



**HPOIL GAS PRIVATE LIMITED  
(A Joint Venture of HPCL & OIL)**

**SUPPLY OF CNG DISPENSERS AT KOLHAPUR GA  
COMMERCIAL VOLUME**

**Tender No.: HOGPL/2022-23/C&P/018**

**Date: 14.11.2022**

## **INDEX**

<b>SL.NO.</b>	<b>DESCRIPTION</b>
<b>NO</b>	
1.0	MATERIAL REQUISITION
2.0	SCOPE OF WORK
3.0	TECHNICAL SPECIFICATION
4.0	DATA SHEET
5.0	QAP
6.0	VENDOR DATA REQUIREMENT
7.0	LIST OF RECOMMENDED TPIA
8.0	APPROVED VENDOR LIST
9.0	CHECKLIST

**CITY GAS DISTRIBUTION PROJECT  
OF  
KOLHAPURDISTRICT**



**HPOIL GAS PRIVATE LIMITED (HOGPL)**

**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

**MATERIAL REQUISITION – CAR DISPENSER AND COMBO  
DISPENSER (CAR CUM BUS DISPENSER)**




**CITY GAS DISTRIBUTION PROJECT OF  
& KOLHAPUR DISTRICT**

---

**CONTENTS**

1. INTRODUCTION .....	3
2. DEFINITION.....	3
3. DOCUMENT PRECEDENCE .....	4
4. SCOPE OF SUPPLY & SERVICES.....	4
5. INSPECTION .....	8
6. SPECIAL INSTRUCTIONS TO BIDDERS .....	8
7. INFORMATION/ DOCUMENTS/ DRAWINGS TO BE SUBMITTED BY SUCCESSFUL BIDDER.....	9
8. INSTRUCTION TO BIDDER.....	10
9. LIST OF ATTACHMENTS .....	11



---

## **1. INTRODUCTION**

Hindustan Petroleum Corporation Limited (HPCL) is a Central Public Sector with a Navratna Status, and a Forbes 2000 and Global Fortune 500 company incorporated in 1974 engaged in refining and marketing of petroleum products with its headquarter in Mumbai, Maharashtra.

Oil India Limited (OIL) is a premier Indian National Oil Company engaged in the business of exploration, development and production of crude oil and natural gas, transportation of crude oil and production of LPG founded in 1959 with its headquarters in Duliajan, Assam.

A JVC has been incorporated in the name of HPOIL GAS PRIVATE LIMITED, which has received the authorization from PNGRB vide letter PNGRB/CGD/BID/8/2018/GA/District dated 22/02/2018 to Lay, Build and Operate City Gas Distribution networks in and vide letter PNGRB/CGD/BID/8/2017/BEC/GA- Kolhapur dated 06/03/2018 to Lay, Build and Operate City Gas Distribution networks in Kolhapur District.

HPOIL GAS PRIVATE LIMITED (HOGPL) has engaged (herein after referred as or "QSPL") as a consultant, for CGD project for Geographical Area (GA) of District and Kolhapur District.

## **2. DEFINITION**

Where used in this document, the following terms shall have the meanings indicated below, unless clearly indicated by the context to this order

PROJECT	:	City Gas Distribution Project of Kolhapur District
OWNER/COMPANY	:	HPOIL GAS PRIVATE LIMITED (HOGPL)
BIDDER/SUPPLIER	:	The party, who supplies equipment to the OWNER / COMPANY



### 3. DOCUMENT PRECEDENCE

It shall be the responsibility of the MANUFACTURER/ VENDOR to inform the PURCHASER of any errors, ambiguities, inconsistencies, discrepancies or conflict of information that may be found to exist in any document, specification or drawing submitted by the PURCHASER.

In case of conflict, the order of precedence shall be as follows:

- a. Material Requisition
- b. Data Sheets
- c. Technical Specifications
- d. Basic Documents
- e. Codes and Standards

As a general rule in the event of any discrepancy between technical matter and local laws/ regulations (and documents above listed) the most stringent shall be applied.

MANUFACTURER / VENDOR shall notify PURCHASER of any apparent conflicts between MR, specifications, related datasheets, any code and standards and any other specifications noted herein. (Resolution and/ or interpretation precedence shall be obtained from PURCHASER in writing before proceeding with the design/ manufacturer or completion of services.)

### 4. SCOPE OF SUPPLY & SERVICES

Design, procurement of materials and bought out components, manufacture, assembly at shop, inspection, testing at manufacturer's works, packing (if any), delivery of Dispenser, supply of all Pre-commissioning, Commissioning and Mandatory spares & documentation as per the enclosed engineering standard, specifications and data sheets etc. attached or referred.

