



**TRIPURA NATURAL GAS COMPANY LIMITED
AGARTALA, INDIA**

**TENDER DOCUMENT FOR PROCUREMENT OF
NATURAL GAS DRIVEN TURBINE FLOW METER ALONG
WITH EVC**

DOMESTIC COMPETITIVE BIDDING

Tender No.: TNGCL/C&P/T.M – EVC/O&M/P(6031)/2022-23

VOLUME – II OF II

PREPARED AND ISSUED BY

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SPECIAL CONDITIONS OF CONTRACT



SPECIAL CONDITIONS OF THE CONTRACT (SCC)

GENERAL

The Special Conditions of Contract shall be read in conjunction with the General Conditions of Contract, Schedule of Rates and nay other documents forming part of contract, wherever the context so requires.

Notwithstanding the sub-division of the documents into these separate sections and volumes ever part of each shall be deemed to be supplementary to and complementary of every part and shall be read with in the Contract so far as it may be practicable to do so.

Where any portion of the General Conditions of Contract is repugnant to or at variance with any provisions(s) of the special Conditions of Contract, unless a different intention appears, the provisions of the special Conditions of Contract shall be deemed to override the provisions of the General conditions of contract and shall, to the extent of such repugnancy, or variations, prevail.

Wherever, it is mentioned in the specifications 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 included cost of such performance and provisions, so mentioned.

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.

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/FOI along with Statement of Agreed Variations.
- ii. Schedule oof 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

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.

In the absence of any specifications covering any material, design of work(s) the same shall be performed/ supplies/ executed in accordance with the standard engineering practice as per the instruction/ direction of Engineer-In-Charge, which will be binding on the Contractor.



1. SCOPE OF SUPPLY

The scope of supply shall include design, engineering, testing and supply of 04 nos. 2” G-65 Turbine Meter, 02 no. 3” G-250 Turbine Meter and 01 no. 4” G-400 turbine meter.

2. DELIVERY SCHEDULE

The delivery schedule will be 08 weeks from the date of PO/ LOA

3. PAYMENT TERMS

The terms of payment shall be as follows:

90% payment on receipt of goods at site along with submission of the following documents:

- i. Invoice in triplicate.
- ii. Inspection Release note by Owner or his appointed or approved agency.
- iii. GR/LR
- iv. Insurance cover note covering transit insurance
- v. A certificate from manufacturer that all items/ equipment under supply including its component or raw material used with manufacturing are new and confirm to the tender requirement.
- vi. Performance Bank Guarantee(s) of 3% of Contract Value.
- vii. Dispatch clearance by Purchaser
- viii. Beneficiary Bank Account Details

10% within 30 days after receipt and acceptance of goods at site along with submission of the following documents:

No Claim certificate

General Notes

- i. All efforts shall be made to release the payment within 30 days after receipt of relevant documents complete in all respect.
- ii. All bank charges incurred in connection with payments shall be to vendor's accounts.
- iii. All payment shall be made in Indian Currency.
- iv. No interest charge for delay in payments if any shall be payable to the owner.

4. INLAND TRANSIT INSURANCE FOR PROCUREMENT OF GOODS

Supplier will be required to submit documentary proof for the transit insurance before dispatch.

5. REPEAT ORDER

Repeat Order upto 50% contract value within 6 months from the date of basic order as per terms of bid document.

6. DELIVERY BASIS

Delivery basis to be on FOT site basis.

Scope of Work:

1. Design, Manufacturing, Testing, supply of turbine flow meter with Electronic Volume Corrector to the defined address of TGCL. Packaging & forwarding, Transit Insurance, Transportation, Custom Clearance, Loading/ Unloading is under the scope of vendor. In case of damaged material, TNGCL won't accept the materials and will reject it.
2. Third Part Inspection of all the Turbine Flow Meter with EVC will be under scope of vendor. Vendor shall submit the documents of the same during the time of supply.
3. The entire test certificates along with calibration certificate should be provided by the vendor.

