



BHAGYANAGAR GAS LIMITED
(A JOINT VENTURE OF HPCL & GAIL)

BID DOCUMENT FOR

**Tender for Procurement of 500 SCMH Meter
Regulating Skid (MRS) for supply of NG to an
Industrial Customer in Hyderabad**

**UNDER LIMITED DOMESTIC
COMPETITIVE BIDDING**

Bid Document No.: BGL/277/2014 -15

VOLUME-II of II



BHAGYANAGAR GAS
LIMITED

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II OF II**

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SECTION – 7
MATERIAL REQUISITION



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MATERIAL REQUISITION

Sl. No.	Item Description	UOM	Qty
1.0	Supply and Commissioning of Dual Stream Metered Regulating Station (MRS) with inlet pressure range 4 to 2.0 kg/cm ² (g) outlet pressure of 1.2 kg/cm ² (g) having 500 Capacity of SCMH flow requirement. Including dual RPD Meter with EVC & GSM Modem	SET	1

Note:

1. The Quoted Rates should include the **Third Party Inspection Charges**.
2. Only BGL approved Third Party Inspection Agencies are to be deployed.
3. Scope of Third Party Inspection – Inspection as per SCC document.
4. The Rates should be in INR only.



Bhagyanagar Gas Ltd.

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SECTION – 8

**SPECIAL CONDITIONS OF CONTRACT
(SCC)**



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SPECIAL CONDITIONS OF CONTRACT (SCC)

1.0 GENERAL

- 1.1 Special Conditions of Contract shall be read in Conjunction with the General Conditions of Contract, Specification of work, Drawing and any other documents forming part of this Contract wherever the context so requires.
- 1.2 Notwithstanding the sub-division of the documents into these separate sections and volumes every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read within the Contract so far as it may be practicable to do so.
- 1.3 Where any portion of the General Conditions of Contract is repugnant to or at variance with any provisions of the Special Conditions of Contract, unless a different intention appears, the provisions of the Special Conditions of Contract of Contract shall be deemed to over-ride the provisions of the General Conditions of Contract and shall be the extent of such repugnancy, or variations, prevail.
- 1.4 Wherever it is mentioned in the specification that the Contractor shall perform certain work or provide certain facilities, it is understood that the Contractor shall do so at his cost and the Value of Contract shall be deemed to have include cost of such performance and provisions, so mentioned.
- 1.5 The materials, design, and workmanship shall satisfy the relevant Indian Standard, the Job Specifications contained herein and Codes referred to. Where the job specification stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.
- 1.6 In case of an irreconcilable conflict between Indian or other applicable standards, General Conditions of Contract, Special Conditions of Contract, Specification, Drawings or Schedule of Rates, the following shall prevail to the extent of such irreconcilable conflict in order of precedence:
 - i. Letter of Acceptance/ LOI along with Statement of Agreed Variations.
 - ii. Schedule of Rates as enclosures to Letter of Acceptance
 - iii. Special Conditions of Contract
 - iv. Drawings
 - v. Technical/ Material Specifications
 - vi. Instruction to Bidder
 - vii. General Conditions of Contract
 - viii. Indian Standards
 - ix. Other applicable standards
- 1.7 It will be the Contractor's responsibility to bring to the notice of Engineer-in-charge any irreconcilable conflict in the contract documents before starting the work(s) or making the supply with reference which the conflict exists.
- 1.8 In the absence of any Specifications covering any material, design of work(s) the same shall be performed/ supplies/ executed in accordance with Standard Engineering Practice as per the instructions/ directions of the Engineer-in-charge, which will be binding on the vendor.



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2.0 SCOPE OF SUPPLY

2.1 General

This Specification covers, supply of MRS / MRS Metering Skids to be used in City Gas Distribution for Hyderabad City in the state of Telangana.

The scope of supply covers design, engineering, manufacture, inspection, testing, supply & supervision of installation and commissioning, shipment and documentation requirements of these items in accordance with the requirements of this Requisition.

Item Name	Flow Capacity	Qty	Parameters	Type of Flow meter	Configuration	Power Back up
Meter Regulating Station	500 SCMH	1	Inlet Pressure : 4 - 2Kg/cm ² (g),150#. Outlet Pressure: 1.2 Kg/cm ² (g),150#.	RPD Meter(Rotary Positive Displacement Meter) with EVC & GSM Modem	Single Filter stream, Double PCV/SSV stream	YES.

2.2 The Scope of Supply shall be as set out at Material Requisition, Data Sheets and Technical Specifications given in Volume-II of tender document and supplemented by all stipulation in the total tender document.

2.3 REMARKS

2.3.1 Supplier's Compliance

Supplier shall submit his bid in full compliance with the requirements of this MR and attachments. Bidder shall include the following statement in his bid:

Compliance with this material Requisition in any instance shall not relieve the Vendor of his responsibility to meet the specified performance.

2.3.2 Compliance with Specification

The supplier shall be completely responsible for the design, materials, fabrication, testing, and inspection, preparation for shipment & transfer of above material to nominated delivery point strictly in accordance with the MR & all attachments thereto.

2.3.3 Supplier's Scope

Supplier's scope of work includes the equipment with all internals & accessories shown on the data sheets, specifications and all unmentioned parts necessary for a satisfactory operation & testing except those which are indicated to be out of Supplier's supply.



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2.3.4 Performance and Inspection

Adequate data on capacity, range ability, lock –up, minimum and maximum operating pressure, dynamic performance characteristics and predicted noise level emissions, set point of PCV cum shut off valve, relief valve etc. should be given by the manufacture in order to determine the performance of the regulators under various operating conditions. Result of such tests carried out by the manufacture to determine operational performance and thereby confirm these design data and manufacturing Test Certificate for all components/parts of the DRS, NDT result, Welding Procedure Specification, Welders Performance Qualification records Etc. should be made available prior to offering the complete skid for witnessing the performance testing by BGL/Third Party Inspection agency.

Stage wise Inspection shall be carried out by respective Sub vendors. Completed Skid shall be finally witnessed & inspected by TPI / Client. TPI shall review Test certificates, traceability and certification by Sub vendors. 3.1 certification is accepted.

Supplier shall submit with his bid a list of 3 well known Third Party inspection Agencies as per enclosed vendor list, which he intends to use for inspection. This agency will issue all relevant certificates as per specification & codes. The final performance test of complete DRS skid shall be carried out in presence of third party inspecting agency/BGL representative before accepting the skid and giving clearance for dispatch. Inspection shall also be performed by a designated Third Party Inspection agency and/or purchaser as set out & specified in the codes & particular documents forming this MR.

3.0 SPECIAL INSTRUCTIONS TO BIDDERS

- 3.1 The installation shall be designed to pass maximum designated gas flow rate at the lowest expected inlet pressure and the designed outlet pressure.
- 3.2 Suitable for the use with natural gas of specific gravity 0.7
- 3.3 TPI shall review Test certificates, traceability and certification by Sub vendors. 3.1 certification is accepted. Stage wise inspection for complete fabrication, testing including raw material inspection to be carried out.
- 3.4 The average velocity of the gas must be 30 m/sec , (20 m/s is before filtration and after filtration is 40 m/s but as per T4s, 30 m/s is the allowable for Secondary network.) in this case already Gas is flowing passing Regulating Station(DRS)
- 3.5 All pipe work and equipment must be capable of withstanding the maximum pressure resulting from a fault condition.
- 3.6 The provision of the inlet and outlet valve for every stream should be incorporated.
- 3.7 The Skid manufacturer must deliver a Certificate EN 10204 3.1 stating the quality, the mechanical properties, the chemical analysis the process of manufacture and the marking for the skid.