#### FOR DELIVERY LOCATION AT KOLHAPUR, MAHARASHTRA

1.0	CAR DISPENSER		
Item S.No.	Item Description	Unit	Quantity
1.1	Design, detail engineering, manufacturing, assembly, factory testing, <b>Supply of Car Dispenser dual arm with 15 Kg/min flow rate</b> including packaging, insurance, handling transportation of Dispenser, loading and unloading at sites, documentation etc. and providing all related services including installation, integration, site acceptance testing, trial run and commissioning, commissioning spares, all drawings ,	Nos.	06



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

	documents and licensed software & hardware,converters, cables etc. conforming to data sheet, scope of work, Technical Specification and other relevant document attached with MR for CNG Dispenser, with TPIA inspection. [Including Onsite Training of three (03) Purchaser's Personnel for Max. 3 (three) days for CNG Dispenser]		
1.2	Lump sum Comprehensive Annual Servicing, Repair & maintenance charges per CNG dispenser for <b>1st year after warrantee</b> period inclusive of manpower, spare, consumables etc. AMC will consist of two parts a. Preventive maintenance at regular interval by OEM/authorized contractor as per recommendation of OEM b. Break down maintenance as and when required within AMC by OEM. Equipment downtime shall not be max 08 hrs from the time intimated via telephone/Email.	Machine Months	72
1.3	Lump sum Comprehensive Annual Servicing, Repair & maintenance charges per CNG dispenser for <b>2nd year</b> after warrantee period inclusive of manpower, spare, consumables etc. AMC will consist of two parts a. Preventive maintenance at regular interval by OEM/authorized contractor as per recommendation of OEM b. Break down maintenance as and when required within AMC by OEM. Equipment downtime shall not be max 08 hrs from the time intimated via telephone/Email.	Machine Months	72
<b>2.0</b>	<b>COMBO DISPENSER (CAR CUM BUS DISPENSER)</b>		
<b>Item S.No.</b>	<b>Item Description</b>	<b>Unit</b>	<b>Quantity</b>
2.1	Design, detail engineering, manufacturing, assembly, factory testing, <b>Supply of Car cum Bus Dispensers, with Dual arm, capacity 15 kg/min and 75 kg/min flow rate</b> respectively including packaging, insurance, handling transportation of Dispenser, loading and unloading at sites, documentation etc. and providing all related services including installation, integration, site acceptance testing, trial run and commissioning, commissioning spares, all drawings , documents and licensed software & hardware,converters, cables etc. conforming to data sheet, scope of work, Technical Specification and other relevant document attached with MR for CNG Dispenser, With	Nos.	01



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

	TPIA inspection [Including Onsite Training of three (03) Purchaser's Personnel for Max. 3 (three) days for CNG Dispenser]		
2.2	Lump sum Comprehensive Annual Servicing, Repair & maintenance charges per Combo CNG dispenser for <b>1st year</b> after warrantee period inclusive of manpower, spare, consumables etc. AMC will consist of two parts a. Preventive maintenance at regular interval by OEM /authorised contractor as per recommendation of OEM b. . Break down maintenance as and when required within AMC by OEM. Equipment downtime shall not be max 08 hrs from the time intimated via telephone/Email	Machine Months	12
2.3	Lump sum Comprehensive Annual Servicing, Repair & maintenance charges per Combo CNG dispenser for <b>2nd year</b> after warrantee period inclusive of manpower, spare, consumables etc. AMC will consist of two parts a. Preventive maintenance at regular interval by OEM/authorised contractor as per recommendation of OEM b. Break down maintenance as and when required within AMC by OEM. Equipment downtime shall not be max 08 hrs from the time intimated via telephone/Email	Machine Months	12

**5. INSPECTION**

Vendor shall appoint anyone of the following TPIA furnished in Doc no-1007-00-ME-TPIA-3007, for inspection purpose.  
Apart from inspection by TPIA, inspection shall also be performed by Client representative, as set out and specified in the codes and particular documents forming this MR.

TPIA charges shall be paid by the Manufacturer/Supplier for all procured items as required.

**6. SPECIAL INSTRUCTIONS TO BIDDERS**

6.1 Bidder to note that no correspondence shall be entered into or entertained after the bid submission.





**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

- 6.2 Bidder shall furnish quotation only in case he can supply material strictly as per this Material Requisition and specification/data sheets forming part of Material Requisition.
- 6.3 If the offer contains any technical deviations or clarifications or stipulates any technical specifications (even if in line with MR requirements) and does not include complete scope & technical / performance data required to be submitted with the offer, the offer shall be liable for rejection.



