as "smalls".

Seller should obtain from the Railway, the particulars of wagon in which the "Smalls" have been loaded, station at which sealed, train Number and date/time of movement and transmit the same to the Resident / Visiting Inspector, EIC (concerned Site) PMC for monitoring their movement.

#### 5.3.3 As Wagon Loads

Consignments, though of lesser weight, but otherwise constituting a "wagon load" by volume should be dispatched as "wagon load" paying the freight applicable to a minimum wagon load or at the smalls rate, whichever is advantageous, as per Rule-164 of IRCA Goods Tariff Part-I (Vol.I)

When consignments call for full wagon(s), indents should be placed with the Railway Station concerned after predetermining accurately the type and number of wagons required. In case of covered wagons, it should be ensured that the same are watertight. If a particular type of wagon is in short supply, request should be made to the Railway Authorities to supply the next suitable type of wagon. Suitable packing in the wagon

shall be done, wherever necessary, to ensure maximum safety of the material in transit.

When ODC packages are involved, the Seller shall apply to the Railway Authorities with loading sketches showing overall dimensions and the wagon proposed to be utilised sufficiently in advance for obtaining movement sanction and to establish firm transportability. Copies of all such correspondence together with loading sketches should be sent to PMC ODC packages shall be loaded, packed and lashed strictly in accordance with the Railway Regulations. Should there be any delay/difficulty in obtaining the required wagon(s), the Seller shall inform RSGL /PMC immediately giving details of the required number of wagons, type, carrying capacity, etc. and indent number so that the matter may be taken up with the Railway Authorities concerned.

After dispatch, SELLER shall obtain from the Railway Authorities, particulars of the wagon/train number, date of movement and destination junction for the particular train and furnish the same to RSGL / PMC for follow-up action on movement, as may be necessary.

After dispatch of the equipment from dispatching station, if movement of the wagon is held-up due to improper/loose lashing resulting in shifting of the load and consignment is required to be readjusted/refixed the vendor shall be responsible to arrange for the same as per Railway requirements. Similarly, in case some infringement in dimensions of the loaded consignment is detected by Railway Authorities after its movement from dispatching station and if it is required to be corrected either by adjustment of the load or by cutting a few protrusions the same shall be arranged by vendor at their cost.

#### **5.4 Shipment by Air**

Wherever Seller is instructed by Purchaser to airfreight any material, the Seller shall take prompt action for the same. Immediately after air shipment is effected, the Seller shall intimate by Fax / E-mail, the details of airway bill number and date, flight number, number of packages etc. to EIC, RSGL / PMC (respective Project Site).

#### **5.5 Destination**

The consignments should be dispatched as indicated in bid document/Purchase Order.

#### **5.6 Advance Information**

Immediately after a shipment is made, Seller shall send advance information as to the particulars of materials, value, Purchase Order Number, date of dispatch, railway receipt number, wagon number/goods consignment note number, truck number, name of transport company and their destination office/associate's address etc./Airway Bill Number and flight details by way of Fax / E-Mail to Resident / Visiting Inspector, EIC, RSGL / PMC (respective Project Site).

#### **5.7 Transmission of Dispatch Documents**

Seller shall, within 48 hours of the dispatch of the material depending upon the payment terms of the Purchase Order, either negotiate through PURCHASER's Bankers or forward direct by Registered Post, the railway receipt/consignment note/Airway Bill to

the Purchaser accompanied by the original invoices, packing lists and challans.

The Seller shall be responsible for any delay in clearance of the consignment at destination and consequent wharfage/demurrage, if any, due to delay in transmittal of the Railway Receipt, Consignment Note/Air Way Bill. Copies of such dispatch advise

together with 2 copies of invoices and packing lists shall be simultaneously distributed to Purchaser's / PMC etc.

#### **6.0 Transit Risk Insurance**

All equipments/materials will be insured for transit risk by bidder unless otherwise specified. The Insurance cover to be provided from warehouse - to - warehouse.

#### **7.0 Dispatch through Approved Transporters**

All materials must be dispatched through Purchaser/PMC approved transporters, list of which may be obtained from the Purchaser's / PMC nearest branch/regional office.

## SECTION – VI

### **TECHNICAL VOLUME- II OF II - (SPECIFICATIONS, SCOPE OF WORK AND DRAWINGS)**

#### **TECHNICAL SPECIFICATION FOR SINGLE COMPOSITE CNG DISPENSING UNIT (CCDU)s**



## **CONTENTS:**

<b>Sl. No.</b>	<b>DESCRIPTION</b>
1	GENERAL
2	CODES & STANDARDS
3	SCOPE OF SUPPLY FOR EACH INTEGRATED CNG DISPENSING PACKAGE
4	INSTRUCTION TO BIDDERS
5	SCOPE OF SUPPLY FOR COMPRESSION SYSTEM
6	TECHNICAL SPECIFICATIONS STORAGE SYSTEM
7	TECHNICAL SPECIFICATION OF THE DISPENSING SYSTEM
8	TECHNICAL SPECIFICATION OF DISPENSERS

This specification along with applicable codes as referred, describe the minimum requirements for design, Engineering, Manufacturing, Supply including packaging and forwarding, insurance, custom clearance, handling, loading and unloading at port, delivery & unloading at client's store/site, erection, testing & commissioning of Skid mounted Electric Motor driven integrated compressor package consisting of compression, storage and dispensing unit along with other auxiliaries. The package shall be complete with electric motor drive, cooling system, Lubrication system, auxiliary air compressor system, priority panel, flame proof control panel (Local) with PLC, and other accessories including acoustic enclosures.

The compression system shall be of capacity 400 SCMH with a suction pressure range of 14-19 Kg/cm<sup>2</sup>(g) and having discharge pressure of 255 Kg/cm<sup>2</sup>(g).

Storage shall have assembly of CCOE approved CNG cylinders having overall storage capacity of not less than 450 WL.

The Dispensing unit shall have Dual arms filling hose and each arm shall be designed for a peak flow rate of 15 kg/ min with Fastfill System for Dispenser and interlocking for filling and safety as required. Dispensers must have necessary W&M India and PESO certification.

Various parts of this specification shall be read in conjunction with each other and in case where the different parts of this specification differ the more stringent requirement shall govern.

Any additional work/equipment or technical requirement not mentioned in the specification but required to make the offered system complete in accordance with the specification and for safe and proper operation, shall be deemed to be included in the scope of work by the Bidder.

## **2.0 CODES & STANDARDS**

### **2.1 Codes & Standards for Compression system**

The design, construction, manufacture, supply, testing and other general requirements of the compressor package equipment shall be strictly in accordance with the data sheets, applicable API codes, and shall comply fully with relevant National/International standards, Indian Electricity Act, Indian Electricity Rules, regulations of Insurance Association of India and Factories Act while carrying out work as per this specification.

Any modification suggested by the statutory bodies either during drawing approval or during inspection, if any, shall be carried out by the Bidder without any additional cost and delivery implications.

The following codes and standards (versions/revisions valid on the date of order) are referenced to & made part of specification for compression system:

**ISO 13631-2002:** Petroleum and natural gas industries packaged reciprocating gas compressors

**PNGRB regulations**

**OISD 179 -2016:** Safety requirements on compression, storage, handling, refuelling natural gas (CNG) for use in automotive sector.



**NFPA-52-2016:** Vehicular natural gas fuel systems code

**NFPA-496-2017:** Standard for purged and pressurised enclosures for electrical equipment

**NFPA-68 -2013:** Standard on explosion protection by deflagration venting

**NFPA-70-2017:** National electrical code

**NFPA 12-2015:** Standard on Carbon dioxide Extinguishing system

**ASME Sec IX:** Qualification Standard for Welding and Brazing Procedures, Welders Brazers and Welding and Brazing Operators

Gas Cylinder rules-2016 ANSI, ASTM, NEC, NEMA, Indian Electricity Rules, and Indian Explosives Act.

## **2.2 CODES & STANDARDS FOR STORAGE SYSTEM**

The design, construction, manufacturing, supply, testing and other general requirements of the Storage system should be strictly in accordance with the latest Applicable Standards and Codes and shall comply fully with relevant Indian or International standards, Gas Cylinder Rule 1981, Indian Explosives Act- 1884, Stationary and Mobile Pressure Vessels (Unfired) Rules (SMPV) 1981, CNG Cylinder Design Code, IS:7285,2004 (part-2), CNG Cylinder Valves, IS:3224 1979 (Amendments 1983,84,85,86,89,92,98) Hydrostatic Stretch Test, IS: 5844-1970, Safety Devices of Gas Cylinders, IS:5903-1970, Regulations of Insurance Association of India and Factories Act while carrying out work as per this specification.

The bidder without any additional cost and delivery implications should carry out any modification suggested by the statutory bodies either during drawing approval or during inspection, if any.

The following codes and standards (versions, revisions valid on the date of order) are referenced to & made part of specification for the storage system:

NFPA 52 Standards for CNG vehicular fuel systems and CNG cylinder code “IS: 7285- 2004(PART-2).

OISD 179 Safety requirements for compression, storage, handling and refuelling of CNG for use in automotive sector.

GAS CYLINDER RULE 2004 Standards for CNG Storage and Gas Cylinder Rules.

STATIC AND MOBILE PRESSURE VESSELS (UNFIRED) RULES (SMPV) (Latest Edition). CNG

CYLINDER DESIGN CODE IS: 7285 2004 (Part-2).

CNG CYLINDER VALVES, IS: 3224 (Latest Edition).

HYDROSTATIC STRETCH TEST IS: 5844 (Latest Edition)

SAFETY DEVICES OF GAS CYLINDERS IS: 5903 (Latest Edition) - Regulations of Insurance

Association INDIAN EXPLOSIVES ACT, ANSI, ASTM, NEC, NEMA, ASNZ

All the applicable statutory codes, national laws and local regulation for safety and environment

## 2.3 CODES & STANDARDS FOR DISPENSING SYSTEM

The design, construction, manufacture, supply, testing and other general requirements of the dispenser equipment should be strictly in accordance with the data sheets, applicable codes, and should comply fully with relevant National & International standards, Indian Electricity Act, Indian Electricity Rules, regulations of Insurance Association of India and Factories Act while carrying out work as per this specification.

The Vendor without any additional cost and delivery implications should carry out any modification suggested by the statutory bodies either during drawing approval or during inspection, if any.

The following codes and standards (versions/revisions valid on the date of order) are referenced to & made part of specification:

NFPA 52: Standards for CNG Vehicular Fuel Systems

NGV 4.1/AGA 2-92: Requirements for CNG Dispensing Equipment for Vehicles

NGV 4.2/AGA 1-93: Requirement for Hoses for NGVs and Fuel Dispensers.

ANSI/NGV1: Compressed Natural Gas Fuelling Connection Devices Standard for Fuelling Nozzles and Receptacles.

NGV4/AGA: Requirements for Breakaway Devices for CNG Vehicle Fuelling Dispensers and Fuelling Hoses.

IS: 5572 Classification of Hazardous areas (other than Mines) for Electrical Installations

IS 5571: Guide for selection of Electrical Equipment for hazardous area

OISD 179 Safety requirements for Compression, Storage, Handling and Refuelling of CNG for use in Automotive Sector.

OISD 113 Classification of areas for Electrical Installations at Hydrocarbon Processing and Handling facilities

NFPA-52: 1992, ANSI, ASTM, NEC, NEMA, ASNZ, OIML, Indian Electricity Rules, Indian Explosives Act. Australian/New Zealand Refuelling Standard. AG901/NZS 5425

OIML TC8/SC7 Recommendation with regards to CNG dispensers, December 2000.

The Standards of Weights and Measures Act 1976.

The Standards of Weights and Measures (Enforcement) Act, 1985.

The Consumer Protection Act, 1986.

The standards of Weights and Measures (General), Amendment Rules, 2005 – Part X



Any other Codes & Standards mentioned elsewhere in this Job Specification/M.R. or which has required to be complied with as per the prevailing Government of India regulations shall also be followed. All Electrical devices shall meet the requirement for the area classification specified in the documents. Tubing & other devices shall be so arranged that there is proper access for Operation & Maintenances.

### **3.0 SCOPE OF SUPPLY FOR EACH INTEGRATED CNG DISPENSING PACKAGE**

The scope of work/services to be provided by the bidder shall be inclusive of but not limited to:

- 3.1** Design, Engineering, Manufacture, assembly, testing at manufacturer's works, erection, commissioning, field trial runs, Equipment performance test along with associated electrical, instrumentation etc. as per biddocument.
- 3.2** Online 400 SCMH compressor package.
- 3.3** The compressor inlet pressure range of 14-19 kg/cm<sup>2</sup>(g) will be considered for designing.
- 3.4** Flame proof Electric motor, the Motor rating should be minimum 45 KW.
- 3.5** Three banks 450 Water Litre (minimum) capacity Cascade for 400 SCMH.
- 3.6** The storage cylinders to be kept completely inside the enclosure of the machine.
- 3.7** CNG Dispenser (1 no.) with two arms and Interconnected SS tubes & fittings
- 3.8** Dispenser should be detachable that can be used in separate location. If required, vendor may be asked to connect 2 dispensers with the unit. Provision for necessary modifications shall be provided.
- 3.9** Dispenser shall be supplied with standard enclosure.
- 3.10** All interconnections between compressor, cascade and dispenser up to the battery limit shall be in theScope of bidder.
- 3.11** Bidder must submit duly PESO approved mechanical drawings/ mechanical design of the Composite/Integrated compressor along with the Bid.
- 3.12** Enclosure wall and doors shall be fire resistant and insulated from inside with rockwool. The side wall of the enclosure/doors shall not have any louvers (To prevent accidental escape of debris/fire). Doors shall have heavy duty double security locks to curtail sudden high pressure inside the enclosure.
- 3.13** Since composite/Integrated Compressor is planned to be placed inside the forecourt in the CNG station hence design of the enclosure should be impact resistant of slow-moving vehicle and bidder should submit detailed calculations for the value of impact to be sustained by the enclosure offered by the bidder.
- 3.14** Gas meter: Mass flow meter (MFM with integral local display) based on Coriolis principle at compressor discharge and at compressor suction. Installation and manufacturing of mass flow meter shall be as per AGA-11 and ease of maintenance / calibration.

While installing special care shall be taken to isolate the mass flow meter from piping vibration. The mass flow meter at the suction of compressor shall be PESO and W&M approved only.

- 3.15** All Mass flow meter shall be provided with a Liquid Crystal Display (LCD) for ongoing flow monitoring, and totalizers.
- 3.16** Void.
- 3.17** PLC based control panel with HMI. PLC based control system with 10" touch screen display. PLC shall be

provided with mounting rack, CPU, Input output cards, Power supply card, and communication card. PLC CPU shall be redundant (1W+1S) with auto switch over without manual intervene. Both CPU shall be connected with High-speed ring for bump less change over between primary and secondary CPU. This shall not affect compressor operation. Failure alarm of CPU shall be provided in HMI. A dedicated modbus (RS 485) slave communication port shall be provided for Remote terminal unit (RTU) interface. Additionally, separate communication ports shall be provided for GPRS modem for communication with SCADA system.

- 3.18 PLC shall be mounted in EX proof enclosure. Cabinet specification with statutory certificate shall be submitted during engineering stage for approval.
- 3.19 Instrumentation and control system as specified on data sheets including Local panel, Console/Local gauge boards, PLC. All the transmitters shall be Ex proof or intrinsically safe. PESO certificates shall be submitted.
- 3.20 Pressure Transmitter and Temperature Transmitters shall be used for CNG Gas application with 4-20 mA output signals to PLC. The units of measurement for flow shall be Kg/hr, for pressure shall be Kg/cm<sup>2</sup>
- 3.21 (g) or and for temperature shall be degree C. Pressure and temperature switches are not acceptable. 3.21 Block & bleed valves/Two valve SS316 Manifold to be provided for Pressure gauges and pressure Transmitters.
- 3.22 Common structural steel skid for the compressor- Motor combination and for all auxiliary systems including cascade, dispenser, priority panel, control panel etc. with one number IR type point gas detectors, one number Flame detector UV type inside the enclosure.
- 3.23 Vendor shall submit documents during engineering stage for review & approval to client/consultant. Document are specification/data sheet with statutory approval certificate, W&M certificate, PESO certificate of all the instruments as per P&ID, instrument index, input output list, power consumption calculation, cause & effect cables specification, cable schedule with termination details, operation &control philosophy, and PLC specification & architecture.
- 3.24 Air-cooled heat exchanger for inter stage and discharge gas.
- 3.25 6 line (3 bank) Priority Panel at Compressor Discharge.
- 3.26 2 way/ 3 way valves with full flow ball valve for priority line.
- 3.27 All interconnecting oil, gas, water, air piping within the compressor package, including priority panel, cascade & dispenser & interconnecting tubing.
- 3.28 Impulse and pneumatic piping/Tubing for all valves, fittings as specified & required for mounting the instruments.
- 3.29 Junction boxes as required for interfacing to compressor package mounted control panel.
- 3.30 NRV at final discharge.
- 3.31 Structural supports within the Integrated CNG Compressor package for all piping, instruments etc.
- 3.32 One no. relief valve at each stage discharge, first (1st) stage suction and Blow Down Vessel.
- 3.33 Y - type strainers, valves, sight flow indicators, check valves, auto & manual drain traps etc. as required for various auxiliary systems i.e. frame lube oil, cylinder lubrication system, cooling water systems etc. according to manufacturer safe design.
- 3.34 Coupling/V-belts/pulleys
- 3.35 Common CO<sub>2</sub> extinguishing system consisting of two cylinders, piping, valves and control systems as per details given in this specification. Block & bleed valves/Two valve SS316 Manifold to be provided for Pressure gauges and pressure Transmitters.
- 3.36 Compressor Inlet and outlet manual and automatic isolating valves for maintenance & emergency.

**3.37** Complete Erection, Testing & Commissioning of integrated compressor packages.

**3.38** Field Performance test at site

**3.39** Supply of all essential spares as specified, erection & commissioning spares.

**3.40** Maintenance catalogue with each Integrated CNG Compressor package.

**3.41** An oil drain pot outside of the package shall be provided to collect all drains from packing, distance pieces, processes etc. The capacity of the drain pot should not be more than 2.5 Litres.

**3.42** Only air cooled and lubricated compressor with suction/discharge volume bottles (dampers) for each stage(separators) with manual drains and automatic drain system, lube oil system, closed circuit cooling water system (console type)/Air cooled according to manufacturer safe design.

**3.43** Priority refuelling system inside of the package.

**3.44** Drive belt, if used shall be anti-static fire retardant type.

**3.45** Duplex suction filters with filtration level up to 5 Micron to be provided outside battery limits of the package at the inlet of package with DP gauge after Y- type strainer. Filters should be installed in series.

**3.46** Suction filter shall be placed remotely as metering and filtration skid is not envisaged.

**3.47** Two stage filtration at discharge so as to limit oil carryover is to be provided.

**3.48** Three no. Emergency stop button (push type) along with one hooter in office/customer interface room.

**3.49** Wires mesh type guard for heat exchanger fan.

**3.50** Secondary lubrication system with check valve protector, HP Filter (for all lubricating points) & DNFT flow switches with standby pump according to manufacturer safe design. Secondary lubrication system with divider block shall be provided. Optional for Bidder to quote as per their Design and ease of Operation and maintenance.

**3.51** Erection, Maintenance and all others relevant manuals for integrated compressor package & its accessories, priority panel, electrical motor & all field instruments, dispenser, storage cascade etc. for easy operation & trouble shooting.

**3.52** Scope of work also covers 4 years comprehensive O&M service (one year during warranty period and 3 years post warranty period) of packages for dispensing CNG at various Geographical Areas (GAs). The packages shall be complete in all respect for a period of 18 months from the date of Fax of Acceptance (FOA). Various parts of this specification shall be read in conjunction with each other and in case, where the different parts of this specification differ, the more stringent requirement will govern.

**3.53** Annual comprehensive Maintenance services as per MR.

**3.54** Training to Owner's Employees on the operation of unit for daily working including regular checks, troubleshooting etc. (at site or works as per owner's permission).

**3.55** Master operator cum Maintenance technician needs to be available at one location of Client's choice along with mandatory tools and spares. Master operator shall also provide necessary training to Client staff for successful operation as and when required.

**3.56** For added safety, manufacturer shall provide Compressor, Cascade & Dispenser in three separate sections, isolated from each other using heavy gauge steel sheet wall of minimum 15 mm thickness

**3.57** Cables

a) Main incoming Power cable from owners Power Distribution Board (PDB) to main control panel of the compressor through heavy duty GI conduit or trenches, all inter connecting cables in compressor package,including complete erection accessories like double compression cable gland, ex proof gland in hazardous area, cable tags, lugs etc. as required.

- b) Cable from owners UPS system/DB to main control Panel of the compressor & Dispenser through heavyduty GI conduit or trenches.
- c) Electrical/Control Cables required for providing connectivity to Co2 system and emergency switch.
- d) Supply, laying, glanding, lugging, ferruling, clamping, terminal of Instrumentation cable (signal, control, communication, ethernet & Power) from instrument to junction box/PLC inside enclosure, flame detectors to PLC, PLC to HMI. Emergency push button outside compressor enclosure to PLC.
- e) Supply of signals and power cable from Emergency push button (field and control room) to CompressorPLC and RS 485 port cable of Compressor PLC to Client's RTU. Vendor shall provide all the RS 485 configuration details to RTU vendors/client/consultant required for configuration. Vendor shall also provide their support during configuration.

Note - FRLS (Fire resistant low smoke) cables shall be used for gas detectors, flame & multisensory detectors and emergency push buttons.

- 3.58** Supply of Communication Cables, cable glands, termination of cable and cable laying from dispenser& Compressor PLC (in integrated package) to junction box is in Vendor's scope. Supply of standard make,WP IP 42 junction boxes, terminal blocks and installation of junction box shall be in Vendor's scope. Junction box shall have 8 inputs cables entry points (side) and two outgoing entry points including spare (bottom), cable entry from top is not accepted, size of junction box to be decided by vendor. All the spare entry shall be plugged properly. Vendor shall be responsible to provide all the signals at the junction box which will be connected to RTU in future. During installation & commissioning of dispenser same will be checked by CLIENT's Engineer.
- 3.59** Communication cable is single pair (1Px 1.5mm<sup>2</sup>), multi strand, armoured cable with HR PVC insulation and PVC st2 inner and outer sheath. Tentative cable length from each dispenser to junction box is approx.50 meters, however vendor shall provide cable length as per requirement.
- 3.60** Vendor must share junction box termination details with CLIENT.
- 3.61** All Instruments & electrical equipment shall be supplied with double compression type of cable glands tested & certified to be used in hazardous area classified as Zone-I.
- 3.62** Appropriately plugged drain valves of the filter outside the dispenser housing with suitable arrangement to collect the drained oil to facilitate the operator to drain the oil on regular basis without requiring to open the lock of the dispenser cabinet. The layout of tubing and other component should be such that it gives unhindered access to all parts and maintenance becomes easy.
- 3.63** CLIENT's Logo and name to be displayed on dispenser side, in CLIENT approved colour scheme. CLIENT's Logo and name shall be painted on stainless steel panel with an appropriate coloured background or alternatively (Powder Coating), vendor shall provide self-adhesive PE film sheet with CLIENT's Logo and name.

The artwork shall be of three colours. The colours, Logo size and name size shall be informed to successful bidder during detailed engineering.

3.64 VOID

3.65 VOID.

3.66 Integrated Compressor package shall be suitable for outdoor installation without roof / shed.

3.67 From safety point of view, manufacturer to provide Compressor, Cascade & Dispenser in three separate sections, isolated from each other using heavy acoustic wall.

3.68 Maximum footprint of integrated compressor frame Package shall not exceed 7.0 SqMtr. Maximum with integration of all accessories.

3.69 Since the sole purpose for the procurement of Package is due to the limitation of space, Hence the cascades should be inside the single acoustic enclosure only so that package / enclosure contains all the major equipment's. Installation of cascades on top of enclosure may not be permitted. Dispensers can be outside attached to the enclosure as the tender stipulates that the dispensers should be such that they can be shifted elsewhere if required.

3.70 As per requirement and its application the "Service factor of the motor shall be 1.

3.71 The kw requirements for loading at 16Kg/cm<sup>2</sup>(g) suction will be between 32kwh to 34 kwh.

## 4.0 INSTRUCTIONS TO BIDDERS

4.01 This specification describes the technical specification of the equipment to be supplied and/or installed for CNG stations at various locations.

4.02 Various parts of the specification shall be read in conjunction with each other. In case where requirements given in different parts differ, the most stringent shall govern.

4.03 The specification states the scope and requirements as completely and clearly as possible. Any additional work/equipment or technical requirement not mentioned in the specification but required to make the offered system complete in accordance with the specification or required for safe operation shall be deemed to be included in the offer.

4.04 The drawings and reference information mentioned elsewhere in this specification shall be considered as part of this document. Anything specified in this specification but not clearly shown in the drawings, or vice versa shall be treated as indicated in both specification and drawings and hence binding.

4.05 The Bidder shall confirm clause by clause acceptance of technical specification. Comments and/or deviation if any, of the Bidder on Owner's document (including technical specification) shall be given clausewise. Clauses, on which no specific comment or deviation will be indicated in the offer, shall be treated as accepted by the Bidder.

4.06 It will be the responsibility of the Bidder to comply fully with relevant National/ International standards, Indian Explosives Act, Regulations of Insurance association of India and Factories Act, while supplying materials and/or carrying out work as per this specification.

4.07 It shall also be the responsibility of the Bidder to prepare and submit all necessary drawings, calculations, test certificate etc. as required by concerned inspectorate.

4.08 The Bidder, free of cost and without affecting agreed milestones, shall carry out modifications suggested by the statutory bodies.

4.09 The Bidder shall be deemed to have inspected the site area and access and ascertained all conditions affecting the contract. The Bidder shall be deemed to be fully conversant with the complete requirements of the work.

4.10 Civil engineering work i.e. foundation, trenches etc. shall be arranged by Owner. The Bidder shall submit GA Drawing indicating location of foundation bolt, if required. In case the requisite information regarding requirement of slots, holes, pipe and other fixing inserts etc. as required for proper installation of equipment is not indicated by the Bidder within two weeks from placement of order, such facilities shall have to be arranged/ provided by the Bidder at their own cost.

4.11 All work shall be carried out to the satisfaction of the Owner. Any work found to be carried out without the approval of Owner or work which is considered to be unsatisfactory and of poor quality of workmanship shall be rectified by the



4.12 The Bidder shall not vary the scope of work as detailed in the approved drawings and specification, without written permission of the Owner. The work shall be done as per approved

4.13 The Bidder shall complete and fulfill all formalities with the statutory authorities having jurisdiction in the area. Bidder shall also arrange for inspection and approval of installation.

4.14 The Bidder shall attend weekly progress meetings and all other meetings called by the Owner. The Bidder's representative shall have the authority to make all decisions related to the Contract.

4.15 The Bidder shall provide the weekly progress report in duplicate. The reports shall clearly define all major activities completed during the previous week and identify manning levels, programs etc. The report format shall be provided by/finalized after discussion with the consultant for adherence by the Bidder.

4.16 The Bidder shall correct all project original drawings with "As Built" information and shall on completion of erection of the equipment submit originals of all finalized drawings to the Owner.

4.17 All pages of the offer shall be numbered and contents with page numbers shall be given at the beginning. All pages of the offer shall be submitted in bound volume.

4.18 Loading/Unloading of equipment's and supply up to sites/stores shall be in the scope of bidder.

4.19 A Test and Inspection certificate issued by the manufacturer of the cylinder duly countersigned by an Inspector that the Cylinder meets the requirements of the standard or code referred above submitted to Chief Controller of Explosives shall be provided to the Purchaser.

4.20 PESO approval for electrical and package design (unit)

4.21 Compressor, Storage & Dispenser on a common skid.

## **5.0 TECHNICAL SPECIFICATION OF COMPRESSOR Precedence**

In case of any conflict among the various documents of this requisition the following preferential order shall govern:

1. Data sheets/drawings
2. This Technical Specification

3. International standards/codes as applicable
4. Indian Standards / codes applicable

Compliance with this specification shall not relieve the Bidder of the responsibility of furnishing equipment and accessories of proper design, material and workmanship to meet the specified operating conditions.

No deviations to the technical requirements and to the scope of supply specified in this enquiry document shall normally be accepted and offers not in compliance to the same shall be rejected summarily. In case a deviation is required due to inherent design of the equipment offered, the Bidder shall list all such deviations at one place giving reasons thereon.

### **DOCUMENTS/DATA REQUIRED ALONG WITH BID**

Bidder shall necessarily furnish the following along with the bid:

1. Proven Track Record Formats duly filled in
2. Checklist duly filled in with regards to scope of supply
3. Completely filled in Data Sheets of compressor, electric motors.
4. Deviations, if any, to this Technical Specification
5. Tentative Lay out / key plan/ General Arrangement indicating size of skids, center distance between skids and space required along with maintenance requirements.
6. Utilities requirements (b) Electrical Load summary
7. Catalogues of compressor, Driver Motor and instrumentation items.

### **SCOPE OF SERVICES**

8. Engineering, design and manufacturing.
9. Procurement of raw materials etc., from sub-vendors.
10. Preparation of documentation for design, approval by Purchaser/consultant.
11. Inspection and testing as per Technical specification / Quality assurance plan.
12. Surface preparation, protective coating and painting as per Technical specification.
13. Packaging for transportation to site and supply.
14. Erection, testing & commissioning as per Technical specification.
15. Field trial run and performance test at site.

16. Post commissioning annual maintenance with all spares and consumables.

## **SCOPE OF SUPPLY FOR EACH COMPRESSOR PACKAGE**

Each compressor Package shall be complete with:

- Lubricated or non-lubricated two throw balanced opposed reciprocating compressor/trunk piston design compressor block with lube oil system and cooling system (console type) as required.
- Electric motor as compressor driver.
- Gas meter: Mass flow meter (MFM with integral local display) based on Coriolis principle at compressor discharge and at compressor suction. Installation and manufacturing of mass flow meter shall be as per AGA-11 and ease of maintenance / calibration.
- While installing special care shall be taken to isolate the mass flow meter from piping vibration. The mass flow meter at the suction of compressor shall be PESO and W&M approved only.
- Instrumentation and control system as specified on data sheets, P&ID including Local panel, Console/Local gauge boards, PLC.
- Electrical equipment / Instruments indicated in the Compressor package.
- Separate flameproof junction boxes for different type of signals like analog, digital signals, alarm, shutdowns, and thermocouples, RTDs etc. for interfacing to FLP local panel. Same is not applicable for direct run cable up to PLC panel.
- All cables and accessories as required for system
- Common structural steel skid for the compressor- electric motor and for all auxiliary systems.
- Structural supports within the compressor package for all piping, electrical and instruments etc.
- Inlet twin suction gas filter with oil drain valve & DP gauge and temporary suction line strainer at 1st stage and at other stage if required, Inter-stage and discharge gas, air cooled heat exchangers.
- Inter-stage and discharge gas, air cooled heat exchangers.
- Separator/Knockout drums with solenoid valve operated drains as required. Bypass valves for automatic drain system shall be as per manufacturer's recommendation. However, 2 No. isolation valves (one at downstream and one at upstream) for each automatic drain valves shall be provided.
- All interconnecting oil, gas, water, air piping within the compressor package.
- Impulse and pneumatic piping/Tubing for all valves, fittings as specified & required for mounting the instruments.
- NRV at gas suction, final discharge point and priority panel, as required.

- Y- Type strainers, valves, sight flow indicators, check valves, manual drain/ traps etc. as required for various auxiliary systems i.e. frame lube oil, cylinder lubrication system, cooling water systems, fuel supply/conditioning system etc. In case divider block lubrication system, paper filter for frame oil & check valve in that circuit are also acceptable.
- Coupling/V-belt/pulleys
- Single Acoustic enclosure for Dispenser, Compressor and electric motor as specified, with 1 number
  - L.E.L detectors and 1 number flame detectors in enclosure.
- CO2 extinguishing system consisting of twin cylinders, piping and valves.
- Inlet and outlet manual & automatic isolating valves
- Complete Erection, Testing & Commissioning of compressor package along with CNG Storage & dispensing unit O & M services duration shall be as specified in material requisition (MR). All spares, consumables, man power, coolant and lubricants, etc., shall be in the scope of supplier during O & M tenure.
- Temperature element shall be of insertion type.
- Load torque graph and the speed torque graph to be provided for electrical motor
- Power consumption VS suction pressure graph to be submitted by bidder along with Technical Bid.
- Each stage outlet Temperature before cooler & after cooler to be displayed on PLC.
- CCOE/BIS approvals of cylinders used in CO2 flooding system to be submitted.
- Gas flow directions to be marked “Gas In / Gas out “with cylinder stage No. on all the inlet outlet tubes inside compressor package.
- The motor selected should be for continuous duty operation.
- Bidder shall furnish a temporary start up conical strainer fitted with adequate size mesh at the gas inlet before filter.
- The rotational speed of both compressor & electric motor (driver) shall be limited to maximum of 1500 rpm.
- Type approval for compressor package including all instrument items from PESO is mandatory along with Technical bid.
- Vendor to provide 1 set of NO/NC contact (NO/NC Rating: 230 V AC, 5A). This contact shall changeover whenever ESD switch is activated. Same to be provided inside the PLC Panel, extended up to terminal end with identification tag plate.
- Power Meter has to be provided. (Required for monitoring Voltage, Current etc., of compressor in PLC panel).
- Suction strainer, Dual suction gas filters with oil drain, differential pressure gauge at the compressor package inlet. Drain line with valve of dual suction gas filters shall be connected to oil recovery vessel. Pipeline inlet pressure range will be 16 to 49 kg/cm<sup>2</sup>g. SRV, isolation valves and pilot operated PRV shall be provided. Smart type pressure transmitter, temperature gauge shall be provided before suction strainer.
- One SOV operated auto shut off valve bypassing PRV shall be provided. If pressure at

package inlet is more than 22 kg/cm<sup>2</sup>, the auto shut off valve shall close to prevent the compressor from overloading and gas shall pass through PRV to compressor (1st stage). However, if gas pressure is less than 22 kg/cm<sup>2</sup> shut off valve shall remain in open condition to prevent pressure loss through PRV so that the compressor can be operated at maximum capacity corresponding to suction pressure. Inlet gas piping to CNG compressor shall be designed for min 49 kg/cm<sup>2</sup> pressure.

- All gas piping downstream of coalescent filter in compressor discharge shall be of SS 316 only.
- Pre alarm to be incorporated in the software before machine trips in predefined values of Pressure & temperatures.

**In case of any conflict between the above scope / specification / requirements, most stringent will be followed as per the instruction of EIC**

- To cater to the UPS power requirement of the compressor for PLC based control panel, one UPS (240 ±1 % V, 50 ±1 % Hz) (feeder in UPS ACDB) shall be provided by Owner. Supply, Laying & termination of incoming cable from ACDB to Compressor and further downward distribution is in the scope of the Bidder. Bidder shall indicate power/feeder (KW/Amp) requirement in the offer. Surge protection devices of approved make shall be provided in the control panel.
  - i. Supply, Laying and Termination of following cables including all erection accessories like Lugs, Glands etc. is included in the scope of bidder:
    - a) Cables from PDB to compressor skid (Length shall be considered as 75 meter).
    - b) Cables from compressor to hooter and up to ESD push button in control room (Length shall be considered as 75 meter).
    - c) Cables from compressor to ESD push button near dispenser (Length shall be considered as 200 meter).
    - d) Cables from compressor to ESD push button in field (Length shall be considered as 150 meter).
    - e) Cables from PDB to Air compressor (Length shall be considered as 50 meter).
    - f) Cables from LDB to Air Dryer (Length shall be considered as 50 meter).
    - g) Cables from CO<sub>2</sub> flooding system to Compressor (Length shall be considered as 30 meter).
    - h) Cables from ACDB to compressor skid for PLC based control panel (Length shall be considered as 100 meter).

i) Cables from manual switch/call point of CO2 flooding system (located in control room) to compressor skid. (Length shall be considered as 75 meter).