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- 3.8 All bought out Items like Flanges, Fittings, Valves to be used in manufacturing of Skids shall have Certificates confirming to EN 10204 3.2 or EN 10204 3.1
- 3.9 All material shall be delivered at Company's designated storage yard. The destination for delivery of items is at Hyderabad.
- 3.10 BGL reserves the right to increase or decrease the quantity of supply item MRS.
- 3.11 For the MRS, inlet pressure will be 4 - 2 bar and out let pressure will be 1-1.2 bar and Also if any modification will be required while change in the pressure, the same will be in the scope of supplier.

**4.0 INFORMATION/ DOCUMENTS / DRAWINGS TO BE SUBMITTED BY
SUCCESSFUL BIDDER**

Successful Bidder shall submit six copies unless noted otherwise, each of the following:

- 4.1 Inspection & test reports for all mandatory tests as per the applicable code as well as test reports for any supplementary tests, in nicely bound volumes.
- 4.2 Material test certificates (physical property, chemical composition, make, heat treatment report, etc.) as applicable for items in nicely bound volumes.
- 4.3 Statutory test certificates, as applicable.
- 4.4 Filled in Quality Assurance Plan (QAP) for Purchaser's approval. These QAPs shall be submitted in four copies within 15 days from LOI/ FOI.
- 4.5 WPS & PQR, as required.
- 4.6 Within two (2) weeks of placement of order, the detailed fabrication drawings along with process and mechanical design calculations for Purchaser's approval.
- 4.7 Detailed completion schedule activity wise (Bar Chart), within one week of placement of Order.
- 4.9 Weekly & fortnightly progress reports for all activities including procurement.
- 4.10 Manufacturer's drawings for bought out items, in 4 copies, for Purchaser's approval within 4 weeks.
- 4.11 Manufacturer related information for design of civil foundation & other matching items within 2 weeks of FOI / LOI.
- 4.12 All approved drawings/ design calculation/ maintenance/ operating manual documents as well as inspection and test reports for Owner's record in nicely category-wise bound volumes separately.
- 4.13 A list of documents to be furnished along with supply.

5.0 PERFORMANCE GUARANTEE:

18 months from date of delivery or 12 months from date of commissioning, whichever is earlier, should be provided.

Note: All drawings, instructions, catalogues, etc., shall be in English language and all dimensions shall be metric units.

The successful bidder shall deposit security deposit @ 10% of the contract value within 10 days of LOI / PO. The Security deposit shall be



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submitted in the form of an unconditional irrevocable Bank Guarantee for Warranty from any Indian Nationalised Bank/ Scheduled bank/ reputed foreign bank having office in India and registered with Reserve Bank of India other than co-operative banks acceptable to BGL for a sum equivalent to 10% of the total contract value on the name of M/s Bhagyanagar Gas Limited, Hyderabad. Alternatively the bidder can also submit the security deposit in the form of crossed Demand Draft in favor of M/s Bhagyanagar gas Limited, Hyderabad.

6.0 TERMS OF PAYMENTS

The Payment shall be made in the following manner subject to completion of all contractual requirements as per tender document.

a) 90% of supply value will be paid against receipt and acceptance of material by Owner & against receipt of the following documents : -

- i) Invoice in triplicate.
- ii) Inspection Release note by Owner or his appointed or approved agency.
- iii) GR/ LR.
- iv) Packing List.
- v) Insurance cover note covering transit insurance.
- vi) A certificate from manufacturer that the 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) Final technical file as per Technical Specifications/ Material Requisition including all test certificates.
- viii) Performance Bank Guarantee(s) of 10% of Contract Value. If already submitted, a copy of the same.
- ix) Document related to CENVAT credit to be claimed by Owner, if applicable.
- x) Documents as specified in the Technical Specifications/Material Requisition, Volume-II of II of the Bid Document.

b) 10% payment shall be released after submission following documents:

- i) No Claim Certificate.
- ii) Final acceptance of material by BGL
- iii) After successful commissioning of MRS.

7.0 PRICE BASIS

The Contract price shall be deemed to be FIRM and valid for the entire duration of the contract till the completion of work and shall not be subjected to any adjustment due to increase in price of material, utilities or any other input for performance of work and the contract except for increase/decrease in taxes and duties on account of subsequent legislation.

**8.0 EVALUATION & ORDERING:
Bidder may quote for 500 SCMH flow MRS. Bids shall be evaluated and**



order shall be placed on the basis of least cost to Company.

9.0 QUALITY ASSURANCE / QUALITY CONTROL

- 9.1 The Contractor shall “prepare a detailed quality assurance plan for the execution of Contract for various facilities, which will be mutually discussed and agreed to.
- 9.2 The Contractor shall establish document and maintain an effective quality assurance outlined in recognized codes.
- 9.3 The purchaser while agreeing to a quality assurance plan shall mark the stages where they would like to witness the tests, review any or all stages of work at shop/site as deemed necessary for quality assurance.

10.0 QUANTITY VARIATION:

The tendered quantity may vary depending upon the project requirement. BGL reserves the right to decrease/increase the quantity depending upon its requirement.

11.0 INSPECTION

BGL reserves the right to engage their own personnel and or BGL’s Inspection agency. All the charges towards all kinds of tests shall be included in the quoted rates. No additional payment to this effect will be made.

12.0 DISPATCH INSTRUCTIONS

- 12.1 Seller shall obtain dispatch clearance from Purchaser prior to each dispatch.
- 12.2 Copy of Inspection Release Certificate, Dispatch Clearance and Statement showing the name of Vessel/Trailer description and weight of material and shipping marks etc. to be submitted along with the dispatch document.

13.0 REJECTION

- 13.1 Any materials/goods covered under the scope of supply, which during the process of Inspection, at any stage of manufacture/fabrication, and subsequent stages, prior to dispatch is found not conforming to the requirements/specifications of the Purchase Order, shall be liable for immediate rejection.
- 13.2 Supplier shall be responsible and liable for immediate replacement of such material with acceptable material at no extra cost to BGL and no extra on the delivery schedule to Employer.

14.0 PRICE REDUCTION SCHEDULE / LIQUIDATED DAMAGES

The supplier agrees that time of supply shall be of the essence of the Contract. If the supplier fails to supply within the respective scheduled / fixed date for supply.



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Company may without prejudice to any other right or remedy available to the company:

Recover from the supplier as curtailed and agreed, genuine pre-estimate price reduction and not by way of penalty, a sum equivalent to ½% per week or part thereof for each week's delay, prorated for part thereof beyond the scheduled supply date each subject to maximum of 5% of Purchase Order value, even though the company may accept delay in supply after the expiry of the scheduled supply date.

15.0 REPEAT ORDER

BGL reserves the right to place a repeat order within eight months of expiry of order on same rate, terms and conditions.

16.0 DELIVERY

The delivery of the MRS shall be at Hyderabad. The exact location of the site/store shall be informed before dispatch of MRS from factory.

17.0 VALIDITY OF OFFER

The offer shall be valid for a period of three months from the receipt of the offer.