- 
- 6.4 The submission of prices by the Bidder shall be construed to mean that he has confirmed compliance with all technical specifications of the corresponding item(s).
  - 6.5 Bidder must submit all documents as listed in checklist along with his offer.
  - 6.6 The Supplier shall deliver a Certificate confirming to EN 10204 3.2 stating the quality, the mechanical properties, the chemical analysis, the process of manufacture and the making of the Dispenser.
  - 6.7 All materials shall be delivered to consortium stores/sites of HOGPL. Detailed addresses will be furnished later on.

**7. INFORMATION/ DOCUMENTS/ DRAWINGS TO BE SUBMITTED BY SUCCESSFUL BIDDER**

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

- 7.1 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.
- 7.2 Material test certificates (physical property, chemical composition, make, heat treatment report, etc.) as applicable for items in nicely bound volumes.
- 7.3 Statutory test certificates, as applicable.
- 7.4 Filled in Quality Assurance Plan (QAP) for Purchaser's/ Consultant's approval. These QAPs shall be submitted in four copies within 15 days from LOI / FOI.
- 7.5 WPS & PQR as required.
- 7.6 Other Drawing & document as specified in vendor data & drawing requirements as with Tender.
- 7.7 Detailed completion schedule activity wise (Bar Chart), within one week of placement of order.
- 7.8 Weekly & fortnightly progress reports for all activities including procurement.
- 7.9 Purchase orders of bought out items soon after placement of order.



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

- 
- 7.10 Manufacturer's drawings/documents for bought out items, for Purchaser's / Consultant's approval as per Vendor drawing and data requirement schedule document attached with this MR.
- 7.11 Manufacturer related information for design of civil foundation & other matching items within 4 weeks of FOI / LOI.
- 7.12 All approved drawings / design calculation / maintenance & operating manual documents as well as inspection and test reports for Owner's / Consultants reference / record in nicely category-wise bound volumes(in Hard Copy) and in Soft Copy separately.
- 7.13 Filled in data sheet for each instrument tag after sizing, range selection, proper selection of materials etc. shall be bidder's responsibility. Any necessary change required later for meeting the specification shall be done by the vendor without any price or delivery implications.
- 7.14 Operation and maintenance manuals – 3 sets all in original for each dispenser. The instruction manual should describe in details the construction and recommended procedure for maintaining, operating and troubleshooting. Of the dispenser should also include cross-sectional drawings, exploded views of all spare parts along with part nos., quantity installed per dispenser. The manual should provide detailed catalogues of all bought out items.
- 7.15 Calibration certificates for all measuring and protection devices (e.g. Mass flow meter, pressure transducer and pressure gauges)
- 7.16 Test records of mechanical running, performance test
- 7.17 Complete wiring diagram of internal wiring of dispenser.
- 7.18 Software (logic diagram) of dispensers on CD-ROM with suitable communication Protocol for communication with dispenser in order to change dispenser parameters if required.
- 7.19 A list of documents to be furnished along with supply.

**8. INSTRUCTION TO BIDDER**

- a) Dispenser (including all components) shall be designed and suitable for Natural Gas and shall comply the Technical specification of Car Dispenser & Combo Dispenser.
- b) All physical and mechanical testing shall be in accordance with the requirements of connected line pipe.
- c) Delivery of Dispensers shall be at M/s HOGPL designated storage yard & at designated location in Kolhapur GA which shall be informed by HOGPL at the time of delivery time and shall be in the Bidder's scope.
- d) The submission of prices by the bidder shall be construed to mean that he has confirmed compliance with all technical specifications of the



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

corresponding item(s).

- e) If the offer contains any technical deviations or clarifications or stipulates any technical specifications (even if in line with MR requirements) and does not include complete scope & Technical/ Performance Data required to be submitted with the offer, the offer shall be liable for rejection.
- f) Bidder must submit all documents/ drawings/ calculations as specified in relevant specification along with his offer and after award of order.
- g) Purchaser's inspector reserves the right to perform stage wise inspection and witness tests, as indicated in specification of Dispenser / ITP at manufacturer's works prior to shipment. Manufacturer shall give reasonable notice of time and shall provide without charge reasonable access and facilities required for inspection to the purchaser's inspector.



Inspection and tests performed/witnessed by purchaser's inspector shall in no way relieve the manufacturer's obligation to perform the required inspection and test.

- h) All drawings, instructions, catalogues, etc. shall be in English language and all dimensions shall be metric units.