TECHNICAL SPECIFICATION

Specification required for Turbine Gas Meter G-65

SI No	C	Specifications			
01	Regulated Operating	0.2 Bar (g) to 4.0 Bar (g), As per ANSI 150#			
02	Maximum Pressure	Max Working Pressure 8.0 Bar (g), and design pressure as ANSI 150			
03	Flange size, Max Flow (Qmax) and Rangeability	Meter model	Flange size (as per ANSI 150, 150#)	Max Flow (Qmax)	Rangeability
		G 65	2" (DN 50)	100 m3/hr	1:10
04	Medium	Natural Gas			
05	Meter body, rotor	Body: Ductile Iron/ Cast Steel EN-GJS-400-15 (GGG40) Rotor:			
06	Specific Gravity	0.57			
07	Approval	EN/OIML/MID certificate for the product offered conforming to EN 12261.			
08	Facing & Finish	ANSI 150#, RF SERR FINISH			
09	Material-Body	Compliant to PED 97/23/EC			
10	Bearing & other wetted parts	SS316			
11	Type	Meter should have such type design for easy mounting of EVC			
12	Accuracy	As per EN 12261 standard $\pm 2\%$ from Qmin to 0.2 Qmax and $\pm 1\%$ from 0.2 Qmax to Qmax			
13	Anti Temper	LF pulser/Reed switch should not be temperable. i.e. must be inductive type			
14	Temperature range	- 30 degree C to + 60 degree C as per ATEX/PED			
15	Straightening vanes- Type	REQD- INTEGRAL			
16	Output	One Inductive type			
17	Intrinsically Safe	YES, Ex II 1/2 G Ex ka IIC T5			
18	Mounting	ON METER			
19	Totalizer	9 DIGIT			
20	Flow direction	Left to Right			
21	Thermowell	Should be in-built			
22	Lubrication/ Oil Pump	Should be in-built			

23	Related Certificates to be submitted	(a) EN type approval certificate for Turbine Meter from authorized certifying body (b) EN/ OIML/MID certificate issued by PTB, Nmi or equivalent for Turbine Meter. (c) 3.1 Material Certification (d) Test & Calibration certificate issued by PTB, Nmi or equivalent authority for individual meters (e) Technical documents, brochures (f) User manual and supporting documents
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Specification required for G-160 and G-250 Turbine Gas Meter

Sl. No	Criteria	Specification
1	Regulated Opening Pressure	0.5 Kg/cm ² (g) to 1.5 Kg/cm ² (g), As per ANSI 150#
2	Maximum Pressure	Maximum working pressure 8 Kg/cm ² (g) and design pressure
3	Maximum Flow	400 M ³ /Hr
4	Rangeability	1:30 for G-250 1:20 for G-400
5	Medium	Natural Gas
6	Meter Body, Rotor	Body: Ductile Iron/ Cast Steel EN-GJS-400-15 (GGG40) Rotor: Polyacetal / Aluminum
7	Specific Gravity	0.57
8	Line Size/ End Connection	DN 80 for G160 As per ANSI 150, 150#
9	Approval	EN/ OIML/ MID certificate for the product offered conforming to EN 12261
10	Facing & Finish	ANSI 150#, RF SERR FINISH
11	Material-Body	Compliant to PED 97/23EC
12	Bearing & other wetted parts	SS316
13	Model	Electronic Volume Corrector (EVC)
14	Type	Meter should have such type design for easy mounting of EVC
15	Accuracy	As per EN 12261 Standard $\pm 2\%$ from Q _{mm} to 0.2 Q _{max} and $\pm 1\%$ from 0.2 Q _{max} to Q _{max}
16	Anti Temper	LF pulser/Reed Switch should not be temprable i.e. must be inductive type
17	Temperature Range	- 30 degree C to + 60 C as per ATEX/ PED
18	Straightening Vanes- Type	REQD-INTEGRAL
19	Output	One inductive type
20	Intrinsically safe	YES, Ex II ½ G Ex ka IIC T5
21	Mounting	ON METER
22	Totalizer	9 DIGIT
23	Flow Direction	Left to Right
24	Thermowell	Should be in-built
25	Lubrication/ Oil pump	Should be in-built