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SECTION – 9
TIME SCHEDULE



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TIME SCHEDULE

Item S.No	Item Description	Qty	Delivery Period
1.0	500 SCMH Meter Regulating Skid (Inlet Pressure : 4-2 kg/cm ² (g), 150# Outlet Pressure : 1.2 kg/cm ² (g), 150#)	1 Set	Within 10 weeks from date of issue of Purchase Order

Note:

- **Price Reduction Schedule (PRS) will be based on contract value for the item covered under this schedule.**



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**SECTION – 10
TECHNICAL SPECIFICATION
FOR
METER REGULATING SKID (MRS)**



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1.0 GENERAL

- 1.1 This specification together with all annexure enclosed, covers the requirements for the design, engineering, manufacturing, testing, inspection and supply of MRS units along with all the accessories.
- 1.2 In the event of any conflict between this specification, datasheets, related standards codes etc., the more stringent shall apply.
- 1.3 Purchaser datasheet for Cartridge filters, Pressure regulators with Slam shut valve, Pressure relief valves, Pressure/Differential pressure gauges, Control valves and accessories indicating materials for body, internals etc. has been attached. However, this does not absolve the vendor of the responsibility for proper selection with respect to the fluid & its operating conditions. Proper sizing & selection of Cartridge filters, Pressure Regulators, Slam shut valves, Pressure relief valves, etc. and accessories are vendor's responsibility. Sizing Calculation required for Cartridge filter, PCV's, SSVs, PSV etc and Noise calculation required for PCVs. Process parameters for skids are attached. Vendor shall take single point responsibility for the design & performance of the skids based on the data sheet and specification furnished and taking into consideration successful operation, safety as per the established international standards for complete skids.
- 1.4 Vendor shall consider all the requirements of this specification along with those as per relevant standards and shall assume total responsibility including all aspects of engineering, design, certification etc. for filtration, pressure reducing and metering units.
- 1.5 Vendor to note that all the items including cartridge filters, pressure regulators and slam shut valves, pressure safety valves, flow computer etc. shall be procured from reputed vendors and shall follow the attached vendor list.
- 1.6 Vendor's quotations shall include the detailed specifications for all the items of filtration, The vendor shall also offer any instruments /equipments required for safe and efficient operation of the system.
- 1.7 Vendor to furnish
 - a) The maximum flow rate (in Sm³/hr) at minimum inlet pressure for all PCVs at valve full open condition.
 - b) Min. flow rate (in Sm³/hr) through each PCV without damaging the trim and valve internals at min. inlet pressure.
 - c) Flow rate vs. trim lift curve to justify the valve range ability and valve regulation characteristics.
- 1.8 All units of measurements in vendor's specification sheets shall be same as those in purchaser's data sheets.

All material specification for the various parts in the vendor's specifications sheets shall be to the same standard as those in purchaser data sheets.
- 1.9 Vendor shall enclose catalogues giving detailed technical specification and other information for cartridge filters, self actuated pressure control valve, and slam shut valves, pressure relief valves, pressure / temperature gauges, control valves etc. covered in the bid.



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Vendor's quotation, catalogues, drawings, operating and maintenance manuals etc. shall be only in English language.

Vendor shall submit subsequent to award of contract the sizing details & specification of all the instruments and piping items make and model, skid details etc. The relevant catalogue, technical literature shall also be furnished.

All drains/vents should be having provision for putting end cap and shall be complete with wire seal.

2.0 GENERALITIES

2.1. Definition

Subject to the requirements of the context, the terms used in this specification are given the following meaning:

OWNER	Designates the purchaser of the GOODS and/or
SERVICES	which are the subject of the AGREEMENT.
VENDOR	Designates the individual or legal entity with whom the order has been concluded by the OWNER. The term "VENDOR" may be used indifferently or a supplier, a manufacturer, an erection contractor, etc.
OWNER'S REPRESENTATIVE	Any Third Party Inspecting agency or BGL's representative as being involved in the project.
GOODS and/or SERVICES	Designate, depending on the case, all or part of the drawings or documents, substances, materials, material, equipment, structures, plant, tools, machinery etc., to be studied, designed, manufactured, supplied, erected, built, assembled, adapted, arranged or put into service by the CONTRACTOR under the AGREEMENT, including all the studies, tasks, works and services specified by the order. The Terms GOODS or SERVICES may be indifferently used one for the other as required by the context.
PROJECT	Designates the aggregate of GOODS and/or SERVICES to be provided by one or more CONTRACTORS
SHALL	This verbal form indicates requirements strictly to be followed in order to conform to the standards and from which no deviation is permitted.
SHOULD	This verbal form indicates that among several possibilities one is particularly suitable without mentioning or excluding others or that a certain course of action is preferred but not necessarily required.
MAY	This verbal form indicates a course of action permissible within the limits of this standard.



CAN

This verbal form used for statements of possibility & capability, whether material, physical or casual.

3.0 STANDARD CODES

Mechanical Equipment shall generally be mechanically designed in accordance with the relevant institute of Gas Engineers (IGE) codes and the following principal codes of practice (Latest Edition).

ASME Boiler and Pressure vessel Code. / American National Standard Code

ANSI/ASME B 16.5	} Flanges & Flange fittings Gas Transmission and Distribution Systems. Metallic Gaskets for pipe flanges Pipe threads general purpose (inch) valve flanged threaded & welding ends.
ANSI/ASME B 31.8	
ANSI/ASME B 16.20	
ANSI/ASME B 1.20.1	
ANSI/ASME B 16.34	

American Petroleum Institute (API)

API RP 520	Part 1 & 2, Design and Installation pressure relieving systems in refineries.
API RP 521	Guide for Pressure relief and Depressing Systems
API RP 550	Manual on Installation of refinery instrument and control system
API 6D	Specification for pipe line valves, end closures and swivels.
API 527	Commercial seat tightness of safety relief valves with metal to metal seats

British Standard Specifications

BS 449 BS 1515	Structural Steel work materials of filters & scrubbers.
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4.0 SCOPE OF WORK:

4.1 Vendor's scope shall include complete design, engineering, manufacturing, integration, performance testing, inspection, FAT, supply, supervision of erection, testing & commissioning, & documentation of MRS skids as per the respective P & IDs, data sheets and other specifications enclosed herewith.

4.2 MRS units shall be comprised of the following items as per enclosed P & IDs, but not limited to (Refer design basis) the followings:

- i) One cartridge filters with differential pressure gauges, Safety Relief Valves, along with all accessories (as indicated in P & ID).
- ii) Two self actuated pressure control valve(s) with integral slam shut as indicated in respective P & ID's.(SSV with Pressure Control Valve, with Only Regulator(Active Regulator) for each stream is required.)
- iii) RPD meter with GSM modem for meter reading uncorrected and corrected volume and inlet pressure.
- iv) Regulator is Directing Acting Regulator.



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- 4.3 If any deviation from the specified technical specification, vendor should highlight in advance to BGL.
- 4.4 The data sheets provided by BGL along with the tender document should be filled up completely and enclosed with Technical BID.
- 4.5 All the connection in the skid where the pressure is more than 19 bar or more should be welded type.
- 4.6 Flanged end connections should be in size of 2", 4", 6", 8" only.
- 4.7 Vendor shall confirm that the MRS are suitable for outdoor installation in tropical climate with following conditions:
- Ambient temperature:-10 -60°C
 - Humidity: 100%
- 4.8 Vendor shall furnish Bill of Materials for the skid, and completeness of the Bill of Materials for the skid to meet the functional requirement of specifications of tender document is vendor's responsibility.
- 4.9 All materials to be used in construction of valves shall be suitable for Natural Gas services.
- 4.10 Vendor shall be responsible for the design of filters for the successful operation of the of the skids. Filter shall be cartridge type with 5 microns filtration capacity and shall be provided with a differential pressure gauge.
- 4.11 Flow direction shall be clearly marked on the meter body.
- 4.12 Accuracy Class – Q_{min} to $0.2Q_{max}$ – Less than 2%
- 4.13 All field mounted instruments shall be suitable for continuous working in outdoor installation, considering temperatures, humidity etc as per the data provided elsewhere in bid.