## 9. LIST OF ATTACHMENTS

S.No	Name of Document
1	SCOPE OF WORK - CNGDISPENSER
2	DATA SHEET - CNGDISPENSER
3	TECHNICAL SPECIFICATION - CNG DISPENSER
4	INSPECTION AND TEST PLAN (QAP) FOR CNGDISPENSER
5	VENDOR DRAWING & DATA REQUIREMENTS
6	LIST OF RECOMMENDED TPIA
7	VENDOR LIST FOR BOUGHTOUT ITEMS
8	CHECK LIST - TECHNICAL
9	COMPLIANCE STATEMENT
10	DEVIATION SHEET
11	DRAWINGS & DOCUMENTS
12	INSTRUCTION TO BIDDER
13	LIST OF SPARES
14	REFERENCE LIST

# **HPOIL GAS PRIVATE LIMITED (HOGPL)**

## **CITY GAS DISTRIBUTION PROJECT OF DISTRICT & KOLHAPUR DISTRICT**

**SCOPE OF WORK- CAR DISPENSER AND COMBO DISPENSER (CAR  
CUM BUS DISPENSER)**



---

## **CONTENTS**

1.	<u>INTRODUCTION</u> .....	<u>3</u>
2.	<u>DEFINITION</u> .....	<u>3</u>
3.	<u>SCOPE OF SUPPLY</u> .....	<u>3</u>
4.	<u>CODE &amp; STANDARDS</u> .....	<u>7</u>
5.	<u>DESIGN &amp; ENGINEERING FOR DISPENSER</u> .....	<u>8</u>
6.	<u>SAFETY</u> .....	<u>8</u>
7.	<u>CHECK LIST: CNG DISPENSER PACKAGE</u> .....	<u>9</u>
8.	<u>Scope of work of comprehensive annual maintenance (CAMC)</u> .....	<u>13</u>



## **1. INTRODUCTION**

Hindustan Petroleum Corporation Limited (HPCL) is a Central Public Sector with a Navratna Status, and a Forbes 2000 and Global Fortune 500 company incorporated in 1974 engaged in refining and marketing of petroleum products with its headquarter in Mumbai, Maharashtra.

Oil India Limited (OIL) is a premier Indian National Oil Company engaged in the business of exploration, development and production of crude oil and natural gas, transportation of crude oil and production of LPG founded in 1959 with its headquarters in Duliajan, Assam.

A JVC has been incorporated in the name of HPOIL GAS PRIVATE LIMITED, which has received the authorization from PNGRB vide letter PNGRB/CGD/BID/8/2018/GA/District dated 22/02/2018 to Lay, Build and Operate City Gas Distribution networks in and vide letter PNGRB/CGD/BID/8/2017/BEC/GA-Kolhapur dated 06/03/2018 to Lay, Build and Operate City Gas Distribution networks in Kolhapur District.

HPOIL GAS PRIVATE LIMITED (HOGPL) has engaged (herein after referred for CGD project for Geographical Area (GA) of District and Kolhapur District.

## **2. DEFINITION**

Where used in this document, the following terms shall have the meanings indicated below, unless clearly indicated by the context to this order:

PROJECT	:	City Gas Distribution Project of Kolhapur District
OWNER/COMPANY	:	HPOIL GAS PRIVATE LIMITED (HOGPL)
BIDDER/SUPPLIER	:	The party, who supplies equipment to the OWNER / COMPANY

## **3. SCOPE OF SUPPLY**

This document covers the details of supply of car Dispenser and Combo (car cum bus dispenser). All works and clauses of this document shall be applicable unless specifically mentioned otherwise. This document shall be read in conjunction with





Data Sheets, Technical Specification, Codes & standards, Drawings and other documents forming a part of the MR Document.

Supply of dual arm car dispenser having flow capacity of minimum 15 kg/min and supply of combo dispenser (car cum bus dispenser) with dual arm having flow capacity of minimum 75 kg/min for bus and 15 kg/min for car under discharge to atmospheric condition.

Each CNG Dispenser shall have following as a minimum:

### 3.1 Car Dispenser:

- a) Two CNG flexible electrically conductive twin (fill & vent) hose, with both hoses fitted with NGV-I for filling of vehicles. However, both the hoses shall be suitable to be attached with NZS-5425 nozzles. **Supply of NZS 5425 nozzles is included in bidders' scope.** Vendor shall include the supply of 3-way valve with each hose for filling & venting of gas. Vendor shall also include supply of Breakaway Coupling, suitable for NGV Industry, in the hose. Hose shall be 3/8" ID 5000 psig, at least 3m long. Vendor shall demonstrate the function of breakaway coupling during performance test. The dispensers shall be designed in such a way that free movement of hoses is possible, by spring loaded high mast.
- b) Two numbers of Coriolis true mass flow metering system.

### 3.2 Combo (car cum bus) Dispenser:

- a) Two CNG flexible electrically conductive twin (fill and vent) hoses with **bus side hose fitted with NGV-2 for filling of the vehicles and car side fitted with NGV-1 for filling of the vehicles.** Vendor shall include the supply of 3-way valve with each hose for filling & venting of gas. Vendor shall also include supply of Breakaway Coupling, suitable for NGV Industry, in the hose. Bus side hose should be 1/2" ID & Car side 3/8" ID working pressure 5000 psig and at least 4 m long for Bus side and at least 3 m long for car side. Vendor shall demonstrate the function of breakaway coupling during performance test. The dispensers shall be designed in such a way that free movement of hoses is possible, by spring loaded high mast.
- b) Two number of Coriolis true mass flow metering system.

