GUJARAT GAS

TECHNICAL SCOPE FOR FABRICATION AND SUPPLY OF FILTER ASSEMBLY

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1. OVERVIEW

Gujarat Gas Limited, hereinafter referred to as GGL, is a Group Company of Gujarat State Petroleum Corporation Ltd., (Government of Gujarat undertaking) supplies natural gas to automobile, industrial, commercial and domestic consumers including CNG stations in various Geographical Areas as per authorisation from Petroleum and Natural Gas Regulatory Board (PNGRB). GGL procures the natural gas Filter Assembly and installs it in Industrial Metering Skid (IMS) for supplying natural gas to Industrial customers.

This specification is intended to establish the minimum technical requirements to fabricate and supply Filter Assembly for the pressure class ANSI 150.

The scope of document includes design, material selection, manufacture, supply, inspection, testing, marking, packaging, handling, despatch of Filter Assembly. The inspection type to comply with 3.1 inspection certificate as per EN 10204.

2. DEFINITIONS

In the Bid / Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires.

a. The **"GGL"** or **"Company"** or **"Owner"** shall mean GUJARAT GAS LIMITED (GGL), incorporated under company's Act 1956 having its registered office at Gujarat Gas CNG Station, Sector 5/C, ,Gandhinagar – 382006,Gujarat, hereinafter mentioned as "OWNER" which expression shall, unless repugnant to the context or meaning or meaning thereof, include all its successors, administrators, executors and assigns.

b. The **"Bid"** shall mean the Bid submitted by the CONTRACTOR for acceptance by the GGL. The **"Contract"** shall mean the agreement and all other documents between the company and the contractor for providing the services mentioned herein.

c. The **"Vendor"** shall mean the person or persons, firm or Company whose Bid has been accepted by GGL

d. The **"Supervisor" OR " work in charge"** shall mean the person deployed by the contractor for control & supervision of the work of his work force, as per the Scope of work mentioned and to receive instructions from OWNER's Engineer-In-Charge or his representative.

e. The **"GGL Engineer-In-Charge"** or" **GGL's representative"** shall mean the person designated as such by the Gujarat Gas Limited and shall include his authorized nominee or agent, provided however that the GGL's Representative to be so designated by GGL may be one person for certain aspects of this agreement and another person for other aspects of work covered by this Bid / Contract.

f. **"Stores"** shall mean the Companies Stores located at various location of Gujarat.

g. The **"Specification"** shall mean all directions, the various technical specifications, provisions attached and referred to in the Bid documents which pertain to the method and manner of performing the work or works to the quantities and qualities of the work or works and the materials to be furnished under the contract or works or works as may be amplified or modified by the COMPANY during the performance of Contract in order to provide the unforeseen conditions or in the best interests of the work or works. It shall also include the latest edition of relevant standard specifications including all addenda / corrigenda published before entering into the contract.

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h. **"Guarantee"** shall mean the period and other conditions governing the warranty / guarantee in respect of the work as detailed in section hereunder.

i. **"HSE"** shall mean Health, Safety & Environment.

j. **"GGL's Premises"** or **"Owner's Premises"** shall mean company's premise or its customer's premises where work is to be executed.

k. **"OEM"** shall mean Original Equipment Manufacturer

l. **"EIC"** shall mean Engineer In –Charge

3. REFERENCE CODES AND STANDARDS

Unless otherwise specified in this document or elsewhere in tender, the vendor shall take reference of latest version of following codes and standards.

PNGRB CGD Standard	:	GSR 612(E) Technical standard and specifications including safety standards for CGD networks (T4S-CGD)
PNGRB Pipeline Standard	:	Technical standard and specifications for Natural Gas Pipelines (T4S-Pipeline)
ASME B 31.8	:	Gas Transmission & Distribution piping systems
IGE/TD/13	:	Pressure regulating installations for Natural Gas, Liquefied Petroleum Gas and Liquefied Petroleum Gas/Air
ASME Sec VIII Division I	:	Boiler and Pressure Vessel Code: Rules for Construction of Power Boilers
ASME Sec IX	:	Boiler and Pressure Vessel Code: Qualification Standard for Welding, Brazing and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators
ASME Sec V	:	Boiler and Pressure Vessel Code: Non-destructive Examination

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4. DESIGN PROCESS PARAMETERS

Design and process parameters shall be considered as per the enclosed Annexure-15

5. PROCESS ENGINEERING FOR FILTER ASSEMBLY

The Filter Assembly consists of following and as per the enclosed P& IDs.