5.0 CERTIFICATION FOR CUSTODY TRANSFER

- 5.1 The vendor shall furnish the regulations of the certifying authority considered by him for custody transfer applications. If other instruments also need to be certified as per the regulations the same shall be complied with.

6.0 TESTING AND INSPECTION

All materials and equipment shall be factory tested before shipment in the presence of BGL's representative. No material shall be transported to site until all required tests have been carried out and equipment is certified as ready for shipment. Acceptance of equipment or the exemption of inspection or tests thereof, shall in no way absolve supplier of the responsibility for delivering equipment meeting the requirements of the specifications. Following tests shall be included.

- i) Material test certificate, hydrostatic test certificate for self actuated pressure control valves, slam shut valves, pressure relief valves, control valves, isolation valves and for



all piping /valves of skid.

- ii) Testing to demonstrate set-point accuracy and actuation time for integral Slam shut valves.
 - iii) Testing to demonstrate the set point accuracy for self actuated pressure control valves for the complete range of pressure and flow conditions.
 - iv) Calibration certificate for pressure relief for set pressure and all field instruments.
 - v) Seat tightness test for self actuated integral slam shut valves, pressure relief valves
 - vi) Test certificate for all field instruments such as PGs, TGs, DPGs, and PTs& TTs.
 - vii) Certificates from statutory body for limit switch being flame proof and weather proof.
 - viii) Skid piping material testing and NDT of welds as per PMS.
 - ix) Pneumatic Test report with air/N₂ at 12 bar(g).
 - x) Skid functional testing considering pressure regulation, limiting and safety characteristics.
- 6.2 Supplier shall perform the usual standard tests to maintain quality control Procedures. Purchaser shall submit these certificates for review before starting inspection. Supplier shall be responsible for testing and complete integration of the system.
- 6.3 Detailed procedures of test and inspection shall be submitted by the supplier for review before order and mutually agreed upon.
- 6.4 Inspection will be done by Owner/ Third Party Inspector at vendor's shop. For this inspection, labor, consumable, equipment and utilities as required shall be in vendor's scope.
- 6.6 Testing and inspection works have to be carried out at Vendor's works or works designated by the Vendor.
- 6.7 The Vendor must submit a certificate EN 10204 3.1 stating the relevant quality of the Supplied MRS

7.0 DOCUMENTATION

The Purchaser in vendor data requirement sheets indicates detailed drawings, data and catalogs required from the vendor. The required number of reproducible and prints should be dispatched to the address mentioned, adhering to the time limits attached. Final drawings from the vendor shall include dimensional details, weight, mounting details and any other special requirements etc. for the skids. All dimensions in general shall be in millimeters. Vendor shall furnish all manuals necessary to test, operate and maintain the system. The Vendor shall submit the following documents in Minimum 3 sets,



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- a. Performance specification and Test certificate.
- b. Certificate from DVGW or equivalent.
- c. Construction drawings, material specification and technical data sheets.
- d. Instructions and recommendations regarding installation, operation and maintenance of all the components of the unit.
- e. Spare part list.
- f. Material test certificate for all the pipe and fittings material.
- g. Hydrostatic and Pneumatic test certificates.

8.0 NAME PLATE

Each skid and all the instruments in the skid shall have a SS nameplate attached firmly to it at a visible place furnishing the following information:

- Tag number as per Purchaser's data sheets.
- Body sizes in inches and the valve Cv.
- Set pressure range or flow range.
- Flow range in Sm³/hr
- Rating
- Manufacturer's Name & model number
- On the MRS cabinet the following instructions shall be inscribed in ENGLISH.
 - ☞ Danger – Inflammable Gas
 - ☞ Bhagyanagar Gas Ltd
 - ☞ MRS NO –
- No smoking or spark flame or naked flame within a radius of 1.5 meters.

9.0 PAINTING

- 9.1 All exposed carbon steel parts to be painted shall be thoroughly cleaned from inside and outside to remove scale, rust, dirt and other foreign materials by wire brushing and sand blasting. Minimum acceptable standard in case of power tool cleaning shall be St. 3 and in case of blast cleaning shall be Sa 2-1/2 as per Swedish Standard SIS 0055900.
- 9.2 Non-ferrous materials, austenitic stainless steels, plastic or plastic coated materials, insulated surfaces of equipment and pre-painted items shall not be painted.
- 9.3 Stainless steel surfaces both inside and outside shall be pickled and passivity.
- 9.4 Machined and bearing surfaces shall be protected with varnish or thick coat of grease. Vendor to ship supply of primer and the paint to permit on-site repair of shipping damage (if any) to the factory coatings.
The direction of the flow of gas in the piping system of the skid shall be indicated on the pipes on the both streams.

10.0 SHIPPING

All threaded and flanged opening shall be protected to prevent entry of foreign material.

All the field mounted instruments shall be supplied loose to avoid damages during transportation. Skids shall bear proper shipping markings.



11.0 REJECTION

Vendor shall make his offer in detail, with respect to every item of the Purchaser's specification. Any offer not conforming to this shall be summarily rejected.

12.0 INFORMATION TO BE SUPPLIED WITH TENDER

The Vendor shall provide at the time of tendering a complete detailed engineering package in accordance with the vendor data requirement and shall include but not necessarily be limited to the same.

13.0 WARRANTY & DEFECT LIABILITY PERIOD

The Vendor shall as required by the Engineer and without additional cost to Owner (unless it can be shown that defects and deficiencies have occurred through Owner's negligence), amend repair or replace with new materials any defects or deficiencies in the plant and/or work which become apparent at any time or from time to time, within the period of twelve (12) months occurring from the date of commissioning or 18 months from the date of arrival of the material at site, whichever is earlier.

If the Vendor does not make good those defects or deficiencies in the plant and/or work within a reasonable time of having been given prior written notice by the Engineer to do so, the Engineer may arrange for such defects or deficiencies to be remedied by others at the risk and expenses of the Vendor, but without prejudice to any other rights which Owner has under the Contract in respect of those defects or deficiencies.

14.0 SCOPE FOR SUPPLY OF CABINET

This specification covers the basic requirements for the design, selection, requisitioning and the installation of instrumentation and control systems associated with equipment purchased as a "CABINET"

- 1) This cabinet doors will be lockable from outside
- 2) For all doors, side lowered sheets and roof sheet proper bracing's to be provided.
- 3) Wherever S.S nuts, Bolts will be provided are properly sealed to avoid entering of rain water etc inside canopy
- 4) Louvers will be provided 5% of Total Surface area.
- 5) All outer locks, handles to be provided at Man Working Height.
- 6) Godrej Cupboard Lock (Internal rod type)
- 7) Adequate Stiffener will be provided to avoid vibration
- 8) All hinges should b form inside of canopy
- 9) Canopy shall be CRCA 16 -gauge with Color Code of Silver (RAL 7001) with Powder Coating.