- 3.3 Three rows of liquid crystal backlit display for night viewing showing total sale in Rupees (00000.00), quantity of gas sold in kg (00000.00), unit price of CNG in Rs/kg (000.00) for each hose on either side of the dispenser (total two sets of three rows for each Dispenser, one display for each side). The whole dispenser electronic unit shall have IP - 65 protections and display cabinet shall have IP 54 protection.



- 3.4** Non-resettable and non-volatile totalizer up to 999999.99 for total CNG sold in Kg with an independent battery backup. Reset to zero of totalizer shall be performed by the dispenser electronics automatically when the maximum valve reached. The Non- Resettable Mechanical Type Totalizer Counter shall also to 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. Updating of Dispenser totalizer reading shall be real time & continuous instead of at the end of fill cycle. Totalizer reading of dispenser shall be taken from inventory of Mass flow meter For further details, refer: Instrumentation & Control specification.
- 3.5** Physical design should be of stainless steel body with doors/ panels to minimize corrosion and ongoing wear and tear. The dispenser should have tamper-proof locking arrangement. The cabinet should be suitably designed to accommodate all valves, fitting flow meter and all required electronic equipment
- 3.6** One number of three banks electronic software and controller including hardware for individual filling arm.
- 3.7** Holster/ cradle for each fill nozzles along with weather caps for the protection of nozzles. Holster/ cradle shall be suitable for both NZS and NGV nozzles. Holster/cradle shall be provided for NGV nozzle and shall be compatible to be attached with NZS-5425 nozzles. Supply of NZS 5425 is included in bidder's scope.
- 3.8** Hi-mast or equivalent arrangement with flexible hose arrangement for each fills hose so that the hose doesn't touch the ground.
- 3.9** Emergency stop switch is required on both side of the Car dispenser and combo dispenser. However, the filling on both sides should stop in emergency condition, when any one of the emergency switch is pressed. During activation of emergency switch, the power supply to the dispenser should be available.
- 3.10** Liquid filled 4" dia. (0-400 Kg/cm<sup>2</sup>g) pressure gauges showing the vehicle filling pressure for each filling arm.
- 3.11** Bubble tight manual shut-off valve for each fill hose.
- 3.12** Vendor has to supply the dispensers with solenoid operated valve or actuated Ball Valve with NAMUR Intrinsically Safe Solenoid Valve made of ANSI 316 SS, for ON-OFF control of flow, on the gas inlet with tube end connection (**size to be specified by vendor**). Valves shall be provided for each bank per hose separately. Valve make shall be as per approved vendor list. Client has an option to choose the type of valve for supply of Dispensers. Vendor to ensure the system design in such a way that any gas if passes, should be recorded by dispenser and there should not be any possibility of unmetered gas supply through dispenser in case of malfunctioning of solenoid valves.
- 3.13** The gas tubing inside the dispensers shall be seamless SS 316 fully annealed (Bright



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

Annealed) conforming to ASTM A 269 with maximum hardness of RB 80 or less and suitable for bending and flaring. The tubes shall be fully annealed (bright annealed), with SS 2-way Ball valve at inlet and tube end connection suitable for connecting with SS Tube (**size to be specified by vendor**).

Vendor should provide required reducing union (1/2" OD x 3/4" OD) for inlet connection of size 3/4". Any open ends on fittings and vents shall be provided with caps/ dust plugs.

- 3.14** Coalescent and particulate Stainless Steel filter of Grade 6 or better to be provided at inlet of each bank supply line with manual drain valve to ensure that the oil carry over in the CNG being filled to vehicle is < 1 ppm and particulate size is < 0.01 Micron. Filter housing for said filter must be capable for collection of oil for a drain interval of 24 hrs with oil carry over < 1 ppm. Filter elements made of



---

paper shall not be accepted. Vendor to provide appropriately plugged drain valve outside the dispenser housing with suitable arrangement to collect the drained oil. Filter size shall be in accordance with max flow through the dispenser.