5.1 VENDOR SCOPE OF SUPPLY

Below materials are in vendor scope and same shall be supplied as per GGL approved datasheet, GGL Piping material specification and from GGL approved vendor-

- Ball Valves incl. inlet and outlet nozzle valves & drain pipe with root valves as per drawings
- Cartridge filters
- Differential pressure gauges along with guide pointer
- All necessary mountings & Accessories incl. Vent & drain pipe with root valves.
- All necessary Fasteners and Gaskets

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5.2 GGL SCOPE OF SUPPLY

- Nil

Note:-

- Inlet and outlet line sizes of Filter Assembly shall be sized considering Design Velocity mentioned in Annexure-15

PROCESS:

Gas Filtration: The system is having cartridge filter arrangement for single-stage filtration. The cartridge filter is designed/ provided with polyethylene/polypropylene/synthetic fibre elements for fine filtration up to 5µ with 99% efficiency.

6. VENDORS SCOPE OF WORK:

- The VENDOR shall be responsible for material selection, design, engineering, fabrication, FAT (Factory Acceptance Test), supply including loading and unloading at site, supply of documentation of Filter Assembly comprising of complete assembly, NDT report.
- VENDOR at no additional cost to GGL shall arrange the class room as well as field training for GGL O&M personnel.
- VENDOR shall be sole responsible for the material selection, design, engineering, and supply to the designated delivery point and performance testing of Filter as per the data sheet and specification furnished and taking into consideration successful operation, safety as per the established international standards.
- VENDOR shall perform all the tests as per the GGL approved QAP and comply to 3.1 inspection certificate as per EN 10204
- VENDOR shall perform Non-destructive tests as per ASME section V, ASME B 31.3 & GGL approved QAP.
- VENDOR shall be responsible for replacement/repairing if any part are found damaged during unloading at site or store with no cost to GGL.
- VENDOR shall provide all 'test certificate and inspection reports of supplied materials.
- VENDOR shall design in such a way that all equipment's & valves of the assembly shall be easily accessible for O&M.
- Functional testing shall be carried out as per the GGL approved functional testing procedure.
- Any soft material used shall be able to retain its functional properties for minimum period of 18 months from the date of dispatch.
- VENDOR shall adopt standard operating procedures for fabrication.
- VENDOR shall provide proper packaging of all equipment, piping, appurtenances and styrene packing to safeguard all components during transportation.

7. SPECIAL NOTES

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- Isolation valve (as root valve) is required for DPG.
- Lifting lugs shall be provided properly as per Centre of gravity. Lifting Procedure to be recommended by the Vendor and approved by GGL prior to dispatch.
- All impulse tubing shall be of Material SS 316.
- For equipment not manufactured by the Bidder, OEM accredited Certification is required for consent on service, supports, spare & maintenance. GGL prior approval is required for such case.
- Filter nozzle below 2" for DP Gauge shall be SW. Threaded nozzle shall not be provided.
- Vendor to furnish the cartridge capacities at various working pressure and differential pressures as per below prescribed table:

Material Code: -
Cartridge Type & Model:
Rated Filter Cartridge capacity: - 250/500/750/__/__/__/……SCMH

Working Pressure (barg)	DP- 0.1 bar (SCMH)	DP- 0.2 bar (SCMH)
0.5 Bar		
1.0 Bar		
1.5 Bar		
2.0 Bar		
2.5 Bar		
3.0 Bar		
3.5 Bar		
4.0 Bar		
4.5 Bar		
5.0 Bar		

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- Vendor to recommend the minimum radial gap between vessel shell's inner diameter and outer diameter of cartridge to give desired performance of filter.
- TPIA Inspection as per the QAP.
- Vertically orientation of filters is to be considered, unless it is specified by GGL preferred.
- All piping, pipe fittings & fasteners to be used are hot dip galvanized.
- Vender shall provide Copper jumper plate at all flange joints as per the dimensions given below-

Nominal Pipe Size (mm/Inch)	**150 Class Flange**		
	Copper plate length (mm)	**Copper Strip Width (mm)**	**Copper Strip Thickness (mm)**
15 (1/2")	115	25	3
20 (3/4")	120	25	3
25 (1")	120	25	3
40 (1 ½")	125	25	3
50 (2")	135	40	3

80 (3”)	155	40	3
100 (4”)	155	40	3
150 (6”)	160	40	3
200 (8”)	175	40	3
250 (10”)	180	40	3
300 (12”)	185	40	3

8. QUALITY ASSURANCE

The Vendor shall submit below tabulated documents after getting firm order from Owner for review and approval as per the requirement mentioned in the table. VENDOR shall be responsible for the submitting all drawing and technical documents including QAP to Gujarat Gas Limited for approval **within 15 days after placement of order**.