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S.No	Item	Skid contractor / Vendor	Laying Contractor / Client	Remarks
1	MRS (Package unit)	Supply of Package unit along with complete instrumentation and control systems equipment, metering Panel, Isolation valves , fittings, flanges, erection hardware, and vendor shall supervise the Installation, Commissioning of the Skid.	Commissioning of Package Skid under the supervision of metering vendor.	

A Cabinet should be provided to cover the MRS and to avert the ingress of water. It should be constructed with durable, corrosion resistant and non-inflammable materials and should have adequate strength so that it should not get damaged during handling, transportation and installation.

The cabinet should have free ventilation of at least 5% of the surface area. It should have front doors that open fully on either side or also lockable from outside. The rear doors are lockable form inside.

Regulator vents should protrude through the cabinet wall and terminate with flame arrestors.

15.0 Technical Details for Pressure Reduction Systems.

- 15.1 One manual actuated inlet double block and bleed integrated isolation valve. This valve is Floating Type Ball Valve (Full Bore is recommended) shall be equipped with a by-pass for line pressurization this by-pass shall be composed of one isolation valve and one manually operated control valve as per P & ID.
- 15.2 One Integral slam shut-off valve with monitor regulator, with the following characteristics:
- 15.3 The valve shall be gas actuated and (direct spring type) of fail closed type; with closing time of less than one second.
- 15.4 The valve shall have RF flanged
- 15.5 This valve shall be equipped with a manual reset and opening device;
- 15.6 Actuation of the valve shall be possible by maximum and minimum pressure;
- 15.7 The seat leakage specification shall be class 6 according to ANSI B16.104;
- 15.8 The accuracy of the trip settings shall be +/- 1%; the setting range shall be:
 - ☞ for the maximum set point, 90 to 150% of the maximum outlet pressure;
 - ☞ for the minimum set point, 10 to 40% of the maximum outlet pressure.
- 15.9 The valve shall control the outlet pressure;.
- 15.10 The maximum increase of the downstream pressure or “closing overpressure” shall not exceed 5% of the set pressure it shall be possible to modify the nominal flow by changing easily the internal restriction pieces of the valves,
- 15.11 The control range shall be from 10% to 120 % of the maximum outlet pressure, the accuracy of the regulated outlet pressure shall be +/- 1% of the set pressure for entire flow range.



16.0 DESCRIPTION OF METERING UNITS

TECHNICAL SPECIFICATION OF ROTARY POSITIVE DISPLACEMENT METER.

- a. Offered gas flow meter shall be approved for custody transfer of natural gas by NMI or PTB or Measurement Canada or Directorate of Legal Metrology (India) under provision of OIML or related guidelines. Vendors to attach complete certificate along with test certificate (if applicable) along with the offer.
- b. Detailed technical catalog from manufacturer of items must be attached with the offer.
- c. Flow meter specifications should be compliant to following directives or standards: a) OIML – R6, R32, TC8/SC8, b) ATEX 94/9/EC.
- d. Manufacturer's declaration that their products complies to directives / guidelines mentioned in type approval certificate for (custody transfer),
- e. All the flow meter will have to be calibrated with air at atmospheric condition. The calibration will have to be done by any NABL accredited agency authorized to carry out calibration of flow related to gas / air. The meter has to be calibrated at following flow rates – Q_{max} , $0.2Q_{max}$, Q_{min} .
- f. Ambient Temperature - 0 – 50 Deg. C
- g. Service Media - Natural Gas – Non-Corrosive
- h. Gas Temperature Range - 0 – 50 Deg.C
- i. Area Classification as per IEC-79 - Zone 2, IEC Gas Group I, T3
- j. Protection Class of enclosure - IP 65
- k. Pressure Tapping - 1 No. – 1/4" NPTF
- l. Temperature Tapping - 1No. – Thermo well SS316 to be provided with approx. 100 mm depth (not less than 50 mm) and 3/8" NPTF connection and suitable for insertion of 6 mm (OD) RTD probe.
- m. Repeatability - + 0.2 percent or better
- n. End Connections - Flanged, 150 RF, ANSI B – 16.5
- o. Facing and finishing of end connections - RF Smooth (125 – 200 AARH)
- p. Nominal diameter of end connection furnished with individual type of meter. 24
- q. Maximum Operating Pressure - 4 Bar (G)
- r. Pressure Range, Working – 4 -1.2 Bar (G)
- s. Read out index - 8 digit mechanical index non resettable.
- t. Output LF/HF pulses will be sent to Electronic Volume Correcting Device complying with EN 12405 for measurement of corrected volume of gas supplied. Gas flow meter should be compatible with such EVC Devices.
- u. Original Calibration / Error curve of RPD meter shall be submitted by Vendor along with metering skid.

17.0 DESIGN OF PRESSURE RELIF VALVE

- 17.1 Valve Design
- 17.2 The definitions of various terminologies used in purchaser's data sheets are as per clause 1.2 of API RP 520 part 1.
- 17.3 Unless specified otherwise, all pressure relief valves shall be full nozzle full lift type and all relief valves in thermal safety application shall be modified nozzle type.
- 17.4 For flanged pressure relief valves, the valve inlet and outlet size, the orifice designation and corresponding relieving area shall be as per API 526.



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- 17.5 Valve Sizing
- 17.6 Sizing shall be carried out using the formulae mentioned in the standards API RP 520 whenever the sizing code mentioned in the purchaser's data sheets refers to these
- 17.7 Discharge Co-efficient
- 17.8 For all valves in gas, vapor or steam service with design code as ASME Sec VIII or ASME Section I discharge co-efficient of 0.975 as per API 520 shall be used.
- 17.9 For the selected orifice letter designation and inlet and outlet size of the pressure relief valve, relieving area of the valve offered by vendor shall meet those in API-526.
- 17.10 Valve Construction
- 17.11 Unless otherwise mentioned, end connection details shall be as below: -
- ☞ Threaded end connections shall not be used.
 - ☞ Flanged end connections shall be as per ANSI/ASME B 16.5.
 - ☞ Flanged face finish shall be as per ANSI/ASME B 16.5. The face finish as specified in the data sheets, shall be as follows;
125AARH 125to200AARH
63 ARH 32 to 63 AARH
- 17.12 For flanged valves, inlet and outlet sizes and ratings and centre to flange face dimensions shall be in accordance with API-526. Dimensional tolerance shall be as mentioned therein.
- 17.13 Body drain with a plug shall be provided as a standard feature on every pressure relief valve.
- 17.14 For the pilot operated pressure relief valves, where vendor's standard model provides only semi nozzle design (i.e. the body is part of the inlet flow path), body material shall be of the same material as that of nozzle specified in purchaser's data sheets, as a minimum.
- 17.15 The term 'trim' covers all the parts of the valves exposed to and in contact with the Process fluid except for the body and bonnet assembly i.e. nozzle, disc, disc holder, stem etc.
- 17.16 Valves shall be of the full nozzle type of design with the exception and valves in thermal relief application.
- 17.17 Wherever stylizing of disc and nozzle has been specified, it stands for stelling of the seat joint and the entire disc contour, unless otherwise mentioned.
- 17.18 For high temperature application, the materials for the internals shall be selected to avoid galling.
- 17.19 Resilient seat, seals or o-rings wherever used shall be suitable for pressure and temperature conditions specified.
- 17.20 Gaskets wherever used shall be metallic type. Gaskets with asbestos filler or with asbestos bearing material shall not be used.
- 17.21 All valves shall be provided with a cap over the adjusting bolt. Cap shall be of either bolted type or screwed type as specified in the purchaser's data sheets.
- 17.22 Lifting lever shall be provided whenever the fluid to be relieved is steam and air or water above 65°C.
- 17.23 Valve spring shall be selected such that it can permit an adjustment of $\pm 5\%$ of the set pressure, as a minimum.
- 17.24 Carbon steel springs shall be made corrosion resistant through plating/coating as per manufacturer's standard design or as specified in the purchaser's data sheets.
- 17.25 The allowable tolerance in set pressures are as below:
- a) $\pm 0.14 \text{ kg/cm}^2 \text{ g}$ for set pressure upto and including $5 \text{ kg/cm}^2 \text{ g}$.
 - b) $\pm 3\%$ for set pressure above $5 \text{ kg/cm}^2 \text{ g}$.