- 3.15** The CNG dispenser specification should meet the IS 15403:2000 (E) natural gas quality designation for use as a compressed fuel for vehicles.
- 3.16** Vendor shall ensure that the system design in such a way that in both options any gas if passes, should be recorded by mass flow meter and there should not be any possibility of unmetered gas supply through dispenser in case of malfunctioning of solenoid or actuated Ball valves. Any unmetered gas passing shall be recorded in the dispenser is retrievable as and when required.
- 3.17** OWNER's Logo and name to be displayed on both sides of dispensers, in OWNER approved colour scheme. OWNER's Logo and name shall be painted on stainless steel panel with an appropriate coloured background or alternatively, vendor shall provide self-adhesive PE film sheet with OWNER'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.
- 3.18** Any other item required for safe and accurate operation of Dispenser.
- 3.19** Any spare(s) required during commissioning shall be in the scope of vendor.
- 3.20** Supply of application program, ladder logic, list of error codes with description for programming the dispenser parameter.
- 3.21** If dedicated programming unit is required for programming/ parameter change. The same shall be submitted in "CD" along with supply of dispenser also hard copy of the same also be submitted.
- 3.22** Vendor shall make a provision to change the price of CNG through the keypad/Switches inside the dispenser unit that shall be covered with security lock. It shall also be possible to change the price from remote station (from SCADA/ from any part of the city). RS 485 port shall also be provided for price change. In case standard RS485 port is not available in the dispenser, then RS232C to RS485 convertor with all relevant hardware and software to be provided by vendor.
- 3.23** RS 485 serial port shall be provided for down loading the CNG sale data with the help of Purchaser's Personal Computer for each shift (8-hour interval). In case standard RS485 port is not available in the dispenser, then RS232C to RS485 converter with all relevant hardware and software to be provided by vendor. Suitable software shall be provided to obtain the same for each shift (8-hour interval).
- 3.24** Vendor shall provide a common processor and open communication protocol/ RS 485 port for RTU to transfer all the dispenser data to central SCADA system. In



case standard RS485 port is not available in the dispenser, then RS232C to RS485 converter with all relevant hardware and software to be provided by vendor.

- 3.25** Vendor must note that non-standard/ propriety type communication protocol in dispenser for communication with RTU is not acceptable. Protocol must be standard as specified above or any standard protocol with compatible convertor shall be made available and must be compatible to any make of RTU (Owner's scope). RTU will have Serial communication port RS 485 protocol to interface with dispenser. Vendor is responsible to provide the communication port compatibility with RTU. Vendor is required to carry the communication port functional test and display all the values in Lap top or in applicable device during dispenser inspection(FAT) at vendor premises. Also functional test shall be carried out by vendor after installation and looping is junction box at site. Vendor shall also share the dispenser protocol details with Client
- 3.26** Vendor must furnish/ share the details of implemented MODBUS protocol like function codes for read and write, slave ID, list of signals to be transferred, CRC implementation, register addressing methods / mapping etc with Client and provide their assistance during interfacing with RTU to automation vendor.
- 3.27** Any Gas Losses incurred due to fault in Dispensers to be debited to the bidder for recovery.
- 3.28** Statutory compliances like calibration of MFM, safety relief valve, PT, PG etc. will be in vendor's scope for comprehensive maintenance duration and shall be done minimum once in a year.
- 3.29** Bidder can also arrange Portable master calibration unit at site to calibrate MFM, safety relief valve, PT, PG. That master calibration unit should be calibrated by NIST. After calibration of the equipment, vendor to submit a calibration certificate of each item to the EIC/Client. Cost of calibration shall be borne by the bidder.
- 3.30** If it's required to send MFM, safety relief valve, PT, PG to the laboratories for calibration purpose then to avoid interruption in operation of CNG dispenser , bidder to arrange the other calibrated MFM, safety relief valve, PT, PG for CNG dispenser for that period.
- 3.31** Bidder to note that due to calibration requirement, CNG dispenser shall not be kept in an idle condition otherwise bidder shall be penalized as per cl. 8.1.4.

#### **4. CODE & STANDARDS**

NFPA52	Standards for CNG Vehicular Fuel Systems
NGV 4.1/AG.A 2-92	Requirements for CNG Dispensing Equipment for Vehicles
NGV 4.2/AG.A 1-93	Requirements for Hoses for NGVs and Fuel Dispensers.



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

ANSI/NGV1	Compressed Natural Gas Fuelling Connection Devices Standard for fuelling nozzles and receptacles.
NGV 4/AG.A	Requirements for Breakaway Devices for CNG Vehicle Fuel Dispensers and Fuelling Hoses
AG.A 2-90	Compressed Natural Gas Fuelling Appliances.
AG 901	Code of practice for NGV refuelling stations.
IS 5572	Classification of hazardous areas (other than mines) for electrical installations.
IS 5571	Guide for selection of electrical equipment for hazardous area.
OISD 113	Classification of areas for electrical installations at hydrocarbon processing and handling facilities.
OISD 179	Safety requirements of compression, storage, handling and refuelling of CNG for use in Automotive sector.
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 (Compressed Gaseous Fuel (CNG) Measuring Systems for Vehicles

**5. DESIGN & ENGINEERING FOR DISPENSER**

- Design & engineering
- Manufacturing & Assembling
- Procurement from Sub-vendors.
- Inspection & Testing at Works.
- Documentation and obtaining statutory approvals from the country of origin.
- Submit/ apply for obtaining type approval for the offered dispensers from Petroleum & Explosive Safety Organization, Govt. of India as per the provisions of Gas Cylinder Rules, 2016.