- j) Suitable arrangement like cable trays, conduits etc. shall be used for laying the cable.
- One number of dedicated Electronic earth pit shall be provided for the PLC based control panel of compressor at a distance of 5 meter from the compressor by Owner. However cabling from the pit to the PLC based control panel and further distribution is in the scope of bidder. For earthing of the body of the Gas compressor, Air Compressor, Dryer and other components, an earth grid will be provided at a distance of 5 meter from the compressor package. Cabling from the grid to the Gas Compressor, Air Compressor & Air Dryer shall be done through GI strip of 25X3 mm/cable of 1C X 10 sq.mm, Copper conductor whereas for panel it shall be done using Cu Strip of 25x3 mm/ cable of 1Cx10 sq.mm, Copper conductor including all accessories like lugs, glands etc. is included in the scope of Bidder.
- Comprehensive Annual O&M, as indicated in the MR / SOR with spares, consumables, man power and lubricants
- During AMC, Vendor has to provide dedicated mobile phone & number for each site/compressor. Client shall not pay any extra charges towards phone & monthly bills.
- Foundation bolts and aligning & leveling material
- All spares, consumables, man power and lubricants during O & M warranty period
- O&M charges (post warranty) with spares, consumables, man power and lubricants including complete overhauling of compressor as required.
- CR corrugated sheets with minimum thickness of 16g for door & louvers and 18g for side walls shall be used.
- However in case SS sheets it shall be as per manufacturer's standard design.

#### **Following documents shall be submitted by the successful bidder:**

- Pressure vessel thickness calculations to be submitted.
- Preventive maintenances schedule.
- Fan motor flame proof certificate to be submitted.
- Spares parts manual (along with cross-sectional details) for the package required.
- All documents/certificates shall be in English Language Only. No other language is permitted.

Any conflict between the above scope / specification / requirements, most stringent will be followed as per the instruction of EIC.

#### **c) Exclusions**

The following are excluded from the scope of the Bidder:

- a. All civil works and foundation design. However, the Bidder shall furnish all the relevant data for design of pedestal/foundation. Grouting of equipment on the foundation including supply of material with foundation bolts (if required for bidder's design) is a part of erection

and is included in the scope of bidder's work.

**d) Safety**

- All controls shall operate in a fail-safe mode i.e. failure of any control shall not lead to running of equipment in unsafe mode. Fail safe control shall be available through both software and hardware for all trips.
- Area Classification: The hazardous area classification Class-I, Division I, Group D as per NEC or Zone I, Group II A/ II B as per IS/ IEC. Certificate from recognized agency to the effect that equipment supplied and/or installed conform to above area classification. All Devices shall meet the requirement for the specified area classification in which they are installed, including instrumentation leads.
- All exposed rotating parts shall be provided with adequate guards of non-sparking type. Drive belt, if used shall be of fire retardant and anti-static type.
- Piping shall be arranged in a manner so as to provide clear headroom and accessibility within the package. Adequate clearances shall be provided for all the engineered components from O&M point of view.
- Package enclosures shall have two IR type L.E.L detectors and two Ultra Violet (UV)/IR fire detectors in each enclosure to cover the enclosures effectively.
- All material used in the package shall be flame retardant.
- The Compressor Package shall trip, if any of the enclosure is opened while the machine is running. However, the bidder shall provide enclosure door by - pass selector switch to facilitate routine checking while compressor is running.
- Relief Valves shall be provided at suction and discharge and in between inter stages of compressor with setting as per cl. 11.18.5 of ISO 13631: 2009 with R.V. venting as per cl. 11.18.6 of ISO 13631: 2009. All vented lines to be connected to common relief valve header.

**CO2 flooding system:**

The package shall be protected by automatically operated CO flooding system designed as per NFPA-12 which should have minimum following features: -

1. Gas Detection by installation of hydrocarbon gas detector (IR type) with self-check function (have self diagnostic LED to show the "HEALTHY" and "FAULTY" status) and transmitter with adjustable alarm levels (0-100%) with preset of 10%, 20% and 50%. Package should have at least 2 no. of gas detectors.
2. Installation of flame detector (UV-IR type) and transmitter, alarm on detection of flame. Package should have at least 2 no. of flame detectors.

CO<sub>2</sub> flooding system shall consist of 2 no. of 45 kg (min.) CO<sub>2</sub> cylinders. However actual size of the cylinder shall be as per compressor enclosure size. Necessary calculation shall be submitted by the bidder during detailed engineering. One cylinder will act as main cylinder & other as stand by, which shall have identical arrangement and connected to the system.

The cylinders shall be protected from weather and direct sunrays as per Gas Cylinder Rules, 2016. Cylinders shall be fitted with actuated Valves, Solenoid valves etc. for automatic actuation.

Control philosophy shall be such that -

- i. Compressor shall trip on detection of gas at preset level.
- ii. Compressor shall trip on detection of flame at preset level and automatic discharge of CO<sub>2</sub> gas shall take place simultaneously.
- iii. On detection of flame by any of the flame detector, the solenoid valve of selected cylinder will open and CO<sub>2</sub> will be flooded into the package.
- iv. At that time, pressure switch will open (NO) because of pressure in CO<sub>2</sub> header. If the selected cylinder is empty, then pressure switch will operate (NC) and PLC will give signal to open solenoid valve of other cylinder, if flame is detected by flame detector
- v. Even after discharge of selected cylinder, if flame remains detected by flame detector, other cylinder can also be operated after 20 sec (Settable from display) from the time of selected cylinder valve energized irrespective of pressure switch signal.
- vi. The limit switch provided on the weighing machine will be connected to PLC to indicate that the CO<sub>2</sub> cylinders are full. Both are start permissive for compressor, i.e. if any of the cylinders is empty as sensed by limit switch, compressor will not start. If the operator wants to run the package even if one of the cylinders is empty, the compressor can be run by putting Limit Switch in By-Pass mode for obtaining start permissive.
- vii. When maintenance override switch put in By-Pass mode to keep the system off during maintenance, CO<sub>2</sub> Solenoid valve shouldn't operate, even on detection of flame by any of the flame detector.

4. Facility shall be made to operate the system manually from remote with the help of a switch/ call point and with help of pull down lever on cylinders. In this regard, manual switch / call point shall be provided to operate the desired (Main / Standby) CO<sub>2</sub> cylinder remotely from control room and Pull down lever shall be provided on each cylinder valve for manual operation.

5. Following Selector switches shall be provided:

- One Selector switch shall be provided in LCP to put Main/Stand by Cylinder in line at

the turn of a switch as per requirement.

- One maintenance override switch shall be provided in LCP to keep the system off during maintenance.
- One switch shall be provided in LCP to bypass desired limit switch,
- One switch in control room to operate CO2 remotely.

6. The System shall be designed to operate on 24 V DC supply. FRLS (Fire resistant low smoke) cables shall be used for the wiring of the system.
7. CO2 Cylinders shall be provided with explosion-proof fittings
8. Online weight (CO2) loss indication device to be provided to ascertain the health of the CO2 flooding system.
9. All installation and instruments shall be compatible for hazardous area Class 1, Division 1, Group-D for Methane Gas.
10. Technical specifications, Operation and Maintenance Manual, CCOE Certificate i.e. Approval/Manufacturing certificates for cylinders and cylinder valves, gas detectors, flame detectors, solenoid valves etc. shall be furnished by the supplier along with system. Software and hardware, calibration procedure shall be provided by the supplier along with the supply sufficient enough to handle the system independently.
11. System shall be tested by the supplier after commissioning at site by creating fire signal and actual discharge of CO2 Gas from the Cylinders. The cylinders have to be refilled by the vendor at no extra cost to purchaser after testing. If the system fails during testing, subsequent testing and refilling would be at vendor's cost.
12. Warning and Operating instructions to be displayed at equipments as per the statutory/safety regulations.
13. Health status of CO2 system shall be monitored & controlled through PLC.

## 2. UTILITIES & BATTERY LIMITS Utilities

- 2.1.1 Bidder shall make his own provision for Instrument air with the flame proof electric motor driven air compressor, receiver and air dryer system.
- 2.1.2 Air compressor of 1.5kw capacity preferably of IR/KPCL/Elgi/CP make of approx. 100 water litre capacity air receivers shall be supplied for each CNG compressor package and each valve shall be actuated by air
- 2.1.3 Cooling water is not available as utility and the package shall be provided with self-sufficient cooling water system for Compressor, as required, with makeup tank. However cooling water for makeup tank is available.

- 2.1.4 All electrical and instrumentation terminals shall be as specified.
- 2.1.5 Electric power shall be made available by Owner.
- 2.1.6 For running the Air compressor, Exhaust fan and illumination, 415 Volt (10 %) 3-phases 4 Wire, 50 Hz (5%) shall be provided by Owner at a single point (feeder in PDB) inside the electrical room. Bidder shall indicate power/Feeder (KW/Amp) requirement in the offer.
- 2.1.7 Purchaser shall provide UPS (240 1 % V, 50 1 % Hz) for control supply requirements at a single point (feeder in UPS ACDB) inside the electrical room. Bidder shall indicate power/feeder (KW/Amp) requirement in the offer. Surge protection devices of approved make shall be provided for all incoming supply to Bidder's end.

### **Battery limits**

#### **TECHNICAL SPECIFICATION FOR INTEGRATED/COMPOSITE CNG DISPENSING PACKAGE**

- 2.2.1 All customer interface connections, gas Inlet shall be brought out to a distance of 10m from the package edge and terminated in nozzles with isolation valves having flange connection. The piping along with structural supports, copper jumpers for all the flange joints from battery limit to Compressor package shall be in bidder's scope. Piping from air compressor to air receiver and CO<sub>2</sub> cylinders up to enclosures at a max. distance of 30m each is in the scope of bidder and shall be treated as part of supply & erection.
- 2.2.2 All the SS tubing shall be supported properly with PVC clamps only. All the drain pipes of air compressor, Air receiver, and air dryer shall be terminated to the nearest drain properly.
- 2.2.3 As and where specified on the data sheets all vents (i.e. Relief valve, distance piece and packing) shall be manifolded and terminated at skid edge outside the enclosure and vented to safe height of 3 m at package roof.
- 2.2.4 All drains from different process equipment, distance piece and packing shall be manifolded and terminated at single point for customer interface duly flanged with isolation valve.
- 2.2.5 UPS and Non UPS power shall be made available from power distribution board (PDB) in the electrical room. Supply, Erection and termination of all cables and accessories from feeder in electrical room shall be in the bidder's scope. Approx distance of the CNG compressor package shall be 25 m from electrical room.
- 2.2.6 The Bidder work shall commence from Outgoing terminals of PDB/ACDB/LDB (PDB/ACDB/LDB is in The scope of Owner) .Downstream distribution arrangement from the PDB to the Compressor is in the scope of Bidder.

2.2.7 Electronic earth pit shall be made available at a distance of about 5 meters from compressor package. Cable from this earth pit shall be in the bidder's scope. Owner's earthing main ring shall be made available at compressor foundation. Cable to control panel body earth inside the compressor package shall be in the bidder's scope.

#### 4.0 BASIC DESIGN

##### 4.1 General

4.1.1 The Compressor shall meet all the technical requirements as specified in:

1. Data Sheets: As enclosed
2. Technical Specification:
3. Codes and standards as indicated in clause 1.2

4. Compressor and its auxiliary's design shall be in conformity with API 11P, second edition, API 618.

4.1.2 Gas composition as indicated in this technical specifications shall be used for Compressor selection, sizing and performance guarantee estimates. However compressor shall be suitable for continuous operation with the indicated gas composition range and operating parameters given in this tender.

4.1.3 The gas pressure in the inlet pipe at the battery limit varies from 14 kg/cm<sup>2</sup>(g) to 19 kg/cm<sup>2</sup>(g). Bidder to provide PRV with slam shut off valve of 300# rating at gas inlet of compressor to protect the downstream distribution piping and fixtures from experiencing excess unsafe pressures in the event that outlet pressure of the high flow PRV rises above an acceptable level. Outlet pressure of PRV should be in the range of 14 to 19 Kg/cm<sup>2</sup>(g) and it may have multiple springs to regulate the pressure. Duplex filter shall be installed before PRV. However, sizing of the compressor for 400 SCMH capacity at discharge pressure of 255 kg/cm<sup>2</sup>(g) shall be carried out at 16 kg/cm<sup>2</sup>(g) suction pressure. Suction pressure transmitters shall be provided to protect the compressor from very high and low pressure.

4.1.4 Bidder's offer shall be based on firm and final compressor / Motor make and models on which basis the offer shall be evaluated and no alternate compressor / Motor make and models or change of make and models to lower frame shall be entertained

4.1.5 Note that the pressures given on the data sheet are at the compressor package battery limits, Bidder shall consider all pressure losses at suction, inter-stage and discharge at the specified capacity (with no - ve tolerance) for compressor and indicate the same on the data sheets.

##### 4.2 Allowable speeds, temperature and vibration levels

4.2.1 The linear piston speed shall be limited to 4 m/sec for non-lubricated and 4.5 m/sec for lubricated compressors.

- 4.2.2 The maximum discharge gas temperature for each stage shall be limited to 150°C.
- 4.2.3 Compressor maximum vibrations at cylinders and at frame shall not exceed 10 mm /sec. And 5 mm/s respectively unfiltered peak velocity. The Bidder shall provide for all structural support within the package so that these levels can be achieved.

#### **4.3 Piston Rod, Bearings and Cross Heads**

- 4.3.1 The surface hardness of Rockwell C 50 minimum is required on piston rods in the areas that pass through the packing. Rolled threads shall be provided on the rods with thread relief area as polished.
- 4.3.2 Crosshead shall be manufacturer standard material and designs. Adequate openings for removal of the crossheads shall be provided.
- 4.3.3 Piston rod and cross head pin loading at any specified operating condition at the relief valve set pressure shall not exceed 80% of the maximum design rod load of the offered compressor. Rod loads shall have sufficient reversals in direction for all specified operating conditions including RV Settings and part load operation.
- 4.3.4 Frame rating as published in catalogues of the offered compressor model shall be min 1.1 times the required rating corresponding to max severe operating conditions taking into account temperature correction factor.

#### **4.4 Packing Cases and Pressure Packing**

- 4.4.1 All oil wiper, intermediate seal and gas cylinder pressure packing shall be segmental rings with corrosion resistant garter springs. The pressure packing case shall be provided with a common vent and drain below the piston rod piped to the outside of the distance piece. However if pressurized crankcase type design is used, packing vent and drain shall not be applicable.
- 4.4.2 ERW/ seamless steel tubing conforming to ASTM A-192 or series 300 SS tubing conforming to ASTM A-269 with minimum thickness as specified in Cl. 7.11 of API-11P shall be used for vent piping.
- 4.4.3 Packing vent piping inside of the distance piece shall be designed for the maximum allowable working pressure of the cylinder.

#### **4.5 Compressor Frame Lubrication**

- 4.5.1 Compressor frame lubrication shall be pressurized system, with a main oil pump driven directly by the compressor shaft.
- 4.5.2 If required the Bidder shall provide manually operated/ air/electric motor driven pre lubrication pump. Crankcase shall be fitted with lube oil temp & oil level sight glass. The maximum and minimum operating levels shall be permanently indicated.
- 4.5.3 All lube oil piping after oil filter shall be 300 series stainless steel conforming to ASTM

A269.

- 4.5.4 Heating shall be provided for reservoir if applicable for the bidder's design of compressor when the minimum ambient temperature is less than the Bidder's required minimum startup temperature.
- 4.5.5 Heater besides meeting the area classification requirements specified in the Tender shall be star connected if designed for operation on 3-phase (4 wire), 440V, and 50 Hz supply.

#### **4.6 Distance Pieces**

- 4.6.1 Distance piece as per ISO 13631-2002 with cylinder side compartment vented to safe location is specified Distance piece as per manufacturer's standard design which is used in the earlier supplied successfully running packages is also accepted.
- 4.6.2 Distance pieces shall be provided with gasketed, solid covers and shall be suitable for a minimum differential compartment pressure of 1.75 kg/cm<sup>2</sup>g.
- 4.6.3 Distance piece as per API-11P with cylinder side compartment vented to safe location is specified.

#### **4.7 Cylinder and Packing Lubrication**

- 4.7.1 Divider block or single point type lubrication system/Single plunger per point force feed mechanical lubricator shall be provided for lubrication to compressor cylinders. Block-distribution lubrication systems shall be complete with no-flow shutdown, rupture relief discs, check valves, filter, common sight glass and carbon steel or austenitic stainless steel tubing. For pump-to-point lubrication systems, a sight indicator for each point, check valves and carbon steel or austenitic stainless steel tubing shall be furnished.
- 4.7.2 Lubricators shall be driven by crankshaft and bidder shall highlight any pre lubrication requirements of the cylinders and the method of achieving the same.
- 4.7.3 Lubricators shall have a sight flow indicator for each lubricator point and a stainless steel double ball check valve shall be provided at each lubrication point. Common sight flow indicator for Divider Block is also acceptable. Brass NRV shall also be acceptable.
- 4.7.4 Digital no flow timer shall be provided to stop the compressor in case of loss of cylinder lubrication.
- 4.7.5 Lubricator reservoir capacity shall be adequate for 100 Hrs of normal flow, and shall be equipped with low level alarm.
- 4.7.6 Bidder along with the proposal shall furnish the recommended lubricating oil type, International Grades & Specification along with their quantity and frequency of change. The recommended oil shall be compatible with gaskets, O-rings, seals, packing,

lubricatorparts and other parts coming into contact.

4.7.7 In case divider block Common indicator shall be provided. Brass NRV shall also be acceptable

## 4.8 Cooling System

### 4.8.1 Compressor Cylinder

Compressor cylinders may be air-cooled or water-cooled. The CW shall be cooled by an air-cooled heat exchanger.

### 4.8.2 Inter / After Gas Coolers

Air-cooled inter-stage and final stage discharge coolers shall be provided which shall limit the gas temperature after the after cooler to 52OC. For calculating the surface area of the air cooler the ambient air temperature of 42OC and 80% RH shall be considered. Cooler design shall be on the basis of 10% excess capacity than required corresponding to suction pressure of 19 kg/cm<sup>2</sup>. Gas sections of coolers shall be designed as per API-661 with manufacturer standard deviations. The Gas and water sections shall not be "U" code stamped but TPI inspected. Vibration switch shall be provided on their heat exchanger to trip the compressor on high vibration limit. Bidder shall indicate vibration level in the offer. For cooling of the Heat Exchangers a cooling fan to be provided inside the enclosure(s). Cooling system shall be preferably installed on the same skid as the compressor due to space constraints. Bidder shall submit cooler sizing calculation for review / records.

## 4.9 Separators & Oil Removal System

4.9.1 Carbon Steel separators / KOD volume bottles with auto and manual drains system shall be provided for the capacity as required.

4.9.2 All pressure vessels shall be designed as per ASME VIII Div. 1 or equivalent.

4.9.3 Scrubber service class - B shall be used for Inter-stage / discharge scrubbers. Service Class - C shall be used for suction scrubber. (Refer API -11P)

- The offered scrubber and mist removal shall restrict the oil level to < 5 ppm in the discharge gas of compressor.
- SS mesh pad shall be used in the scrubbers.
- All vessels including pulsation dampers shall be fully (100 %) radiographed as per ASME VIII UW (a) or equivalent.
- NRV shall be provided on suction of scrubber drains.

4.9.4 Minimum design temperature for separators/KOD/volume bottle shall be 71OC and minimum design pressure shall be maximum operating pressure plus 15% for inter-stages and plus 10% for final stage.

4.9.5 NRV shall be provided on suction, 1st stage, 2nd stage, 3rd stage separators/KOD/volume bottle drains

4.9.6 Gas recovery system: Bidder shall provide blow-down tank to act as:

- A buffer tank during start-up.
- Gas flow dampener during compressor operation
- Surge tank for depressurization of each of the compressor stage piston cylinders during shutdown.
- Blow-down tank size should be to manufacturer's design standards. The gas recovery vessel shall be provided with pressure relief valve and necessary instrumentation to avoid cold flaring of gas.
- Capacity shall be suitable to prevent any venting.
- Suction damper and gas recovery vessel shall preferably not be combined and one pressure regulator with isolation valve shall be provided to connect gas recovery vessel with compressor suction. If suction damper and gas recovery vessel are combined pressure regulator after gas recovery vessel will not be allowed due to high pressure drop during compressor operation.
- In case pressure regulator valve (PRV) is to be installed in main suction line up to 1st stage compressor cylinder from gas recovery vessel, an SOV operated auto shutoff valve bypassing PRV shall be provided. If pressure at 1st stage of compressor cylinder inlet is more than 19 kg/cm<sup>2</sup>, the auto shut off valve should be closed to prevent the compressor from overloading and gas should go to cylinder through PRV. However, if gas pressure is  $\leq 19$  kg/cm<sup>2</sup> shut off valve should be in open condition to prevent pressure loss through PRV so that the compressor can be operated at maximum capacity corresponding to suction pressure. The pressure drop in PRV shall be as minimum as possible and should not be more than 0.6 kg/cm<sup>2</sup>.
- One vent line from gas recovery vessel with double isolation valves shall be provided.

4.9.7 All separators / KOD's/volume bottles shall be provided with 3 mm corrosion allowance.

4.9.8 Oil from all drains shall be collected into the oil recovery pot. Oil recovery pot of suitable capacity shall be provided with double isolation manual valve and level gauge.

4.9.9 Coalescent super fine filters (preferably two stage) Third Party approved, for removal of liquid (e.g. water & oil) and solid particles down to 0.1 microns out of compressed natural gas shall be provided. Residual Oil Contents shall be less than 1 PPM. Automatic drains with On-off valve connected to Gas recovery vessel shall be provided. The filters shall be sized to flow min. 200% of the flow at suction pressure of 19 kg/cm<sup>2</sup>(g) and discharge pressure of 255 Kg/cm<sup>2</sup> (g). However mechanical design shall be based on safety set pressure.

**4.10** Pulsation, Vibration Control and Analog Study

4.10.1 Suitable arrangement for inter stage pulsation damping shall be provided in confirmation to API 618 and API 11P. The bidder has to give compliance report that they have already

conducted such type of Pulsation, Vibration Control and Analog Study and offered compressor is safe.

4.10.2 If felt necessary by bidder, the acoustic and mechanical evaluation study shall be carried out for compressor package (from inlet flange to discharge on skid edge as per API-618 approach-3) by an agency or in house experts. The compressor Bidder shall be totally responsible for all the coordination with the agency carrying out the study. If acoustic and mechanical evaluation study is carried out, the same shall be submitted to purchaser/CONSULTANT for review.

#### **4.12 Enclosure of CNG Compressor Package**

- 4.12.1 The maximum allowed temperature within the enclosure shall be 5°C above ambient temperature. Adequate ventilation fans shall be provided to meet the above and also to account for heat dissipation of the coolers. Interlock shall be provided to start the exhaust fan to vent out any entrapped gases in the enclosure before starting the main compressor.
- 4.12.2 The compressor package shall consist of single enclosure for Compressor and Motor. The equipment shall be mounted on one common skid. The Enclosure to restrict maximum noise level to 80 dB (A) at 1 meter from the enclosure.
- 4.12.3 Compressor canopy shall be weather proof and designed such that water cannot enter in the canopy and material used inside canopy shall be fire retardant
- 4.12.4 The enclosures shall have doors for normal access and removable wall panels for ease of maintenance of all the components.
- 4.12.5 All the pressure, temperature, gas flow meter, oil level, lube oil pressure, coolant temperature, coolant level indicators shall be visible from outside of enclosures. Enclosures as per the design of the manufacturer through gauge panel. However if due to space constraint some of the Instruments not visible from outside of enclosure then proper accessibility has to be provided for reading the parameters from the Instruments. The Flow meters shall be installed in such a way that if required reading can be taken safely on running of compressor during performance testing.
- 4.12.6 Enclosures shall have internal flame proof lighting arrangement. The local control panel should also have flame proof lighting.
- 4.12.7 For handling of all heavy parts for maintenance purpose lifting arrangement i.e. beam fitted with chain hoist shall be provided in enclosure.
- 4.12.8 The Compressor shall be located inside an acoustic enclosure. All Coolers, Knock out Drums, Scrubbers, Cooling System, lubrication system along with interconnecting piping shall be inside an enclosure. Enough headroom shall be made available for easy access and maintenance of all equipment.

- Components such as pressure gauges, temperature, pressure switches, filter automatic ball valves, safety valves etc., which require in-situ adjustment, maintenance and reading, shall be easily accessible.
- Tray/Conduits and tubing shall be arranged in orderly and systematic manner and shall be routed neatly to enter the back of display or monitoring panels.
- Routine service item such as, but not limited to, crank case oil filters, inter stage gas filters, inlet and outlets gas filters and drive belt (if applicable) shall be located to facilitate easy one-man servicing.
- One person should be able to access crank case oil inlet and drains to allow addition or drainage of oil without removing panels or adjacent components and without the need of the pump.
- Items which must be operated & monitored during operation shall be readily accessible without opening the door.
- Suitable gradients shall be provided on the enclosure roof for rain drainage and to avoid water pockets.
- One vent line with double isolation valve shall be provided to emptying the package at 3rd stage separator.
- Communication/Control cables shall be routed through Cable Trays/conduits

#### **4.13 Piping**

- 4.13.1 All gas piping shall be designed, fabricated & tested in accordance with ANSI B 31.3.
- 4.13.2 Low pressure Gas piping shall be seamless carbon steel manufacturing in accordance with ASTM A - 106 Grade B. All Gas piping shall be flanged connections. Pipe wall minimum thickness shall be in accordance with Table 4 of ISO 13631:2002.
- 4.13.3 All rigid piping, tubing & other components of compressor package shall be designed for full range of pressure & temp and loading to which they may be subjected with a factor of safety of at least 4 based on minimum specified tensile strength at specified ambient temperature.
- 4.13.4 All rigid piping shall be continuous between their respective components & free of connections except welded joints. All high pressure joints shall be welded unless otherwise not feasible.
- 4.13.5 The instrument air tubing material shall be SS316 as per ASTM A269.
- 4.13.6 All high-pressure double ferrule fitting and 2/3 way valves shall be of S.S. material only. Material of tube shall also be SS316 as per ASTM A269.
- 4.13.7 Bidder shall furnish a temporary start up conical strainer fitted with adequate size mesh
- 4.13.8 Bidder shall furnish a basket strainer fitted with adequate size mesh at the gas inlet. The

free area of the strainer element shall be at least four (4) times the internal area of the connecting pipe lines. Flow area in any portion of Basket strainer assembly shall not be less than the pipe cross sectional area. The strainer element shall be with the mesh of 5 micron. Pressure drop in clean condition shall not be more than 4.0 MWC. Wire mesh of the strainers shall be suitably reinforced, to avoid buckling under operation. Strainer shall have screwed blow off connection fitted with a removable plug. The strainer will have a permanent stainless steel tag fixed on the strainer body indicating the strainer tag number and service and other salient data. The size of the strainer and the flow direction will be indicated on the strainer body casting. Thickness of the strainerelement should be designed to withstand the pressure developed within the strainer due to 100% clogged condition exerting shut-off pressure on the element.

4.13.9 All lube oil piping downstream of filter shall be series 300 Stainless Steel. Pressurized lubricating oil lines downstream of the filter (with the exception of cast-in-frame lines or passages) shall be made of austenitic stainless steel. For either tubing or piping, bends shall be used to minimize the number of fittings wherever possible. Steel fittings shall be furnished with stainless steel tubing. Pressure piping downstream of oil filters shall be free of internal obstructions or pockets (such as those created by socket weld fittings) that could accumulate dirt at pipe joints. Non-consumable back-up rings and sleeve-type joints shall not be used. Other piping fittings shall be of the socket-weld or butt-weld type. When butt welds are necessary, such precautions as internal grinding of joints and use of gas tungsten-arc welding for the first weld pass shall be taken to prevent weld splatter inside the lines. After fabrication, oil lines shall be thoroughly cleaned and preserved. In addition, carbon steel piping shall be pickled and passivated.

4.13.10 External drain & vent piping shall be Carbon Steel and not less than 1" nominal size. However, all the internal drains shall be SS 316 tube as per ASTM A269. However all the internal drains shall be SS 300 series material.

4.13.11 Mercaptan/ THT dosing is envisaged hence all materials coming in contact with gas shall be compatible to such gas with Mercaptan/ THT dosing and be of compressor manufacturer's standard. The use of SA 515 material is prohibited.

4.13.12 All piping after coalescent filter at compressor discharge shall be of SS 316.

4.13.13 The instrument air header up to compressor enclosure and CO<sub>2</sub> piping shall be seamless CS.

4.13.14 All low pressure and high pressure gas piping joints fabricated at site / shop shall be 100% radiographed after welding.

4.13.15 Design of piping systems shall achieve the following:

- Proper support and protection to prevent damage from vibration or from shipment, operation and maintenance;
- Minimize loads on the nozzles of cylinders and pulsation suppression devices;
- Avoidance of pipe work bending forces and/or introduction of adequate flexibility to minimize stress;
- Good accessibility for operation, maintenance and cleaning;

Installation in a neat and orderly arrangement adapted to the contour of the machine and not obstructing access openings;

- Elimination of air pockets;
- Complete drainage through low points without piping disassembly;
- Elimination of low points in the inlet process piping including recycle/by-pass piping that could trap liquid;
- Use of pipe clamps on all gas piping and on all piping DN 50 (2 in) and larger;
- Supports shall not be welded directly to gas piping.
- Following certificates have to be submitted for piping fabricated at Site & shop
  - A. Electrode qualification test procedure
  - B. Proposed Welding procedure specification with impact test
  - C. Electrode qualification test results.
  - D. Procedure qualification test results and final WPS.
  - E. Welder's qualification test.

#### **4.14 Coupling**

4.14.1 V-Belt drive / Direct drive acceptable.

### **5.0 ELECTRICS & INSTRUMENTATION CONTROL:**

#### **5.1 Starter/Control Panel/ Control philosophy**

5.1.1 FLP Panel shall be complete with all FLP equipments like start and stop push buttons, power on and fault indication lamps, fault reset button. All necessary timers and intrinsically safe relays to control the system on an automatic starting and stopping basis shall be provided. The compressor package control system shall be designed for unattended operation in automatic mode and in case of any fault it will go in a safe mode.

5.1.2 Doors shall be interlocked isolator. Panel shall be complete with start and stop push buttons, hours run meter, power on and fault indication lamps, fault reset button. All necessary timers and intrinsically safe relays to control the system on an automatic starting and stopping basis shall be provided. The compressor package control system shall be designed for unattended operation in automatic mode and in case of any fault it will go in a safe mode.

5.1.3

Compressor Package shall be provided with a PLC based LCP, which shall be mounted on the package enclosure. PLC shall be housed inside flameproof IIA/IIB (Ex'd') enclosure. Local operator panel shall also be provided on the flameproof enclosure. All the interlock, monitoring and controlling of the CNG compressor package shall be done through PLC based control system which will be of proven type and make. PLC hardware shall be in accordance with IEC-61131-2 and PLC programming shall be made only in ladder diagram, however PLC shall be capable to convert programmed in flow chart, functional block diagram, structural text etc in accordance with IEC-61131-3. PLC shall be provided with display & scrolling facilities to view process & machine parameters. All source & object codes including logic flow chart, ladder diagram etc is to be furnished by the Packager during detailed engineering. Provision shall be made so that the same can be viewed on Laptop.

5.1.4

PLC shall be suitable for recording of compressor parameters as indicated in instrumentation and all other parameters that are recommended by the compressor manufacturer for recording on hourly basis for the last 24 hours.

5.1.5

PLC shall be suitable for interfacing with printer (HP Laser printer) for getting the print out of the parameters recorded (as mentioned above) for the last 24 hours through remote HMI PC

5.1.6

The units of measurement for flow shall be Kg/hr, for pressure shall be Kg/cm<sup>2</sup>(g) and temperature shall be in degree Centigrade.

5.1.7

PLC shall be of modular in construction with redundant CPU with EEPROM, redundant interface module, redundant power supply for CPU and HMI, redundant power supply for load ,non redundant I/Os, communication cards for connecting mass flow meter, communication card card/port for future SCADA connectivity. The selected I/O shall have 20% spare capacity for future use. Diagnosis feature shall be available in CPU and I/O used in PLC. Mounting of PLC components such as CPU, HMI, I/Os in one JB and power supply relay barriers/isolators, fuses, MCB, electrical earthing bus bar in other JB. PLC components / system shall be tropicalised, adopted with complete wiring and necessary terminals. Wiring to be color-coded with cross printed ferrule in position. Mass to volume calculation is not required; however, bidder shall provide a soft tag for entering standard density up to 2 decimal point with the help of external push button in PLC for converting mass flow rate to volume flow rate. PLC shall be configured as a remote terminal unit of supervisory computer and data acquisition system complete with dial up connectivity. PLC shall be capable of carrying out on line routines for at least ten separate loops without affecting the scan, cycle & up dating time etc.

5.1.8

The PLC System offered shall be supplied with monitor and shall be capable of:

a)

Compressor Control & Emergency Shut down

b)

Fire and gas detection and monitoring

c) Graphics, Data acquisition, monitoring & logging, viewing, modifying set point and range of all process parameters for which transmitters are provided.

d) Record the last 20 Alarms of abnormal operations on separate page.

e) Viewing process diagram with on line data on line.

f) Viewing trend of min 10 critical parameters.

g) Shall have historical as well as event recording system for at least last 200 events

h) PLC shall be capable for display of flow meter data for flow rate and flow totalizer(i.e. Gas Suction, Gas Discharge), compressor running hour etc. in following manner:

- Shift wise (for 3 shift operation i.e. 06:00-14:00, 14:00-22:00 & 22:00-06:00)- shall be available for at least last 96 hours with date stamping
- Daily basis- shall be available for at least last 31 days with date stamping. The above data will be viewed / analyzed offline (during shutdown of compressor) or online through dedicated SCADA port (Ethernet / RS 485) on laptop / Local PC. Necessary software for downloading data and processing as define above shall be provided. 10 Meter cable with suitable adaptor (if required) shall be provided.

5.1.9 The compressor package control system shall be so designed that the first item to go into alarm condition shall lock out to indicate the cause of the trip though the cause of the trip may have disappeared. The lock out condition shall be manually reset. A change over set of contacts shall be provided for Owner's use to give a remote indication of alarm and trip. Where three bank cascade has been envisaged ; in auto mode, compressor shall start automatically in case high bank storage pressure falls below 220 kg/cm<sup>2</sup>(g) and stop as soon as pressure in all three banks of stationery cascade and mobile cascade reaches 255 kg/cm<sup>2</sup>(g). Where only one bank cascade has been envisaged; in auto mode, compressor shall start automatically in case storage pressure falls below 220 kg/cm<sup>2</sup>(g) and stop as soon as pressure in cascade and mobile cascade reaches 255 kg/cm<sup>2</sup>(g). In manual mode the compressor shall also stop at 255 kg/cm<sup>2</sup>(g) pressure. The priority fill system (In Bidder's scope) shall ensure the filling of vehicle. Control system shall be designed such that in case of any fault, discrepancy or abnormality, it will go in safe mode. All controls shall be made in fail-safe mode & failure of any control shall not lead to operation of equipment/ system in unsafe condition. In case of fault, a warning hooter shall operate, the sound of which should be audible at distance of at least 15 meter. Further the fault alarm and emergency stop PB shall be duplicated in the CNG station control room. Acknowledgement/resetting of fault shall be possible only from compressor panel. There shall be red and green indication at top of enclosure to indicate code no. of alarm/trip in red color. List of alarm with code no shall be indicated on SS plate and to be fixed at compressor enclosure. Acknowledgement/resetting of fault shall be possible only from compressor panel. Emergency stop PBs shall be mushroom head turn lockable type. Once the fault is acknowledged or compressor is under normal

maintenance, the valves of priority panel shall take the position so that gas available in the stationary CNG storage cascade can be dispensed.

The pressure in each bank shall be monitored from downstream of priority panel.

- Pressures in each bank of stationary storage cascades.
- Pressure at outlet for dispenser.
- Pressure at outlet for mobile cascades.
- Control Air Pressure
- Indicators, Alarms and Trips as per Equipment Data Sheets
- Pre alarm to be incorporated in the software before machine trips in predefined values of Pressure & temperatures.

5.1.10 Calibration certificates of all instruments such as Pressure, Temperature, flow meter, vibration, KWH meter, SRV, GD FD etc shall be valid at the time of string test, compressor commissioning and Performance Guarantee testing.