17.26 Bonnet shall be of the closed type for all process applications in general.

**SPECIFICATIONS OF ELECTRONIC VOLUME CORRECTING
DEVICES (EVCD)**

1. Offered EVCD shall be approved for custody transfer of natural gas by NMI or PTB or Measurement Canada or Directorate of Legal Metrology (India) under provision of OIML or related guidelines. Vendors to attach complete certificate along with test certificate (if applicable) along with the offer.
2. Detailed technical catalog from manufacturer of items must be attached with the offer.
3. Item should comply to and must have type approval for :
4. Permission to use in potentially explosive atmosphere as per Atex directive 94/9/EC or equivalent IEC guidelines and
5. Compliance with electromagnetic compatibility to EMC directive 89/336/EEC or equivalent IEC guidelines.
6. Compliance with requirement of EN 12405.
Manufacturer's declaration that their product complies to directives / guidelines mentioned in type approval certificate for (custody transfer), Atex directives 94/9/EC, EMC directive and requirement of EN 12405.
Manufacturer's declaration should also be submitted that the product will be supported for next 10 years with respect to spares and services.
7. Internal battery operated EVC, suitable for mounting inside covered metering skid is required for measurement of corrected volume of gas on the basis of receiving pressure and temperature signals through built in sensors and LF signal from TFM (complying with EN 12261) or RPD meters (complying with EN 12480). Offered EVC must be compatible with RMG-TRZ03 TFMs, Instromet SMRI TFMs, Instromet IRM RPDs, Actaris Delta RPDs.
8. Ambient Temperature - 0 To 50 Deg. C
9. Service Media - Natural Gas - Non-Corrosive
10. Gas Temperature Range - (-) 5 To 50 Deg. C
11. Area Classification as per IEC-79 - Zone 1, Group IIB, T3
12. Protection Class of enclosure - IP 65
13. Product will be used in general open climate and medium level of vibration and shock, severity class - F
14. Measuring Temperature Range - (-) 10 Deg. C to 60 Deg.. C
15. Temperature will be measured through inbuilt RTD sensor, (3 wire / 4 wire PT 100 or PT 1000) encapsulated inside 6 mm SS316 thermowell and necessary cabling. Immersion length of the sensing well will be over 100 mm and with suitable adaptures for connecting to thermo well with 3/4inch NPTF thread. There should be provision to adjust the immersion depth of temperature sensor.
16. Measuring Pressure Range - 0.8 to 5 Bar (Absolute)
17. Pressure measurement is done through built in sensor and required cabling. The sensor is connected to pressure tapping point provided with above mentioned TFMs/RPDs. Tentative type of connector is 1/4 inch NPTM. Sensor must be capable of withstanding pressure upto 12 Bar without loss of its characteristics.
18. Accuracy of Pressure Measurement- (+/-) 0.2 percent of measured value or better.
19. Accuracy of Temperature Measurement - (+/-) 0.25 percent of measured value or better.



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20. Compressibility Calculation - a) At least one of the following : AGA8, Gross, AGA NX 19, ISO 12213 (any of the method), MGERG, SGERG.
21. Maximum gross error of flow calculation should be better than (+/-) 0.5 percent of measured value.
22. LF Pulse Input from any of the above mentioned TFM/RPD.
23. Power Supply - Lithium Battery 3.6 V, battery life should be min. 5 years. No setup data should be lost while changing battery. It should be possible to change battery in field.
24. Local Display - 2 Lines Alfa Numeric Display, LCD
25. Data Connectivity - 2 ports # Serial RS232/485, USB, Infrared ports are required for connecting to:
26. Scada System through GSM (GPRS) Modem using Modbus protocol.
27. 2nd port is required for connectivity to windows based Laptop for downloading/ uploading of data and software.
28. EVC will be capable of continuing with flow measurement even when downloading / uploading of data is going on.
29. Outputs Measurement and Display:
Corrected Flow Rate # Sm³/hr.
Corrected Totalized Volume # Sm³.
Pressure # Bar
Temperature # Deg. Celsius.
Un-corrected Flow Rate # m³/hr.
Un-corrected Total Volume # m³.
Yesterday Flow # SCM.
Todays Flow # SCM.
Alarm output for unit malfunctioning
Low Battery Alarm.
30. Other features of EVC:
31. Data security through password.
32. Parameters and programmed constants shall be stored in EEPROM / non-volatile memory.
33. Facility for entry and accessing live and stored data through external Laptop / PC.
34. Must have facility to store at least 180 days data (on hourly basis) for pressure, temperature, corrected and uncorrected flows with date and time stamping.
35. The stores data above shall be retrievable by using Laptops. Suitable dedicated port shall be available on the EVC for Laptops connection. Software required shall be supplied without any additional charges.
36. Gas composition can be entered either from key board or from Laptop.
37. Must have facility to store at least auditable record of 200 events for 90 days.
38. Base parameters for calculation of corrected gas flow :
39. Pressure : 1.01325 Bar
40. Temperature : 15 Deg. C
41. Preferably the EVCD should have provision to enter correction factor for compensating any (FWME) error found in calibration of gas flow meter (RPD or TFM).
42. EVC must be incorporated with three way valve at pressure tapping for online pressure calibration.
43. 2 sets of Connecting cable (connecting laptop with EVCs) must be supplied free of cost with total lot of EVC



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Specific Requirements for MRS:

Sr. No	Party's Offer		
A	Regulator (Active)	MRS	Type I
(i)	Capacity	(i) 500 SCMH flow at 4 to 2 bar(g) inlet pressure and 1.5 (g) out let pressure	
(ii)	Inlet pressure range	2.0 to 4 bar(g)	
(iii)	Outlet pressure range	1.2 bar(g))	
B	Shut off device pressure Set point	Excess +20% Lack-20%	
C	No.of Stream	Twin stream	
D	Stream selector	Required**	
E	Test Pressure		
(i)	Hydro satatic Test	12 bar (g)	
(ii)	Pneumatic Leakage test(Air/N2)	12 bar (g)	
F	Factory settings	4 bar (g)	

*Standard cubic meter per hour (SCMH) required is at 1.20 bar (g) outlet pressure & 28⁰C

** Automatic switch over from active stream to the hot stand by stream should take place in the event of shut down of the active stream for any abnormal reason. For achieving the specified automatic switch over from active to hot standby stream for any abnormal reason, NRV is required in each stream.