**6. SAFETY**

All Electrical devices shall meet the requirement for the area classification specified elsewhere in tender document.



Tubing & other devices shall be so arranged that there is proper access for operation & maintenance.

**7. CHECK LIST: CNG DISPENSER PACKAGE**

Vendor shall furnish all the equipment of Dispenser, 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 maintenance of the equipment package shall be included by the Vendor in his scope.

Vendor to write YES/NO against each item. Vendor 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 reason for the same:

Vendor's scope of supply shall include but not limited to the following:

<b>S.No</b>	<b>Description</b>	<b>Specified by purchaser (yes / no)</b>	<b>Included by vendor (Yes/No)</b>	<b>Remarks</b>
<b>1.0</b>	<b>Each Dispenser Package complete with:</b>			
1.1	Frame material - STAINLESS STEEL 304	YES		
1.2	Built-in Coalescing unit of 3-5 microns with manual drain valve at inlet.	YES		
1.3	Certificate of "Weights & Measures" approval for Dispenser & Mass Flow Meter	YES		
1.4	Certificate of "CCOE" / PESO approval for Model approval /Dispenser & Mass Flow Meter & master meter (as applicable).	YES		
1.5	Certificate by Weights and Measures or the other statutory authorities of the country of origin is Provided.	YES		
1.6	Fast fill type and electronic display - car: 2 Sets of 3 rows Combo :- BUS 2 Sets of 3 rows	YES		
1.7	Dispenser with Tamper Proof Locking arrangement	YES		



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

1.8	Cabinet suitable to accommodate all valves, fitting flow meter and all required electronic equipment	YES		
1.9	Front/Side mounted Nozzle with lockable holder and safety lever/latch to firmly hold when not in use	YES		
1.10	Pressure Dial gauge of 4"size (Min)	YES		
1.11	Separate non-resettable straight forward reading Totalizer	YES		
1.12	ESD button mounted on both side of the dispenser or front panel.	YES		
1.13	One set of Isolation Valve complete with venting line valve and end plug installed on the inlet of the inlet steel pipes of dispenser.	YES		
1.14	Certificate by Weights and Measures or the other statutory authorities of the country of origin is Provided.	YES		
1.15	Electrical equipment and Instrumentation wiring are provided with Certificate of Area Classification.	YES		
1.16	Dispenser automatically and immediately shut off CNG supply to each fill hose individually in case of -Power failure, Failure of metering, Low flow, Failure of Totalizer, Overfill, pressure transducer failure.	YES		
1.17	Overall CV is indicated of dispenser from inlet of the dispenser up to outlet probe including mass flow meter, interconnecting tubing, valves, hoses, nozzles etc.,	YES		
1.18	Dispenser is shipped in fully wired and assembled condition only gas supply connection, Instrument Air supply connection and power supply connection shall be made at site.	YES		





**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

1.19	Warranty for a period of 12 months is provided from the date of final site acceptance/commissioning of dispenser of CNG facilities by the Company's.	YES		
<b>2.0</b>	<b>Spares</b>			
2.1	All necessary Spares and consumables during warranty period are in the scope of supplier.	YES		
2.2	Mandatory spares for 2 year normal operation with rates.	YES		
<b>3.0</b>	<b>Inspection and Testing</b>			
3.1	As specified on the datasheets and Technical Specifications	YES		
<b>4.0</b>	<b>Vendor Data and drawings</b>			
4.1	All data & drawings as required per VDR format	YES		
<b>5.0</b>	<b>Erection , commissioning and trial runs at site of the Dispenser</b>			
5.1	Additional Items not specified by purchaser but recommended by Vendor for safe smooth and normal operation. (Vendor shall indicate separate list of such items in his proposal)	YES		
<b>6.0</b>	<b>Technical parameters to be confirmed by</b>			
6.1	Inlet Pressure Kg/cm <sup>2</sup> g -255	YES		
6.2	Fill Pressure Kg/cm <sup>2</sup> g -210	YES		
6.3	Operating Temperature range - [ -10°C to 70°C]	YES		
6.4	Electrical Supply Single Phase AC, 230V±}10%, 50Hz±} 2%.	YES		
6.5	Fill Nozzle <b>CAR</b> : NZS 5425 with two number of adaptor for one side and NGV-1 for another side <b>Combo dispenser</b> : Fill Nozzle – Bus side- NGV-2 & car side- NGV-1	YES		
6.6	Flexible fill & vent hose - Twin of Parker/syneflex/Mac	YES		
6.7	Fill hose pressure rating - Working pressure 5000 PSIG	YES		