5.1.11 Vendor shall ensure to calibrate the instruments during O&M period and calibration shall be valid up to three months from expiry of O&M period.

5.1.12 Vendor has to calibrate Pressure & Temperature instruments within 1 month of compressor commissioning or before Performance Guarantee testing.

**5.2** The priority fill systems: the priority panel shall ensure the filing of vehicleS. The priority fill system shall ensure 200-kg/cm<sup>2</sup>g pressure in CNG dispenser outlet port. Design of priority fill system shall be aimed to achieve maximum flow rate through combined flow from compressor and cascade arrangement. All priorities shall be with full bore ball valves having high CV. Bidder shall indicate flow rate achievable through proposed priority fill system design. All tubing and valves shall be  $\frac{3}{4}$ " size for 400 SM3/h and above compressor. One isolation valve at outlet of each line shall be provided. All the pneumatic tubing for Solenoid of priority shall be of SS 304 only.

### **Number of priority panel required shall be as per SOR/ MR.**

The details for various configuration of priority panel for different type of CNG stations including priority fill panel design to deliver the CNG shall be as follows

HMI shall be provided with touch screen and operating system software (with minimum all the features of operator panel MP277B/ TP1200Comfort min. 10" graphic display of Siemens/Schneider), software's for interlocking, monitoring and control. All operational buttons shall be on touch screen except the Emergency stop button. Touch screen display system shall be weather proof to IP65. This should be provided in the flame proof panel with HMI mounted on the door of the panel. The HMI screen shall be back side of the toughened glass. During running

of the compressor the HMI should be assessable through the external push button provided on the panel. The PLC shall be interfaced with SCADA in future. All the parameters on the PLC shall be available on the HMI. Bidder shall provide Application program for PLC, HMI on LCP (licensed one set) along with all interfacing adaptors and cables. Bidder shall also provide one set of source & object codes for PLC, HMI on LCP (in both forms, hard & soft).

#### 5.4 Emergency Shut Down

Bidder shall provide emergency shut down (ESD) system in the control room as well as locally mounted near the Compressor. Fail-safe system shall be designed and incorporated to isolate cascade storage from dispenser, stop compressor, and isolate the compressor suction and discharge lines. ESD switch shall have to be manually reset to restart the compressor package again. ESD shall activate either on pressing emergency push button (red button) or on fire detection. Red ESD (4no.) shall be located one no. on compressor, one no. in control room, one no. in process area, one no. near dispenser.

In addition to the above, Separate ESD push button shall be provided in LCP other than the packaged emergency push button. This push button shall be directly wired with fuel shut off valve. On pressing the button it shall immediately cut off the fuel supply and ground the ignition system for immediate stop of the machine. A spare contact from the emergency push button shall be connected in PLC to initiate other auxiliaries shut down and indicate alarm as "hard ware emergency push button press".

#### 5.5 Electric and control panel:( Refer Annexure E & E1 for detail)

#### 5.6 FLP Electric Motor for Air compressor (Refer Annexure E & E1 for detail)

#### 5.7 CABLING (Refer Annexure E & E1 for detail)

#### 5.8 Electrical cables (Refer Annexure E&E1 for detail)

#### 5.9 INSTRUMENTATION

5.9.1 All Instruments shall be suitable for an area classification of "Class 1, Group D, Division 1 as per NEC" OR "Zone 1, Group IIA /IIB as per IS/ IEC".

5.9.2 All package mounted transmitters & temperature element shall be intrinsic safe "ib" as per IEC 79- 11 and solenoid valves, switches and related junction boxes shall be flame proof "D" as per IEC 79-1. Other special equipment's/instruments, where intrinsic safety is not feasible or available, shall be flame proof as per IEC 79-1.

5.9.3 The compressor package instrumentation & control is to be configured for manual as

wellfully automatic control system including starting, shutdown as applicable for unattended operation. Control system shall be PLC based of a reputed make and proven type.

- 5.9.4 Electrical instrumentation shall be certified by a recognized authority such as BASEEFA, PTB, LCIE, CESI, INIEX, CMRS or any agency approved by Indian Government.
- 5.9.5 All the instrumentation shall be capable of operating for full range of operation.
- 5.9.6 Separate junction boxes shall be provided for each type of signal i.e., analog, digital, solenoids, RTD thermocouple and power supply
- 5.9.7 RTD shall be 3 wire PT-100 and duplex type, thermocouple shall be K type and solenoid valve shall be 24 V DC operated.
- 5.9.8 Power cable, analog signal cable, digital signal cable shall be separately laid and properly tagged.
- 5.9.9 All pressure gauges and pressure transmitters shall be provided with isolation valves andhave accuracy of + or - 1% of FSD and + or - 0.25% of FSD respectively.
- 5.9.10 Pressure transmitters shall be fixed range type with 2 wire 4 to 20 mA transmitter of piezoresisitive suitable for CNG applications except at suction and discharge which is 2 wire smart type 4 to 20 mA transmitter with integral display and IP 67 certified & ex-proof.
- 5.9.11 The temperature gauge shall be generally mercury or Gel filled in steel filled type, weatherproof & with capillary extension. Capillary tubing shall be min Carbon Steel with CS flexible armoring. The gauge shall have accuracy of + or - 1% FSD. The range shall be 1.5 times of operating temperature.
- 5.9.12 Units of measurement shall be:
  - GAS FLOW: SM3/hr & kg/hr
  - PRESSURE: kg/cm<sup>2</sup> (g)
  - TEMPERATURE: 0C
- 5.9.13 Two no. of RS 485/RS232 Serial Communication Ports shall be provided for Hooking up the PLC to SCADA & Laptop PC at PLC end in future. Necessary adopter if required shall be under scope of vendor. Also, Vendor shall include one set of all licensed relevant Software (Windows operating system based system configuration software and application program) for accessing the PLC, HMI and mass flow meter through Laptop or PC. All the parameters available on the PLC through SCADA system are required. The detail requirement of SCADA will be communicated to successful vendor during detailed engineering / O&M, as per the requirement by client. For selection of equipment, compatibility of SCADA system vendor shall consider the Modbus RTU

protocol, FCC-68 RJ 45 connection type RS 232 communication standard, Baud rate up to 19.2 K with configurable software.

5.9.14 Following points to be noted regarding Mass Flow meter – Coriolis type required at Suction, Discharge .

- Each Mass Flow meter shall include a sensor with integral transmitter i.e. meter electronics certified intrinsically safe/explosion proof by statutory authority suitable for the required hazardous area as per IS-2148 /IEC-79. Also the offered sensor and the transmitter shall be weather proof to IP 65 as per IS-2147/IEC-529. Statutory authority for local installation is CCOE/PESO.
- For online Calibration of MFM; Vendor to provide suitable arrangement to connect Master Mass flow meter (Prover) with Compressor Suction & Compressor Discharge flow meter for calibration purpose. Indicate and provide the details in P&ID.
- Offered mass flow meter shall be necessary for Custody Transfer application at compressor suction and discharge and accuracy should be in the range of 0.5% of span. Type of approval certificate from W&M India is required.
- Vendor has to calibrate all instruments including mass flow meter and perform pressure vessel testing within 1 month of compressor commissioning.
- Flying lead type electrical termination is not acceptable. All electrical connections shall be  $\frac{1}{2}$ " NPTF. Cable glands shall be provided for electrical power, signal and control connections. Cable glands shall be double compression type and certified weather proof and explosion proof for the required area classification as per IS-2147 and IS-2148.
- Offered Mass flow meter shall be completely free from corrosion of measuring tube due to alternating stresses continuously occurring in the tube. Also measuring tube shall be completely free from erosion, which may result due to fluid velocity.
- The design of meter electronics shall be in compliance with the electromagnetic compatibility requirements as per IEC-801.
- Meter Electronics shall include all the associated pre-amplifiers converters line riser etc and shall have enough diagnostic facility to correct live zero, variation, meter factor etc with help of Laptop. Output of the mass flow meter RS 485 type/ RS 232 to PLC shall be utilized. Mass flow meter shall be powered by 24 V DC only.
- Installation details as per AGA-11 recommendations have to be followed. For Horizontal / Vertical installations support etc. OEM recommendations shall be followed and to be provided.
- Vendor shall calibrate each Mass Flow meter from the statutory authority of country of origin or any recognized test house (for India from FCRI) with the fluid for which it is to be used. In case it is not possible to calibrate the Mass Flow meter with actual fluid.

Vendor must indicate.

- a) Fluid used for calibration
- b) Correction factor/Adjustment required for actual process fluid. In any case, inaccuracy when extended to actual process shall not exceed the specified limits (as per manufacturer's standard).

The calibration certificate should be valid for at the time of supply. The validity of calibration will be considered one year from the date of calibration. If the same is expired then the recalibration has to be done from FCRI as per the latest NABL/IS standards with the fluid.

- Vendor shall submit the following test certificates and test reports for purchaser's review:- a) Material test certificate with detailed chemical analysis from foundry (MIL Certificate).
- b) Certificate of radiography / x-ray for any welded joint.
- c) Hydrostatic test report with pressure of 1.5 times the design pressure.
- d) Calibration report including calibration factors for each Mass flow meter certificate from statutory body for offered sensor and transmitter for required area classification.
- e) W&M India certificates.

#### 5.9.15 CERTIFICATION:

The requirement of statutory approvals for usage of equipment/instruments/system in electrically hazardous areas shall be as follows:

- a) The vendor shall be responsible for obtaining all statutory approvals, as applicable for all instruments and control systems.
- b) Equipment's/instruments/systems located in electrically hazardous areas shall be certified for use by statutory authorities for their use in the area of their installation. In general, the following verification shall be provided by the vendor.
  - Bidder shall provide certificates (from BASEEFA FM, UL, PTB, LCIE etc.) from country of origin for all intrinsically safe/flameproof protected by other methods equipment/instrument/systems, which are manufactured outside India. If required, bidder shall provide necessary certification/approvals/authentication, for all such intrinsically safe/flameproof equipment/instrument/systems, by the Indian authority—Chief Controller of Explosive (CCOE)/PESO, Nagpur, India.
  - For all flame proof equipments manufactured within India, the testing shall be carried out by any of the approved testing houses- Central Mining Research Institute (CMRI)/ERTL etc. The item shall in addition bear the valid certification from CCOE.
  - For all intrinsically safe equipment manufactured within India the testing shall be carried

out by any of the approved testing houses – Central Mining Research Institute (CMRI)/ERTL etc. The item shall in addition bear the valid certification from CCOE.

5.10 Earthing of equipment:

5.10.1 Bidders shall make provisions for earthing of the complete package as required as per IS(Earth pits are not in Bidder's scope). All electrics shall comply with latest IS/IEC. Epoxy based paints shall be applied on all electrical equipments. Bidder's scope shall include obtaining statutory approvals for the complete package, wherever necessary.

5.10.2 Dedicated Instrumentation earthing has to be provided.

5.10.3 Metallic part of all equipment not intended to be alive shall be connected to earth as per provisions of IS: 3043/IEC recommendation. Grounding of all electronics shall be separately connected to earth using insulated copper wire. Grounding of electronic equipment shall not be connected to earthing for electrics or equi-potential bonding

## 6.0 INSPECTION AND TESTING

6.1 General

a) Inspection and Test Requirements have been spelled out in respective Equipment Data Sheets and this Technical Specification.

b) Bidder shall confirm compliance to all inspection and testing requirements stipulated therein and include the inspection charges in the lump sum cost.

c) Owner/consultant shall witness tests as per data sheet and this specification. The Bidder shall notify the timing of such inspection and testing at least 15 days in advance to PURCHASER/CONSULTANT. PURCHASER/ CONSULTANT shall depute their representative for witnessing the tests.

d) Bidder shall submit detailed Test Procedure for Approval of the Purchaser two months in advance of the actual date of conducting each test.

e) Inspection testing for foreign bidder: Cost of third party inspection including fees payable and arranging the same shall be borne by bidder. Approved 3rd party inspection agencies are EIL,BVQ, DNV, MECON and Lloyd's reg. TUV/AB- Vincottee/SGS/American bureau services/ Velosi certification services/International certification services limited/BV/Dr.Amin Controllers Pvt. Ltd.

f) Inspection testing for Indian bidder: Owner/Consultant shall carry out Inspection and testing as per QAP, inspection charges shall be considered @1.25% of the ex-works price excluding duty and taxes of the equipment for price evaluation purpose only. Domestic bidder shall also arrange 3rd party for inspection as indicated in QAP and expenses on

thirdparty inspection including fees payable and arranging the same shall be borne by bidder

#### 6.2 Mechanical running test (MRT)

6.2.1 The MRT for each compressors shall be carried out by bidder with job or shop driverincluding complete job driving system i.e., job driven V-belt, job pulleys etc., for 4 hours continuously at shop of compressor manufacturer. The compressor need not be pressure loaded for MRT test. During this test following shall be recorded at agreed intervals.

- Vibration levels measured on cylinders and frame
- Bearing temperature
- Oil cooler inlet and outlet temp
- Sound level

Subsequent to satisfactory run the compressor shall be examined as per standard procedure& following shall be examined as minimum: Internal Inspection certificate for strip test after no-load run of compressor is to be submitted for review of client /consultant.

Strip test is limited to open Crank Case cover, X-Hd guide & Dist.pc. Cover and opening of bore & other parts, piston, one valve per cylinder. Visual examination of position rod if any of part found damaged, all similar components shall be stripped for inspection. The MRT test shall be repeated after replacement of such parts. All the interlocking and performance of the instrumentation systemwill be verified during the MRT.

#### 6.3 Mechanical String Test

Mechanical String Test for 4 hrs shall be performed at packager's shop before dispatchin presence of Purchaser/Consultant. This test can be clubbed up with the Mechanical Run Testof compressor as specified above, provided the job driver, lube Oil system is used for the test. Only natural gas shall be used for string test. All parameters including discharge pressure shall be demonstrated. All the interlocking and performance of the instrumentation system will be verified during the MRT. String test at unload condition is not acceptable.

##### 6.3.1 Compressor capacity during string test for 400 SCMH Motor Driven Compressor

The string test for this compressor shall be performed at suction pressure 14 to 19 kg/cm<sup>2</sup>(g) for 4 hours continuously and the capacity shall be recorded. In case the capacity is found to be not meeting the requirement, the compressor shall not be accepted.

#### 6.4 Package Performance Test (PT)

Bidder shall assemble the complete package including auxiliary systems, instrumentation, safety

devices within the enclosure at his shop and dispatch. Duration of PG test shall be 4 hours with compressor running on continuous basis, however if load is not available at site intermittent running for 4 hours shall be permitted with maintaining minimum continuous operation of  $\frac{1}{2}$  hour. Bidder to submit PG test procedure for review / approval. Complete package shall be performance tested as a module along with Motor & compressor as per Performa (to be decided during engineering). Bidder shall demonstrate all controls, shutdown, trips & alarms, functioning of Instrumentation system, PLC, Motor etc. Pressure and temperature of gas shall be considered at purchaser's boundary limit (or before filter unit of package if provided) and as indicated in the Instrumentation schedule; if provision not available then supplier shall install necessary pressure and temp measuring devices. Discharge PT & TT of compressor will be used for discharge pressure and temperature measurements. All instrument duly calibrated, tools & tackles, any modification required for conducting PT shall be in the scope of supplier.

6.4.1 The PT shall be conducted only after 30 days' running of the machine after successful commissioning or after 30 days from the date of commercial operation, but not later than 90 days from the date of commercial operation of the machine. The delay in conducting PT beyond 90 days shall be liable for PRS unless such delays are solely attributable to the owner (i.e. due to inadequate load, non-availability of CNG vehicles for conducting PT).

6.4.2 The test shall be the basis of assigning penalties on the Bidder, acceptance/rejection of the package thereon. Bidder shall submit the detail test procedure for the same, which shall be approved by PURCHASER/CONSULTANT. The test package shall be witnessed by PURCHASER/CONSULTANT.

6.4.3 Bidder to note that prime mover speed correction shall not be allowed below guaranteed speed. Temperature and pressure will be considered at purchaser's boundary limit, if provision is not available at compressor suction and discharge as explained above.

## 7.0 PRICE LOADING AND COMPENSATION FOR UNDER PERFORMANCE

a) This section describes the guaranteed parameter, which the CNG compressor package must fulfill and the penalty for shortfall in guaranteed parameters and rejection of compressor package by the Purchaser.

b) The guaranteed parameter shall be adjusted to account for variation in gas composition and prevailing ambient condition during testing.

c) Necessary calculations shall have to be furnished by Bidder, which shall be final and no deviation shall be permitted afterwards.

d) In case of any inconsistency in manufacture and/or operation of supplied compressor package, Bidder shall at his own risk and cost, eliminate the defects to the satisfaction of Owner. Bidder shall furnish guaranteed values as per cl. 14 of this specification.

### 7.1 Compressor Capacity

Bidder shall guarantee 400 SCMH capacity of compressor with given gas composition, at suction

pressure of 16 kg/cm<sup>2</sup> (g) and at suction temperature of 30°C, discharge pressure of 255 kg/cm<sup>2</sup> (g) with no Negative tolerance for errors in instruments and measurements.

Since the compressor suction pressure varies from 14 kg/cm<sup>2</sup> g to 19 kg/cm<sup>2</sup> g at present, the compressor shall be suitable to deliver flow corresponding to 14 and 19 kg/cm<sup>2</sup> (g) at present.

In both the above cases the driver shall be selected corresponding to max capacity. Mechanically the compressor shall be suitable to operate from min to max suction pressure without throttle and suction valve full open condition. Bidder to note that the suction pressure and temperature shall be measured at vendor's boundary limit and not at compressor cylinder.

Bidder shall guarantee compressor capacity in SCMH as per MR item no. for design case gas composition, suction pressure and suction temperature as specified against guaranteed condition with discharge pressure of 255 kg/cm<sup>2</sup>(g) with no negative tolerance for errors in instruments and measurements. Mechanically the compressor shall be suitable to operate from min to max suction pressure without throttle and suction valve full open condition.

## 7.2 Loading & Compensation Criteria

This section describes the guaranteed parameter, which the CNG compressor package must fulfil, the penalty for shortfall in guaranteed parameters and rejection of compressor package by the Purchaser.

The guaranteed parameter shall be adjusted to account for variation in gas composition and prevailing ambient condition during testing.

Necessary calculations correction curves shall have to be furnished by Bidder along with bid, which shall be final & no deviation shall be permitted afterwards.

In case of any inconsistency in manufacture and/or operation of supplied compressor package, Bidder shall at his own risk and cost, eliminate the defects to the satisfaction of Owner.

Bidder shall furnish **guaranteed** value as per Annexure enclosed with this specification

### Compressor Capacity

Bidder shall guarantee 400 SCM/hr capacity (as the case may be) of compressor with design case gas composition, at suction pressure of 16 kg/cm<sup>2</sup>g, suction temperature of 30°C, discharge pressure of 250 kg/cm<sup>2</sup>g with the no negative tolerance for errors in instruments and measurements.

Since the compressor suction pressure varies from 14 kg/cm<sup>2</sup>g to 19 kg/cm<sup>2</sup>g the compressor shall be sized / selected for specified capacity of 400 SCMH at 16 kg/cm<sup>2</sup>g (with no -ve tolerance) whereas the driver shall be selected on the basis of compressor BkW with either 14 kg/cm<sup>2</sup>g or 19 kg/cm<sup>2</sup>g whichever is higher.

For calculation purpose 1kg of CNG = 1.37 SCM

The same shall be used to establish the capacity at test bed during package performance test.

#### **A. Loading against Package Gas Loss:**

The bidder shall design the compressor package so that no venting and leakage of gas takes place. Bidder shall indicate actual vent & leakage losses through the compressor package. If package loss is quoted more than 1% of suction capacity gas consumption than bid shall be rejected. This quoted figure will be used for evaluation and total quoted price for all compressor towards supply, special tools and tackles, erection and commissioning will be loaded as per following formulas:

$$F = G \times H \times I \times N \times Df$$

Where,

F = Loading amount in Rs.

G = Vent/Leakage rate quoted in percentage (e.g. The value of G shall be 0.0004 if package gas loss is 0.04%).

H = Prevailing rates of CNG per Kg

I = Avg. no. of running hours per year i.e. @ 3650 hours N = Number of machines

Df = Discounting factor @ 10 % to arrive at Net Present value (NPV) based on 5 Years i.e. 3.791

#### **B. LOADING AGAINST ENERGY CONSUMPTION:**

The compressor package shall be designed in such a way that Energy Consumption (KWH/Kg) should be minimum for production of CNG.

Bidder shall indicate actual Energy consumption for their compressor package. This quoted figure will be used for evaluation and total quoted price for all compressors towards supply, special tools & tackles, erection and commissioning will be loaded as per following formulas:

$$F = (G-Q) \times H \times I \times N \times Df$$

Where,

F = Loading amount in Rs.

G = Bidder's Energy consumption rate quoted in KWH for every 400 SCMH of CNG produced

Q = Lowest Energy consumption rate quoted in KWH for every 400 SCMH of CNG produced

H = Cost of Energy @ INR 11/Kwh

I = Avg. no. of running hours per year i.e. @ 3650 hours N = Number of machines

Df = Discounting factor @ 10 % to arrive at Net Present value (NPV) based on 5 Years i.e. 3.791

Note: Cumulative loading on Gas Loss and Energy consumption limited to 10% of the Gross value (Supply+ CAMC-5 yrs.) of compressor package of H-1 (highest) Bidder .

### 7.3 PENALTIES

#### A. Penalty towards Excess Package Gas Loss and Energy Consumption during PAT to be performed at site:

In case of Performance parameters not matching with the declared / Guaranteed Parameters then penalty shall be suitably levied on pro-rata basis with sole discretion of EIC (HOD Marketing / HOD O&M).

#### B. Penalty for Non-Performance during Period of Operation & Maintenance

Details of Penalty for non-performance of equipment

- a. On normal day (i.e., the day other than the schedule maintenance day): The penalty in case of breakdown / shutdown (beyond stipulated timeframe) would be as below
  - Beyond 8 hours up to 16 hours : Rs 5000
  - Beyond 16 Hours up to 24 hours :Rs 10,000
  - Beyond 24 Hours up to 32 Hours :Rs 15,000
  - Beyond 32 Hours to up to 40 Hours: Rs 20,000
  - Beyond 40 Hours to up to 72 Hours : 25,000
- i. In case there is a continuous breakdown beyond 72 hours up to 15 days, 50% of monthly maintenance charges will be deducted.
- ii. In case there is a continuous breakdown beyond 15 days, which is not in the control of the contractor, no maintenance charges will be paid
- iii. Vendor will make all efforts to maintain operation (availability) for duration of >97.5%. In Case of monthly average availability is below 97.5%. Then penalty @ of Rs 10,000 per % or part thereof shall be applicable.
- b. On schedule maintenance day:
  - i. The party would be required to carry out the recommended schedule/preventive maintenance of the equipment(s) for which the party has to indicate the time required for each type of schedule maintenance.
  - ii. If the equipment is down for more than 4 hours & up to 12 hours beyond the time indicated for the agreed schedule maintenance, the party would be penalized Rs. 20,000/- and for more than 12 hours Rs. 40,000/- per day.
  - iii. In any case, the maximum penalty imposed in a month for non-performance of the equipment

turns out be 50% or more of the amount of O&M charges to be paid to the party per month per compressor (a complete cost break up of O&M charges need to be furnished by the bidder during bid), OWNER will take necessary actions as per terms and conditions of the contract for such non- performance.

### **C. Penalty towards Excess Package Gas Loss and Energy Consumption during Comprehensive AMC period**

In case of Performance parameters not matching with the declared / Guaranteed Parameters then penalty shall be suitably levied on the basis with sole discretion of EIC (HOD Marketing / HOD O&M) and in line with the Clause 7.2 (A) and (B)

## **8.0 PAINTING AND PROTECTION**

### **8.1 SURFACE PREPARATION**

- a. Rust, rust scale and foreign matter shall be removed fully to ensure that a clean and dry surface is obtained. The minimum acceptable standard for blast cleaning shall be Sa 2-1/2 or equivalent as per Swedish Standard SIS-055900-1967 or equivalent.
- b. Blast cleaning shall not be performed where dust can contaminate surfaces undergoing such cleaning or during humid weather conditions having humidity exceeding 85%.
- c. The first coat of primer must be applied by brush on dry surface. This should be done immediately after cleaning.
- d. Surface shall be inspected by Purchaser/ third party before application of primer.

### **8.2 PAINTING (PRIMER & FINISH COAT)**

Following primer and finish coats to be applied on the canopy and all structural parts as a minimum:-

a) Primer	Two component epoxy zinc phosphate primer with minimum volume solids of 59%, an initial cure of 75 minutes at 25 deg. C and a weight of around 2.52 kg/litre
No. of Coats:	1
DFT	75 (micron) $\mu$ each
b) Primer	Two component intermediate coat with epoxy high build MIO (micaceous iron oxide) of minimum volume solids of 80%, an initial cure of 60 minutes at 25 deg. C and a weight of around 2.1 kg/ litre.

No. of Coats	1
DFT	100 micron
c) Finish Coat	: Acrylic Polyurethane paint
No. of Coats:	2
DFT	50 (micron) each coat
Total DFT	100 $\mu$
Total DFT after application of primer and paint shall be 275 $\mu$ (micron)minimum.	

**8.3** The vendor to ensure that exterior steel surface of equipment and piping painted shall have a fade free life without oxidation of paint surface for at least 5 years in an environment of bright sunlight with an intense UV content.

**8.4** The headers of air-cooled exchanger shall be zinc sprayed.

**8.5** Packing shall be sufficiently robust to withstand rough handling during ocean shipment & inland journey. Sling points shall be clearly indicated on crates.

#### 9.0 ERECTION, TESTING AND COMMISSIONING AT SITE

**9.1** Bidder shall be responsible for erection commissioning; performance test, field noise level test and field trial run of all compressor packages at site.

**9.2** Bidder shall be liable to pay all local taxes, levies applicable and comply with rules, laws prevailing in concerned state.

#### 10.0 FIELD TRIAL RUN (Commissioning and Commercial Operation)

Bidder shall conduct a field trial run of each compressor package for minimum 72 hours cumulative or 6 hours continuous duration near the guaranteed points in which satisfactory operation of complete package together with all accessories/auxiliaries controls shall be established for specified operating conditions prior to the start of operation and maintenance period as defined in the contract. During the field trial run the bidder will be allowed a maximum of THREE attempts to complete the above-specified test. The Equipment shall be considered commissioned after the successful completion of Field Trial Run. Further Commencement of commercial operation will be intimated by client.

#### 11.0 SPARE PARTS, SPECIAL TOOLS AND TACKLES

All spare parts as required, special tools & tackles with toolbox for erection and commissioning and during O&M period of compressor package shall be supplied by the packager and shall form his scope of supply. Sufficient numbers of special tools and tackles for compressors, (such as tool for extraction of fly wheel, key to hold crank shaft for loosing & tightening mech seal/bush,

special key to install and uninstall bush for mech seal, piston nut wrench, valve installation tool, rod nut wrench, valve adjusting wrench, etc) as required for Breakdown and scheduled maintenance during the operation & maintenance period shall be supplied by the packager, which shall form the property of PURCHASER. Special tools & tackles used by bidder in during O&M period shall be handed over to purchaser after completion of O&M period.

## 12.0 DATA AND DRAWING

- a. Drawings and Data shall be furnished in conformity with the Bidder Data Requirements Forms attached with Enquiry Specifications.
- b. The data requirement after placement of Fax of intent is indicated in the Bidder Data requirement Forms for the respective equipment, including the number of weeks within which this data is to be provided. Bidder shall confirm that all data as required shall be furnished by him and shall indicate the Bidder's promised data in the columns provided.
- c. After the placement of FOI/FOA, a conference (kick off meeting) will be held at such date and at such place, as may be mutually agreed upon between the Bidder and the Purchaser. The intent of this conference shall be to discuss / clarify various requirements and finalize the modus operandi for execution of the contract within the scheduled delivery period.
- d. Bidder shall furnish the Drawings/Documents for Purchaser's Review / approval as per the Bidder Data Requirement (as specified in the Specifications/ Bidder data requirement forms). The review comments for major and critical drawings (such as system P&ID's, operation philosophy, General Arrangement Drawings, Foundation Drawings, Performance characteristics, Pulsation and Vibration Study Reports, Tensional Analyses etc.) shall be discussed across the table at such date and place as may be mutually agreed between the Purchaser and the Bidder

## DRAWINGS AND DATA REQUIRED FROM BIDDER

(All drawings & Documents shall be in English Language only and shall be submitted in three sets)

DESCRIPTION	Required with bid	Certified Information Required after		
		Prints for review/Approval	For records & Information	Time from FO in weeks( To be indicated)
(1)	(2)	(4)	(5)	(6)
A.1	<b>GENERAL</b> Schedule for furnishing the vendor data			
A.2	A specific statement that CNG compressor package is in strict accordance with data sheet, technical specification & applicable standards, In case of any deviation, specific list with details & reasons for each deviation.	Yes	Yes	Yes
A.3	General arrangement (GA) indicating battery limit for electric and piping connection & schematic diagram. & Flange details of piping connection at battery limit. i. Compressor package ii. Air compressor, dryer & receiver iii CO2 flooding system. iv. Duplex filter	Yes	Yes	
A.4	A statement on oil consumption and minimum allowable oil	Yes		Yes
A.5	Flange details of piping connection with connection at battery limit.			Yes
A.6	Duly filled in experience record program	Yes		Yes
A.7	Foundation plan drawings along with load details of compressor			
A.8	Tentative load data for foundation design.			

A.9	List of sub-vendors with address				
A.10	Leaflet, catalogues for all items.				
A.11	O & M manual		Yes	Yes	
B	Compressor				
B.1	Data Sheet duly filled in.	Yes		Yes	
B.2	Catalogue of compressor	Yes		Yes	
B.3	Typical cross sectional drg. and literature to fully describe the details of				
	- Compressor	Yes		Yes	
	- Suction	Yes		Yes	
	- Discharge valve	Yes		Yes	
	- Piston rod gland				
	- Lube oil pump	Yes		Yes	
B.4	V-belt & pulley with selection chart & calculation				
B.5	Cooler data / drg with				
B.6	Design calculation, GA drgs for pulsation dampner.				
B.7	Gas hydraulic oil, lube oil piping & instrument diagram				
B.8	Torque angle diagram,				
B.9	Torque speed characteristic. Starting torque of Motor and				
B.10	Acoustic / mechanical evaluation report				
B.11	Itemized price list of spares	Yes	Yes		
B.11	Itemized list with price of spares for erection /commissioning.				
B.12	Item list of spares for warranty period				
B.13	Drg. For testing arrangement & test procedure to be adopted.	Yes	Yes		
B.14	Quality Assurance Plan		Yes		
B.15	Certificate for following		Yes		

	a) Hydraulic testing		Yes		
	b) Non destructive testing		Yes		
	c) Material composition&		Yes		
	d) Leak proofness list of frame		Yes		
	e) Lube pump, frame oil pump, hyd. Oil pump		Yes		
B.16	Design / Actual assembly clearance chart	Yes	Yes		
B.17	Test records of following		Yes		
	a) Mechanical running		Yes		
	b) Performance test		Yes		
	c) Noise level test		Yes		
B.18	List of special tools &				
B.19	Filled in air cooler data sheet				
C	Electric equipment and motors				
C.1	Performance curves of motor				
C.2	Technical literature/catalogue, selection charts, nomo graphs etc. for motors				
C.3	Filled in data sheet of motor and				
C.4	Control schematics of motors				
C.5	Performance curves for				
C.6	Typical component cross sectional drawing and literature				
C.7	Test procedure of motor		Yes		
C.8	Mill test report of motors		Yes		
C.9	Manufacturer's test report of motors				
C.10	Stage inspection and testreport				
C.11	Final acceptance testing and performance tested records.				
C.12	Schematic diagram with startup				

C.13	Inter connection & wiring diagram				
D	INSTRUMENTATION AND ELECTRICS				
D.1	Drawing & document index		Yes		
D.2	Instruments and electric motor data sheets				
D.3	Start up and shut down writeup				
D.4	Startup & shut down interlock diagram				
D.5	Alarm & shut down list with set point				
D.6	Control panel layout		Yes		
D.7	Termination diagram, panel writing detail				
D.8	Loop schematic		Yes		
D.9	Inter connecting diagram		Yes		
D.10	Cable schematic		Yes		
D.11	Bill of material		Yes		
D.12	Inspection & test procedure		Yes		
D.13	Test / Inspection certificate		Yes		
D.14	List of relief valves with settings				
D.15D	P & ID of priority panel. -				
D-16	Electrical Load summary	Yes			
	Power required from UPS				
D-18	Power required from NonUPS Supply (415V TPN)				
D-19	Combined Speed-Torque				

Note:

- 1) Drawings/ document as indicated above and which are required to be submitted after placement of order for approval shall be submitted in following sets:
  - a) Soft copy of all documents/drawing (As built drawings only);
  - b) 2 sets of prints;
  - d) One no. licensed software for compressor PLC

On successful award of work, the drawings/documents shall be submitted for approval as per the scope of work. The drawing submitted with bid will not be considered as final. Successful Bidder shall submit final drawing as per scope defined in tender for approval.

## 13.0 OPERATION & MAINTENANCE SERVICES

The date of successful performance test (PT) at site (which shall be conducted within 90 days from the date of successful commissioning of the machine) will be considered as date of start of the annual maintenance contract. However, bidder shall be paid only 50% of O&M charge for operation and maintenance of the compressor from the date of commercial operation up to the date of performance test as part payment against O&M till the capacity and other guaranteed parameters of the package is established through PT. The balance 50% of O&M charge (from the date of commercial operation up to the date of PG test) shall be released to the bidder subsequent to successful PT (ie, after establishing all the guaranteed parameters as per tender). In case the PT is not successful, the balance 50% shall be forfeited in addition to provision of cl. 7.3-A of this Section. The bidder must follow the 'OPERATION & MAINTENANCE REQUIREMENT' as stated below but not limited to and ensure to provide trouble free services to the satisfaction of the owner

### 13.1 Accommodation/transportation/medical

The bidder shall make his own arrangement for the accommodation of his personnel at respective locations and subsequent transportation arrangement for them from their place of residence to work place or any other place as required and company shall have no obligation in this respect. The company shall not be responsible for providing any medical assistance to the bidder personnel.

### 13.2 Discipline:

The bidder shall be responsible for the discipline and good behavior of all his personnel deployed in the services contracted out and should any complaint be received against any of his employee, he shall arrange to replace such persons within 24 hours of notice issued by the Engineer-in- Charge. The decision of the Engineer – in-Charge in this matter shall be final and binding on the Bidder.

### 13.3 Gate pass/identity card

The contract shall arrange to supply / renew identity card to his workforce at his own cost, if so required by the Purchaser for security or for any other reasons. Those Bidder's personnel shall be required to carry their respective identity cards while on duty and produce on demand.

### 13.4 Right to get services carried out through other agencies

Nothing contained herein shall restrict Purchaser from accepting similar service from other agencies, at its discretion and at the risk and cost of the Bidder, if the bidder fails to provide the said services any time.

## 13.6 Compliance of laws

The bidder deploying 20(twenty) or more workmen as contract labour shall have to obtain license from appropriate licensing authority, if required. The bidder (which shall include the Contracting firm

/ company) shall be solely liable to obtain and to abide by all necessary licenses from the concerned authorities as provided under the various labour laws legislation's including labour license from the competent authority under the Contract Labour("Regulation & Abolition") Act or similar act applicable to land of law. The Contractor at his own cost shall comply with all statutory regulations required for this Work. All statutory liabilities of payment of ESI/PF or other statutory payments as may be applicable will be borne by the Contractor. The installations where job is to be carried out are live and have hydrocarbon environment. Bidder shall comply with all safety and security rules and regulations and other rules laid down by PURCHASER for its operation. It shall be the duty/responsibility of the bidder to ensure the compliance of fire, safety, security and other operational rules and regulations by his personnel. Disregard to these rules by the Bidder's personnel will lead to the termination of the contract in all respects and shall face penal/legal consequences.

The bidder shall arrange for insurance of all this workers engaged on the job as per the relevant Acts, rules and regulations, etc. In case by virtue of provisions of worker's compensation Act, or any other law in force. PURCHASER has to pay compensation for a workman employed by the bidder due to any cause whatsoever the amount so paid shall be recovered from the dues payable to the bidder and /or security deposit.