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Data Sheet

Sr No.	Specification	Requirements	Vendor's Offer	Deviation , if any	Remarks
I	Regulator (Active)				
1	Make	Vendor to specify			
2	Type / model	Vendor to specify			
3	Type	Direct acting			
4	Maximum operating temperature	45 deg C			
5	Minimum operating temperature	10 Deg C			
6	Regulation accuracy	+/- 2.5 % of set outlet pressure (G) or better			
7	Connection details	Flanged ends-ANSI150#.			
8	Material of construction				
a	Body	Steel ASTM A216 Gr.WCB or suitable material for withstanding pressure requirements			
b	Internals	SS or brass or suitable material for withstanding pressure requirements			
c	Diaphragm	Synthetic rubber or suitable material for withstanding pressure requirements			
9	Standards				
A	Regulator	EN 334:2005(+A1:2009)			
B	Components for gas supply	DIN 30690-1:2006/DIN 30690-2:1980 or equivalent			
II	Regulator monitor				
1	Make	Vendor to specify			
2	Type / model	Vendor to specify			
3	Type	Direct acting			
4	Maximum operating pressure	45 Deg C			
5	Minimum operating pressure	10 Deg C			
6	Regulation accuracy	+/- 2.5 % of set outlet pressure (G) or better			



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Sr No.	Specification	Requirements	Vendor's Offer	Deviation , if any	Remarks
7	Connection details	Flanged ends- ANSI 150#			
8	Material of construction				
a	Body	Steel ASTM A216 Gr.WCB or suitable material for withstanding pressure requirements			
b	Internals	SS or brass or suitable material for withstanding pressure requirements			
	Diaphragm	Synthetic rubber or suitable material for withstanding pressure requirements			
9	Standards				
A	Regulator	EN 334:2005(+A1:2009)			
B	Components for gas supply	DIN 30690-1:2006/DIN 30690-2:1980 or equivalent			
II	Relief valve protection	Against downstream over pressure at low flows			
1	Make	Vendor to specify			
2	Type / model	Vendor to specify			
3	Max. Capacity	1 % of stream fault capacity			
4	Standard	DIN 33821:2009 or equivalent			
III	Slam shut valve				
1	Make	Vendor to specify			
2	Type / model	Vendor to specify			
3	Body	Steel ASTM A216 WCB or suitable material for withstanding pressure requirements			
4	Accuracy	As per EN 14382:2009			
5	Connection	Flanged 150#			
6	Standard	EN : 14382:2009			
IV	Inlet / outlet valve				
1	Make	Vendor to specify			
2	Type / model	Vendor to specify			



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3	Standard	API 6D:2008			
4	Nominal size (inch / NB)	to be specified by vendor			
5	Pressure class	ANSI 150#			
6	Service	Natural gas			
7	Full bore				
8	End connection	Flanged, raised face			
9	Valve operator	Lever operated			
10	Material specification(equivalent)				
A	Body	ASTM A 216Gr.WCB			
B	Ball	ASTM A 182 Gr. F6/F 304			
C	stem	ASTM A 182 Gr. F6/F 304			
D	Stem seal	PTFE			
E	Stud bolts / nuts	ASTM A 193 Gr B7 / ASTM A 194 Gr 2H			
11	Other requirements				
A	A valve type / design	Ball valve, 1 piece construction/bolted 2 piece construction			
B	Ball mounting	Tri union mounted			
C	Stem design	Anti blow out type			
D	Anti static design	Yes			
E	Ball position indicator	Open/close indicator required			
F	Mechanical stops	For Open/close limits required			
G	Fire safe design	API 6 FA: 2008			
V	Isolation valves for pressure gauge & other small bore valves(less than 2")				
1	Make	Vendor to specify			
2	Type / model	Vendor to specify			
3	Standard	BS EN ISO 17292:2004			
4	Nominal size (inch / NB)	to be specified by vendor			
5	Pressure class	ANSI 800#			
6	Service	Natural gas			
7	Pattern	Full bore			
8	End connections	Socket welding ends			
9	Valve operation	Lever operated			



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Sr No.	Specification	Requirements	Vendor's Offer	Deviation , if any	Remarks
10	Material specification (equivalent)				
a	Body	ASTM A 105			
b	Ball	ASTM A 182 Gr. F6/F 304			
c	stem	ASTM A 182 Gr. F6/F 304			
d	Stem seal	PTFE			
11	Other requirements				
a	Valve type / design	ball valve, 1 piece construction/bolted 2 piece construction			
b	Stud bolts / nuts	A 193 Gr B7 / A 194 Gr 2H			
c	Ball mounting	Tri union mounted or floating type with full bore.			
d	Stem design	Anti blow out type			
e	Anti static design	Yes			
f	Ball position indicator	Open/close indicator required			
g	Mechanical stops	For Open/close limits required			
h	Fire safe design	API 607: 2005			
VI	Pressure gauge				
1	Make	Vendor to specify			
2	Type / model	Vendor to specify			
3	Standard	BS EN 837			
4	Type	Bourdon			
5	Mounting	Direct			
6	Dial size	100 mm			
7	Window material	Shatter proof glass			
8	Pressure elements	SS 316			
9	Accuracy	+/-1% scale range			
10	Range	0 -25 bar (inlet) & 0-6 bar (outlet) others may be as suitable			
VII	Filter				
1	Make	Vendor to specify			
2	Type / model	Vendor to specify			
3	Type	Cartridge			
4	Fineness	5 microns or finer			
5	Efficiency	99%			
6	Maximum working pressure	12 bar			



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Sr No.	Specification	Requirements	Vendor's Offer	Deviation , if any	Remarks
7	Connection details	Flanged end ANSI 150#			
VIII	Strainer				
1	Pipe work	As per ASME BPV code, section VIII:2007 API 5L or ASTM A 106 Gr. B			
2	Fittings ASTM A 234 GR WPB, ASTM A 105				
X	Painting				
1	Specification	BS 4800 canary yellow finish			
XI	General construction				
1	Skid mounted	Vertical type inside cabinet			
2	Noise level	AT 1 meter <80dBA			
3	Spares requirement	Separate prices for the spares listed at clause" to be quoted			
4	Commissioning	1) Procedures & specific instruction should be provided. 2) Commissioning assistance to be provided free of cost			
5	Relief valve vents to terminate	To terminate with flame arrestors at least 3 meters away from the ground level			
XII	Delivery period	10 weeks or better			
XIII	Third party inspection	<i>Separate rates should be quoted for third party inspection as per clause 'K'</i>			
XIV	Cabinet ,Skid Size & I/L & O/L Connections				
1	SKID size & cabinet size	Vendor to specify (length*width*height)			
2	Inlet / Outlet Connections	Side wise Entry			



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3	Mating Flanges(Inlet & Outlet Flanges to be supplied by Vendor as per design)	150 #			
4	Steel Pipe for inlet connectivity	Spool piece of 1.2 m length matching with TF fitting			