S. No.	Document	Requirement
Engineering		
1	P& I Diagram	GGL Approval
2	GA Drawing	GGL Approval
3	Skid Sizing Calculation Sheet for Inlet, Intermediate & Outlet, DP across the skid as well as major centre	GGL Approval
4	Bill of Material	GGL Approval
5	WPS/PQR	TPI Approval
6	Operation, Installation & Maintenance Manual	Information
Quality		
1	Quality Assurance Plan	GGL Approval
2	Hydrostatic test Procedure	GGL Approval
3	Hydrostatic test report	TPI approval
4	Pneumatic test report	TPI approval
5	Non Destructive examination	TPI Approval
Valves & Equipment’s		
1	Filter datasheet	GGL Approval
2	Filter drawing	TPI Approval
3	Design of filter vessels consisting sizing calculation, weld schedule, GAD, support details, QAP, Selection of cartridge, flow capacities chart on working pressure v/s pressure drop, etc.	TPI Approval
4	Detailed Cross Section Drawing for equipment’s like valves, etc.	GGL Approval
5	Filter cartridge selection	GGL Approval
6	Filter element drawing and capacity chart (each type)	Information
7	Name Plate	GGL Approval

- Prior to dispatching of materials, Vendor shall offer material to GGL/GGL representative for final acceptance test as per GGL approved QAP at their premise following for review of GGL/GGL representative at the time of final inspection at Vendor premise prior to dispatch of materials.
- The vendor is entirely responsible for the quality of the Filter Assembly manufactured by them.

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- VENDOR shall provide all testing report as mentioned in Quality Assurance Plan (QAP) for review during FAT. Also all tests to be certified out during FAT shall be witnessed by GGL/GGL representative.
- VENDOR shall provide WPS & PQR before commencement of fabrication job for approval.
- VENDOR shall procure bought out items from approved Vendors with Gujarat Gas Limited.
- **Third Party Inspection (TPA)** for Filter document approval is in vendor scope.
- **Third Party Inspection (TPA)** for in-process and final Inspection upto dispatch clearance of Filter Assembly as per GGL approved QAP and Technical Specification is in GGL scope. For any control test or examination required under the supervision of GGL/GGL representative, Vendor shall inform in writing ten (10) working days in advance about inspection date & place along with production schedule.

9. DOCUMENT HAND OVER

MANUFACTURER shall also submit the *1 sets hard copies and one (1) digital copy on Compact Disc* of following documents along with shipment

- Approved Bill Of Material;
- Approved P&I Diagram and GAD;
- Approved Cross Section Drawing;
- Approved Quality Assurance Plan;
- Material test certificates (physical property, chemical composition, make, heat treatment report, etc.) as applicable for items in nicely bound volumes.
- Traceability Records (including welding rods);
- Statutory test certificates, as applicable.
- WPS, PQT & WQT records wetted by TPIA;
- Dimensional Check Report;
- Non Destructive Test Report: RT, UT & MPT
- Pressure Testing Certificate: Hydrostatic & Pneumatic Test;
- Performance / Functional test Certificate;
- Painting Specification and Report;
- Inspection & test reports for all mandatory tests duly certified by Gujarat Gas Limited authorized TPI/representative after review/witness as per the applicable code as well as test reports for any supplementary tests, in nicely bound volumes.
- VENDOR shall provide Un-priced Purchase orders of bought out items along with all TCs.
- Mechanical Gauge / Instrument Calibration Certificates;
- Warranty Certificate;
- FAT Report;
- TPI approved Inspection release Note;
- Equipment Design, sizing & Calculation Documents;
- System Pressure Drop;
- Valve Documentation;

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- Filter Cartridge Details & specification;
- Equipment & Instrument Data Sheets;
- Operation and maintenance instruction manual & requirements;
- Original Equipment / instrument catalogues;
- Other information which MANUFACTURER seems necessary.
- Consolidate Exception / Deviation Report;
- FAT Procedure;
- Start-up and Commissioning Procedure;
- Summary report which includes all the test as per QAP, TC/Report number, Observed values of tests

10. WARRANTY PERIOD

- WARRANTY periods are defined as 12 Months from the date of commissioning of Filter Assembly (or) 18 months from the date of delivery of Filter Assembly.

Note:

- No additional charge will be paid during warranty period for supply and replacement of any item of Filter Assembly.

11. ANNEXURES

ANNEXURE-01 TYPICAL PIPING & INSTRUMENTATION DIAGRAM (P&ID)
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