**Contract Labour Act & Minimum Wages Act:** Contractor shall ensure that all formalities like obtaining all permissions and licenses not limited to but including the contract labour license etc. as required by law are fulfilled by him at appropriate stipulated times. Contractor shall be responsible for all legal liabilities concerning the labour employed by him at site. The Contractor shall comply with all the statutes and legislation including but not limited to Payment of wages, Minimum wages etc. relating to labourers/workers. The Contractor shall indemnify and keep purchaser indemnified against all or any of the liabilities that may arise out of its not complying with any of the legislations.

Contractor shall not engage /deploy any child and the persons to be deployed should be physically and mentally fit. The Contractor shall ensure that he does not violate any of the laws of land and shall ensure that he respect and follow the contents of purchaser Values Charter which will be given to successful bidder.

*The Bidder has to ensure payment of wages shall be as per minimum wage of respective state (The state to be considered here as Rajasthan).*

## 13.7 The officer in charge shall have power to

- I. Issue the bidder from time to time during the running of the contract such further instructions

as shall be necessary for the purpose of proper and adequate execution of the contract and the bidder shall carry out and bound by the same.

- II. During the currency of this contract, PURCHASER can increase and/or decrease the number of the services / technicians to meet contractual requirements.
- III. Order the bidder to remove or replace any workman whom the company considers incompetent or unsuitable and opinion of the company representative as to the competence of any workman engaged by the bidder shall be final and binding on the Bidder.

13.8 Repatriation and termination

PURCHASER shall reserves the right at any time during the currency of the contract, to terminate it by giving 30 days notice to Bidder, and upon expiry of such notice period the bidder shall vacate the site/office occupied by him immediately.

13.9 Indemnity agreement

Bidder shall exclusively be liable for non- compliance of the provision of any act, laws, rules and regulations having bearing over engagement of workers directly or indirectly for execution of work and the bidder hereby undertake to indemnify the company against all actions, suits, proceedings, claims, damages demands, losses, etc. which may arise under minimum wages act, payment of wages act, workman compensation act, personnel injury (compensation insurance) act ESI Act, Fatal Accident Act, Industrial Dispute Act, Shops and Establishment Act, Employees Provident Fund Act, Family Pension and deposit Linked Insurance Scheme or any other act or statutes not herein specifically mentioned but having direct or indirect application for the persons engaged under this contract. (A certificate to this effect shall be submitted by the bidder immediately on receipt of LOA).

13.10 Compensation for non-fulfillment of obligation under Annual Maintenance Contract (AMC)

13.10.1. Payment Reduction clause: Penalty for Non-Performance during Period of Operation & Maintenance

13.10.2. Details of Penalty for nonperformance of equipment's

Penalty for Non-Performance during Operation & Maintenance period, applicable during each year.

Details of Penalty for nonperformance of Equipments:

13.10.2.1. On normal day (i.e. the day other than the schedule maintenance day): The penalty in case of breakdown /shutdown (beyond stipulated time frame)would be as below

13.10.2.1.1. Beyond 8 hours up to 16 hours : Rs 5000

13.10.2.1.2. Beyond 16 Hours up to 24 hours :Rs 10,000

13.10.2.1.3. Beyond 24 Hours up to 32 Hours :Rs 15,000

13.10.2.1.4. Beyond 32 Hours to up to 40 Hours: Rs 20,000

13.10.2.1.5. Beyond 40 Hours to up to 72 Hours : 25,000

i. In case there is a continuous breakdown beyond 72 hours up to 15 days, 50% of monthly maintenance charges excluding operational part will be deducted.

ii. In case there is a continuous breakdown beyond 15 days, which is not in the control of the contractor, no maintenance charges will be paid. Only operation charges may be payable on sole discretion of EIC.

Vendor will make all efforts to maintain operation (availability) for duration of > 97.5%. In Case of monthly average availability is below

97.5%. Then penalty @ of Rs 10,000 per % or part thereof shall be applicable.

13.10.2.2. On schedule maintenance day:

I. The party would be required to carry out the recommended schedule/preventive maintenance of the equipments for which the party has to indicate the time required for each type of schedule maintenance.

II. If the equipment is down for more than 4 hours & up to 12 hours beyond the time indicated for the agreed schedule maintenance, the party would be penalized Rs.20,000/- and for more than 12 hours Rs.40,000/- per day.

III. In any case, the maximum penalty imposed in a month for non- performance of the equipment turns out be 50% or more of the amount of O&M charges to be paid to the party per month per compressor (a complete cost break up of O&M charges need to be furnished by the bidder during bid), OWNER will take necessary actions as per terms and conditions of the contract for such non- performance.

13.10.3. Details of Penalty for non performance of staff

On Non-performance of Staff or deviation from Scope of Work, Client will intimate supplier/ bidder in form of 1st Notice. Bidder / supplier will confirm the time for resolution. Resolution time shall be agreed by both parties. If the issue not resolved within time frame or same issue is repeated, client shall impose penalty as under;

a) Rs.100/- per incident, when any of person found continuing duty beyond 12 hours normal duty, on any given day.

b) Rs.100/- per Incident Day penalty shall attract each up on failure by the contractor to provide the necessary PPEs (I Cards, Dress Code/ Uniform / Safety Shoes/ Hard hat/Safety Belt ) to person and their failure to wear the same as specified by EIC per person.

- c) Rs. 100/- per Incident for the non compliance found in the log book readings of CNG Compressors.
- d) Rs. 500/- per Incident for the untrained CNG Compressor operator is on duty.

13.11 Bidder's responsibility

- The bidder shall depute his Supervisor for supervision of the services to receive instructions from Engineer-in-Charge or his representative.

13.12 Employment liability of Bidder

The bidder shall ensure and will be solely responsible for payment of wages and other dues latest by 7th of the following month to the personnel deployed by him in the presence of the Company's representative.

The bidder shall be directly responsible and indemnify the company against all charges, claims, dues etc. arising out of disputes relating to the dues and employment of personnel deployed by him.

The bidder shall indemnify the company against all losses or damages caused to it on account of acts of the personnel deployed by the Bidder. The bidder shall ensure regular and effective supervision of the personnel deployed by him.

The bidder shall be liable for making good all damages/losses arising out of loss or theft of each handled, leakage, pilferage of any office, furniture equipment fitting and fixtures what-so-ever as may be caused directly or indirectly by the engaged persons through him/work carried out by them.

13.13 General

The operation and maintenance services shall be provided in terms of shift pattern on the round the clock basis as mentioned in the tender document. (*a complete True cost break up of Operation & Maintenance charges separately need to be furnished by the bidder during bid*) *OWNER may take necessary actions as per terms and conditions of the contract if there is reduction in No. of shift in operations on prorata basis on operational charges*

- i) The bidder shall deploy adequate number of technicians / supervisors / Engineers / helpers as well as tools & equipment for smooth and proper operation & maintenance of the compressors supplied in terms of the contract. In case required to meet operational requirements, the bidder shall augment the same as per direction of Engineer -in-Charge.
- ii) The bidder is required to carry out all services as mentioned in the Scope of Services and Schedule of Rates on all the 365 days including Sunday and all Holiday & around the clock.
- iii) The bidder shall allow weekly rest and daily working hours to his workmen as per the relevant

Act/Law/and Rule made thereunder. However, no work shall be left incomplete/unattended on any holiday/weekly rest. Technician/operators provided shall have minimum qualification of ITI. Contract in person or his authorized representative shall provide the services on daily basis to interact with Engineer-in- charge and deployed workman

- iv) The work force deployed by the bidder for O&M services at CNG installation shall be of sound relevant technical professional expertise which is otherwise also essential from the safety point of view of the personnel of the bidder as well as for the installation.
- v) Bidder has to ensure the safety of man and machine all the times. Damages of equipment due to negligence will be recovered as per the decision of Engineer-in-Charge, which will be final.
- vi) Regarding work completion, the decision of the Engineer-in-Charge will be final and binding.
- vii) The bidder shall make his own arrangements to provide all facilities like boarding and transport etc. to his workmen.
- viii) All personnel of the bidder entering on work premises shall be properly and neatly dressed and shall wear uniform, badges while working on premises of the company including work sites.
- ix) Bidder shall maintain proper record of his working employee's attendance and payment made to them.
- x) The Bidder's representative/supervisor shall report daily to the Shift-in- Charge for day to day working.
- xi) All the safety rules and regulations prevailing and applicable from time to time at the installations as directed by PURCHASER will be strictly adhered to by the Bidder.
- xii) The rates quoted by the Bidder must be inclusive of all the taxes, duties, services tax, work contract tax and any other levies, Bidder's share of P.F. and insurance charges, Bidder's profit and any other expenditure etc.
- xiii) It will be the responsibility of the bidder to pay as per the minimum wages of the Rajasthan government applicable under the Minimum Wage Act.
- 
- The services shall be provided in terms of shift pattern on the round the clock basis. The bidder is responsible to provide effective and efficient services in all shifts and assure that there is no disruption in the services for want of any resources. *(a complete True cost break up of Operation & Maintenance charges separately need to be furnished by the bidder during bid) OWNER may take necessary actions as per terms and conditions of the contract if there is reduction in No. of shift in operations on pro-rata basis on operational charges.*
- xiv) The bidder shall establish a complaint addressable mechanism available 24 hours, seven days a week where complaint regarding non- performance of the compressors in terms of the contract can be lodged. Further, to ensure immediate redressal of complaint round the clock manpower

shall be made available, the bidder shall deploy adequate number of technicians/ supervisors / engineers at various site offices in consultation with Engineer- in-Charge to provide trouble free operation & maintenance of the compressors.

- xv) All arrangements for communication from control room to the contract person working on job under the services shall be the responsibility of the Bidder, viz smartphone.
- xvi) All the jobs mentioned under scope of services shall be carried out as per sound engineering practices, work procedure documentation recommendation of the manufacturer and as per the guidelines/direction of engineer-in-charge of authorized representative

13.14 Operation and Maintenance of compressor packages as per Schedule of Rates

14.14.1. Scope of supply during warranty period:

All spares, consumables, lubricants, lubricating oil, coolant, sealant etc. required for carrying out the Operation and maintenance of the complete compressor package during the warranty period, including periodic, breakdown maintenance for continuous and uninterrupted operation of the compressor packages shall be in scope of the Bidder and shall be kept in stock. If any equipment got fire or broken due to accident the same shall be replaced or rectified by the bidder. Electricity shall be supplied free of cost to the Bidder.

13.14.2. Scope of supply during post warranty period:

- All spares, consumables, lubricants, lubricating oil, coolant, sealant etc. required for carrying out the Operation and comprehensive maintenance of the complete compressor package excluding major overhauling of compressor during the post warranty period till contract validity, including periodic, breakdown maintenance for continuous and uninterrupted operation of the compressor packages shall be in scope of the Bidder and shall be kept in stock. If any equipment got fire or broken due to accident or in any way Electric Motors or compressor's major overhaul is required during breakdown the same shall be replaced or rectified by the bidder, at his own cost. Electricity shall be supplied free of cost to the Bidder. If Major overhauling of the compressor and Engine (prime mover) is required as per compressor manufacturer's O&M manual recommendation, the same shall be in supplier's scope excluding spares which shall be arranged by Purchaser as per O&M manual recommendation.

13.14.3. Scope of services:

13.14.3.1 The Bidder shall have to keep all the spares, consumables, lubricants, coolant, etc required for carrying out periodic, breakdown, emergency maintenance etc of the package so as to minimize the down time of the compressor. Non-availability of compressor package for non-availability of spares shall be liable for compensation.

13.14.3.2 All tools, tackles and fixtures required for carrying out the above maintenance of the compressor shall be in scope of the Bidder. The scope will also include handling equipment like crane,

forklift, chain pulley block, etc required during the any maintenance activity.

13.14.3.3 Any expert services required from principal company or OEM shall be arranged by the bidder or his agent at his own cost. All arrangements like phone, fax, computer, Internet etc required for correspondences with above personnel shall be arranged by the Bidder.

13.14.3.4 The periodic maintenance required to be done as per OEM recommendation, exclusive of major overhaul maintenance, shall be taken up promptly. The Bidder shall provide the detailed preventative maintenance schedule along with

- a) Estimated down time required for each type of maintenance schedule.
- b) List of spares and their quantities required for each type of maintenance schedule per compressor.
- c) Type and number of man days required for each type of maintenance schedule per compressor.

The bidder shall plan such maintenance during non-peak hours and in consultation with the Engineer In Charge (EIC) of Purchaser. Any maintenance that needs to be taken up, shall be wellplanned in advance with due approval of the EIC.

Note: - Major Overhaul Maintenance is defined as: Highest mentioned maintenance interval in terms of running hours (as per OEM) in which inspection/ testing or removal of crankshaft and crankshaft main bearing is recommended as per OEM.

13.14.3.5 The Bidder shall use only OEM's certified spares during maintenance. In case, the schedule maintenance of the OEM manual recommends checking and replacing parts like valve spring, valve plates, piston rings etc. after certain time interval, same shall be replaced or used further only on approval from the Purchaser representative. However any untoward consequences for non- replacement of such parts shall be the responsibility of the Bidder.

13.14.3.6 All routine and periodic checks / inspections required to be done as per OEM recommendation shall be done by the Bidder. Instruments required for above inspection like verniarcalipper, micrometer screw gauge, fill gauges, bore gauge etc shall be in scope of the Bidder and these instruments shall be calibrated every year.

13.14.3.7 The bidder shall submit a copy of the daily / weekly / fortnightly / monthly / bimonthly / quarterly and yearly performance report to the EIC in both soft and hard form. All stationery including the printed material shall be in scope of the Bidder.

13.14.3.8 All the maintenance / inspection job carried out by the Bidder shall be recorded and the report of the same shall be jointly signed by Purchaser representative.

13.14.3.9 The EIC will be final authority to take decision with regards to maintenance or replacement of parts or any disagreement between the Bidder and Purchaser, during the execution of the contract.

13.14.3.10 Calibration shall be done from government-approved laboratories and shall be carried out at least 15 days prior to the calibration due date.

13.14.3.11 The Bidder shall keep 1 set of safety relief valves in spare for the purpose of calibration. For total PR quantity of compressor packages.

13.14.3.12 The Bidder shall carry out retesting of pressure vessels periodically as per Gas Cylinder rules 2016 or Static & Mobile Pressure Vessels Rules.

13.14.3.13 The periodic maintenance required to be done as per OEM recommendation shall be taken up promptly. The Bidder shall plan such maintenances during non peak hours and in consultancy with the Engineer In Charge (EIC) of Purchaser. Any maintenance that needs to be taken up shall be well planned in advance with due approval of the EIC. The scope shall include preparation of maintenance schedule for carrying out the maintenance during the contract period.

13.14.3.14 In case, the schedule maintenance of the OEM manual recommends checking and replacing parts like valve spring, valve plates, piston rings etc. after certain time interval, same shall be replaced in the presence of Purchaser representative. If top overhauling of the compressor and prime mover is required as per compressor and prime mover manufacturer's O&M manual recommendation, the same shall be in bidder's scope. However, all major overhaul required due to breakdown during AMC period shall be in bidder's scope.

13.14.3.15 Insurance of free issue items up to 15 days beyond commercial operation by purchaser or two months from the date of supply of equipment at site whichever comes earlier will be in the scope of bidder. The risks that are to be covered under the insurance shall include, but not be limited to the loss or damage in handling, transit, theft, pilferage, riot, civil commotion, weather conditions, accidents of all kinds, fire, war risk etc. After that the purchaser will arrange insurance for fire, war, earthquake, civil commotion, riots and flood. Any other risk over and above will be in the scope of supplier.

## 14.0 GUARANTEED PARAMETERS

### COMP. AT SUCTION PR 16 KG/Cm<sup>2</sup>(g).

Sr No	DESCRIPTION	BY BIDDER
1	Compressor capacity in SM3/ Hr at suction pr 16 kg/cm <sup>2</sup> discharge pr 250 kg/cm <sup>2</sup> and gas inlet temp 30°C.	
2	a) BKW required by compressor at guaranteed parameters	
	b) Transmission efficiency in %	
	c) Efficiency of compressor electric motor at operating speed corresponding to guaranteed parameters in %	

3	a) BKW required by cooling fan at guaranteed parameters	
	b) Transmission efficiency in %	
	c) Efficiency of fan electric motor at operating speed corresponding to guaranteed parameters in %	
4	Electric power consumed by compressor package including power absorbed by following auxiliaries along with transmission losses and at guaranteed flow at specified conditions	
	Lube oil pump motor, Air exchanger fan motor, Cooling water pump motor if required.	
5	Electric power consumed by following auxiliaries shall not be included in the above electric power consumption figure.	
a)	Control panel	
b)	Air compressor motor	
c)	Separate Exhaust fan motor if installed	
d)	Enclosure lighting	
6	Sound level of enclosure (required 80), dB(A)	
7	Package Gas Loss in %age at suction pressure of 16 kg/cm <sup>2</sup> , discharge pressure of 255 kg/cm <sup>2</sup> and flow of 400 SCMH and gas inlet temp. of 30 deg C	

**Notes:**

- 1) Bidder shall indicate realistic power consumption. The guaranteed value of power consumption including all losses such as mechanical, transmission, power absorbed by compressor driven auxiliaries like Air exchanger fans, auxiliary lube oil pump etc. but excluding air compressor motor at guaranteed parameters with zero percent positive tolerance.
- 2) For loading as well as penalty purpose the power consumption corresponding to the guaranteed parameters of 400 SCMH at 16 kg/cm<sup>2</sup>(g) suction pressure shall be considered.
- 3) bidder has to submit / the declaration provided as Annexure-1 along with the bid
  - 3.1 for Package Running Power consumption (including all its accessories and auxiliaries) as per Annexure-14A
  - 3.2 for Package gas loss as per Annexure-14B

ANEEXURE-14A

DECLARATION

To:  
DGM C&P  
Rajasthan State Gas Ltd. Room  
No. 215, Khaniz Bhawan, Tilak  
Marg, C-Scheme  
Jaipur-302005

Tender No: RSGL/KOTA/C&P/PROJ/2025-26/NIT-14 Date: 02-01-2026 for Procurement of 400 SCMH COMPOSITE CNG Dispensing Unit & Comprehensive O & M Services for 5 Years.

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Dear Sir,

With ref. to Guaranteed parameters, We, .....(company's name) hereby declare that the Package Running Power consumption (including all its accessories and auxiliaries) of the offered "400 SCMH COMPOSITE CNG Dispensing Unit at Guaranteed Parameters (i.e. at suction pressure of 16 kg/cm<sup>2</sup>, discharge pressure of 255 kg/cm<sup>2</sup> and flow of 400 SCMH) shall be considered as .....KW for all the calculation of Loading of Prices and Penalty provisions of the subjected tender document.

Yours faithfully,

Authorised Signatory

## ANNEXURE-14B

### DECLARATION

To:  
DGM C&P  
Rajasthan State Gas Ltd.  
Room No. 215, Khaniz Bhawan,  
Tilak Marg, C-Scheme  
Jaipur-302005

Tender No: RSGL/KOTA/C&P/PROJ/2025-26/NIT-14 Date: 02-01-2026 for Procurement of 400 SCMH COMPOSITE CNG Dispensing Unit & Comprehensive O & M Services for 5 Years..

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Dear Sir,

With ref. to Guaranteed parameters , We, .....(company's name) hereby declare that the Package Gas loss shall be considered as .....% (at 400 SCMH, at suction pressure of 16 kg/cm<sup>2</sup> , discharge pressure of 250 kg/cm<sup>2</sup> and gas inlet temperature of 30°C ) for all the calculation of Loading of Prices and Penalty provisions of the subjected tender document.

Yours faithfully,

Authorised Signatory

## 15.0 GAS COMPOSITION:

Sr. No.	Component	% Mole
1	Methane	92.34
2	Ethane	5.47
3	Propane	0.32
4	Butane	0.027
5	Pentane	0.003
6	Nitrogen	1.78
7	Carbon Dioxide	0.00
8	Sulphur	00
	Total	100

Oxygen: Not more than 0.5 mole%

Total Non Hydrocarbon: Not more than 2.0 mole% Total Sulphur including H<sub>2</sub>S: about 24 ppm by weight, Water Content : <dry

Mass density (kg/m<sup>3</sup>) = 0.69 Molar

mass (kg/kmol) = 17.1262NCV (Kcal/Sm3) = 8374.00

Above composition shall be taken for guarantee purpose.

\* The composition, however, may vary between:

Component	Range
Methane	Not less than 80%
Ethane	1% - 8%
Propane	< 3.3%
iC <sub>4</sub>	< 2%
iC <sub>5</sub> + nC <sub>5</sub>	< 0.25%

## 16.0 Climate

Altitude: 205m above MSL (Mean Sea Level)  
 Max. RH: 90%  
 Wind Velocity: 160Km/hr  
 Minimum Ambient temperature: 2 deg C. Maximum Ambient temperature: 47 deg C

17.0 DATA SHEET OF COMPRESSOR

17.1 Data Sheet of Main Compressor:

1	<b>General:</b> <input checked="" type="checkbox"/> Means required <input type="checkbox"/> Means bidder shall indicate; if not indicated shall be in bidders scope		
2	<b>Project:</b>		
3	<b>Owner:</b>		
4	<b>Service:</b> Procurement of CNG Compressor		
	Site:	As per MR	
	<b>No. required :</b>		
5	Compressor Capacity	:400	Driver: Electric Motor
6	Note: <input checked="" type="checkbox"/> Scope Option / Information Specified by Purchaser <input type="checkbox"/> Information required from Vendor.		
7	<input type="checkbox"/> Manufacturer:	<input type="checkbox"/> Model No.:	
8	<input type="checkbox"/> Place of manufacture:		
9	<input type="checkbox"/> No. of stages: by Bidder	<input type="checkbox"/> Cylinder Arrangement:	
10	Cylinder Lubrication: <input type="checkbox"/> Lubricated <input type="checkbox"/> Minimum Lubricated <input type="checkbox"/> Non- Lubricated		
11	<b>Driver Type:</b> Electric Motor		
12	<input type="checkbox"/> DRIVE: COUPLING	<input type="checkbox"/> V – BELTS (ANTI-STATIC)	<input type="checkbox"/> DIRECT TYPE) WITH
13	<input type="checkbox"/> Direction of rotation (facing driven end): <input type="checkbox"/> Clockwise <input type="checkbox"/> Counter clockwise		
14	<b>■ SITE / INSTALLATION DATA</b>		
15	SITE DATA:		
16	AMBIENT TEMP. (30°C):	MAX: 47.5 MIN:	
17	RELATIVE HUMIDITY(%):	MAX: 90	
	ALTITUDE (M):	25	
18	Earth Quake Zone :As per site		
19	INSTALLATION: <input checked="" type="checkbox"/> OUTDOOR		
20	<input checked="" type="checkbox"/> Mounted on a common skid along with driver, enclosed inside a acoustic		
21	<b>■ Electrical Area Hazard:</b>		

22	CLASS/ZONE: <b>CLASS I ZONE I IIB</b>		DIVISION: I GAS GROUP: <b>D, GROUP IIA,</b>									
23	<b>Applicable Codes and Standards</b>											
24	COMPRESSOR:  <b>Preferably API 618</b>	PIPING:	<b>ASME/ANSI B 31.3</b>									
25	PRESSURE VESSELS:	GAS COOLER: Preferable <b>API 661</b>										
26	OIL COOLER:  Oil cooler will be as manufacturer standard	SOUND: 80dBA @ 1M FROM ENCLOSURE										
27	<input type="checkbox"/> AUX. ELECT. MOTORS:											
28	Control panel & instrumentation refer: technical specification											
29	UTILITIES DATA											
30	<input type="checkbox"/> Cooling Water (Not Available)											
31	<input type="checkbox"/> Type:		<input type="checkbox"/> Supply temperature (0C):		<input type="checkbox"/> Max		return					
32	<input type="checkbox"/> Fouling Factor:		<input type="checkbox"/> Supply pressure (kg/cm <sup>2</sup> G):		<input type="checkbox"/> Min. return							
33	<input type="checkbox"/> Design pressure (kg/cm A):		<input type="checkbox"/> Design temperature (0C):									
34	<input type="checkbox"/> Water Flow Rates (m <sup>3</sup> /hr)											
35	<input type="checkbox"/> Electricity											
36	Auxiliary Motors: V Ph Hz											
37	Oil Heaters: V Ph Hz											
38	Solenoid Valves:											
39	Instruments:											
40	Local Panel INDI./Alarm/Ann :											
41	Local Panel Trip Circuit:											
42	UPS:											
43	<input type="checkbox"/> Total Utility Consumption											
44	<input type="checkbox"/> Cooling Water (Make UP) (mP3P /hr)											
45	<input type="checkbox"/> Power (Auxiliaries) (kW)											
46	<input type="checkbox"/> Power (Heaters) (kW)											
47	REMARKS:											
48	Vendor/ Bidder should estimate the requirement for all the Utilities and indicate the same in											
49	<input type="checkbox"/> CONSTRUCTION / DESIGN FEATURES											
50	Nomenclature	Unit	Stage#1	Stage#2	Stage#3							
51	Cylinders											
52	No of Cylinders -											
53	Single Acting (SA) / Double Acting (DA)											
54	Cylinder Bore / Stroke	mm / mm										
55	Rotational Speed	RPM										
56	Linear Average	M/sec										
57	Piston Displacement	MP <sup>3</sup> P/ hr										
58	Cylinder Liner (Yes / No)											
59	Type of Cylinder											

60	Clearance Pockets						
61	Max. Allow. Working	kg/cm <sup>2</sup> a					
62	Max./Min Allow.	P0PC					
63	M.A.W.P, Cylinder	kg/cm <sup>2</sup> a					
64	Safety Valve Set	kg/cm <sup>2</sup> a					
65	G Helium Test	kg/cm <sup>2</sup> a					
66	Hydrostatic Test	kg/cm <sup>2</sup> a					
67	Cylinder Jacket						
68	Cooling Media,						
69	Max. Allow. Working Pressure, Cylinder. Jacket	kg/cm <sup>2</sup> a					
70	Hydrostatic Test	kg/cm <sup>2</sup> a					
71	Suction Nozzle						
72	Discharge Nozzle						
73	Suction Valve						
74	Average gas	M/sec					
75	Discharge Valve						
76	Average gas	M/sec					
77	Type of Suction valve -						
78	Type of Discharge valve -						
79	Suction Valve						
80	Clearance Pockets						
81	Piston Rod Diameter	Mm					
82	Rod Reversal at Crosshead Pin (min.)	Deg.					
83	Piston Rod Run out						
84	Max. Allow. Rod	Kg					
85	Tension	Kg					

86	Rod Load Comp.	Kg					
87	Tension	Kg					
88	Rod Load at R.V Set	Kg					
89	Distance piece / Packing						
90	Type of Packing						
91	Packing Vent						
92	Packing Cooling						
93	Type of Distance						
94	Cylinder. Side						
95	Frame Side Compartment Pressurized						
96	Distance Piece purge gas Pressure	Mm HB2BO					
97	Distance Piece	NmP3P /hr					
98	Distance Piece Vento	S H	afe eight	Safe	Safe		
99	Distance PieceTest	kg/cm <sup>2</sup> G					
100	## Packaging should be connected to vent header Ref 7.19.4 of API-11						
101	Frame						
102	Replaceable Shoes Crosshead						
103	Crosshead Guide						
104	Maximum Frame	KW					
105	Speed - Maximum/ Minimum	Rpm					
106	<input type="checkbox"/> <b>Lubrication Systems</b>						
107	Type of lube system	Piping material					
108		Carbon Steel					
109	Main Oil Pump Driven By :	Stainless Steel (all piping & valves Trims)					
110	Standby Oil Pump, Driven By :	Auxiliary oil tank					
111	Hand Operated Pre lube /Priming Pump:	Oil Grade :					
112	Suction Strainer :	Lube Oil Consumption :					
113	Pressure Control Valve	Main Pump - Make : Model :					

114	Level Glass on the Sig htCrankcase	Type :	Material :
115	Type of Oil Cooler :	Standby Pump-Make	Model :
116	Size of Filter:		Type : Material :
117	Oil Heater (if required).		
118	Electric Heater with thermostat		
119	Thermostatic Valve		
120	Type of Cylinder Lubrication	Lubricator Equipped With :	
121	Lubricator Type: Manzel or	Level sight glass	
122	Single plunger per feed	Oil heater electric with thermostat	
123	Divider blocks type.	Electric Heater (Kw) (if required)	
124	Lubricator Driven By :	Auxiliary Oil Tank (if required)	
125	Compressor Shaft	Oil Grade :	
126	Lube oil Electric Motor KW	Oil System Capacity: (min 30 Hrs.)	
127	All tubing and valves in SS	Oil Consumption. Rate	
128	Double Ball Check valve oneach lubrication point		
129	<input type="checkbox"/> <b>Cooling System</b>		
130	<input type="checkbox"/> Static filled coolant system for		
131	All Stage Cylinders		
132	Including expansion chamber, Vents, Drains, Level Gauge, Piping, etc.		
133	All Piping prefabricated <input type="checkbox"/> Material		
134	<input type="checkbox"/> Atmospheric thermos syphon cooling system for		
135	All Stage Cylinders <input type="checkbox"/>		
136	Including expansion tank, Vents, Drains, Coolers, and Level & Temp.indicators, Piping, etc.		
137	All Piping prefabricated. <input type="checkbox"/> Material		
138	<input type="checkbox"/> Forced Cooling Water System		
139	All Stage Cylinders		
140	<input type="checkbox"/> Packings <input type="checkbox"/> Oil Coolers <input type="checkbox"/> Gas Coolers		
141	<input type="checkbox"/> Including drains, Vents, flow & temp. Indicators, Temp. regulating & Isolationvalves, complete piping to provide one		
142	<input type="checkbox"/> Common inlet and one common outlet connections for Purchaser's interface terminated by a flanged block valve		
143	<input type="checkbox"/> Block valve.		
144	<input type="checkbox"/> Each isolatable circuit to be provided with thermal relief valve.		
145	All Piping prefabricated. <input type="checkbox"/> Material		
146	<input type="checkbox"/> Self contained, forced circulation, closed circuit Cooling Water System (ifreqd.)		
147	All Stage Cylinders <input type="checkbox"/>		
148	<input type="checkbox"/> Packing <input type="checkbox"/> Oil Coolers <input type="checkbox"/> Gas Coolers		

149	<input type="checkbox"/> Including drains, Vents, flow & temp. Indicators, Temp. Control Valve,Regulating & Isolation valves, complete piping				
150	<input type="checkbox"/> Main circulating pumps with drivers & suction strainers <input type="checkbox"/> Single Coolers				
151	<input type="checkbox"/> Reservoir (Make Up) <input type="checkbox"/> Heater (if required)				
152	<input type="checkbox"/> Pumps, Reservoirs, Coolers etc. to be mounted on a common skid as to make a separate console.				
153	<input type="checkbox"/> Material of piping:				
154	<input type="checkbox"/> Type of coolant:				
155	<input type="checkbox"/> Jacket cooling				
156	<input type="checkbox"/> Gas Piping System				
157	<input type="checkbox"/> Vendor's Supply Includes:				
	<input type="checkbox"/> ■ Separator				
158	<input type="checkbox"/> ■ Pulsation suppression equipment as per 'next' page				
159	<input type="checkbox"/> ■ Suction Filter:				
160	<input type="checkbox"/> ■ Temporary Strainer on Compressor Suction				
161	<input type="checkbox"/> ■ Type of Strainer:				
162	<input type="checkbox"/> ■ Relief Valves: on compressor ■ suction ■ Inter-stage <input type="checkbox"/> on compressor discharge				
163	<input type="checkbox"/> ■ Check Valve on Discharge Line (compressor valve design, and suction line)				
164	<input type="checkbox"/> ■ Process Gas Coolers Complete With Manual Drain Valve				
165	<input type="checkbox"/> ■ Separators Complete With Manual/ Automatic Drain Values				
166	<input type="checkbox"/> ■ Process Gas Piping				
167	<input type="checkbox"/> ■ Supply starts at inlet flange of CNG PACKAGE				
168	<input type="checkbox"/> ■ Terminates after priority panel with isolation valve				
169	<input type="checkbox"/> ■ Materials:				
170	<input type="checkbox"/> ■ By-Pass Line Piping				
171	<input type="checkbox"/> ■ Between				
172	<input type="checkbox"/> ■ Gas cooler				
173	<input type="checkbox"/> ■ Interconnecting Piping Between Packing Vents, PSV Relief terminating to Vent Recovery System.				
174	<input type="checkbox"/> ■ Interconnecting piping between distance piece terminating to Vent Recovery System up to package B/L				
175	<input type="checkbox"/> ■ Interconnecting piping between Drains terminating as a single point				
176	<input type="checkbox"/> ■ Interconnecting piping between Instrument Air terminating				
177	<input type="checkbox"/> ■ Pulsation Suppression Equipment				
178	Stage #:	Stage#1	Stage#2	Stage#3	
179	Suction				

180	Puls. Equipment Required Yes/No	YES	Yes			
181	Inlet Pressure					
182	Residual Peak to Peak Pulsation % As per API 618 ( APPROACH -3 ), CI 3.9.2.7					
183	Inlet Nozzle Size / Rating/ Position					
184	Discharge Nozzle Size / Rating/Position					
185	Design Pressure Kg/cm <sup>2</sup> a					
186	Design Temperature °C					
187	Volume					
188	Material : vessels	SA 516 Gr.70	SA 516 Gr.70			
189	Internals					
190	Corrosion Allowance mm	3	3			
191	Hydrostatic test Pressure kg/cm <sup>2</sup> ,g	1.3XMAWP	1.3XM AWP			
192	Discharge					
193	Puls. Equipment Supplie d Yes/No	YES	YES			
194	Inlet Pressure					
195	Residual Peak to Peak	As per API 618, CI 3.9.2.7				
196	Inlet Nozzle Size / Rating/Position					

197	Discharge Nozzle Size / Rating/P					
198	Design Pressure					
199	Design Temperature °C					
200	Volume					
201	Material	SA 516 Gr.60	SA 516 Gr.60			
202	Internals					
203	Corrosion Allowance mm	3	3			
204	Hydrostatic test Pressure kg/cm²,g	1.3XMAWP	1.3XMAWP			
205	Design Code: ASME SEC. VIII DIV. 1					
206	Analog Piping Study / Acoustic	Simulation, As per	Approach 3, Cl.	3.9.2. 6		
207	Upstream / downstream	Inter-stage				
208	Performed By: <input type="checkbox"/> Vendor	<input type="checkbox"/> Any other agency having similar experience				
209	Piping Mechanical Analysis					
210	Performed By: <input type="checkbox"/> Vendor	<input type="checkbox"/> Any other agency having similar experience				
211	<input checked="" type="checkbox"/> Automatic Drain Valves For Each Stage suction KOD					
212	<input type="checkbox"/> Capacity Control					
213	<input checked="" type="checkbox"/> Start / Stop, based on discharge receiver pressure: Fully Automatic					
214	Unloading for Startup/Shut down :Automatic Through <input type="checkbox"/> Valve Unloader <input type="checkbox"/> Recycle					
215	<input checked="" type="checkbox"/> Interlock against loaded start					
216	<input checked="" type="checkbox"/> Automatic Control based on					
217	<input type="checkbox"/> Suction Pressure	<input checked="" type="checkbox"/> Discharge Pressure	<input type="checkbox"/> Flow Manual			
218	<input type="checkbox"/> Type of Actuator	<input type="checkbox"/> Actuation fluid to load	<input type="checkbox"/> Actuation fluid to unload			
219	<input checked="" type="checkbox"/> On Power / Actuation fluid failure :	Compressor to <input type="checkbox"/> Load	<input checked="" type="checkbox"/>			
220	<input checked="" type="checkbox"/> Continuously	<input type="checkbox"/> Maximum Hrs.				
221	<input type="checkbox"/> Continuously	<input type="checkbox"/> Maximum Hrs.				
222	<input checked="" type="checkbox"/> At All other capacity, Compressor should run continuously					
223	Vendor's scope Should Include :					
224	<input checked="" type="checkbox"/> Pilot Devices (pressure / temperature / Flow devices ,Controllers & Switches)					
225	<input type="checkbox"/> Intermediate Devices (Solenoid Valves   Pneumatic Relay / Valves)					
226	<input checked="" type="checkbox"/> Actuators					
227	<input type="checkbox"/> Recycle valves					
228	<input type="checkbox"/> Control Logic and System for Complete Capacity Control					
229	<input checked="" type="checkbox"/> Inter Connecting Tubing, Piping, Cabling & Wiring					
230	<input checked="" type="checkbox"/> Protection against extended unloaded operation (Trip)					