DATASHEET OF GSM MODEM

CLIENT :		-----	
PROJECT :		-----	
Model	:		10
		The GSM modem should be able to send the real time data like uncorrected volume and corrected volume, Pressure to Host computer including sending set alerts to 2 Mobiles. The offer must include all adapters, connectors, software etc.	
Certification	:	Intrinsically Safe , EExia IIB T4 & [EExia] IIB (Ta = -20 to +60 Deg.C)	11
Inputs:		Analog Input-01 no., Digital Input: 02 nos.	
Pressure Input:		Input range (gauge): 0-75 mbar, 0-100 mbar, 0-350 mbar, 0-1 bar, 0-2 bar, 0-12 bar Input range (absolute): 0-10 bar, 0-20 bar Above mentioned pressure ranges are as per network pressure. Recording Strategy: pressure sampled at 1 min rate, mean value stored at the recording interval. Accuracy/resolution: +/- 0.5% of range Pressure Port: Female 1/4" BSP taper thread	
Flow Inputs:		Pulses counted over and recorded at preset intervals.	
Serial Port / Fast Barrier:		Type: Full duplex, asynchronous serial port. Data Rate: 9600 bps	
GSM Modem:		Frequency 900 MHz, 1800 MHz.,1900 MHz Internal antenna	
Data Storage / Memory:		Type: Solid State, non-volatile. Size: 128k, allocated between channels as required (max 64k/channel)	
Clock:		Type: Crystal controlled calendar clock with leap year adjustment Accuracy: 100 seconds per month maximum error over operating temperature range Synchronization: option to synchronise clock to GSM network	
Supply:		Type: Internally powered by an intrinsically safe replaceable lithium battery pack Life: typical battery life is 5 years. Internal back up cell maintains logging and local communications during main battery change	
Recording:		Recording interval: programmable between 1 second and 1 Hour Data Storage: Rotating store or store until full	



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Alarm Dial-Out:	High/Low alarms independently programmable on each channel. Continuous, time window and profile modes profile modes of operation. Option to transmit data more frequently after an alarm.
Environmental:	Operating temperature: -20 to +50 Deg.C Protection Classification: Flow versions and absolute pressure versions: IP68 submersible to 1 mtr.
Connectors:	Flow Input: M12, 3 pole stainless steel Communications: M12, 4 pole, stainless steel
Mechanical:	Dimensions: Vendor To Provide

Data Sheet regarding RPD Flow Meter

1	Meter Size	G 160- 3"
2	Service	Natural Gas
3	Standard	OIML R32/ASME B 109.3/complying to EN 12480
4	Op.Pressure/ Max. Pressure	2.0 to 4.0 bar/ 12 bar
5	Operating Temperature Range	-20 to 50 deg C
6	Qmax	250 m ³ /hr.
7	Rangeability @ +/- 1 % error	1:70
8	Rangeability @ +/- 2 % error	1:145
9	Qmax/Qmin	145
10	Start rate/ Stop rate	0.1510/0.0960

	Capacity of MRS	500 SCM /hour @ 2.0 bar min. inlet pressure.
Note:-	Inlet Pressure	4 to 2 bar
	Out let Pressure	1.2 bar

Remark :- Sizing calculations of RPD Meter should be given in a data sheet.



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LIST OF RECOMMENDED THIRD PARTY INSPECTION AGENCY

S.NO	NAME OF VENDOR	ADDRESS	PHONE NO	FAX NO
1	Tata Projects Ltd	22,Sarvodaya Society, Nizampura,Baroda-390002	0265- 2392863	0265- 2785952
2	Indian Register of Shipping	52 AAdiShankaracharyaMarg Opp. Powai Lake, MUMBAI,400 072	91-22- 30519400	91-22- 25703611
3	Bax counsel InsepectionBureau Pvt. Ltd.	303, Madhava,BandraKurla Complex Bandra(E)-400051	022- 26591526,02 2-26590236	022-26591526
4	Bureau VeritasQI	The Leela Galleria, 5th floor, Andheri-KurlaRoad,Andheri(E), Mumbai-00059	022-26956300	022-26956309
5	Germanischer Lloyd	304-305, Anna Salai,Teyanampet,Chennai-600018	044-24320335	044-24328186
6	Velosi Certification Serrvices, Mumbai	Velosi Certification Services(l)PVT.LTD,212,SHIVKR UPA Complex Centre,OffGhokhaleRoad,Navpad	022-25376770	022-25426777
7	ABS Industrial Verification Ltd., Mumbai	404,Mayuresh Chambers,Sector- 11,CBD Belapur(E),Navi Mumbai- 400614	022-27578780 /1 12	022-27578784 / 5
8	Certification Engineers International Ltd.	EIL Bhavan, 5th floor,1,Bhikaji CammaPlace,New Delhi-110066	011- 26167539,26 102121	011-26101419
9	Dalai Mott MacDonald	501, Sakar -II, Ellisbridge, Ahmedabad-380006	079-26575550	079- 6575558
10	International Certification Systems	E-7,Chand Society, Juhu Road, Juhu, Mumbai-4000049	022-26245747	022- 22624816 7
11	SGS	SGS India Pvt. Ltd.,SGS House,4B,A.S.Marg,Vikhroli(W), Mumbai	022- 25798421 to 28	022- 25798431 to 33

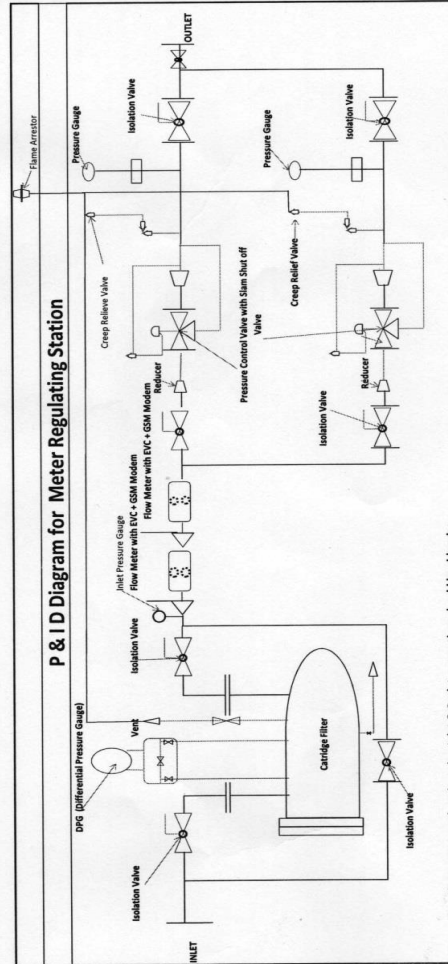


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SECTION – 11
SCHEDULE OF RATES (SOR)



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PROCUREMENT OF METER REGULATING SKID (MRS)

S.No	Location	Description	Qty	Basic Rate (Rs)	per unit Excise Duty (Rs)	per unit sales tax without "C" Form (Rs)	per unit freight upto project site by Road including transit insurance & all other taxes like octroi, entry tax etc (Rs)	Service Tax Applicable on Freight charges(on column 8) (Rs)	Per Unit FOT site (Rs)	Total Cost on FOT Basis (Rs)
					----- %	----- %			(5+6+7+8+9)	(4*10)
1	2	3	4	5	6	7	8	9	10	11
1	Hyderabad	Design, Manufacturing, fabrication, Testing and supply at owners designated site of the Dual Stream MRS with inlet pressure range 04-02 kg/cm ² (g) outlet pressure of 1.2 kg/cm ² (g) having Capacity of 500 SCMH flow requirement with G 160 - 3" RPD Meter and GSM Modem, able to send meter & pressure data to Host Computer e.t.c with required softwares.	1							

Note:

1. The Quoted Rates should include the Third Party Inspection Charges.
2. Only BGL approved Third Party Inspection Agencies are to be deployed.
3. The Rates should be in INR only.