26	Related Certificates/ documents	(a) EN type approval certificate for Turbine Meter from authorized certifying body (b) EN/ OIML/MID certificate issued by PTB, Nmi or equivalent for Turbine Meter. (c) 3.1 Material Certification (d) Test & Calibration certificate issued by PTB, Nmi or equivalent authority for individual meters (e) Technical documents, brochures (f) User manual and supporting documents
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Specification required for Electronic Volume Corrector for Turbine Gas Flow Meter

SI No	Criteria	Specifications
01	Make & Model	Specification Requirement
02	Standard	Offered EVC must be approved by NMI as per EN12405 for custody transfer application of Natural Gas. According to European regulation, the EVC PTZ bears the CE marking and complies with the following directives: 94/9/EC for potentially explosive atmospheres directive & 89/336/EEC for electromagnetic directive
03	Approval	Vendor to furnish type approval & certificates details
04	Power supply option	Internal battery operated
05	Service Media	Natural Gas- non corrosive
06	Area classification	As per IEC 79: Zone I, Group IIC, T4 (without internal modem) and Group IIB T3 (with internal modem)
07	Protection Class	Enclosure: IP 66
08	Temperature Sensor (External Type)	Temperature shall be an external 4 wire Pt1000/3 wire Pt1000 sensor in accordance with IEC/EN60751 standard. The sensor, equipped in a stainless steel tube having an IP67 protection degree, can be inserted into a thermowell of 6 mm diameter (recommended 1/3 to 2/3 of the ID of the pipe). The sensor is provided with a cable of length 2.5m. Its operating range is (-) 40 to (+) 70 deg C.
09	Pressure Sensor (External Type)	Measuring pressure range 0.2 to 10 bar (a) with an IP66 protection level as per EN60529. The sensor connects via a 2.5 cable to a pressure tapping point provided in the TFM or RPD meter through a G 1/4 " BSP (M) Connector. The sensor can withstand according EN12405 an overpressure of 1.25 times its maximal pressure [i.e. up to 12.5 bar (a)] for 30 minutes.
10	Pressure sensor rangeability	1:11 or better

11	PTZ compressibility Factor	Following formula should be programmable: SGERG 88, AGANX 19 (std.), AGANX 19 (modified), AGA 8 Gross method 2, 16 coefficients (table of Z), AGA 8 detailed and fixed compressibility value.
12	Accuracy	According to EN 12405, the EVC must have accuracy on conversion within +/- 0.5% at reference conditions. Typical accuracy is better than 0.20%.
13	Inputs	The EVC accepts LF pulse inputs from the TFM
14	Power supply option	The EVC should be powered by a lithium battery pack, which is certified for intrinsic safety and has an autonomous life of 5 years under typical use. The battery pack can be changed in hazardous area without interrupting the normal operation of the device.
15	Display	The EVC should have a large graphical LCD, which allows display of all metrological and alarm status, iconic indications, compressibility ratio, conversion factor, measured volume and converted volume.
16	Communication Port	Two communications port
		Serial RS232 port, which allows either a local communication with a laptop or a PC through an intrinsic safe isolation OR a remote communication to SCADA interface through GSM modem using Modbus protocol.
		Optical port, which allows local communication with a laptop or PC via a Windows based software for uploading/ downloading of data or software.
17	Operation during communication	The EVC should be able to perform its metrological function even while the communication is in progress & it has memory to store the data pm Hourly, Daily & Monthly basis
18	Parameters to display	Corrected flow rate in sm ³ /hr, Nm ³ /h
		Corrected totalized volume in sm ³ , Nm ³
		Pressure in bar
		Temperature in deg C
		Uncorrected flow rate in sm ³ /hr, Nm ³ /h
		Uncorrected total volume in m ³
		Alarm output for unit malfunctioning
		Low battery alarm
19	Data to store	Monthly log last 24 months minimum
		Daily Log 120 days Minimum
		Hourly log 1440 Hrs Minimum
		Interval log up to 5900 records
		Event log for 600 events
20	Data Protection	Hardware lock & password access should be available
21	External Sealing provision	Should be available
22	Related Certificates/ documents required	(a) EN/ MID/ ATEX certificate issued by PTB, Nmi or equivalent authority for EVC (b) Technical documents, brochures (c) User manual and supporting documents