231	<input type="checkbox"/> Valve unloaders are required as such Compressor should start / stop at specified receiver
-----	--

232	<input type="checkbox"/> Purchaser's Interface				
233	Type of Interface	Size	Rating	Face	Position/Location
234	Main Gas Piping				
235	Main Gas Piping				
236	Relief Valves discharge				
237	Distance Piece				
238	Packing Vent				
239	C.W. Inlet				
240	C.W. Outlet				
241	NB <sub>2B</sub> Inlet Supply				
242	NB <sub>2B</sub> Vent (Safe location)				
243	Drains				
244	<b>■ MATERIALS</b>				
245	Cylinder Materials				
246	Stage	1 Stage	2 Stage	3 Stage	
247	Cylinder				
248	<input type="checkbox"/> Liner				
249	<input type="checkbox"/> Piston				
250	Piston Rings	PTFE	PTFE	PTFE.	
251	Rider Rings	PTFE	PTFE	PTFE	
252	Piston Rod				
253	<input type="checkbox"/> Packings Rings				
254	<input type="checkbox"/> Valve Seats				
255	<input type="checkbox"/> Valve Stops				
256	Valve Rings / Plates				
257	Valve Springs				
258	<input type="checkbox"/> Cylinder Head				
259	<b>Motion Work Materials :</b>				
260	Item	Material / ASTM Grades			
261	Top Cover				
262	Crankcase				
263	Crankshaft				
264	Connecting Rods				
265	Cross heads				
266	Cross Head Shoes				
267	Cross Head Guide				
268	Main Bearings Type				
269	Cross Head Pin				
270	Connecting Rod				

271	Cross Head Pin Type		
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312	Overall supply (excluding driver and gear box, if any) Kg. approx.
313	Maximum erection weight Kg. approx.
314	Maximum maintenance weight Kg. approx.
315	Gear Box Kg. approx.
316	Driver Kg. approx.
317	<b>SCOPE OF SUPPLY</b>
318	■ Compressor Assembly complete with frame, cylinders, cross head etc.
319	■ Motion work lubrication system
320	■ Cylinder and packing lubrication system
321	■ Cooling system
322	■ Process Gas system
323	■ Local instrumentation
323	■ Local Gauge Board
325	■ Local Control Panel      ■ PLC Panel      ■ Human Machine Interface located on skid
326	■ Main driver
327	■ Barring Device:      ■ Manual      ■ Electric.      Pneumatic
328	■ Flywheel
329	■ V-Belts with Pulley
330	■ Couplings
331	■ Driver Compressor
332	■ Guards for moving parts ■
333	■ Base plate Common for Compressor and Driver
334	■ Fabricated Steel skid Common for compressor, driver and accessories
335	■ Ladders and platforms
336	■ Special Tools - One Set for each package
337	■ Anchor Bolts for Complete Package
338	■ Piping supports and brackets : ■ prefabricated for piping in Vendor's Scope
339	■ Supports For Cylinders & Auxiliaries, Prefabricated & fitted in the Package
340	■ Commissioning Spares, erection and commissioning spares
341	■ Spares as specified in the Job Specification
342	■ Vendor Data as specified
343	NOTE : Refer checklist for scope of supply

## 17.2 Data sheet- heat exchangers to be submitted for compressor.

1	<b>GENERAL</b>
2	<b>PROJECT:</b>
3	<b>OWNER :</b> SITE :
4	Service : <b>Intercooler / After cooler for Compressor Package</b>
5	<b>No. Reqd.:</b>
6	NOTE: ■ SCOPE OPTION / INFORMATION SPECIFIED BY PURCHASER <input type="checkbox"/> INFORMATION REQUIRED FROM VENDOR.
7	<input type="checkbox"/> Manufacturer : Type : <input type="checkbox"/> Forced Draft <input type="checkbox"/> Induced Draft
8	<input type="checkbox"/> Bundle Size : m x m x <input type="checkbox"/> Bundles/Section <input type="checkbox"/> Number of Units : m
9	<input type="checkbox"/> Bundles/Unit : <input type="checkbox"/> In Parallel / Series <input type="checkbox"/> Section Size :
10	<input type="checkbox"/> Surface/Bundle : m <sup>2</sup> <input type="checkbox"/> Bare Tube : m <sup>2</sup> <input type="checkbox"/> Section/Unit :
11	<input type="checkbox"/> Surface/Unit : m <sup>2</sup> <input type="checkbox"/> Bare Tube : m <sup>2</sup> <input type="checkbox"/> Plot Area/Unit :
12	<b>PERFORMANCE (Of One Unit)</b>
13	<input type="checkbox"/> Heat Exchanged : kcal/hr <input type="checkbox"/> MTD (Corrected) : °C

14	<input type="checkbox"/> Transfer Rate : kcal/hr m <sup>2</sup> °C		<input type="checkbox"/> (Finned Surface)	<input type="checkbox"/> (Bare Surface)
15	<b>■ TUBE SIDE</b>			
16	<b>■ Fluid Circulated: GAS</b> Gravity : Liquid API SG @ 15.4EC			
17	<b>■ Total Entering Gas kg/hrEnthalpy / Latent Heat kcal/kg</b>			
18	<input type="checkbox"/> Operating Temperature Fouling Resistance hr m <sup>2</sup> °C/kcal		In :	Out :
19	<input type="checkbox"/> Operating Pressure Passes / Bundle kg/cm <sup>2</sup>			
20	<b>AIR SIDE</b>			
21	<b>■ Temperature</b>		<b>■ In:</b> Out :	<b>■ Altitude</b>
22	<input type="checkbox"/> Total Flow/Unit kg/hr			
23	<input type="checkbox"/> Quantity/Fan kg/hr			Power/Fan
24	<input type="checkbox"/> Face Velocity m/sec			
25	<b>CONSTRUCTION (Each Bundle)</b>			
26	<input type="checkbox"/> Design Pressure : kg/cm <sup>2</sup> g		<input type="checkbox"/> Test Pressure : kg/cm <sup>2</sup> g	
27	<input type="checkbox"/> Code Requirements :			
28	<b>■ Type of Tubing :</b>		<b>■ Tube Material :</b>	<b>■ Fin</b>
29	<b>■ Tube Bare Tubes (no's): Length</b>		<input type="checkbox"/> No. of rows: O.D.	<input type="checkbox"/> BWG/Thk
30	<input type="checkbox"/> Fins: Spacing /inch. O.D.		<input type="checkbox"/> Root Dia	<input type="checkbox"/> Thickness :
31	<b>■ Header Type: Plug / Cover</b>		<input type="checkbox"/> No. of Splits: Material :	
32	<input type="checkbox"/> Plugs/Gaskets		<b>■ Side Frame : C.S. Inside Zinc</b>	
33	<input type="checkbox"/> Nozzles		In :	Out :
34	<input type="checkbox"/> Couplings		<input type="checkbox"/> Vent:	<input type="checkbox"/> Drain :
35	<b>CONSTRUCTION (Each section)</b>			
36	<b>■ Structure</b>		CS <input type="checkbox"/> Sec. /Gr. No.	<input type="checkbox"/> Design Wind Load : kgf/m
37	<b>■ Plenum Chamber</b>		CS inside Zinc Protected	
38	<input type="checkbox"/> Fans	No.	Dia.	RPM
				Mfr.

33	<input type="checkbox"/> Blades	Material:	Pitch: Auto variable / (No.) Page 232 of 302
40	<input type="checkbox"/> Hubs Adjustable	Material:	
41	<input type="checkbox"/> Louvers	Material :	Type : Mfr.
42	<input type="checkbox"/> Weights kg Each Section(Dry) :	Full of Water:	
43	<input type="checkbox"/> Each Bundle (Dry) :	Full of Water:	
44	<input checked="" type="checkbox"/> APPLICABLE SPECIFICATIONS	API Standard 661	
45	<input checked="" type="checkbox"/> REMARKS	1. Air coolers should be designed for 10% excess capacity than	
46	<input checked="" type="checkbox"/> Exchanger	should be designed with air side temperature of 44 0C.	
47	<input checked="" type="checkbox"/> Separate data sheet	should be filled by the bidder for each service i.e. Intercooler and After cooler	

## 18.0 Datasheet of Main Motor

1	Project name:	
2	Driven equipment	Air Compressor
3	Tag No. / Equipment No.	
4	Duty	
5	Manufacturer	
6	Motor Duty & Type	
7	Frame Size/Mounting	
8	Output	
9	Voltage _____ VOLT	415 V+/- 10%
10	Full load current _____ AMP	
11	Starting current with star delta _____ starting AMP	
11	Full load speed _____ RPM	
12	Enclosure	TEFC/FLAMEPROOF/IP55 AS PER IS:4691-
13	Mounting	
14	Insulation Class	F' – Temp. rise limited to Class – 'B'
15	Ambient temperature	47
16	Temp. Rise by resistance	
17	Applicable Code	
18	Full load torque _____ Kg-m	

19	Starting torque FLT	
20	Efficiency at 100% Load	
	Load	75%
	Load	50%
21	Rotation viewed from DE	
22	Bearing type No.	
23	Type of Lubrication	

24	Coupling / pulley	DIRECT / FLEXIBLE
25	Net weight (approximate)	
26	Cable size / type _____ mm sq.	
27	Phase / connection / No. of terminal	
28	Frequency _____ Hz.	50 Hz + / - 5%
29	No. of poles _____	
30	Locked rotor current _____ %FLC	
31	LR withstand time (HOT) Sec	
	(COLD)	
32	Startor / rotor time constant	
33	Power factor at – 100% Load	
	- 75% Load	
	- 50% Load	
34	Break down or pull out torque	
n35	Space heaters WATT / VOLT	
36	Vibration Level / Noise Level	As per IS12065 / IS12075

### 18.3 DATA SHEET OF COOLING FAN MOTOR

1	Project name:	
2	Driven equipment	Compressor
3	Tag No. / Equipment No.	
4	Duty	
5	Manufacturer	
6	Type	THREE PHASE, SQUIRREL CAGE INDUCTION MOTOR.
7	Frame designation	

8	Output KW	
9	Voltage _____ VOLT	415 V+ / - 10%
10	Full load current AMP	
11	Starting current AMP	
11	Full load speed RPM	
12	Enclosure	TEFC/FLAMEPROOF/IP55 AS PER IS:4691-
13	Mounting	
14	Insulation Class	F' - Temp. rise limited to Class - 'B'
15	Ambient temperature _____ °C	47
16	Temp. Rise by resistance °C	

17	Applicable Code	
18	Full load torque Kg-m	
19	Starting torque FLT	
20	Efficiency at _____	100% Load
		75% Load
		50% Load
21	Rotation viewed from DE	
22	Bearing type No.	
23	Type of Lubrication	
24	Coupling / pulley	
25	Net weight (approximate)	kg
26	Cable size / type	mm sq.
27	Phase / connection / No. of terminal	
28	Frequency	Hz.
29	No. of poles	
30	Locked rotor current	%FLC
31	LR withstand time (HOT)	Sec
	(COLD)	Sec
32	Startor / rotor time constant	_Min
33	Power factor at – 100% Load	
	- 75% Load	
	- 50% Load	
34	Break down or pull out torque	%FLT
36	GD Sq. of load	Kg-mP2P
37	GD Sq. of motor	Kg-mP2P
38	Starting time at 100% / 80% V with star delta	
39	No. of starts – Hot / Cold	4
40	Vibration Level / Noise Level	As per IS12065 / IS12075
41	Speed – Torque characteristics curve	

#### 18.4 DATA SHEET GAS DETECTION SYSTEM

1	<b>TECHNICAL</b>	<b>GENERAL</b>
2	<b>PROJECT:</b>	
3	OWNER: M/S	SITE:
4	<b>EQUIPMENT: GAS DETECTION FOR CNG STATIONS</b>	
5	<b>NO.</b>	GAS DETECTION TYPE:
6	NOTE: <input checked="" type="checkbox"/> SCOPE OPTION / INFORMATION SPECIFIED BY PURCHASER <input type="checkbox"/> INFORMATION REQUIRED FROM VENDOR.	
7	<input type="checkbox"/> MANUFACTURER:	<input type="checkbox"/> MODEL NO.:
	<b>SIGNAL TRANSMISSION</b>	
8	<input type="checkbox"/> ANALOG: TRANSMISSION BY 3CORE SHEILDED CABLE	
9	<input type="checkbox"/> MEASUREMENT CONTROL: 4mA to 20mA	
10	<input type="checkbox"/> SENSOR DRIFTS BELOW ZERO:	
11	<input type="checkbox"/> MEASURING RANGE EXCEEDED:	
12	<input type="checkbox"/> TRANSMITTER FAULT:	

13	<input type="checkbox"/> MAINTENACE SIGNAL:				
14	<input type="checkbox"/> HART COMPATIBLE:				
<b>■ SITE / ENVIRONMENTAL DATA</b>					
15	SITE DATA:				
16	AMBIENT (P <sup>o</sup> C):	TEMP.	MAX:	47	
17			MIN:		
18	RELATIVE HUMIDITY		MAX:	90	
	ALTITUDE (M):				
19	INSTALLATION: ■ INDOOR				
20	<b>■ ELECTRICAL AREA HAZARD:</b>				
21	CLASS/ZONE: CLASS I ZONE I DIVISION: I GAS GROUP: D, GROUP IIA, IIB				
<b>■ APPLICABLE CODES AND STANDARDS</b>					
22	■ GAS DETECTION APPROVALS: CENELEC		■ UL, CSA: Class 1, Div 1, Groups B,C,D		
<b>VOLTAGE OF SUPPLY</b>					
23	<input type="checkbox"/> OPERATING VOLTAGE: A.C/D.C		V	Ph	
24	<input type="checkbox"/> IN-RUSH CURRENT: A.C/D.C				
25	<input type="checkbox"/> POWER INPUT A.C/D.C				
<b>■ PHYSICAL SPECIFICATIONS</b>					
26	<input type="checkbox"/> ENCLOSURE: Nema 4+7 (IP65)				
27	<input type="checkbox"/> SIZE				
28	<input type="checkbox"/> WEIGHT				
<b>■ INSPECTION AND TESTS</b>					
29	<input type="checkbox"/> Physical Tests on site:				
<b>REMARKS</b>					

### 18.5 Datasheet – UV Fire Detection System

1	<b>TECHNICAL</b>		<b>GENERAL</b>		
2	<b>PROJECT:</b>				
3	OWNER: M/S	SITE:			
4	<b>EQUIPMENT: GAS DETECTION FOR CNG STATIONS</b>				
5	NO.	GAS DETECTION TYPE:			
6	NOTE: ■ SCOPE OPTION / INFORMATION SPECIFIED BY PURCHASER <input type="checkbox"/> INFORMATION REQUIRED FROM VENDOR.				
7	<input type="checkbox"/> MANUFACTURER:		<input type="checkbox"/> MODEL NO.:		
<b>SIGNAL TRANSMISSION</b>					
8	<input type="checkbox"/> ANALOG: TRANSMISSION BY 3CORE SHEILDED CABLE				
9	<input type="checkbox"/> MEASUREMENT CONTROL: 4mA to 20mA				
10	<input type="checkbox"/> SENSOR DRIFTS BELOW ZERO:				
11	<input type="checkbox"/> MEASURING RANGE EXCEEDED:				
12	<input type="checkbox"/> TRANSMITTER FAULT:				
13	<input type="checkbox"/> MAINTENACE SIGNAL:				
14	<input type="checkbox"/> HART COMPATIBLE:				
<b>■ SITE / ENVIRONMENTAL DATA</b>					
15	SITE DATA:				

16	MAX:	47			
17	MIN:				
18	MAX:				
	ALTITUDE (M):				
19	INSTALLATION:	<input checked="" type="checkbox"/> INDOOR			
20	<b>■ ELECTRICAL AREA HAZARD:</b>				
21	CLASS/ZONE: <b>CLASS I ZONE I</b>	DIVISION: <b>I</b>	GAS GROUP: <b>D, GROUP IIA, IIB</b>		
	<b>■ APPLICABLE CODES AND STANDARDS</b>				
22	■ GAS DETECTION APPROVALS:	<input checked="" type="checkbox"/> <b>UL, CSA: Class 1, Div 1, Groups B,C,D</b>			
	:Exd IIC 6				
	<b>VOLTAGE OF SUPPLY</b>				
23	<input type="checkbox"/> OPERATING VOLTAGE:	A.C/D.C	V	Ph	
24	<input type="checkbox"/> IN-RUSH CURRENT:	A.C/D.C			
25	<input type="checkbox"/> POWER INPUT	A.C/D.C			
	<b>■ PHYSICAL SPECIFICATIONS</b>				
26	<input type="checkbox"/> ENCLOSURE: <b>Nema 4+7 (IP65)</b>				
27	<input type="checkbox"/> SIZE				
28	<input type="checkbox"/> WEIGHT				
	<b>■ INSPECTION AND TESTS</b>				
29	<input type="checkbox"/> Physical Tests on site:				
	<b>REMARKS</b>				

19.0 Operating Condition and Experience Record of Compressors  
Please submit for online compressor separately after taking photocopy.

19.1 Operating Conditions Suction Pressure of Compressor: 16 Kg/cm2

Sl no		Units	Stage 1	Stage 2	Stage 3
1	<input checked="" type="checkbox"/> Gas Handled (See Analysis)				
2	<input type="checkbox"/> Corrosion Due to		<b>NONE</b>	<b>NONE</b>	<b>NONE</b>

3	<b>Suction Conditions</b>				
4	<input checked="" type="checkbox"/> Pressure (@ Vendor's B/L)	kg/cm <sup>2</sup>			
5	<input checked="" type="checkbox"/> Temp. (+@ Vendor's B/L)	POPC			
6	<b>Discharge Conditions</b> (Vendor's Battery Limit :				
7	<input checked="" type="checkbox"/> Pressure (@ Vendor's B/L	kg/cm <sup>2</sup>			<b>250</b>
8	Pressure @ Cylinder Flg.	kg/cm <sup>2</sup>			
9	Temp., Adiabatic @Cyl. Flange	POPC	<b>&lt;150</b>	<b>&lt; 150</b>	<b>&lt; 150</b>
10	Temp., Actual @Cyl.Flange	POPC			
11	Temp., After After Cooler	POPC			<b>&lt; 50</b>
12	Cp/Cv Ratio				
13	Compr. Factor (ZB <sub>2B</sub> ) or (Z				
14	<b>Operating Characteristics</b>				
15	Capacity (wet)	SMP <sup>3P</sup> /Hr			
16	Mfr's Rated Cap. (Design)	(No -ve tol.)			
17	Actual Inlet Flow (wet)	AMP <sup>3P</sup> /Hr			

18	Specific Gravity					
19	V Belt / Coupling Losses	KW				
20	Volumetric Efficiency	%				
21	Valve Lift Suction /	mm / mm				
22	Valve Lift Area Suction/ Discharge	mmP <sup>2P</sup> / mmP <sup>2P</sup>				
23	Valve Velocity	m/sec				
24	Compressor Speed	RPM				
25	Motor sped in	RPM				
26	Compressor Shaft Power (	KW				
27	Compressor Shaft Power KW	KW				
28	Transmission efficiency	%				
29	Motor efficiency at operating	%				
30	Driver Power	KW				
31	Power consumed by motor sno ( 26/28/29)	KW				
32	Specific gravity of gas					

#### LIST OF INSTRUMENTATION & CONTROLS FOR COMPRESSOR

Sl no	Description	INDICATION		ANNUNCIATION & PRE ALARM		TRIP & A/V ALARM ANNUN.	
		GUAGE -LOCAL GUAGE	INDICATOR LOCAL PANEL (PLC) DISPLAY	LOW LOCAL PANEL	HIGL LOCAL PANEL DISPLAY (PLC)	LOW -LOCAL PANEL - PLC-DISPLAY	HIGH LOCAL PANEL PLC-DISPLAY
1	Frame Oil Sump/Reservoir	■ yes				■ yes, switch	
2	Main L/O Pump Disch. Pr	■ yes	■ yes	■ yes		■ yes	
3	Oil Flow						
4	Oil Pressure at Main						
5	Supply Header Temp.						
6	Oil cooler Oil Inlet Temp.						
7	Stand by Pump Start						
8	Compressor Main bearing metal Temp.						
9	Cylinder & Packing Oil						
10	Lubricator Oil Level	■ local yes					

11	Lubricator Oil Flow						
12	Lubricator Failure					<input checked="" type="checkbox"/> yes	
13	Aux. Oil						
14	Lub. Oil Supply Pr.						
15	Lub. Oil return						
16	Elec. Motor bearing metal temp.						
17	Coolant System						
18	Each cylinder CW outlet temp.						
19	Inter/After/Oil Cooler CW						
20	CW Supply header flow						
21	Sight Flow CW return each cylinder, Cooler & Header						
22	For Closed Circuit Cooling						
23	Coolant main pump disch. Pr.	<input checked="" type="checkbox"/> yes	<input checked="" type="checkbox"/> yes				
24	Coolant standby pump disch. Pr.						
25	Coolant stand by pump start						
26	Coolant supply header Pr.						
27	Coolant supply header temp						
28	Coolant cooler Outlet	<input checked="" type="checkbox"/> yes					
29	Coolant reservoir Level	<input checked="" type="checkbox"/> yes	<input checked="" type="checkbox"/> yes	<input checked="" type="checkbox"/> yes			
30	Cylinder Coolant Outlet temp.						
31	For Static/Thermo-siphon						
32	Cylinder Coolant Outlet temp.						
33	Diff. Pr. Across packing coolant filter						
34	Process Gas System						
35	Temperature before twin filter at suction	<input checked="" type="checkbox"/> yes	<input checked="" type="checkbox"/> yes				
36	Pressure & Temperature before twin filter at	<input checked="" type="checkbox"/> yes					
37	1st , 2nd and 3rd stage	<input checked="" type="checkbox"/> yes					
38	Each stage Outlet temp.	<input checked="" type="checkbox"/> yes		<input checked="" type="checkbox"/> yes			

39	After Cooler Gas Outlet temp.	■ yes	■ yes		■ yes		■ yes
40	Cylinder Packing Vent						
41	Final Disch Press. after coalescent filter *	■ yes					
42	Blow Down vessel level if required	■ yes					
43	Piston Rod Drop Indicator						
44	Distance piece diff. Purge pressure						
45	Common process parameters						
46	Common machine parameters						
47	Blow Down vessel	■ yes					
48	Vibration on comp						■ yes switch
49	Min electric motor speed.		■ yes				
50	Main motor fails to start					■ yes	
51	Electric power consumption indication	■ yes	■ yes				
52	motor winding temperature : pt-100						■ yes
53	Temp before and after Air cooler	■ yes					

\* Pressure transmitter shall be of smart type with LCD display at suction and discharge

## 20.0 QUALITY ASSURANCE PLAN AND CONTROL

The Supplier shall perform all test and inspection as per tender and as per this quality assurance plan

Sl. No.	Description	D	R	TW	W	
	<b>Compressor</b> (also refer note 4)					
	Material TC for: crank shaft, connecting rods, cylinder, liner, piston (compliance cert.)	Yes	Yes	-	-	
	Hydrotest of – cylinder	Yes	Yes	-	-	
	Ultrasonic test of – crank shaft, connecting rod.,piston rod. (refer note: 1)	Yes	Yes	-	-	
	End clearance of the cylinders, piston rod run out	Yes	Yes	-	-	
	No load mechanical run test as per manufacturers standard(4 hours test at packager's end)	Yes	Yes	Yes	-	
	Strip check and internal inspection after "NLMRT" of all compressors –ReferNote: 2	Yes	Yes	-	-	

Instrumentation & Control				
Manufacturers test certificates / calibration certificates of				
Manufacturer test certificates, testing & functioning of				Page 240 of 302
Assembly check as per P&ID	Yes	Yes	-	Yes
Others				
Acoustic Enclosure: Surface preparation after cleaning & prior				
Filter, SS tubes, acoustic material, pipe, fittings, flanges,				
Mechanical string test for with Air/N2/NG	Yes	Yes	-	Yes
Package performance test at site at guaranteed parameters				
Field trial run	Yes	Yes	-	Yes
<b>Electric Motor</b>				
Manufacturer's compliance report – <b>Note 3 &amp; 4</b>	Yes	Yes	-	-
Type test certificate by CMRI	Yes	Yes	-	-
<b>Pressure vessels (at sub-vendor works)</b>				
Material test certificates for RAW Material	Yes	Yes	-	-
Dimension and Visual Inspection Report as per drawing	Yes	Yes	-	-
Radiography of pressure vessels as applicable	Yes	Yes	Yes	-
Hydro test of pressure vessels	Yes	Yes	Yes	-
Final painting and cleaning	Yes	Yes	-	-
<b>Heat Exchangers (at sub-vendor works)</b>				
WPS / PQR – Welder Qualification	Yes	Yes	-	-
Material test certificates for raw material (pressure parts)	Yes	Yes	-	-
Dimension and visual inspection report as per drawing / Data Sheet	Yes	Yes	-	-
Radiography of heat exchangers as applicable	Yes	Yes	Yes	-
Hydrotest of heat exchangers : Note 3	Yes	Yes	Yes	-
Final painting and cleaning	Yes	Yes	-	-
<b>Control Panel &amp; Soft Starter</b>				
Dimensions / visual as per drawing	Yes	Yes	-	Yes
Functional test	Yes	Yes	-	Yes

**LEGENDS:** **D** = Documents to be submitted by vendor / sub-vendor; **R** = Review of documents by client/consultant; **TW** = witness by third party; **W** = Witness by client or consultant.

**NOTES:**

- 1 Crank Shaft, Connecting Rod: UT / MPT shall be conducted either in forged or in finished condition.
- 2 Strip test is limited to open Crank Case cover, X-Hd guide & Dist.Pc. Cover and opening of bore & other parts, Piston, one valve per cylinder. However if comprehensive O&M after commissioning is in bidder's scope strip test shall be at bidder's option.
- 3 Review of manufacturer's test reports/certificates of all parts
- 4 If bidder is only packager and not manufacturer of main CNG compressor the standard QAP of compressor OEM with test report of compressor and motor from manufacturer or as witnessed by TPI appointed by manufacturer shall be accepted
- 5 Cooler, pressure vessel shall be witnessed by TPI. Expenses of TPI including its fess shall be borne by packager/manufacturer.

## 21. PREFERRED MAKES

Preferred makes of equipments shall be as follows:

Sl. No.	Item description	Preferred Makes
---------	------------------	-----------------

1	FLP motors	ABB / Compton Greaves / Kirloskar / Siemens / Bharat Bijlee/Weg/Marelli/LHP
2	FLP Switchgear	Baliga/ FCG/ FPE / Flexpro/Sudhir
3	Switches/fuses/contactors	L & T/ GEC/ Siemens/ Schneider
4	Push Button	L & T/ Vaisno/Technik
5	MCCB	Siemens/ Legrand/Schnieder
6	Vibration switch	Robertshaw Control/ Murphy
7	PLC	Rockwell Automation/ GE Fanuc/ Siemens/ AllenBradley / L&T/Telemecanique/Schnieder
8	IR Gas detectors	General Monitors / Crowcon / Honeywell / Sieger / Detronics/ Khrome Schroder / Net safety/ESP Safety Pvt. Ltd/M/s Oldham.
9	UV Flame detectors	General Monitors / Crowcon / Honeywell / Sieger/ Detronics / Khrome Schroder/ Net safety/ ESP SafetyPvt. Ltd/M/s Oldham
10	Mass Flow meter	Micromotion CNG 50 , Endress& HauserCNGmassDCI
11	Pressure Transmitter	Druck/ Wika/ Honeywell/ ABB/Fisher/Rosmount/Yokogawa
12	Pressure Regulator &Slam ShutValve	M/s PietroFiorentiniS.p.A. (Italy)/ M/s EmersonProcess Management/ M/s RMG- RegelMesstechnik (Germany) / M/s Mokveld Valves BV(Netherlands)/ Tartarini / Fisher /M/s Gorter Controls etherlands)/M/s Dresser/Nirmal /M/s Vanaz
13	Pressure Safety Valve	M/s BHEL, OFE & OE Group (New Delhi)/ M/s Keystone Valves (India) Pvt. Ltd. Baroda/M/s Sebim Sarasin Valves India (P) Ltd. (New Delhi/ Halol-Gujarat)/ M/s Tyco Sanmar Ltd. (NewDelhi/ M/s Parcol SPA, Italy/ M/s Nuopignone, Italy/ M/s Sarasin, France/ M/s Tai Milano SPA, Italy/ M/s Fisher Rosemount (Now M/s Emerson Process) Singapore/ Mercer USA/ M/s FaingerLeser.
14	Pressure Gauges & Temperatures Gauges.	M/s AN Instruments Pvt. Ltd., New Delhi/ M/s General Instruments Ltd., Mumbai/ M/s WIKA/M/s Altop/
15	RTDs :	M/s General Instruments Ltd. Mumbai/ M/s NagmanSensors (Pvt.) Ltd./ M/sPyro Electric, Goa/ Altop
16	SS Tubes for CNG application	M/s Sandvik, Sweden/ M/s Tubasax/ M/s RatnamaniMetals & Tube
17	SS tube Fittings/ On Off SS ball/needle/non-return valve for CNG application	M/s Swagelok (USA)/ M/s Parker (USA)/ M/s Hoke (Circore Instruments)/ M/sHamlet/ M/S SSP/M/S BMTKorea/ HYLOK/ M/s Dk-Lok
18	Plug Valve for air water	M/s Nordstrom Valves Inc. USA/ M/s SerckAudcoValves, UK/ M/s Breda Energia SestolIndustriaSpa, Italy/ M/s Sumitomo Corporation, New Delhi/M/sFisher XomoxSanmar India Ltd., New Delhi/M/s Larsen & Toubro Ltd. (Audco IndiaLimited),Chennai/M/s Microfinish/M/s Virgo/M/s BDK/M/s Petro valves
19	Solenoid Valve	M/s ASCO / M/s Rotex / M/s Parker Hanifen/M/sSwagelok
20	Cables and wires	INCAB/ Universal/ ASEAN/CCI/ FORT Gloster/Finolex/ KEI/ Hylite/Polycable/Associated cables
21	Barrier/ Isolators/Surge protector	MTL / Phoenix / P&F
22	Air exchanger	GEI HamonInd Ltd/ GEA India / Patel Air temp / M/sKirloskar Pneumatic Co.Ltd./CP/United Heat Transfer
23	SMPS	Telemecanique (Schnieder)/ Siemens/Phoenix
24	Pressure switch	Orion/Switzer/Danfoss/Wika/IFM

**NOTE-1:**

For procuring bought out items from vendors other than those listed above, the same may be acceptable subject to prior approval of Consultant/owner to the following: -

- a) The vendor/ supplier of bought out item(s) is a regular and reputed manufacturer/ supplier of said item(s) for intended services and the sizes being offered is in their regular manufacturing/ supply range. Further, the bidder has to certify that the item(s) has/have been regularly used by them in all the packages for the last two years and they are working satisfactorily.
- b) The vendor/ supplier should not be in the Holiday list of Client / Any other PSU.

**NOTE-2**

For any other item(s) for which the vendor list is not provided, bidders can supply those item(s) from reputed vendors/ suppliers who have earlier supplied same item(s) for the intended services in earlier projects and the item(s) offered is in their regular manufacturing/ supply range. The bidder is not required to enclose documentary evidences (PO copies, Inspection Certificate etc.) along with their offer, however in case of successful bidder; these documents shall be required to be submitted by them within 30 days from date of Placement of Order.

## 22.0 CHECKLIST

Scope of Supply for Reciprocating Gas Compressor Package:

Notes:

- i. Bidder shall furnish all equipment, drivers, auxiliary systems, instruments and controls and safety devices as per the enquiry document. Anything required over and above what is specified, for safe and satisfactory operation of the equipment package shall be included by the Bidder in his scope.
- ii. Bidder to write YES/NO against each item. Bidder is required to include complete scope, as such 'NO' is not warranted. However, in case for any of the items if vendor's reply is 'NO', vendor should give reasons for the same:
- iii. Bidders' scope of supply shall include but not be limited to the following:

SI	Description	Specified by Purchaser (Yes/No)	Included by	Remarks
1	<b>Each Reciprocating Compressor package complete with :</b>			
1.1	Suction / discharge pulsation dampers	Yes		
1.2	Process equipment such as separator complete with supports, manual drain with isolation valves, and automatic drain system for separators	Yes		

1.3	Air cooled, lube oil, cooling water, inter-stage and discharge gas coolers with necessary air cooling arrangement	Yes		
1.4	Combined or separate closed circuit cooling water system for compressor (As required)	Yes		
1.5	Lubricating oil system for compressor	Yes		
1.6	Safety relief valves on each stage of the compressor	Yes		
1.7	All interconnecting oil, gas, water, air piping within the compressor package	Yes		
1.8	All valves, tubing, fittings as specified and required within the compressor package	Yes		
1.9	Fuel supply hardware complete with SS piping, control valves, Regulators, Flow-meter, filter, vent/drain within the package suitable for the specified fuel gas	Yes		
1.10	Common skid for compressor and other auxiliary systems	Yes		
1.11	Acoustic enclosures for compressor for noise attenuation up to 80 dBA @ 1 m distance fitted with fire detection and extinguishing system as specified	Yes		
1.12	Instrumentation and control system complete with PLC based control panel configured as RTU of supervisory computer and data acquisition, instrumentation as	Yes		
1.13	Cabling with cable trays for all the electrical devices within the package	Yes		
1.14	Mass flow meter with integral display	Yes		
1.15	Inlet Pressure Regulators (Compressor Suction)	No		
1.16	Priority Panel (as specified) at Package	Yes		
1.17	Compressor gas twin inlet Y-type temporary strainer, permanent inlet filter.	Yes		
1.18	Y-type strainers, valves, sight flow indicators, check valves, auto/manual drain traps as required for various compressor auxiliary systems, i.e. frame lubrication system, cylinder	Yes		
	lubrication, cooling water systems etc.			
1.19	Manual package isolating valves and auto inlet isolation valve	Yes		
1.20	All couplings and guards	Yes		
1.21	Flywheels, barring device	Yes		

2	Spares and Tools / Tackles			
2.1	Mandatory Spares if specified in the TS "(Indicate separate price for each items)	No		
2.2	Erection and commissioning spares as recommended by Bidder including lube oil consumables etc. as required for erection & commissioning of each compressor package.	Yes		
2.3	Two year normal operation and maintenance spares over and above the spares as required during one year warranty period normal operation and maintenance of each package by the Bidder	No		
2.4	Quote for five year Normal operation & maintenance spares (excluding lube oil etc.)	No		
2.5	Special tools and tackles required for normal operation & maintenance of each equipment of compressor package as required and recommended by the Bidder	Yes		
3	Inspection and Testing			
3.1	As specified on the datasheets and tech. Spec	Yes		
4	Vendor data and drawings			
4.1	All data & drawings as required	Yes		
5	Erection, commissioning and trial runs at site of the complete package	Yes		
6	Miscellaneous			
6.1	Foundation and anchor bolts	Yes		
6.2	Acoustical and mechanical analysis report & pulsation study (approach-3)	Yes		
6.3	Additional items not specified by Purchaser but recommended by Bidder for safe smooth and normal operation. (Bidder shall indicate separate list of such items in his proposal)	Yes		
6.4	Optional price quoted for complete compressor package with Non-flame proof electric panel in lieu of flame proof electric panel.	Yes		

6.5	Data sheet of compressor, motor, LEL and UV Detection system duly filled.	Yes		
6.6	Combined Speed-Torque Characteristic curve of Compressor at rated inlet pressure.	Yes		
6.7	Electrical Load summary	Yes		
6.8	Catalogues of electric motor, flame proof equipment and Instrumentation	Yes		
6.9	Power required from UPS Supply (230 V AC Single Phase	Yes		
6.10	Power required from Non UPS Supply (415VTPN)	Yes		
7	Operation maintenance contract including all operating spares, consumables, man power etc.	Yes		

## 27.0 FORMAT OF DEVIATION TO THE TECHNICAL SPECIFICATION:

All deviations sought by the vendor shall be furnished in this format. If some deviations/observations/comments are furnished by the vendor at some other places of the offer, the same shall not be considered as deviation. Purchaser may accept some deviation in the interest of project. However, 1.5 times the cost of deviation shall be loaded in the offered cost for evaluation purpose

S N o .	Claus e no.	Te nd er	Deviatio n taken	Reasons for deviations / remarks

## EXTENT OF SUPPLY AND SERVICES - CASCADE

### 1.0 SUPPLY

Supply of CNG storage cascades along with Interconnecting tubing / piping, fitting, valves of water liter capacity as specified in Schedule of rates (SOR) with following minimum details:

- 1.1 Cylinders- 6x75 WL with three bank
- 1.2 Each cylinder equipped with cylinder shut -off valve and fusible burst disc.
- 1.3 Pressure gauge on bank.
- 1.4 Safety Relief Valve and Pressure Relief Valve.
- 1.5 Any other item required for completing the cascade assembly.
- 1.6 Cylinders and their fittings for CNG use shall be designed, manufactured, tested including hydrostatic stretch test at a pressure in full conformity to IS 7285-1, IS 7285-2, ISO 111119- 1, ISO 111119-2, ISO 111119-3, ISO 11120, EN 12245, EN 12247 or other national/international standards having approval from statutory authority under Gas Cylinder rules 2004 i.e. CCOE considering the maximum allowable operating pressure of 255 Kg/cm<sup>2</sup>(g).

### 2.0 TECHNICAL SPECIFICATIONS STORAGE SYSTEM

The following specification is intended to give the vendor the technical and operating conditions the cascades must fulfill. Features other than those indicated herein but which call for a better design, increase in efficiency, enhance reliability, optimization may be accepted subject to approval from owner/consultant. The vendor shall bid in their main offer items according to the technical specifications outlined below:

### 2.1 CASCADE

2.1.1 Cascade shall be a group of 75 WL cylinders (6x75 WL) of capacity required to meet the specified total water capacity, dimensional and weight limitations. The cascades shall also be provided with structural frame having facility of lifting and placement.

2.1.2 **Cascade Storage Capacity:**  
The water storage capacity of cascade shall be min 450 WL.

2.1.3 The cylinder shall be designed as per IS: 7285 Part II and approved by Chief Controller of Explosive (CCoE) / Petroleum and Explosives Safety Organization (PESO), Government of India for use in India for specified conditions.

2.1.4 Working Pressure of cascade cylinder shall be maximum 255 Kg/cm<sup>2</sup> (g) at 15 C

2.1.5 All cylinders shall be new and unused. Re-certified cylinders are not acceptable. Before dispatch, using or refilling the cylinder has to be made gas-free, air contained therein shall be purged by N<sub>2</sub> gas. All cylinders in a cascade shall be of same capacity.

2.1.6 Cylinder material shall be seamless alloy steel (Cr-Mo) as per design approval by Chief Controller of Explosive (CCOE)/ Petroleum and Explosives Safety Organization (PESO) Government of India.

2.1.7 Cylinder neck threading shall be as per IS 3224:2002 approved by Chief Controller of Explosive (CCOE)/ Petroleum and Explosives Safety Organization (PESO) Government of India

2.1.8 The threads size will be of diameter 25.4mm, Type 4 Size 2 of IS: 3224 with taper of 1 in 8 on diameter.

2.1.9 The cylinder shut-off valve shall be with fusible burst disc confirming to requirements of IS: 3224 and as per design approved by Chief Controller of Explosives (CCOE)/ Petroleum and Explosives Safety Organization (PESO), Government of India.

2.1.10 The burst disc shall rupture on excess pressure as well as on excess temperature either individually or combined. The burst disc discharge shall be manifolded to a common header for safe venting. Vendor shall indicate burst pressure and temperature.

2.1.11 The cylinder shut-off valve orifice shall be designed for high flow. To permit the combined flow of 100 kg/min from each bank at pressure of 255 Kg/cm<sup>2</sup> (g). Vendor to furnish necessary calculation indicating overall pressure drop for the bank, Coefficient of flow (C<sub>v</sub>) values, valve orifice size etc.

2.1.12 The interconnecting tube work shall be maximum of 3/4" OD. The sizing of connecting tubing between each outlet and its associated cylinders shall be such that where they join the total incoming flow areas shall not be less than outgoing area. The loops in tube work shall be provided for absorbing contraction, expansion and vibration piping / tubing shall be suitably

clamped to the frame structure. Except pressure gauge with  $\frac{1}{4}$ " OD SS tube, at the other inter connecting tube shall be min of  $\frac{3}{4}$ " OD tube for pressure piping. For operating the pressure gauge  $\frac{1}{4}$ " OD tube is sufficient.

- 2.1.13 The interconnecting tube work of cylinder manifold shall have configuration suitable for priority filling and sequential dispensing system by the electronic CNG dispensers.
- 2.1.14 The cylinders and their fittings for CNG use shall be designed, manufactured, tested including hydrostatic stretch test at a pressure in full conformity to IS:7285, Part 2:2004 and Gas Cylinder Rules, 2004 considering the maximum allowable operating pressure of 255 Kg/cm<sup>2</sup>(g).
- 2.1.15 The cylinders shall be permanently and clearly marked for "CNG only" and also labeled as "CNG ONLY" in letter at least 25 mm high in contrasting color in a location which shall be visible after installation.
- 2.1.16 All cylinder valves and fittings must be rated for the full range of temperature and pressure and the manufacturer shall stamp or permanently mark the valve body to indicate the service rating.
- 2.1.17 All cylinders are to be hydrostatically tested and approved by third party certification body i.e. Bureau of Indian Standards (BIS). Test certificates shall be duly endorsed by approving body and issued before delivery
- 2.1.18 Approval of third-party certification body i.e. Bureau of Indian Standards (BIS) & PESO for all the cylinders to be submitted. Certificates shall be duly endorsed by approving body and issued before delivery.
- 2.1.19 Cascade venting tubes shall not be with welded connection. Its shall be with nut ferrule connection.

## 2.2 Cascade frame

- 2.2.1 The frame shall not allow lateral and rotational movement of cylinders during regular road transport under any circumstances. Vendors shall take into account the rough patches / bumps on roads.
- 2.2.2 Frame shall be free standing and have facility for lifting by crane and forklift the complete assembled cascade. Bottom and top of frame shall be reinforced to prevent any twisting or strain to inter connections among cascade cylinders during lifting by crane, forklift and during the transport.
- 2.2.3 Frame structure of each cascade shall be capable of withstanding 4g impact (four times gravity) from any direction without any distortion. Calculations for the same to be signed by TPI and to

be submitted to Owner/Consultant.

2.2.4 All items used in the frame shall be weatherproof.

2.2.5 Supplier to submit structural drawing of the frame

2.2.6 Gas storage facility shall be protected from the effects of the weather by a canopy designed to facilitate the dispersion of free or escaped gas and shall not permit gas to be trapped.

2.2.7 Frame Painting:

Surface preparation by Short Blasting as per grade SA 2 ½ as per IS 9954/ISO 8501-1, shall be carried out. Three coats of paint shall be applied with minimum thickness of 300 micron. (Permissible thickness in each coat shall be within 80 to 120 micron.)

### **2.3 Piping / Tubing / Fitting/ Pressure gauges**

2.3.1 Materials used for the piping shall be stainless steel 316 fully annealed seamless confirming to ASTM A269 with maximum hardness of Rb80 or less and suitable for bending and flaring. OD tolerance shall be (+) 0.005". The piping/ tubing material shall be of Sandvik /Tubacex make only.

2.3.2 All fittings including valves shall be of Swagelok, Parker, SSP and Hylok make. Material shall be SS 316 conforming to ASTM A 182 / A 479 / A 276/ A 269. Open ends on fittings and vents shall be provided with caps.

2.3.3 Piping / Tubing shall be suitably clamped to the frame structure.

2.3.4 Liquid filled pressure gauge of diameter 4", (0-400 kg/cm<sup>2</sup>) with a 3 - way isolating valve or 2- Valve manifold block on each bank shall be used. Thus each cascade shall have three pressure gauges. Pressure gauges shall be securely mounted. One common Temperature gauge of the range 0-100 deg C shall also be provided.

2.3.5 Material of vent tubing shall be SS 316 conforming to ASTM A 269 and vent height shall be minimum 3 meter above from the working level.

2.3.6 The cascade cylinder shall be purged with N2 and maintained at 1 bar (g) pressure before dispatch.

### **2.4 Pressure Relief Valve**

2.4.1 Single SRV for venting of the cascade in case of a runaway pressure is accepted

2.4.2 Relief devices shall be positioned in such a way as to avoid discharge of high pressure gas to the operator or persons in close vicinity and suitably extended.

2.4.3 SRV Pressure shall not exceed 20% above MAWP of the system

## 2.5 Painting

- Cylinders shall be painted as per Gas Cylinder Rules/IS code as follows:
- White color on cylinder body
- Signal red on cylinder neck portion
- Yellow color on frame

The paint shall be chosen, primed and applied as to have a service life of ten years. The exterior surface is required to be corrosion free for ten years and to have faded free life without oxidation of paint surface for five years in an environment of bright sun light with an intense UV content.

## 3.0 CNG STORAGE CASCADES

- 3.1 All the Cylinder Specifications, valves, safety relief devices, pressure gauges, pressure relief devices etc., shall remain same as mentioned above.
- 3.2 All cylinders used for storage of compressed gas shall be type approved, in writing, by the Chief Controller of Explosives / Petroleum & Explosives Safety Organization.
- 3.3 The design stress shall include an allowance to include an allowance to enable the cylinder to withstand shocks normally encountered by the movements on road, such as acceleration and deceleration for a minimum of 4g (4 times gravity).
- 3.4 All the cylinders shall be designed to withstand the most severe combined stresses to which they may be subjected to by the pressure of the gas and the pumping pressures
- 3.5 All end connections for quick release coupling, pressure gauges, valves and fittings of cascade shall be within tamper proof, wire cage enclosure. These shall be on one side of cascade for ease of operation. After opening the doors only, flexible hose quick release coupling connections to the cascade are authorized.

## 4.0 INSPECTION AND TESTING

- 4.1 Vendor shall carryout 4-G static calculation of one complete assembled cascade with all the cylinders mounted and filled and submit the same
- 4.2 Vendor shall carryout cylinder burst test of one cylinder from the entire batch produced for supply to owner in case offered cylinders are of new design. Vendor shall inform the schedule of the test well in advance to enable Owner or their authorized representative to depute technical personnel for witnessing the test.
- 4.3 Vendor shall carry out all standard shop tests / QA/QC as per recommendation of manufacturer/ Chief Controller of Explosives or Petroleum and Explosives Safety Organization (PESO). Copies of the testing / inspection carried shall be furnished to owner.
- 4.4 Vendor shall furnish record of storage capacity check of each cylinder in a cascade and the same need to be demonstrated to Owner/ Consultant or their authorized representative.

- 4.5 Each assembled storage cascade with all tubing, valves shall be pressure tested to ensure existence of no leakage prior to dispatch.
- 4.6 All tests/checks described above or recommended by manufacturer/Chief Controller of Explosives or Petroleum and Explosives Safety Organization (PESO) shall be witnessed by Third Party Inspection Agency.
- 4.7 Third Party Inspection is in the scope of bidder. Third Party shall be PNGRB Approved.
- 4.8 In case any problem or abnormality found /occurs in cascade during commissioning or warranty period, bidder has to get it solved within 24 hours of lodging of complaint by owner.
- 4.9 Owner/Consultant or its representative/third party or both shall have access for stage-wise and final inspection to those parts or areas of the plant where work or testing of the equipment is being performed, including packaging items.

## 5.0 DOCUMENTATION

- 5.1 Following documents shall be submitted with the offer (Technical Bid):

- 5.1.1 Drawing of cylinder of specified parameters and proposed to be used in offered cascades, approved from Chief Controller of Explosives/ Petroleum and Explosives Safety Organization (PESO), Government of India, Nagpur.
- 5.1.2 Schematic of cascade piping
- 5.1.3 Drawing of cascade frame and assembly.
- 5.1.4 Bill of quantities with weight of each component
- 5.1.5 Make of bought out items.
- 5.1.6 Detailed time schedule for supply indicating time period required for cylinder manufacturing, cascade frame fabrication, shop testing, dispatch of material from works and delivery at site.
- 5.1.7 Dimensions & schematic drawings of cascades offered.

- 5.2 Following documents shall be submitted after release of order:

- 5.2.1 Cylinders to be manufactured and tested as per IS 7285 (Part 2), approved by CCOE under BIS certification marks scheme. The approval for same to be enclosed.
- 5.2.2 Schematic of cascade piping, drawing of cascade frame and bill of quantities with weight of each component and make for Owner/ Consultant's review and approval
- 5.2.3 The supplied cylinders shall have the certification from CCOE, Government of India,

Nagpur for suitability of each cylinder for filling and storage of CNG up to 255 Kg/ cm<sup>2</sup> (g) at 15 OC in India.

- 5.2.4 Vendor shall furnish the material test certificates for all bought out items like cylinder raw material, tubing / piping, valves, check valves and fittings with the shipment.
- 5.2.5 QA/QC report for manufacture of cylinder and testing shall be furnished.
- 5.2.6 Bidder shall furnish “As built” drawing of each CNG cascade with serial number indicating schematic, structural dimensions and bill of material with shipment.

## 6.0 PROTECTION DURING SHIPPING

The cascade shall be packaged to withstand rough handling during ocean shipment and inland journey. It shall be vendor's responsibility to rectify any deterioration / damage that occurs during shipment. Sling points shall be clearly indicated on crates.

## 7.0 EXPERIENCE RECORD PROFORMA FOR CASCADE

Sl. No.	PARAMETER	Information on offered model	Information on Existing Cascade (Location)	
			1	2
1	No. of Units Supplied			
2	Service	CNG		
3	Working Pressure of Cascade in bar (g)			
4	Site min. /max. Temp.			
5	Normal flow from each bank Kg/hr.			
6	Cascades water capacity- Litres.			
7	Water capacity of single cylinder used in cascade – Litres.			
8	Material of Cylinder			
9	Thickness of cylinder wall and disc end in mm			
10	Size of the Cascades			
11	Type of Cascades (/ mobile)			
12	Valve make			
13	Valve type and Dia.			
14	Nos. of banks in cascade			
15	Nos. of cylinders in low bank			
16	Nos. of cylinders in medium bank			
17	Nos. of cylinders in high bank			
18	Water capacity of cylinders individual banks – litres.			
19	4-G calculation for one complete assembled package			

20	Cylinder burst test for one cylinder			
21	Design standard code used			
22	Total weight of cascade in – Tons			
23	Burst pressure and temperature for burst disc in bar (g)			
24	Hydrostatic or Hydrostatic Stretch test			
25	Pressure test for Leakage			
26	Design case gas composition			
27	Approved Manufacturer License certificate from			
28	Dimensions of the Total package			
29	Warranty certificates			
30	Dimension of package max.			
31	Calibration certificates for all instrument gauges etc of package			
32	Test certificates of all instruments with cylinder, tubing's, fittings of total package			
33	Date of commissioning of cascade			
34	Where cascades are supplied :			
35	Major problems encountered if any			

## 8.0 CHECK LIST FOR SCOPE OF SUPPLY

Sl. No.	Description	Specified by Purchaser YES/NO	Included by Bidder YES/NO	Remarks
1.0	<b>Each Storage cascade Package complete with:</b>			
1.1	Specification – Indian Standard 2825, as amended from time to time, IS: 7285 – 1988 or BS5045:Part1 or (US) D.O.T 3AA or similar such other standard code approved by the	YES		
1.2	Cylinder material – Seamless alloy steel (Cr-Mo) or standard code approved by the	YES		



1.3	All the fittings, Valves, Safety devices, gauges are as per IS 3224 or standard code approved by the Chief Controller of	YES		
1.4	Tubing's are of rigid type ASTM A269, SS 316 stainless steeltube.	YES		
1.5	All cylinders are Hydro static Tested	YES		
1.6	Water capacity of single cylinder used in cascade shall be as per SOR / MR	YES		
1.7	No. of banks in cascade- three bank system	YES		
1.8	One Cylinder should be burst tested	YES		
1.9	4-G calculation for one complete assembled package is done	YES		
1.10	Working Pressure of Cascade min. 255 Kg/ cm <sup>2</sup> (g)	YES		
1.11	Pressure test for Leakage on cylinders in assembled condition	YES		
1.12	Isolation Valve complete with venting line valve and end plug installed on the inlet of the cylinder	YES		
1.13	Copy of Calibration certificates for all instrument gauges etc of Cascade package, Test certificates of all instruments with cylinder, tubing's, fittings of total	YES		
1.14	BOQ with weight of each component	YES		
	Drawing of cylinder of specified parameters and proposed to be			
1.16	Drawing of cascade frame	YES		
	Storage cascade with frame assembly is shipped in fully and			
1.18	GA drawing of the cascade.	YES		
	Warranty for a period of 12 months is provided from the			
1.20	Make of bought out items			
	Detailed time schedule for supply indicating time periods required			
2.0	Spares and Tools /Tackles			
	All necessary spare parts to sustain the operations and maintenance			
	Mandatory spares as specified in the "Check List			
3.0	Inspection and Testing			
3.1	As specified on the Inspection and testing clauses	YES		
4.0	Vendor Data and drawings			
4.1	All data & drawings as required as per clause 11.	YES		
	Supervision during the Trial Run if required at site of the CNG			
	Additional Items not specified by purchaser but recommended by			
	Technical Parameters to be confirmed by vendor			
6.1	Pressure range from 19 bar (g) -250 bar at 15 °C	YES		
6.2	Fill Pressure Kg/cm <sup>2</sup> g or [bar(g)] -200	YES		
6.3	Operating Temperature range [-55°C to 65°C]	YES		
6.4	Design Code :IS 2825, IS 7285, IS 3224 or as per Applicable	YES		
6.5	Calibration traceability - To NIST as per ISO	YES		
6.6	Enclosure weather proof to - IP65,NENA4x	YES		
6.7	Process Temperature effect - ± 0.01% of nominal flow rate/degree C	YES		
6.8	All valves as per IS 3224 or as Applicable standard code or approved	YES		
6.9	Safety relief devices as per IS: 5903 or	YES		

## SCOPE OF WORKS FOR DISPENSING SYSTEM

The scope of work for the dispensing system includes design, detail engineering, manufacturing, assembly, factory testing, integrating dispensing system with the compression and CNG storage system.

Fast fill System for Dispenser shall be provided. Sequencing system should be in-built to the dispenser unit. On site stamping from local W&M department of CNG Dispensing system shall be in scope of bidder prior to commencement of commercial sale.

Natural Gas shall not be used for pneumatic controls of Dispensing system and Instrument air / Exe-proof electronically controlled solenoid shall be used for such purpose. Instruments Air, if required for pneumatic operation of Solenoid Valves, suitable air compression system along with auxiliaries & tubing shall be in scope of the bidder.

The dispensing system shall meet the following parameters:

SI.No	Type of Dispensers	Type	Flow rate Kgs/min	Fill Pressure kg/cm <sup>2</sup>	Fill Hoses Nos./ Dispensers	Remarks
1.	Common (CAR/Auto)	Hi / Low	15	200	(Two)	Inlet Pressure

The Dispensing system shall be complete including all required auxiliary equipment for efficient & safe operation as a whole. Bidder shall be responsible for furnishing all electrical, instrumentation, interconnecting Piping & Safety Items as required to make the system complete.

It is not the intent of Purchaser to specify every piece of equipment/item but nevertheless any item not specifically mentioned but required as per Good Engineering Practice and for the safe & trouble-free operation of the complete system is deemed to have been specified & shall be in the scope of Bidder without any implication in the price or schedule.

Dispenser & Mass flow meter, obtaining statutory approvals from the country of origin as well as from India is in Bidder's scope. The offered Dispenser / Mass Flow meter model used for Dispensing measurement must be certified by the Weights and Measures or any other statutory authority from the Country of Origin. The Bidder shall also get the offered Dispenser model certified by the Weights and Measures, India. (Ministry of Consumer affairs) complied with latest Legal metrology act.

The offered system (model) must also be approved by the Chief Controller of Explosive (CCOE) Nagpur now PESO (Petroleum and Safety Organization) and the Bidder shall submit the certificate along with the offer.

## **SCOPE OF SERVICES**

The scope of services includes Design, Engineering, Manufacturing, Assembling, Procurement from Sub-Bidders, Inspection & Testing at Works and Training at site, Documentation and obtaining statutory approvals as per specification, Packing, Forwarding and Transportation up to Job Sites/ Client's stores. Testing and commissioning, trial run, Site calibration of the Mass Flow Meter of the supplied dispensing system by Master Meter before commencement of performance test is also in the bidder's scope. AMC after site installation of each system, on site stamping from local W&M department of CNG Dispensing system shall also be in scope of bidder prior to commencement of commercial sale.

The Vendor shall be responsible for supply of dispenser at client stores/sites depending upon the availability of sites. The Transportation from client stores to respective sites for erection, installation, testing & commissioning shall be in Vendor's scope.

### **1. TECHNICAL SPECIFICATION OF THE DISPENSING SYSTEM**

#### **1.1 INTRODUCTION:**

For filling of Compressed Natural Gas (CNG) to Commercial & Private Vehicles (CNG Bus, Car, Auto etc.) through Integrated CNG filling Stations are the prime objectives of this Specification.

#### **1.2 PROJECT REQUIREMENTS:**

The project requirements will be as defined in respective Particular Job Specification (PJS) for CNG Car / Auto. The Supply and Installation complete with all auxiliaries & features required for efficient & safe operation, in accordance with this Technical Specification, Data sheets & other enclosures at the CNG station is included in the Scope of Vendor. Natural Gas shall not be used for pneumatic controls of Dispenser and Instrument air / Exe proof electronically controlled solenoid shall be used for such purpose. Air compression system along with auxiliaries for the same shall also be in the bidder's scope. The metering system shall be Coriolis true Mass Flow System.

The Dispensing system and Mass Flow Meter or Dispensing system using a Mass Flow Meter part of Dispensing system offered by the vendor shall be certified from the Weights and Measures or any other statutory authority of the Country of Origin as well as shall also be certified by the Weights and Measures, India. (Ministry of Consumer affairs). The offered Dispensing system must also be Type Approved by the Chief Controller of Explosive (CCOE), Govt. of India as per Gas Cylinder Rules, 2016 (latest).

Calibration Unit as per clause no. 7.6 in the form of Master Meter (Master Mass Flow Meter) with Hose, Nozzle, and Fittings and vent valve mounted on a suitable frame/trolley as per International Standard. The Master Meter for Calibration must have traceability to International Standard. The Calibrator Master Meter should be certified by Weights and Measures or any

otherstatutory authorities as certified Custody transfer meter of the Country of Origin (such as PTB, NMI, Trans Canada Calibrations, (TCC) Canada, Colorado Engineering Experiment Station Inc.(CEESI)USA, South West Research Inc.(SWRI) USA, PISGAR, etc.) and in India by FCRI. The calibrationshall be not more than 2 months old at the time of supply.

### 1.3 PROJECT DETAILS &GUIDELINE FOR EQUIPMENT DESIGN:

#### 1.3.1 Technical Data of CNG:

The CNG specification should meet the IS 15403:2000 (E) natural gas quality designation for useas a compressed fuel for vehicles.

The proposed specification of the CNG is as follows: Gas Temperature -10OC to +70OCOil Content 10 PPM

Particulate matter Less than 5 microns

Odorant 20 mg/m3 (Ethyl Mercaptan)

The package shall be suitable for the Climatic Conditions. All Electrical devices shall meet the requirement for the area classification specified in this Technical Specification. Tubing & other devices shall be so arranged that there is proper access for operation & maintenance.

All the packages shall be suitable for Outdoor installation without any additional roof/shed. Canopyas required for the system shall be in the scope of the bidder.

### 1.4 Operations & Control Philosophy

The package should be designed with minimum operator intervention. Routine maintenance work will be carried out during normal working hours and outside the scheduled refuelling activities. The control system will be fully automated, only requiring manual intervention for connection of the hoseand to initiate the filling operations.

Dispenser shall use instrumentation air / electronically controlled Solenoid for operation and biddershall make available necessary provision for it. The dispensing facilities should be designed to operate for a two-years or 10,000 hours whichever comes first, without any major overhaul of thegas dispensers.

To commence refuelling of CNG vehicles, the drivers / operators need to unhook the NGV/NZS connector from the dispensing system and hook-up to the inlet of the CNG vehicles. Thereafter, the refuelling would commence upon activation either through manual reset switch or through card reader. The dispensing system will automatically stop the refuelling process at 200 kg/cm2(g) and all such refuelling transaction data would be stored and subsequently downloaded into a computer or forecourt management system. The printer attached with the system will generate a cash memo for each hose separately after completion of refilling Process.

2.0

## TECHNICAL SPECIFICATIONS OF DISPENSERS

The specifications described herewith are intended to give vendor the technical & operating conditions that Dispensing system must fulfill. These are to be referred along with relevant description included in this document.

Vendor may indicate in his offer, the additional features, which his dispensing system has in terms of better design, enhance reliability etc., however such feature may be accepted subject to Client's review and approval.

### 2.1 Dispensing System:

The dispenser shall be designed to handle a flow rate of greater than or equal to 15 Kg/min at atmospheric condition. The dispensing shall be suitable for a turn down of not less than 10:1 on flow. The normal operating pressure of CNG at dispenser inlet shall be 255 Kg/cm<sup>2</sup> (g). However, supply from dispenser to the vehicle shall get positively cut off at outlet pressure of 200 Kg/ cm<sup>2</sup> (g) to ensure the safety of the vehicle. Dispenser shall be suitable for Outdoor installation without roof / shed.

Each dispensing system shall have the following specifications:

It should be fast fill electronic type and display the following key information on the dispenser with liquid crystal back- lit display for night viewing showing:

Quantities of gas dispensed in kg (4 digits in 2 decimal points i.e., 00.00) in one row. Unit cost of gas dispensed in Rupees, Rs/kg (5 digits in 2 decimal points i.e., 000.00) Complete transaction value in Rs (6 digits in 2 decimal points i.e., 0000.00) in one row.

There should be 2 displays, one on each side of dispenser.

Displays must remain active for at least 15 minutes after power failure. The decimal point required being adjustable through software programme.

The complete transaction value can be rounded off to nearest Rupees (less than 0.5 considered to be 0 and  $\geq 0.5$  will be considered to 1 Rs) through software to avoid transaction related dispute.

The display should read previous batch reading even after power failure.

Non-resettable and non-volatile inbuilt totalizers up to 999999.99 for total CNG sold in KGs with an independent battery backup. Since these packages are used for custody transfer purpose, the totalizers should not reset in any eventuality not even in case of electronic failure. Reset to zero of totalizer shall be performed by the dispenser electronics automatically when the maximum value reached. The Non- resettable Mechanical Type Totalizer Counter may be provided which can be visible from front. The vendor should provide suitable arrangement outside the flameproof electronic box (on the dispenser's body) for reading the totalizer.

**\*\*The Dispenser frame/body shall be powder coated.**

Physical design should be of stainless steel body with doors/ panels to minimize corrosion and on-going wear and tear. The dispensing unit should have tamper-proof locking arrangement. The cabinet should be suitably designed to accommodate all valves, fitting flow meter and all required electronic equipment. Wire mesh net to be provided at the base of the dispenser to avoid entry of rats, lizards etc. Front/side mounted nozzle come with lockable holder and safety lever / latch to firmly hold the nozzle when not in use. 2 No. holster/cradle for filling nozzles along with weather caps for the protection of nozzles. Holster / cradle shall be suitable for NGV/NZS for Car Dispensers.

Each side of dispensing unit shall be equipped with authorization / on-off switch and liquid filled 4 inches dial pressure gauge (0-400 kg/cm<sup>2</sup>) showing the vehicle filling pressure for each filling arm. Vendor shall provide a bypass isolation valve with associated tubing to facilitate routine servicing calibration of pressure gauges without shutdown of the dispensing unit.

The Dispenser shall have ready to start delay of around one minute after each Power On and to start next batch filling. (Adjustable on site).

One no. Bubble tight Manual Shut-off valve for each fill hose has to be considered.

For dispensing unit the gas tubing inside the system shall be SS 316,  $\frac{3}{4}$ " OD with a  $\frac{3}{4}$ " SS 2 way ball valve at inlet and  $\frac{3}{4}$ " OD end connection suitable for connecting with  $\frac{3}{4}$ " OD Tube. For Car dispenser SS 316,  $\frac{1}{2}$ " with  $\frac{1}{2}$ " to  $\frac{3}{4}$ " adopter for Interconnecting tubing / piping, fittings, high flow valves shall be used. NRV's shall be provided as required.

One set each of (1/2" for car with  $\frac{1}{2}$ " to  $\frac{3}{4}$ " adopter) isolation 2 way ball valves complete with venting line valve and end plug should be installed on the inlet steel pipe of the dispenser. The valve should be located immediately before the dispenser and should be accessible to the maintenance personnel.

Dispensing units shall have fast fill 3 Bank Sequencing System. Sequencing system should be in-built to the dispenser unit.

Overfill protection shall be through electronically programmed hose to terminate the fill after 200 Kg/cm<sup>2</sup> (g). Vendor shall include 2 transducers or 1 transducer with 1 pressure micro switch or 1 transducer with 1 pressure regulator per hose of suitable range for sensing the pressure. Pressure relief valve shall be provided to avoid overfilling. Pressure Relief valve set pressure shall be at 220 kg/cm<sup>2</sup> g with resetting at 215 kg/cm<sup>2</sup> (g). Relief valve setting has to be adjustable from 205 kg/cm<sup>2</sup> (g) to 240 kg/cm<sup>2</sup> (g) with resetting at 200 to 235 kg/cm<sup>2</sup> (g) respectively. 2 transducer or 1 transducer with 1 pressure micro switch or 1 transducer with 1 pressure regulator per hose has been envisaged to terminate the filling. If due to some malfunctioning, transducers or switch are not working well, relief valve shall POP for safety purpose to avoid over filling.

Built-in coalescing unit of 3-5 microns at inlet of each bank to be able to trap particulate and carried over oil at the inlet with manual drain valve. Vendor has to provide suitable arrangement to detect the filter status and to collect the drained oil outside the dispenser by necessary tubing.

Easy to read lighted display – explosion proof backlighting or LED to be provided. Display must be of IP 54. Display should show the proper error code during shutdown.

The components of the flexible hoses are to be factory tested after assembly and before use to at least 5,000 psig. Copies of test certificates should be provided together before the delivery of the complete system.

Connection for the flexible hose should be designed with a burst pressure of at least four times the most severe pressure and temperature conditions expected. Necessary certificate shall be submitted along with supply.

ESD button (ESD Button to be of Mushroom Type Only) to be mounted on both side of the dispenser front panel and to be easily reached during emergencies. This should close filling from each arm of dispenser.

Refuelling procedure / instruction complete with diagram or icons type figures should be installed on each side of refuelling hoses for each dispensing unit.

Dispenser electrical equipment and instrumentation wiring should be approved to meet the hazardous area classification Class-I, Division I, Group D as per NEC or Zone I, Group II A/ II B as per IS/ IEC, certification required on all components.

Filling of vehicle from the dispensing unit should be of the following sequence:

1st sequence - from low bank and (high) initially

2nd sequence - from medium bank

3rd sequence - from high bank

Dispensing package instruments such as pressure gauge, authorization switch, emergency shut-off valve, filling nozzle, ESD button should be provided with labelling / tagging.

Temperature compensator to limit fill pressure to an adjustable value (the normal value 200 kg/cm<sup>2</sup> (g)) equivalent at 15 deg C and pressure with normal value 200 kg/cm<sup>2</sup>g shall be provided. Temperature compensation provision shall be provided and the facility to enable or disable the same also to be available in dispenser.

Dispenser should be automatically and immediately shut off CNG supply to each fill hose individually in case of: Power failure or Excursion beyond permissible limit.

#### Loss of Display

Power Failure of Mass Flow Meter Flow beyond High and low limits Failure of Metering Failure of Totaliser.  
Overfill of quantity or pressure

Failure of pressure sensing transducer.

Failure of Pneumatic ball valve / electro valve Repeated operation of Reset or Start/ Stop switch. Removal of any electrical wire connection to controller

Program step is in “HOLD” due to any error.

Vendor should indicate overall pressure loss of dispenser from inlet of the dispenser up to outlet probe including mass flow meter, interconnecting tubing, valves, hoses, nozzles etc.

All the vents (eg. Actuator, PSV, fill hose) shall be taken out from top of the package.

Vendor should include necessary licensed system and application software for dispensing unit electronics one set for each dispensing unit, required for calibration and fault finding diagnostics.(As applicable)

The normal operating pressure of CNG at dispenser inlet shall be 255 Kg/cm<sup>2</sup> (g). However, supply from dispensing unit to the vehicle shall get positively cut off at outlet pressure of 200 Kg/ cm<sup>2</sup> (g) to ensure the safety of the vehicle.

Once the particular-cycle of filling has been completely stopped (on achieving the maximum fill pressure and/or minimum flow rate) then next filling can be started only after initialization.

The normal operating temperature of wetted parts of the dispensing unit shall be from (-) 10 °C to +70°C.

Designing of the dispensing unit would take into account severity of service. The dispensing unit shall be designed in such a way as to operate in cyclic (start, fill, stop, start.) round the clock basis with about 1 minute (typical to be adjusted as per requirement) interval between stop and start modes. The dispenser also to work satisfactorily when the time between stop and start is indefinitely high, e.g. during lull time or when the dispenser is commissioned after it was decommissioned for prolonged period or in storage after initial commissioning. For this purpose if any specific storage facility is required, the same to be indicated by the bidder.

Vendor shall include any other item required for safe and accurate operation of Dispenser.

## 2.2 DISPENSER CABINET

Complete cabinet shall be of Stainless Steel and shall have tamper proof locking arrangement. Cabinet wall thickness shall not be less than 1.6 mm. Cabinet shall be sized to accommodate all electrical, electronic and mechanical components for metering and display within the cabinet. Cabinet shall be designed to protect all tubing, pressure gauges, valves, fittings, electrical & electronics item from tampering, rain, dust, vermin etc. Dispensing unit cabinet shall be provided with adequate size bottom opening for the entry of gas supply line/lines and power supply connections. Adequate ventilation shall be provided so that there is natural convection current and cooling takes place inside. Cabinet shall be structurally robust and should not resonate at the

frequencies emanated during normal flow or during choked flow through the nozzles, breakaway coupling or valves etc.

Appropriately plugged drain valves of the filter outside the dispenser housing with suitable arrangement to collect the drained oil to facilitate the operator to drain the oil on regular basis without requiring opening the lock of the dispenser cabinet. The layout of tubing & other components should be such to give unhindered access to all parts & maintenance becomes easy. Common drain valve shall have lockable arrangement accessible to DSM for draining of dispenser. Each filter drain line should have NRV 1/4" OD SS & Ball Valve arrangement in series.

2.3 PESO approved electrical and package design, Compressor, Storage & Dispenser on a common skid.

2.4 Small footprint will be required tentative approx. 3 to 5 m<sup>2</sup> for installation in forecourt

## **ELECTRICAL SPECIFICATION**

### **1.0 GENERAL**

- 1.1 This specification defines the requirements of design, engineering, supply and installation, testing and commissioning of electrical facilities for CNG Dispenser Package.
- 1.2 It is not intended to cover all aspects of design but to indicate the basic requirements only. Vendor shall ensure that the design and installation on the skid is carried out as per good engineering practice to meet the requirements of safety, reliability, ease of maintenance and operation, aesthetics and interchangeability of equipment.

### **2.0 CODES AND STANDARDS**

- 2.1 All electrical equipment and complete package shall meet the requirement of relevant Publications and Codes of Practice of Bureau of Indian Standards, statutory regulations and good engineering practices. Complete system must conform to the latest revisions of the following:
  - a. Indian Electricity Act and Rules framed there under.
  - b. Fire Insurance Regulations.
  - c. Petroleum Rules and any other regulations laid down by Petroleum & Explosive safety organization.
- 2.2 Vendor shall provide all assistance required for obtaining approvals from statutory authorities for materials, plant design/drawings and complete installation.
- 2.3 Where Indian Standards do not exist, the relevant IEC/British/ German (VDE) standards shall apply. Any Other international standard may also be followed provided it is equivalent

to or more stringent than the standards specified above.

2.4 In case of any discrepancy/conflict between the specified codes and standards, the following order of decreasing precedence shall govern:

- i) Statutory Regulations.
- ii) Codes and Standards.

Owner's concurrence shall, however, be sought before taking a decision in the matter.

### 3.0 AREA CLASSIFICATION AND EQUIPMENT SELECTION

3.1 In case of storage, handling or processing of flammable materials within the battery limits of the package, area classification shall be carried out in line with IS: 5572 & Petroleum Rules and OISD- 179 guidelines where applicable.

3.2 Selection of the type of equipment for use in hazardous areas shall be done in accordance with IS: 5571 and other safety regulations as applicable. The electrical equipment shall meet the requirements of relevant IS, IEC or NEC standards. Increased safety type Ex (e) equipment shall not be permitted for use in Zone-1 areas. For Zone-2 areas, Increased safety type Ex (e) or Non-Sparking Type Ex (n) equipment shall be provided as a minimum, subject to the same being acceptable to statutory authorities. Ordinary safe area type electrical equipment shall not be used in Zone-2 areas (even though this may be permitted by NEC for Div.2 areas).

3.3 Electrical equipment for hazardous areas shall be certified by CMRI and approved by PESO (or equivalent statutory authority of the country of origin) for installation and use in the specified hazardous area. Flameproof equipment of indigenous origin shall be BIS marked. Vendor shall furnish the necessary certificates indicating such approvals.

3.4 All the electrical and electronic component shall be in flame/explosion proof housing suitable for area classification: Hazardous area, Class 1, Division 1, Group D as per NEC or Class 1, Zone 1, Group IIA/IIB as per IS/IEC, Temperature Class T3, and completely enclosed in a securely lockable dispenser cabinet. No component of the dispenser shall be installed outside the cabinet.

Certificate from recognized agency to the effect is required to be produced that equipment supplied and/or installed conforms to above area classification."

### 4.0 EQUIPMENT SPECIFICATIONS

4.1 Specifications of equipment shall be furnished for review by the owner. All equipment and components shall be new and supplied by approved reputed manufacturers. Equipment requiring specialized maintenance or operation shall be avoided as far as possible and prototype equipment shall not be accepted. All equipment shall be complete with all necessary weather protection including tropicalization to prevent damage due to climate,

dust and corrosive vapors.

- 4.2 Vendor shall be responsible for any damage to the equipment during transit. All packages shall be clearly, legibly and durably marked with uniform block letters giving the relevant equipment material details. Each package shall contain a packing list in a waterproof envelope.
- 4.3 All electrical components and equipment shall be sized to suit the maximum load under the most severe operating conditions.
- 4.4 All electrical equipments shall be supplied with double-compression cable glands, made of nickel- plated brass, tested and certified to be used in zone-1, hazardous area.
- 4.5 All electrical components should be suitably weather proof to prevent short circuits, corrosion and should be suitable for installation in Hazardous classification as class I, Division 1, Group D.
- 4.6 Although the supply is being arranged through UPS System, but in some remote occasions, the power supply may be from DG sets with poor regulations and thus power supply available from CLIENT may contain harmonics, transients and surges etc. The Electronics shall be compatible to the supply system as no transient, surge or harmonics protection is provided by CLIENT. Bidder to include suitable surge protection device/ voltage conditioning unit, as required, in their scope for accurate and safe operation of dispenser
- 4.7 Rated voltage and frequency for the equipment shall be indicated below:

Ambient Temp:.....	Max. 48 °C & Min. 1 °C
System Voltage:	230V + 10% Single Phase AC System
Frequency :.....	50 Hz + 3%
System Earthing :	Solidly Earthed

We have envisaged solid earthing for the system. However, if specific earthing is required for the system - electronics, the same to be highlighted by bidder; otherwise, system earthing including making of earth-pits etc. shall be provided by the successful bidder.

- 4.8 Name of the manufacturer, type of enclosure protection and certificate no. with name of testing/Certifying agency shall be furnished with bids / for approval.
- 4.9 General Requirement All power supply J.B.'s shall be flame-proof type as per area classification. Fill hoses should be conductive type to mitigate the static charges. Provision for connecting earth strip at two points inside the dispenser. Supply cable entry to dispenser shall be suitable for armored 2.5sq.mm. 4 core. There should be effective static charges (as generated in hoses) mitigation design. All hoses shall be conductive so that auto earthing of static charges (as generated in system) could be ensured. Vendor shall submit the requisite documents/demonstration against the same at vendors shop.

## 5.0 ELECTRICAL SYSTEM DESIGN

### CODES, STANDARDS & CERTIFICATION

The Electrical Equipments shall comply with the latest applicable Indian standards listed below. Where Indian standards do not exist, the relevant IEC or British standards (as specified elsewhere in this document) shall apply.

IS – 325 three phase induction motors.

IS - 4029 Guide for testing 3-phase induction motors.

IS - 46 Degree of protection provided by enclosures for rotating electric machines.

IS - 6362 Designation of methods of cooling for rotating electrical equipment

IS – 8789 Performance parameters for motors

IS - 2148 Flame-proof enclosures for electrical apparatus.

IS - 5571 Guide for selection of electrical equipment for hazardous area.

IS - 12075 Measurement & evaluation of vibration of rotating electrical machinery.

IS-1554 : PVC insulated (heavy duty) electric cables.

IS-3961(Part-2): Recommended current ratings for cables; PVC insulated and PVC sheathed heavy duty cables.

IS-3975 : Mild steel wires, straps and tapes for armouring of cables.

IS-5831 : PVC insulation andsheathe of electric cables.

IS-7098 : Cross-linked poly ethylene insulated PVC sheathed cables.

IS-8130 : Conductors forinsulated electric cables and flexible cords.

IS – 3700 Essential ratings and characteristic of semi-conductor devices

IS – 4237 General requirement of switchgear & control gear for voltage not exceeding 1000 V.

IS – 4411 Code of designation of semi-conducting devices.

IS – 5001 Guide for preparation of drawings for semi-conductor devices.

## IS – 13947 Low voltageswitchgear and control gear: General rules

### IEEE-519: IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems

The controller shall be designed to meet the applicable requirements of IEC 947-4-2

Certificates from statutory authorities like CMRI / DGMS shall be submitted indicating suitability ofmotors, control panels and emergency push button etc. in hazardous area.

#### Battery Limit:

Power supply for electrical control panel: Owner shall supply 415 V (+10%) 3 phase & N, AC 50 Hz(+3%) electrical power at the incomer of the Soft Starter Panel/Board supplied by the contractor/Bidder. All further distribution of electric power shall be carried out by the contractor/Bidder. Bidder to note that all control electronic / electrics shall be capable of withstanding voltage fluctuation specified.

UPS Power supply for PLC based Control Panel: Owner shall supply  $220 \pm 5\%$  V,  $50 \pm 1\%$  Hz. electrical power for PLC through UPS at the inlet of the Soft Starter panel to be supplied by the contractor. All further distribution of electric power shall be carried out by the contractor.

## 6.0 ELECTRIC MOTORS

- a) The compressor motor shall be selected such that at the greatest BKW (Brake Horsepower) required by compressor, other auxiliaries and the losses under any of the compressor operating conditions, motor rating shall be 110% of the greatest BKW required by the compressor in normal range of operation.
- b) Motors shall be provided with 230 V anti-condensation heaters, sized and located so as to prevent condensation of moisture during shutdown periods. The heaters shall permanently remain 'ON' when the motor is not in service and as such shall not cause damage to the windings. Manual over-ride push button shall be provided for anti- condensate heater for switching ON/OFF. RTD and BTD shall be provided to monitor the winding and bearing temperature of main motor.
- c) Motor shall be TEFC squirrel cage induction motor in standard frame size as per IS/IEC rated for continuous duty with premium efficiency (IE2) and designed for Soft Starter starting. Motor torque shall be compatible with speed torque curve of compressor. Motor windings shall be class 'F' insulated with temperature rise limited to class 'B'. Minimum degree of protection of motor enclosure shall be IP55 as per IS. Motors for use in hazardous areas shall have protection Ex (d) as per area classification(Class-I, Division I, Group D as per NEC or Zone I, Group II A/ II B as per IS/ IEC) and RPM of the motor shall be 1500 and Service factor of motor shall be 1.0.

- d) Vibrations: Motor vibration shall be within the limit of IS-12075.
- e) Noise level: Permissible noise level shall not exceed the stipulations laid down in IS12065.
- f) Motor accessories:
  - Compressor grooved flywheel
  - Motor grooved drive pulley
  - Drive vee belts
  - Flexible coupling for direct drive
  - Drive guard
  - Adjustable motor slide rails for vee belt tensioning
- g) Technical Specification (TS No. - MEC/TS/05/E9/E/072) and datasheet (DS No.- MEC/DS/05/E9/072) of the FLP Motor is attached as Annexure-E1 with the Tender, for detailed technical requirements.

#### 6.1 SOFT STARTER PANEL

- a) Soft Starter Drive shall be provided as starter panel for the Electric motor.
- b) Continuous current of Soft starter Drive shall be 115% of Electric motor's rated full load current. Current rating of Soft Start shall be calculated after de-rating to 50-degree ambient temperature.
- c) Soft starter Drive so chosen shall be IGBT based, heavy duty drive rated for 50 degrees ambient suitable for all modes of operations (sensor less, vector control, V/f, field-oriented control sensor).Soft starter drive shall be heavy duty with input line and DC choke, along with other safety measure.
- d) Starter panel shall be floor mounted with 2.0 mm thick CRCA sheet steel enclosure (IP-42 – dust & vermin proof) consisting of following & complete in all respect - Soft starter Drive (of suitable rating as mentioned above), bus bar chamber, cable alley, incomer and outgoing feeders.
- e) The SOFT STARTER panel shall have one incomer and adequate number of outgoing feeders for main motor, air compressor, cooling fan, lighting, control and other auxiliaries. The incomers shall be provided with suitably rated MCCB (Microprocessor based protection), ammeter, voltmeter with selector switch, Multifunction meter (for metering of package total energy, KVAH, KWH, Voltage, current, PF, Frequency, MDI (KVA), MD (KWH)), Phase reversal relay, Earth fault relay, indication lamps etc. All the motor feeders shall be provided with heavy duty MCCB (MP based Protection), contactors (AC-3 duty), bi-metal relay with built in single phase prevent, ammeter, push buttons, indication lamps for Start/Stop/Trip, etc. Adequate number of MCB feeders for control and lighting shall be provided. Bidder shall furnish single line diagram of the panel with the bid. All auxiliaries and power contactors in electrical panel etc. shall have operating voltage of 220/110 volt

AC.

- f) Soft Starter Panel shall be non flame proof and will be installed in safe area.
- g) Soft Starter Panel shall be suitable to operate in non-air-conditioned room under dusty environmental conditions.
- h) Digital ammeter shall be provided for all motors separately and shall be communicated with main PLC
- i) Printed circuit boards shall have 3C3 conformal coating as per IEC-60721-3-3 for protection from humid and corrosive environment.

## 6.2 DRIVE CONTROLLER

The drive controller shall be equipped with microprocessor based digital regulator with programmable functions. The power control regulator logic shall provide for an acceleration / deceleration current limit curve and shall be capable of field adjustments without shutting the system down. Linear acceleration and deceleration shall be separately programmable from 0.1 second to 600 seconds (adjustable at site). The controller shall be able to start and run the drive at reduced power

The following are the minimum features required in the Drive controller:

- A. Electrical ratings
  - a) 415 +10% Volts AC mains
  - b) 50- Hz + 3%
- B. The Controller shall provide following “starting” modes:
  - c) Linear Torque control for Start
  - d) Starting with CNG compressor
  - e) Current Limit Start
  - f) Voltage ramp Start
  - g) Starting and running at reduced power
- C. The Controller shall provide following “stopping” modes:
  - a) Linear Torque control for Stop
  - b) Stopping of CNG compressor
  - c) Voltage ramp Stop
- D. The Controller shall provide following “Protection” features:
  - a) Motor Overload
  - b) Inverter overload
  - c) Phase imbalance
  - d) Phase reversal
  - e) Over voltage:



- f) Under voltage
- g) Locked Rotor
- h) Electronic over load
- i) Over Frequency operation
- j) Over temperature of motor
- k) Motor Speed

E. The Controller shall provide following displays in backlit alphanumeric display and a keypad:

- a) Three Phase Current
- b) Three Phase Voltage
- c) Frequency
- d) Current in L1, L2, L3
- e) Voltage between L1-L2, L1-L3, L2-L3
- f) Shaft Power in kW / HP (selectable)
- g) Motor thermal state
- h) Drive thermal state
- i) Motor speed
- j) Motor Energy consumption (kWh)
- k) Power factor
- l) Run time in hours
- m) Heat sink over temperature

F. The Controller shall be provided following Controls through keypad:

- a) Start / Stop
- b) Speed control (Raise / lower).
- c) Forward / Reverse
- d) Auto / Manual mode
- e) Emergency stop

G. The Controller shall provide as standard, the following “Fault Indication” functions:

- a) Line failure
- b) Phase imbalance
- c) Over temperature – motor
- d) Over temperature – SOFT STARTER
- e) Locked Rotor
- g) Overload - Shaft Torque
- h) Underload – Shaft Torque
- i) Phase imbalance
- j) Over voltage
- k) Under voltage
- l) Excessive Starts
- m) Phase reversal

For detail features of Soft Starter Controller, please refer the Technical Specification of the Soft Starter attached with the tender.

### 6.3 SOFT STARTER PANEL FOR MOTOR COMPRESSOR

<b>A. Design Criteria:-</b>		
1.0	Incoming supply voltage	415V (+/-10%), 50 Hz (+/-3%), 3 Phase, 50KA for 1 sec
2.0	Control Supply	240 V AC through control transformer.  However there shall be provision of control supply of 110V/240 V AC through shorting links in control supply power terminal blocks .
3.0	Output	Full wave in line control
4.0	Device	IGBT
5.0	Acceleration	Step less
6.0	Pump control	Starting :- 2 – 30 seconds  Stopping :- 2 – 120 seconds
7.0	Adjustable current limit	500 % of In.
8.0	Adjustments	<ul style="list-style-type: none"> <li>- Dwell time at current limit with ramp continuation after acceleration.</li> <li>- Acceleration time adjustable current limit</li> <li>- Minimum voltage adjustment</li> <li>- Voltage stability adjustment.</li> </ul>
9.0	Overload tripping range	100 – 130 %
10.0	Overload capacity	Continuous :- 115 %  60 seconds :- 250 %  30 seconds :- 300 %
11.0	Other features	<ul style="list-style-type: none"> <li>- Shall have facility to run in energy saving mode during light load operation (less than 50% of rated) of the drive</li> <li>- Shall have bypass mode. Motor can run in bypass mode</li> </ul>
		<ul style="list-style-type: none"> <li>- Soft starter mode or bypass mode can be selected through selector switch mounted on front side of the panel.</li> <li>- In auto mode soft starter shall start / stop after getting command from PLC.</li> </ul>
12.0	Protections	<ul style="list-style-type: none"> <li>- Short circuit</li> <li>- Overload.</li> <li>- Under voltage protection</li> </ul>
13.0	LED Indications	<ul style="list-style-type: none"> <li>- Power ON (green)</li> <li>- RUN (amber)</li> <li>- Fault (red)</li> </ul>

B. General :-		
1.0	Type	<ul style="list-style-type: none"> <li>- Metal clad.</li> <li>- Non draw out type.</li> </ul>



2.0	Construction	<ul style="list-style-type: none"> <li>- Modular construction.</li> <li>- Fully compartmentalized with metal / insulating material partition.</li> </ul>
3.0	Enclosure class	IP52.
4.0	Type of execution	Single front.
5.0	Mounting	<ul style="list-style-type: none"> <li>- Floor mounting.</li> <li>- Free standing with ISMC 75.</li> </ul>
6.0	Installation	Indoor.

**C. Constructional Features :-**

1.0	Sheet steel	
	Thickness	<ul style="list-style-type: none"> <li>- 2 mm for load bearing members.</li> <li>- 1.6 mm for non-load bearing members.</li> </ul>
	Material	CRCA
2.0	Cable entry	<ul style="list-style-type: none"> <li>- Incomer :- Bottom cable entry.</li> <li>- Outgoing :- Bottom cable entry.</li> </ul>
3.0	Design	<ul style="list-style-type: none"> <li>- Rear access through removable rear hinged cover door.</li> <li>- All the components shall be accessible from front</li> </ul>
4.0	Interlocking & protection	<ul style="list-style-type: none"> <li>- Module door interlocked with main power isolating devices.</li> <li>- Power circuit isolation device to have pad locking in the OFF position</li> </ul>
5.0	Operating height	<ul style="list-style-type: none"> <li>- Minimum :- 300mm</li> <li>- Maximum :- 2000 mm.</li> </ul>
6.0	Gland plate	Undrilled removable bottom gland plates (3 mm thick)
7.0	Miscellaneous	<ul style="list-style-type: none"> <li>- Neoprene rubber gasket shall be provided for all the doors , removable covers &amp; between adjacent covers</li> </ul>
8.0	Labelling	<ul style="list-style-type: none"> <li>- Clear legible identification labels (anodized aluminum with white letters engraved on black background ) with letter sizes of :-</li> </ul>
9.0	Earthing	<ul style="list-style-type: none"> <li>- Two separate earthing terminals will be provided.</li> <li>- Bolted joints with tooth spring washers for good earth continuity.</li> </ul>
10.0	Panel space heater	In each panel with thermostat , fuse , switch.
11.0	Ventilation enclosure	AS per NEMA type -1

**D. Busbars**

1.0	Arrangement	Three phase & neutral.
2.0	Material	High conductivity electrolytic aluminum alloy confirming to grade E91E.
3.0	Phase Busbar Rating	<p>Shall be able to carry continuously the connected load (considering all derating factors) plus a 25% margin . Max. current density shall be</p> <p style="text-align: center;">1.0 A/sq.mm for Aluminum</p> <p style="text-align: center;">1.5 A/sq.mm for Copper .</p>
4.0	Neutral Busbar Rating	50 % of phase busbar rating

5.0	Short circuit rating	50 Ka for 1 sec.
6.0	Busbar configuration	Red-yellow-blue from front to back or top to bottom or left to right as viewed from front.
7.0	Busbar insulation	Heat shrinkable PVC R,Y,B coloured sleeves for phases Black for neutral.
8.0	Busbar supporting insulators	Non-hygroscopic Flame retarded Track resistant
		High strength Sheet moulded compound or equivalent polyester fibre glass moulded type .
9.0	Max. temp. rise of bus	Not to exceed 35 0C. above ambient of 50 0C
10.0	Air clearance for bare busbar	Phase to phase :- 25.4 mm (minimum) Phase to earth :- 19.0 mm (minimum)
11.0	Joints and tap off points	Busbar joints and tap off points shall be shrouded and bolted ( with cadmium coated bolts with plain and spring washers and locknuts). Bimetallic connectors for connection between dissimilar metals . Antioxide grease for all bus connections.
12.0	Neutral bus isolation	Through disconnecting link.
13.0	Busbar access	Rear side
<b>(ii) Earth bus</b>		
1.0	Material	GI.
2.0	Size	Minimum 50 x 6 mm with extension at both ends .
<b>(iii) Control bus</b>		
1.0	Material	Copper.
2.0	Size	Minimum 25 x 3 mm .
<b>E. Insulation level</b>		
1.0	Rated insulation voltage	1100 V
2.0	Impulse withstand voltage	4 kV as per IS-13947 (Part I) 1993
3.0	One minute power frequency withstand voltage	2.5 kV for power circuit& 500 V for control circuit
<b>F. Pollution Degree</b>		
1.0	Pollution Degree	Pollution Degree 3 ; unless otherwise stated
<b>G. Components</b>		



1.0	Isolating Equipment	3 pole manual MCCB
2.0	Indication Lamps	LED type indicating lamps for :- MCCB ON/OFF/TRIP. Incoming power R / Y / B . Auto / Remote / Local /Soft starter mode / bypass mode Motor ON / OFF / TRIP.
3.0	Meters and selector switches	96 sq.mm size voltmeter with 4 position selector switch 96 sq.mm size ammeter with 4 position selector switch
4.0	Power contactor	AC3 duty of rated capacity .
5.0	Thermal overload relay	CT operated Shall be connected in bypass mode .
6.0	Auxiliary contactors	Shall be provided for logic operation and operating sequence . Shall have minimum 2NO+2NC auxiliary contacts.
7.0	Door mounted operating devices	Start / stop operating PB, Reset PB. Selector switches :- Auto / Remote / Local .
<b>H. Panel Wiring</b>		
1.0	Power / current transformer circuit	1.1Kv grade single core, black colour PVC insulated, stranded copper conductor of minimum size 2.5 sq.mm.
2.0	Control and potential circuit	1.1Kv grade single core Black colour PVC insulated Stranded copper conductor of minimum size 1.5 sq.mm.
3.0	Ferrules	Numbered plastic/ceramic ferrules. Self locking type.
4.0	Marking	Wiring will be properly marked
5.0	Spare contacts	All spare contacts of relays selector switches & contactors will be wired up to the terminal block. Each components shall have at least one potential free spare contacts.
6.0	Terminals	Power & control terminals shall be segregated by insulating material like hylam / Bakelite sheet.  All control field wiring terminals shall be front access. Power terminals will be stud type.  Control terminals will be ELMEX type suitable for connecting two cores of 2.5 sq.mm wires. Minimum 20 % spare terminals will be provided. The minimum rating of control terminal shall be 10 Amps.
7.0	Cable glands	Double compression cable glands for receiving external power and control cables
<b>I. Control Supply</b>		
1.0	Control transformer	1 no. of 415V/240 V control transformer of minimum 2.5 KVA Secondary unearthing.

2.0	Input and output side isolation device	Input side :- MCCB/MPCB Output side :- MCB
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#### 6.4 LOCAL CONTROL PANEL :

The LCP shall be flameproof construction and located on the compressor package. Push button for fault accept, fault reset, ESD, compressor start, compressor stop, scroll up, scroll down, enter, increment, decrement, back, hooter test, 4 nos spares shall be provided on Local Control Panel.

Switch for main over ride, auto manual selection, CO2 cylinder main /CO2 cylinder standby, 415 VAC supply on/off ,220 VAC supply on/off, tube light on/off, enclosure door by pass and 2 nos spares shall be provided. Lamp for 415 VAC, 220 VAC on, 24 VDC PLC supply on, ready to start , running & trip and 5 nos spares shall be provided.

#### 6.5 EMERGENCY SHUT DOWN

Bidder shall provide emergency shutdown (ESD) system in the control room as well as locally mounted near the Compressor. Fail-safe system shall be designed and incorporated to isolate cascade storage fromdispenser, stop compressor, and isolate the compressor suction and discharge lines. ESD switch shall have to be manually reset to restart the compressor package again. ESD shall activate either on pressing emergency push button (red button) or on fire detection. 03 nos. - Mushroom type ESD to be installed by bidder at Control Room, Local control panel and compressor. 01 no. Glass Break Type for CO2

Flooding system manual call point shall be installed. Cables for installation of ESD's shall be supplied & laid by Bidder. ESD along with canopy & metallic tag shall be in bidder's scope. All ESD shall be FLP Type.

#### 6.6 CABLING (suitable for hazardous area applications)

Control Cable inside the compressor package shall be of 1.5 Sq. mm and for outside compressor package shall be 2.5mm.

All Cables shall be 1100-volt grade, Stranded Annealed Copper Conductor up to 16 mm<sup>2</sup> & Stranded Aluminum Conductor from 25 mm<sup>2</sup> and above, XLPE insulated, PVC sheathed, Galvanized flat steel strip armour/Round wire Armour, FRLS cables.

Cables shall be terminated using double compression type metallic frame proof glands and copper lugs.

Spare cores to be kept in each control cable.

All the signal cables shall be screened armoured cables.

All the control and power cables shall be armoured copper cables inside the package.

All the communication cables shall be screened and shall be terminated to JB through threaded GI conduits only.

Communication/Control cables shall be routed through Cable Trays.

## 7.0 AIR COMPRESSOR (ELECTRICAL)

- a) Air Compressor Motor shall be FLP type 4 pole Induction motor and suitable for hazardous areas shall have protection Ex (d) as per area classification(Class-I, Division I, Group D as per NEC or Zone I, Group II A/ II B as per IS/ IEC), T5.
- b) Starter of the Motor shall be DOL(rating up to 5.5 Kw motor above with star-delta) with FLP type enclosure for Zone-I operation.
- c) Power and Control Cable shall be included in bidder scope.

## 8.0 EARTHING FOR COMPRESSOR PACKAGE AND EQUIPMENT:

Bidders shall make provisions for earthing of the complete package as required as per IS (Earth pits are not in Bidder's scope). All electrics shall comply with latest IS/IEC. Epoxy based paints shall be applied on all electrical Equipments. Bidder's scope shall include obtaining statutory approvals for the complete package, wherever necessary.

Metallic part of all equipment not intended to be alive shall be connected to earth as per provisions of IS: 3043/IEC recommendation. Grounding of all electronics shall be separately connected to earth using insulated copper wire. Grounding of electronic equipment shall not be connected to earthing for electrics or equi-potential bonding.

CNG Compressor package shall have four nos. of proper metallic emboss on each corner of skid for termination of 50X6 mm G.I strip.

Main Motor body shall be earthed by min 25 sq mm green earth wire with skid and G.I strip. Separate provision for Earthing of PLC by copper cable shall be provided.

No continuity shall be observed between the electrical and instrumentation earthing.

## 9.0 INSPECTION AND TESTING

### 9.1 General

- a. Inspection and Test Requirements have been spelled out in respective Equipment Data Sheets and this Technical Specification.
- b. Bidder shall confirm compliance to all inspection and testing requirements stipulated therein and include the inspection charges in the lump sum cost.
- c. Owner/consultant shall witness tests as per data sheet and this specification. The Bidder shall

notify the timing of such inspection and testing at least 15 days in advance to PURCHASER/CONSULTANT. PURCHASER/ CONSULTANT shall depute their representative for witnessing the tests.

- d. Bidder shall submit detailed Test Procedure for Approval of the Purchaser two months in advance of the actual date of conducting each test.
- e. Inspection testing for foreign bidder: Cost of third-party inspection including fees payable and arranging the same shall be borne by bidder. Approved 3rd party inspection agencies are CEIL, BVQ, DNV, Rites and Lloyd's reg.
- f. Inspection testing for Indian bidder: Owner/Consultant shall carry out Inspection and testing as per QAP, inspection charges shall be considered @1.5% of the ex-works price excluding duty and taxes of the equipment for price evaluation purpose only. Domestic bidder shall also arrange 3rd party for inspection as indicated in QAP and expanses on third party inspection including fees payable and arranging the same shall be borne by bidder.
- g. Inspection of Electrical Motor and SOFT STARTER Panel shall be done at OEM's works (FAT) by third party. Cost of third party inspection including fees payable and arranging the same shall be borne by bidder.

## **STANDARD TECHNICAL SPECIFICATION – ELECTRICAL MOTOR**

### **1.0 SCOPE**

The intent of this specification is to define the requirements of Electrical Motor for medium and low voltage. Tenderer's scope of work includes design, manufacture, testing, packing and delivery to site and testing & commissioning of electrical motor as per this specification & data sheet. Unless specified in material requisition motor shall be suitable for Zone-1 Groups IIA & IIB as per IS 2148,IS 5572 or as per SOR/datasheet.

### **2.0 CODES AND STANDARDS**

The design, manufacturing, construction, assembly, supply, testing and installation, test and commissioning and other general requirements of the composite dispensing unit package shall be strictly in accordance with the data sheet, applicable PESO regulations, applicable PNGRB regulation, applicable API codes, and shall comply fully with relevant national/international standards, Indian electricity ACT, Indian Electricity rules, regulations of insurance association of India and factories Act while carrying out work as per this specification. **c o m m i s s i o n i n g** of electrical motors shall be in accordance with the following codes and standards, at least. Any modification suggested by the statutory bodies either during drawing approval or during inspection, if any shall be carried out by the Bidder without any additional cost and delivery implications. The latest revision of the publication referred to shall apply.

IEC 60034	Rotating electrical machines
IEC 60038	IEC standard voltages
IEC 60072	Dimensions and output series for rotating electrical machines
IEC 60085	Thermal evaluation and classification of electrical insulation



IEC 60529	Degrees of protection provided by enclosures (IP Code)
ISO 15	Rolling bearings - Radial bearings - Boundary dimensions, general plan
ISO 281	Rolling bearings - Dynamic load ratings and rating life

**2.1** Wherever the requirements in this specification are in conflict with any of the above standards, the requirements under this specification shall be binding.

**2.2** In case of imported Equipments standards of the country of origin shall be applicable if these standards are equivalent or stringent than the applicable standards as mentioned.

**2.3** The equipment shall also confirm to the provisions of Electricity rules of the country and other statutory regulations currently in force in the country.

**2.4** In case of any contradiction between various referred standards/ specifications/ data sheet and statutory regulations the following order of priority shall govern.

- i) Schedule of rates
- ii) Design Basis
- iii) Scope of Work/ Job specification
- iv) Date Sheet
- v) Standard specification
- vi) Codes and standards

As far as the power supply authority (PEC) and permits of other authorities require additional codes and standards, respectively impose additional requirements, these are also part of the contract.

Equipment meeting with the requirement of any other authoritative standards, which ensure equal or better quality than the standard mentioned above shall also be acceptable. if the equipment offered by the bidders conforms to any other standards, salient points of difference between the standards adopted and the specific standards shall be clearly brought out in relevant schedule. Four copies of such standards with authentic English Translations shall be furnished along with the offer.

**2.5** Latest Applicable Standards of

- i) Bureau of Indian Standard
- ii) British Standard Institute
- iii) American Standard Institute
- iv) International Electro Technical Commission

### 3.0 ENVIRONMENTAL CONDITIONS

The electrical motors shall be designed and constructed for continuous operation at full load under the climatic and environmental conditions as described in the specification “Design Basis Electrical”.

## 4.0 TECHNICAL DATA

The technical data of the electrical motors are defined in the data sheets. The Contractor has to guarantee the fulfillment of these requirements.

## 5.0 GENERAL REQUIREMENTS

### 5.1 Selection of Motors

In general it shall be the responsibility of the driven equipment manufacturer to select and co-ordinate the required motor type. This includes the co-ordination of the performance data (motor speed, shaft power and direction of rotation) as also the mechanical construction and coupling requirements. The motors shall be designed as squirrel cage motor and shall be of industrial type.

If not specified otherwise the actual power output of the motors must be selected to meet the maximum required shaft power of the driven equipment, multiplied by a factor of 1.2 for motors up to 250 kW and 1.15 for motors above 250 kW and using the next larger standard motor size. Motors shall be entirely suitable for outdoor installation without any additional protection. Lifting lugs and drain hole for condensation shall be provided on all motors.

The motors shall be suitable to deliver rated power continuously at

- $\pm 10\%$  nominal voltage and rated frequency,
- Nominal voltage and  $\pm 5\%$  of rated frequency,
- $\pm 10\%$  combined variation of nominal voltage and frequency, with frequency variation  $\pm 5\%$ .

The type of MV motors (fixed or variable speed) has to be specified. In case variable speed motors are selected, speed control mode of operation need to be detailed.

### 5.2 Components and Equipment

The Contractor has to take care that all components and equipment are selected considering easy maintenance, simple and quick diagnosis and long maintenance intervals. All components and equipment shall be designed for continuous duty at rated load and under the given climatic conditions. Standard industrial high-performance systems and components of supplier's standard lists shall be used as far as possible. Components and equipment of same kind and type shall be selected for equivalent functions. The interchangeability must be guaranteed.

### 5.3 Duty

The motors shall be designed for continuous running duty, S1 according to IEC, at the specified conditions.

Motors connected to electric / electronic speed control or start-up equipment such as frequency converters or start-up transformers have to be selected / matched to the special requirement of such duty.

### 5.4 Dimensions

All motors of the same size shall be interchangeable. The motor dimensions shall be in accordance with IEC 60072.

### 5.5 Noise Requirements

The sound pressure level of electrical motors shall not exceed 85 dB (A) @ 1 m under no load

conditions.

### 5.6 Tagging

All components, equipment and installations shall receive the respective tagging plates, labels, etc., which have to be of extremely durable material resistant against the environmental conditions.

For further requirements, reference is made to specification "Design Basis Electrical".

### 5.7 Units and Scales

The metric system on basis of SI-units shall be used for all scales and indications.

## 6.0 MEDIUM VOLTAGE MOTORS

### 6.1 Motor Start and Torque Requirements

The motors shall be designed for direct on-line starting at full load, the starting current shall not exceed 5.5 times the rated current.

The motors shall not break out if during normal operation the voltage at the motor terminals remains 0.8 UN, but the operation at 0.8 UN shall be limited to 10 seconds. The motors shall be designed to allow 4 starts successively from cold (max. ambient temperature) or 3 starts successively from hot service temperature without tripping of any protection device.

### 6.2 Insulation / Winding Protection

The motors shall have tropicalized insulation. The motors shall be designed for class F insulation, thermal utilisation of the motors shall be for class B only. The Motors shall be designed for operation in isolated neutral or unearthing systems. Therefore the level of insulation required shall be suitable for this condition. The stator winding shall be insulated by high quality modern synthetic resin insulation system based on mica-glass tape. After insertion of the coils into the stator core the whole winding shall be vacuum impregnated with epoxy resin, free from any solvent.

The allowable impulse-stress-voltage for the insulation system shall meet the requirements of IEC60034 part 15.

The motors shall be designed for re-acceleration against 100% residual field at phase opposition. In each stator winding phase at least two (2) Pt 100 temperature elements (4- wire system) shall be imbedded at the hottest place and wired to the auxiliary terminal box. The motors shall be equipped with surge arrestors, which are to be installed in the motor stator connection terminal box. The surge arrestor design must match to the actual network configuration, the used circuit breakers and the connected cable arrangement. If technically recommended additional surge arrestors shall be installed at the switchgear side for cable protection during vacuum circuit breaker switching.

### 6.3 Method of Cooling

The motor cooling shall be according to the data sheets, either air cooled or with air/water heat exchanger. If the motor cooling will be performed via an air/water heat exchanger, the water outlet of the heat exchanger shall be equipped with a thermostat or an equivalent device for control of water temperature and flow.

### 6.4 Current Transformers for Differential Protection

For all motors with a rating at 2000 KW or above a differential relay for winding protection shall be provided and installed in the associated switchgear. In that case the star-point connection shall be brought out separately to terminals box and three current transformers at motor end shall be provided, one for each winding between line and neutral side at motor. The differential current transformers shall be designed to class 5P10 or class X to BS with a rating matched to the protection system. The CTs shall be provided by the motor supplier and accommodated in the star-point terminal box. The current transformers for the motors and as well the current transformers for installation inside of MV switchgear shall be delivered by the motor manufacturer. The current transformers for motors must be installed prior to workshop tests. The current transformers for the MV switchgear shall be handed over to switchgear manufacturer before workshop tests of the respective switchgear.

### 6.5 Bearings

The motors shall be fitted with ball or rolling contact bearings, supplied with life time grease. Grease regulator and nipples, as also surplus grease discharge openings shall be provided if required. For larger motors, self-cooled sleeve bearings are acceptable, too. Sleeve bearings shall be equipped with an oil ring lubrication, the bearing housings shall have an oil level indication. External lube oil systems shall only be used, if necessary and shall be combined with the lube oil system of driven equipment. Temperature monitoring with Pt 100 temperature elements (4-wire) is required for the bearings.

### 6.6 Terminal Boxes

A stator connection terminal box shall be provided and fitted with terminals, including surge arrestors and cable glands for the connection of the actual number and type of cables. Dimension of cable glands shall be as per requirement. Pressure relief flaps shall be foreseen.

Auxiliary terminal boxes with terminals and cable glands for current transformers, instrumentation and anti-condensation heater connection shall be foreseen. Surge arrestors shall be installed for all monitoring instrument circuits.

### 6.7 Anti Condensation Heater

The motors shall be equipped in general with electrical anti condensation heaters, to be switched on if the motor circuit breaker is off. The voltage level for the anti-condensation heater shall be 1 x 230 V AC, 50 Hz.

## 7.0 LOW VOLTAGE MOTORS

### 7.1 Motor Start and Torque Requirements

The motors shall be designed for direct on-line starting at full load. For motors of 132 kW shaft

power and above, the starting current shall not exceed 5.5 times the rated current. The motors shall not break out if during normal operation the voltage at the motor terminals remains greater than 0.8 UN, but the operation at 0.8 UN shall be limited to 10 seconds. The motors shall be designed to allow 4 starts successively from cold (max. ambient temperature) or 3 starts successively from hot service temperature without tripping of any protection device.

#### 7.2 Insulation / Winding Protection

The motors shall have tropicalized insulation. The motors shall be designed for class F insulation, thermal utilisation of the motors shall be for class B only. The stator winding shall be insulated by high quality modern synthetic resin insulation system based on mica-glass tape. After insertion of the coils into the stator core the whole winding shall be vacuum impregnated with epoxy resin, free from any solvent.

The motors shall be designed for re-acceleration against 100% residual field at phase opposition. Motors of a rated power of 90 kW and above shall be equipped with winding protection by means of embedded positive temperature coefficient thermistors. Two thermistors per phase (one set service – one set spare) shall be provided and wired to the auxiliary terminal box.

#### 7.3 Method of Cooling

Motors shall be totally enclosed and fan cooled by ambient air, equivalent to cooling code IC0141 or IC0151 according to IEC 60034 part 6.

#### 7.4 Bearings

The motors shall be fitted with ball or rolling contact bearings, supplied with life time grease. Grease regulator and nipples, as also surplus grease discharge openings shall be provided if required. Self-cooled sleeve bearings are acceptable, too. Sleeve bearings shall be equipped with an oil ring lubrication, the bearing housings shall have an oil level indication. External lube oil systems for LV motors will not be accepted.

#### 7.5 Terminal Boxes

Terminal boxes shall be provided and fitted with terminals and cable glands for the connection of the actual number and type of cables. Dimension of cable glands as per requirement. If required, auxiliary terminal boxes with terminals and cable glands for instrumentation and anti-condensation heater connection shall be foreseen. All terminal boxes shall be IP55 enclosure type.

#### 7.6 Anti Condensation Heater

Motors with 75 kW rated power and above shall be equipped in general with electrical anti condensation heaters, to be switched on if the motor circuit breaker is off.

The voltage level for the anti-condensation heater shall be 1 x 230 V AC, 60 Hz.

### 8.0 PAINTING

The painting shall be as per the approved manufacturer standard at least consisting of:

- One coat of two-component epoxy zinc chromate rust-inhibiting primer,
- One intermediate coat of two-component epoxy primer,

- Two top coatings for two-component resin, colour as per the approved colour code schedule.

Total thickness of dry protective paint coating shall be at least 120 µm. All paint coatings shall be resistant against temperature conditions up to 140 °C and intermittently up to 180 °C. Damages, caused by transport, installation, cabling or commissioning shall be repaired in a way, that the original quality is restored. An additional painting at location of installation is not allowed.

## 9.0 INSTALLATION

Installation and alignment shall be carried out in accordance with the instructions and recommendations of the manufacturer and with due regard to the requirements of the driven machine.

## 10.0 TESTS

### 10.1 Workshop Tests

All motors shall be tested completely and detailed in manufacturer's workshop. All tests required by the codes and standards as well as all manufactures tests have to be performed. The test program for the work shop test has to be submitted prior to start of the tests in accordance with the Project Procedure Manual. All motors shall be subjected to at least the 'abbreviated' tests in accordance with the applicable standard test procedures.

Complete tests on motors up to 90 kW will not normally be required if evidence of type tests on identical machines is produced at the time of quotation. For machines of 90 kW and above it will be acceptable that 'complete' tests are made on only one of several identical machines with 'abbreviated' tests on the remaining machines.

The following tests shall be performed, at least:

#### a) Abbreviated tests ('routine' tests)

- Measurement of no-load losses at rated voltage and frequency
- Measurement to allow calculation of locked rotor current and torque
- High voltage tests plus insulation resistance test
- Inspection (at no-load) of bearings and mechanical operation of motor
- Vibration
- High voltage and continuity tests on built-in temperature detectors
- Bearing insulation integrity (if applicable)
- Complete test ('full' tests)
- Measurement of winding resistance (cold and hot)
- Measurement of no-load losses at rated voltage and frequency
- Measurement to allow calculation of locked rotor current and torque
- Full load heat run
- High voltage test after heat run and insulation resistance before and after heat run
- Inspection (at full load) of bearings and mechanical operation of motor

#### Measurement of slip at full load

- Measurement to allow calculation of pull-out torque
- Measurement to allow calculation of starting torque
- Measurement to allow calculation of efficiency at full, three quarter and half load
- Measurement to allow calculation of power factor at full, three quarter and half load
- Vibration
- Noise
- High voltage and continuity tests on built-in temperature detectors, together with tests to demonstrate satisfactory operation and compliance with stated characteristics
- Bearing insulation integrity (if applicable)

Detailed test protocols of all tests performed have to be submitted prior to installation. Type test certificates for LV motors will be acceptable, if the same type and rating of motor is covered.

#### 10.2 Site Tests

The site tests shall include the following steps:

- Pre-installation testing,
- Pre-commissioning (including “Loop Testing”),
- Commissioning and test on completion,
- Test runs,
- Performance tests.

The aim of the tests is to ensure and prove the proper function of the complete scope.

#### 11.0 DOCUMENTATION

Complete documentation shall be provided for the design, manufacturing, testing, commissioning, start-up, operation, maintenance and repair of the motors and its components. All documents shall be in English language.

The documentation of motors shall include the following documents and drawings (minimum requirements):

- a) Layout drawings
- b) Wiring diagrams
- c) Termination drawings
- d) Technical data sheets
- e) Calculations, protocols, certificates
- f) Spare parts list
- g) Performance curves
- h) Operation and maintenance manual
- i) Reports of tests and commissioning with protocols.

The documents listed above shall be handed over for approval. Special attention has to be given to the fact, that documentation must be submitted with sufficient time allocated for approval prior to manufacturing / assembly. Documentation has to be prepared in accordance with the relevant ISO standards or in the absence of relevant details in those standards the DIN standards shall apply.



The final documentation shall be delivered on paper in sufficient number and with exception of the signed protocols in electronic form, too. The type of the electronic files shall be agreed with the Client.

#### 12.0 SHIPPING

All equipment, material and spare parts shall be sufficient packaged and shall be shipped as a common delivery. The material, especially loose parts and spare parts shall be clearly labelled according to the designation. Motors shall be coupled with the respective work machine before shipping

## DATASHEET OF ELECTRICAL MOTOR

1	MOTOR TAG NO.				
2	DRIVEN EQUIPMENT		COMPRESSOR		
3	DUTY		CONTINUOUS S1		
4	Deleted				
5	TYPE		SQUIRREL CAGE INDUCTION MOTOR. TEFC (Flame Proof and Weather Proof)		
6	FRAME DESIGNATION (As per IS: 1231- 1974)		To be furnished by Manufacturer		
7	STATOR & ROTOR FRAME (Laminated Sheet of High Grade Low Loss Silicon Steel)		Insulated Silicon Steel (CRNGO),		
8	MOTOR BODY (Grey Iron Casting)		Cast Iron		
9	SHAFT (Forged)		Carbon Steel-EN-8/8D		
	FAN		Polypropylene with reinforced with Glass Fibre/Aluminium with Hot Dipped Galvanized Steel Fan Cover		
11	KILOWATT OUTPUT		By Bidder as per Pump Sizing		
12	VOLTAGE	FREQUENCY	415 V ± 10%	50Hz ± 5%.	10% (Combined)
13	FULL LOAD AMPS		To be furnished by Manufacturer		
14	FULL LOAD SPEED		To be furnished by Manufacturer		
15	AREA CLASSIFICATION		Hazardous Area (Zone 1, IIA & IIB, T6)		
16	ENCLOSURE		Flame Proof & Weatherproof, Frame Enclosure- IP55 Min. As per IS:4691-1985 (Latest) Additional Canopy to be provided.		
17	MOUNTING		Horizontal		
18	NOISE LEVEL (As per IS: 12075)		To be furnished by Manufacturer		
19	VIBRATION LEVEL (As per IS: 12065)		To be furnished by Manufacturer		
20	STATOR WINDING		Polyester Enamelled Copper Wire (VPI)		
21	ROTOR WINDING		Pressure Die Cast Aluminum		
22	INSULATION CLASS		CLASS "F" Temperature Rise Class "B"		
23	AMBIENT TEMP / TEMP RISE IN °C		50 °C /90°C Above Ambient		
24	APPLICABLE CODE		As per relevant IS & Tech. Specs		
25	FULL LOAD TORQUE		To be furnished by Manufacturer		

	STARTING TORQUE AS % OF F.L. TORQUE	
27	EFFICIENCY CLASS OF MOTOR	Premium Efficiency-IE3
28	EFFICIENCY AT LOAD 100%	To be furnished by Manufacturer
29	EFFICIENCY AT LOAD 75% / 50%/25%	To be furnished by Manufacturer
	ROTATION VIEWED FROM NON-DRIVING END	
31	BEARING TYPE NO. DE / NDE	To be furnished by Manufacturer
32	TYPE OF LUBRICATION	To be furnished by Manufacturer
33	COUPLING / PULLEY	To be furnished by Bidder
34	TERMINAL BOX	Cast Iron, Side Mounted (Rotation 36)
35	CABLE SIZE / TYPE	As per Detail Engg. by Bidder
36	PHASE / CONNECTION / NO.OF TERMINALS	
37	FREQUENCY	50 ± 5%
38	NO. OF POLES	To be furnished by Manufacturer
39	COLOR	Product Specific-Corrosion Category
40	LOCKED ROTOR CURRENT	To be furnished by Manufacturer (shall not exceed 6.0 times of rated current)
41	LOCKED ROTOR WITHSTAND TIME ~ HOT	
42	LOCKED ROTOR WITHSTAND TIME ~ COLD	
43	STATOR / ROTOR TIME CONSTANTS	To be furnished by Manufacturer
44	POWER FACTOR AT 100% LOAD	To be furnished by Manufacturer
	POWER FACTOR AT 75% / 50% / 25% LOAD	
46	SECONDARY AMPS AT FULL LOAD	To be furnished by Manufacturer
47	SECONDARY VOLTAGE	To be furnished by Manufacturer
48	SECONDARY OHMS	To be furnished by Manufacturer
49	BREAKDOWN OR PULL OUT TORQUE %	To be furnished by Manufacturer
50	RATED FIELD CURRENT	To be furnished by Manufacturer
51	SPACE HEATERS WATTS / VOLTS	*/ 240 V AC (Refer Note 1)
52	TORQUE	To be furnished by Manufacturer
53	GD2 OF LOAD	To be furnished by Bidder

54	GD2 OF MOTOR	To be furnished by Bidder
55	THRUST Kg UP / DOWN	To be furnished by Bidder
56	STARTING TIME (AT 100% V & 80% V)	To be furnished by Manufacturer
57	THERMISTOR	One no. each for Bearing DE and NDE side and one no. in each phase winding with one spare.
58	FAULT LEVEL	40 KA for 0.25 sec for motors above
59	CERTIFICATION	IS 2148 Certification.

Notes:

1. SPACE HEATER TO BE PROVIDED FOR MOTOR ABOVE 30 KW RATING for Operating Temperature Range at site.
2. Motor characteristic curves shall be submitted.
3. Manufacturer to submit no. of hot consecutive starts, no. of cold starts and no. of starts distributed per hour.
4. Motor having frame size 260 and above shall be equipped with insulated bearings and bearing housing and for lower frame size insulated bearing housing shall be provided

### **STANDARD TECHNICAL SPECIFICATION - LV & MV CABLE**

#### **1.0 SCOPE**

This specification is intended to detail the selection criteria of MV power and control cables besides covering general requirements, testing at manufacturer's works, packing, transportation and receipt at site.

#### **2.0 CODES & STANDARDS**

The work shall be carried out in the best workman like manner in conformity with this specification, the relevant specifications, codes of practice of Indian Standards Institution, approved drawings and instructions of Engineer-in-Charge or his authorized representative issued from time to time. In case of any conflict between the standards, the instruction of Engineer-in-Charge shall be binding.

The cables shall comply in design, material, testing and performance to the following codes and standards. The latest revision of the publication referred to shall apply.

IS-209	: Specification for zinc.
IS-1554	: PVC insulated (heavy duty) electric cables.
IS-3961 (Part-2)	: Recommended current ratings for cables; PVC insulated and PVC sheathed heavyduty cables.
IS-3975	: Mild steel wires, straps and tapes for armouring of cables.
IS-5831	: PVC insulation and sheath of electric cables.
IS-7098	: Cross-linked poly ethylene insulated PVC sheathed cables.
IS-8130	: Conductors for insulated electric cables and flexible cords.
IS-10418	: Drum for electric cables.
IS-10810 (Pt-41)	: Method of test for cables; mass of zinc coating on steel armour.
IS-10810 (Pt-58)	: Method of test for cables; Oxygen Index test.
IS-10810 (Pt-61)	: Method of test for cables; Flame Retardant test.
IS-10810 (Pt-62)	: Method of test for cables; Flame Retardant test for bunched cables.
IS-13573	: Joints and terminations for polymeric cables for working voltages from 6.6 KV & including 33KV ; performance requirements & type tests.
IEC-323-3	: Tests on cables under fire conditions.
IEC-502	: Extruded solid dielectric insulated power cables for rated voltages from 1KV up to 30KV.
IEC-540 & IEC-540 A:	Test methods for insulation & sheaths of electric cables cords.
ASTM-D2863	: Standard method of test for flammability of plastics using oxygen index method.
IEC 60028	: International standard of resistance for copper
IEC 60502	: Power cables with extruded insulation and their accessories for rated voltages from 1 kV up to 30 kV
IEC 61034	: Measurement of smoke density of cables burning
IEC 60502	: under defined conditions Power cables with extruded insulation and their accessoriesfor rated voltages from 1 kV up to 30 kV

The cables and accessories shall conform to the provisions of Indian Electricity Rules and other statutory regulations as applicable.

- 2.1 Wherever the requirements in this specification are in conflict with any of the above Standards, the requirements under this specification shall be binding.
- 2.2 In case any contradiction between various referred standards/specification/data sheets and statutory regulation etc the following order of priority shall be given -
  - i) Schedule of rates
  - ii) Design Basis
  - iii) Scope of work/Job specification
  - iv) Data Sheet
  - v) Standard specification
  - vi) Codes & standard

### 3.0 ENVIRONMENTAL CONDITIONS

The cables shall be designed and calculated for continuous operation at full load under the climatic and environmental conditions as described in the “Design Basis”.

### 4.0 DESIGN REQUIREMENTS

The cross section of all power cables shall be determined in accordance with the current demand of the linked power consumer, the maximum permissible voltage drop, the operating temperature, thermal short-circuit capacity, maximum cable loop impedance for earth faults and laying conditions.

Cable cross-sections shall be determined using the manufacturer’s published data and the respective reduction factors according to installation conditions. The current-carrying capacities of power cables shall be calculated according to the type of operation, the conditions of installation and the ambient condition. The reduction factor shall be related to the following parameters:

- Ambient or ground temperature
- Exposure to solar rays
- Ground thermal resistivity
- Grouping/spacing

The maximum voltage drop is limited to the values given in specification “Design Basis”. The values for voltage drops are referred to the nominal voltage of the system. The maximum permissible continuous conductor temperature for power cables, depending on insulation material, shall be:

- PVC insulated cables 70 °C
- XLPE insulated cables 90 °C

The colours of the cores shall be in accordance with the IEC regulations.

### 5.0 CABLES SPECIFICATION

#### 5.1 Power Cables for Medium Voltage up to 11kV.

Power cables for 3.3 KV, 6.6 KV and 11 KV systems shall be single core OR three core, U/UE as per SOR with the following construction (from inwards to outwards):

1. Screened Stranded Aluminium/copper Conductor as per SOR.
2. Conductor screening (with non-metallic semi conducting tape or by extrusion of semi-conducting compound)
3. XLPE insulation by extrusion
4. Insulation screening (Extruded semi Conducting layer followed by copper tape)

5. Core with suitable filler material (For three core cables)
6. PVC inner sheath ST2 by extrusion or wrapping
7. Galvanized flat steel strip armour/Round wire Armour (For three core cables)
8. Hard drawn Aluminium Round wire armour (For single core cables)
9. Outer sheath of cable will be FRLS PVC, ST2 type by extrusion

The minimum cross section of medium voltage cables shall be 70 mm<sup>2</sup>. If cross sections larger than 240 mm<sup>2</sup> are required, in general two or more parallel cables shall be provided. For cables above 240 mm<sup>2</sup> single core cables shall be used only. The maximum conductor size shall be 400 mm<sup>2</sup>. In general the bending radius during installation shall be within acceptable limits as specified by cable manufacturer.

Power cables for medium voltage shall be designed in accordance to IEC 60502. Minimum value of oxygen index shall be 29% (min) as per ASTM-D-2863

## 5.2 Power Cables for Low Voltage

Low voltage cables (1100 V Grade) shall be multi – core with the following construction (from inward to outwards):

1. 1100 Volts grade
2. Aluminium/copper stranded conductor (Stranded Annealed Copper Conductor up to 16 mm<sup>2</sup> & Stranded Aluminium Conductor from 25 mm<sup>2</sup> and above)
3. XLPE/PVC insulation as per SOR
4. PVC inner sheath by Extrusion
5. Galvanized flat steel strip armour/Round wire Armour
6. Overall PVC outer sheathed by extrusion

For secondary circuits, building installations, outdoor lighting and sockets etc PVC insulation for the conductor may be used. If cross-sections larger than 240 mm<sup>2</sup> per phase are required, general two or more parallel cables shall be provided. The minimum cross section of low voltage power cables shall be 2.5 mm<sup>2</sup>. Power cables for low voltage shall meet the requirements of IEC 60502. Direct buried cable shall be armoured cables. Unarmoured cables shall also be used wherever required.

Minimum value of oxygen index shall be 29 % (min) as per ASTM-D-2863. Flame propagation properties shall meet the requirement as per IEC-332(part 3)

## 5.3 CONTROL CABLES

Control cables shall be 1100 Volt Grade, 2.5 mm<sup>2</sup> copper conductor PVC insulated type A by extrusion, extruded inner PVC sheathed ST2 , single wire armoured with an overall PVC ST2 sheath, as per IS: 1554 Part-I. Unarmoured cables shall be used wherever required.

Cores shall be identified as per IS: 1554 (Part-1) for the cables up to five (5) cores and for cables with more than five (5) cores the identification of cores shall be done by printing on

all cores as per clause 10.3 of IS 1554 (Part-1).

## 6.0 GENERAL REQUIREMENT

The cables shall be suitable for laying in racks, ducts, trenches, conduits and undergo und buried installations.

They shall be designed to withstand all mechanical, electrical and thermal stresses under steady state and transient operating conditions. The XLPE /PVC insulated L.T. power cables shall withstand without damage a 3 phase fault current for 1 second as specified in “Design Basis” at rated conductor temperature(70° C for PVC insulated cables and 90°C for XLPE insulated cables).

The XLPE insulated cables shall be capable of withstanding a conductor temperature of 250°C during a short circuit without any damage. The PVC insulated cables shall be capable of withstanding a conductor temperature of 160°C during a short circuit.

The Aluminium/Copper wires used for manufacturing the cables shall be true circular in shape before stranding and shall be uniformly good quality, free from defects.

Progressive sequential marking of the length of cable in metres at every one metre shall be provided on the outer sheath of all cables.

The fillers and inner sheath shall be of non-hygroscopic, fire retardant material, shall be softer than insulation and outer sheath shall be suitable for the operating temperature of the cable.

When armouring is specified for single core cables, the same shall consist of aluminum wires/strips.

## 7.0 CABLE DRUMS

- 7.1 Cables shall be supplied in returnable wooden or steel drums of heavy construction. Wooden drum shall be properly seasoned sound and free from defects. Wood preservative shall be applied to the entire drum.
- 7.2 Standard lengths for each size of power and control cables shall be 500/1000 meters. The cable length per drum shall be subject to a tolerance of plus or minus 5% of the standard drum length. The owner shall have the option of rejecting cable drums with shorter lengths. However if shorter length of cable (Not standard as specified) is required shall be provided by the contractor in drums. Maximum, One (1) number non standard length of cable size(s) may be supplied in drums for completion of project.
- 7.3 A layer of water proof paper shall be applied to the surface of the drums and over the outer most cable layer.

- 7.4 Each drum shall carry the manufacturer's name, the purchaser's name, address and contract number and type, size and length of the cable, net and gross weight stencilled on both sides of drum. A tag containing the same information shall be attached to the leading end of the cable. An arrow and suitable accompanying wording shall be marked on one end of the reel indicating the direction in which it should be rolled.
- 7.5 Packing shall be sturdy and adequate to protect the cables, from any injury due to mishandling or other conditions encountered during transportation, handling and storage. Both cable ends shall be sealed with PV C/Rubber caps so as to eliminate ingress of water during transportation and erection.

## 8.0 TRANSPORTATION AND UNLOADING

All cables shall be shipped and transported on cable drums of adequate size. Drums shall be lifted by means of a crane or by means of a loading ramp. Throwing and dropping down of cable drums shall be strictly avoided. In order to prevent drums moving during transportation, these must be securely wedged to prevent movement. Before unloading it is necessary to verify that the drum is received in proper condition. The directional arrow of the drums has to be observed during rolling. Empty cable drums have to be stored on a suitable central store place. Re-transport to the cable manufacturer of returnable drums is the Contractor's responsibility.

## 9.0 DRAWINGS AND DOCUMENTS

Following minimum information shall be furnished with bid:

- a) Data sheet for cables
- b) Type Test Reports of cables

The following drawings (in three sets) shall be submitted for approval/review within 3 weeks of award of contract.

- a) Data sheet for cables
- b) Type Test Reports of cables

## 10.0 INSPECTION

Inspection and testing of equipment shall be carried out by the owner/ consultant at the works of the contractor on final product to ensure conformity of the same with the acceptable criteria of technical specification, approval drawings and reference national/ international standards.

The contractor shall submit Quality Assurance Plan (QAP) for respective equipments within 3 weeks of award of contract.

QAP shall be prepared and furnished by the contractor in MECON Form No. 11.20(4.4) F-10 alongwith their internal in process quality checks.

Routine test and type test certificate shall be furnished for review. Acceptance test shall be witnessed by owner/consultant.

## **ELECTRICAL**

### **LIST OF SUPPLIERS OF MAJOR BOUGHT-OUT ITEMS**

#### **Batteries (Nickel Cadmium)**

1. Amco Batteries Ltd.
2. HBLNIFE Power Systems Ltd.

#### **Cable – Fire Alarm & Communication Cables**

1. Cords Cable Industries Ltd.
2. CMI
3. Delton cables Ltd.
4. ELKAY Telelinks
5. KEI Industries Ltd.
6. Reliance Engineers Ltd.

#### **Cable – LT Power and Control**

1. Cords Cable Industries Ltd.
2. Universal Cable Ltd.
3. KEI Industries Ltd.
4. Havells.
5. Delton
6. Elkay Telelinks
7. Evershine Electricals
8. Ecko
9. Ravin
10. Rallison.
11. Suyog
12. Netco
13. Uniflex
14. Paramount
15. Gloster
16. Associated cables Pvt Ltd.
17. CMI
18. Gemscab
19. Industrial cables
20. NICCO
21. Polycab
22. Torrent

#### **Cable – Gland**

1. Baliga
2. Comet
3. Flexpro
4. Flameproof
5. FCG

6. Electro Werke
7. Dowels
8. CCI

### **Cable – Lugs**

1. Dowels
2. Jainson
3. Ismal

### **Cable – Tray**

1. Ercon Composites
2. Yamuna Power & Infrastructure Ltd.

### **Cable Termination and Jointing Kit**

1. CCI
2. Raychem
3. M-Seal

### **Ceiling/Exhaust/Pedestal Fans & Circulators**

1. Bajaj Electricals Ltd.
2. Crompton Greaves Ltd.
3. Khaitan Electricals Ltd.
4. Havell's

### **Contractors – AC Power**

1. Andrew Yule
2. ABB
3. BHEL
4. C&S
5. Havell's
6. L&T
7. Schneider
8. Siemens Ltd.
9. Telemecanique

### **Control Transformer**

1. AE
2. Indusree
3. Intra Vidyut
4. Kalpa Electrikals
5. Transpower Industries Ltd.
6. Siemens

### **Earthing Materials**

1. Rukmani Electrical & Components Pvt Ltd.
2. Indiana Grating Pvt Ltd.
3. Jef Techno Solutions Pvt Ltd

### **Flame proof LDB's/ JB,s/Control Station/ switches**

1. FCG
2. Sudhir
3. Prompt Engineering Works
4. Flame Proof equipments pvt. Ltd.
5. Baliga Lighting Equipments Pvt. Ltd.
6. Flexpro Electricals Pvt. Ltd.

### **Indicating Lamps**

1. Alstom Ltd.
2. BCH
3. L&T Ltd.
4. Siemens Ltd.
5. Vaishno Electricals

### **Indicating Meters**

1. ABB
2. AMCO
3. AE
4. Alstom Ltd. (EE)
5. Conzerv/Schneider
6. Elecon Measurement Pvt. Ltd.
7. HPL Electric & Power Pvt. Ltd.
8. MECO Instruments Ltd.
9. Minilec
10. Rishabh Instruments Pvt. Ltd.
11. Trinity energy system
12. kaycee
13. Salzer

### **Lighting Fixtures**

1. GE Lighting Pvt. Ltd.
2. Bajaj Electricals Ltd.
3. Crompton Greaves Ltd.
4. Philips India Ltd.

### **Lighting Fixtures – Flameproof**

1. Bajaj Electricals Ltd.
2. Baliga Lighting Equipment Pvt. Ltd.
3. Crompton Greaves Ltd.
4. CEAG Flameproof Controlgear Pvt. Ltd.
5. Flexpro Electricals Pvt. Ltd.
6. Philips India Ltd.
7. Sudhir Switchgears Pvt. Ltd.
8. FCG.

### **Miniature Circuit Breakers (MCBs) and Lighting DB**

1. ABB
2. Hagger
3. Havell's India Ltd.
4. Indo Asian Fusegear Ltd.
5. Legrand
6. MDS Switchgear Ltd.
7. Schneider
8. Siemens Ltd.
9. HPL

### **Moulded Case Circuit Breaker (MCCBs)**

1. ABB
2. Andrew yule
3. Larsen & Toubro
4. Schneider
5. Siemens
6. Control and Switchgear

### **Protection Relays – Thermal**

1. BCH
2. L&T Ltd.
3. Siemens Ltd.
4. Telemenchanique & Controls (India) Ltd.

### **Low Voltage Power Control Center (PCC)/ MCC/ PDB/ MLDB/ LDB**

1. ABB
2. BCH
3. C & S
4. Elecmech Switchgear & Instrumentation
5. KMG ATOZ
6. L&T
7. Pyrotech Electronics Pvt. Ltd.
8. Risha control Engineers Pvt. Ltd.
9. Siemens
10. Tricolite Electrical Industries
11. Unilec Engineers ltd.
12. Vidyut Control India Pvt. Ltd.
13. Control and Schematic
14. Zenith Engineering

### **Push Buttons**

1. BCH

2. Alstom Ltd.
3. L&T
4. Siemens Ltd.
5. Telemenchanique & Controls (India) Ltd.
6. Vaishno Electricals

### **Switches-Control**

1. BCH
2. Easum Reyrolle Relays & Devices Ltd.
3. Alstom
4. Kaycee Industries Ltd.
5. L&T
6. Siemens Ltd.

### **Switches – 5/15A Piano/ Plate, Switch Socket**

1. Anchor Electronics & Electricals Pvt. Ltd.
2. Kingal Electricals Pvt. Ltd.
3. North-West Switchgear Ltd.

### **Switch Socket Outlets (Industrial)**

1. Alstom Ltd.
2. Best & Crompton Engineering Ltd.
3. BCH
4. Crompton Greaves Ltd.
5. Essen Engineering Company Pvt. Ltd.

### **Terminals Blocks**

1. Connectwell
2. Controls & Switchgear Co. Ltd.
3. Elmex Controls Pvt. Ltd.
4. Essen Engineering Co. Pvt. Ltd.

### **Transformer**

1. ABB
2. Andrew Yule
3. Areva
4. BHEL
5. Bharat Bijlee
6. Crompton Greaves
7. EMCO Ltd.
8. Intra Vidyut
9. Indushree
10. Indcoil
11. Kirloskar
12. Skippers Electricals
13. Transformers & Rectifiers (I) Ltd.
14. Voltamp

### **Flame proof Motor**

1. ABB
2. Compton Greaves
3. Kirloskar
4. Siemens

5. Bharat Bijlee
6. Weg
7. Marelli
8. Laxmi Motor

### **Variable Frequency Drive/Soft Starter**

1. ABB
2. BHEL
3. Siemens
4. Nelco (Hitachi)
5. Vacon
6. Schneider
7. L&T (Yaskawa)
8. Rockwell Automation
9. Tmeic
10. Amtech
11. Eurotherm

## SECTION – VII

### SCHEDULE OF RATES (SOR)

#### TENDER DOCUMENT FOR PROCUREMENT OF 2 NOS. OF 400 SCMH COMPOSITE CNG DISPENSING UNIT & COMPREHENSIVE O&M SERVICES FOR 5 YEARS

Tender No.: RSGL/KOTA/C&P/PROJ/2025-26/NIT-14 DATE: 02-01-2026

Name of Bidder:

#### 1. 400 SCMH COMPOSITE CNG DISPENSING UNIT (For Supply Portion)

SOR Item No.	Description of item	Unit	Qty.	HSN CO DE	Unit Rate (Ex- works Price including packing and forwarding)	Unit Inland transportation up to Delivery location and other costs incidental to delivery of goods	GST (Note 1 below) on finished Good (Col No. 5)		GST (Note 1 below) on Inland Transportation (Col No. 6)		Unit FOT site price incl. all taxes & duties & inland transportatio n	Total FOT site price incl. all taxes & duties & inland transportation	
							INR/Unit	INR/Unit	%	INR	%	INR	INR
(1)	(2)	(3)	(4)		(5)	(6)	(7A)	(7B)	(8A)	(8B)	(9)=(5)+(6)+(7B)+(8B)	(10)=(9)*(4)	
1	<p>Design, Engineering, Manufacturing, Supply (including Design, Engineering, Manufacturing, Supply (including packaging and forwarding, insurance, handling, loading and unloading at port and delivery &amp; unloading at Client's store / site Design, Engineering, Manufacturing, Shop testing and supply of online Electric Motor driven Composite CNG Dispensing Unit - CCDU consisting of Compressor with Storage &amp; Detachable Dispenser:</p> <p>a. Nominal Discharge flow capacity of 400 SCMH</p> <p>b. Suction Pressure : 16 Kg/cm<sup>2</sup> (g)</p> <p>c. Diharge Pressure: 255 kg/cm<sup>2</sup> (g) The package shall be inclusive of:</p> <p>A) String test of complete compressor package with air/nitrogen along with electric motor and accessories at packagers' factory.</p> <p>B) Special tools &amp; tackles (list and price of each tools and tackles to be furnished by the bidder separately in Price Bid)</p>	No.	2									In figures	In Words

	C) Design, Engineering, Manufacturing, Supply (including packaging and forwarding, insurance, handling and unloading at Client's store /site of air compressor of capacity approx 1.5 kW, discharge pressure approx 7 kg/cm <sup>2</sup> g , min 100 water liter air receiver and air dryer along with all accessories and auxiliaries.											
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## 2. LUMP SUM ANNUAL OPERATION, REPAIR & COMPREHENSIVE MAINTENANCE DURING WARRANTY PERIOD POST COMMERCIAL OPERATION. ETC.

SOR Item No.	Description of item	Unit	Qty (A).	HSN COD E	Unit Rate including of all incidental costs but excluding GST applicable on it in INR (B)	GST (CGST and SGST/UTGST or IGST)		Unit Price including all taxes & duties in INR D= B+C	Total Price including all taxes & duties in INR E=D X A
						%	INR/UNIT (C)		
2	Lump sum annual operation, repair & comprehensive maintenance charges during the 1st year of Warrantee period per CCDU package including air compressor including air compressor during first year of warranty period inclusive of all manpower, spare parts, lubricants etc. (The quoted Annual rate (E) for this item must be equal to or more than 8% of rate of Item no. 1 (Column -10 i.e. (Total Price including all taxes & duties) quoted by the bidder.	Per Month	2x12=24 months						
Total amount (2) including of all taxes and duties (In INR									

## 3. LUMP SUM ANNUAL OPERATION, REPAIR & COMPREHENSIVE MAINTENANCE DURING POST WARRANTY PERIOD OF 1 YEAR POST COMMERCIAL OPERATION. ETC.

3.1	Lump Sum Annual repair, comprehensive Operation and maintenance cost per CCDU package including air compressor for 1st Year after expiry of warrantee period and inclusive of all maintenance support, spare parts, lubricants etc. (The quoted Annual rate (E) for this item must be equal to or more than 9% of rate of Item no. 1 (Column -10 i.e. (Total Price including all taxes & duties) quoted by the bidder.	Per Month/ Compressor	2x12=24 months						
3.2	Lump Sum Annual repair, comprehensive Operation and maintenance cost per CCDU package including air compressor for 2nd Year after expiry of warrantee period and	Per Month/	2x12=24 months						

	inclusive of all maintenance support, spare parts, lubricants etc <b>(The quoted Annual rate (E) for this item must be equal to or more than 10% of rate of Item no. 1 (Column - 10 i.e. (Total Price including all taxes &amp; duties)) quoted by the bidder.</b>	Compre ssor					
3.3	Lump Sum Annual repair, comprehensive Operation and maintenance cost per CCDU package including air compressor for 3rd Year after expiry of warranty period and inclusive of all maintenance support, spare parts, lubricants etc. <b>(The quoted Annual rate (E) for this item must be equal to or more than 11% of rate of Item no. 1 (Column - 10 i.e. (Total Price including all taxes &amp; duties)) quoted by the bidder.</b>	Per Month/ Compre ssor	2x12=24 months				
3.4	Lump Sum Annual repair, comprehensive Operation and maintenance cost per CCDU package including air compressor for 4th Year after expiry of warranty period and inclusive of all maintenance support, spare parts, lubricants etc <b>(The quoted Annual rate (E) for this item must be equal to or more than 12% of rate of Item no. 1 (Column - 10 i.e. (Total Price including all taxes &amp; duties)) quoted by the bidder.</b>	Per Month/ Compre ssor	2x12=24 months				

**Total amount (3) including of all taxes and duties (In INR)**

**Total amount (1+2+3) including of all taxes and duties (In INR) in words**

N-1	IN CASE OF INTRASTATE SUPPLY, RATE OF GST MENTIONED ABOVE SHALL BE DIVIDED INTO CGST & SGST/UTGST EQUALLY FOR EVALUATION AND ORDERING.
N-2	Bidder to clearly indicate 'Quoted' / 'Not Quoted' against each Sr. No. in the price column in the unpriced Price Schedule. Bidders to submit Price part of above Price schedule in their Priced Bid and Unpriced part with the Unprice Bid
N-3	Bidder shall furnish prices/details as above, in accordance with various clause of ITB/SCC
N-4	Bidder must quote the price in enclosed Price Schedule formats only. The formats shall not be changed and/or retyped. For any deviation to the formats, offer may be rejected.
N-5	Quoted prices are firm and fixed till complete execution of the entire order.
N-6	Transportation charges & applicable GST to be quoted in "SOR-Transportation" sheet of Price schedule/ Schedule of Rates.
N-7	Item-wise list & quantity for start-up & commissioning spares, if applicable, shall be furnished by the Bidder other than those already mentioned in MR . Start-up & commissioning spares, if applicable,
N-8	Bidder confirms that he has noted the contents of the price schedule, price schedule, bid document, material requisition and quoted his prices accordingly without any deviation.

**BIDDER'S NAME :**

**BIDDER'S SIGNATURE:**

**COMPANY'S NAME:**

**SEAL:**