6.8	<b>Sequential filling-</b> Three bank for Car Dispenser. <b>Combo dispenser-</b> Single Bank	YES		
-----	--	-----	--	--



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

	for bus Dispenser & three bank for car side.			
6.9	Temperature compensation - 210 kg/cm <sup>2</sup> (g) equivalent at 15°C	YES		
6.10	Breakaway coupling - CAR side: 3/8" BUS side: 1/2"	YES		
6.11	Principle of mass metering - Coriolis	YES		
6.12	<b>Flow meter Coriolis type Model with integral flow indicator - CAR &amp; BUS:</b>	YES		<b>Bidder to confirm the model considering flow rate of car and bus dispenser</b>
6.13	Minimum Flow rate - CAR side : 15 Kg/min Minimum Flow rate - BUS side: 75 Kg/min	YES		
6.14	Batch delivery accuracy - $\pm$ 1.5% of batch	YES		
6.15	Mass flow accuracy for gas meter - $\pm$ 0.5% (inclusive of sis & linearity, hysteresis & repeatability errors	YES		
6.16	Calibration tractability - To NIST as per ISO 5168	YES		
6.17	Repeatability - $\pm$ 0.3 %	YES		
6.18	Enclosure weather proof to - IP55, NEMA4x	YES		
6.19	Pressure rating of Wetted parts - 5000 psi At 25°C as per ASME/ANSI B 31.3	YES		
6.20	Process Temperature effect - $\pm$ 0.01% of nominal flow	YES		
6.21	Pressure influence - Nil	YES		
6.22	Surge and frequency Transient - Shall be in compliance With ANSI/IEEE(EFT)c 62.41(1991)	YES		
6.23	EMI effect on sensor and Transmitter - To the requirement of EMC directive (jan'94)	YES		
6.24	Vibration effect - As per SAMA PMC 31.1 1994	YES		
6.25	<b>Pull test and</b> conductivity of hose should be checked every six month. Hose shall be replaced by vendor if			

	found non- conductive.			
--	------------------------	--	--	--

---

## **8. Scope of work of comprehensive annual maintenance (CAMC)**

### **8.1 General:**

This contract covers the provision of services to undertake the Comprehensive Maintenance as per Company schedule and Breakdown repair of CNG dispensers as & when complaints are received at CNG control room. For the purpose of clarity, the agency providing maintenance services for above dispensers shall, herein after be referred to as "Contractor" and the company hiring the services of the agency will, herein after be referred to as "Company" (HOGPL).

"Comprehensive Maintenance refers to preventive maintenance of equipment as per schedule which includes breakdown, equipment spare parts replacement, engineering and labor charges."

### **Training :**

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.

### **On site training requirements:**

On Site Training for each Client personal maximum for 3 days (or as define in the SOR) shall be provide by the Bidder. Commissioning will not be deemed to have completed and formal acceptance will not be granted until training has been completed to the satisfaction of the Client.

### **8.1.1.Preventive Maintenance:**

To carry out the Preventive & Breakdown maintenance of dispensers strictly in accordance with the schedule provided by Company / OEM Manual.

The Contractor shall confirm to Company their availability to carry out the Maintenance in advance.

Contractor shall depute a technically competent persons for the maintenance services and to receive instructions from Engineer-in-charge or his representative.

Ensure availability of technicians under Kolhapur GA. Daily Reporting of technicians to EIC HOGPL.

Vendor shall also ensure the technicians must be available during rate change activity for technical support to HOGPL team.

The spares required for carrying out preventive maintenance shall be in the scope of Contractor. The contractor personnel shall inform the exact time to the EIC before and after carrying out the maintenance. Contractor shall confirm to HPOIL about their availability to carry out the maintenance as per the schedule finalized along with Engineer In-Charge.

The Contractor shall ensure all required consumables such as probe O'ring, cotton waste, cleaning solvent, insulation tapes, thinner, soap solution, Teflon tape etc. including required tools & tackles , are available on site. Supply of consumables, tools & tackles etc. is in the scope of Contractor. Tools shall include multi meters, Laptop with required software (prolink etc.,) etc.

## Machines, Equipment, Tools-Tackles:

All the Equipment, Tools, Tackles. Special Tools used for the job execution shall always be fit for purpose & If Certification is applicable than equipment should be with its certification validity through appropriate authority.

Bidder shall arrange the special tools/general tools to be used while specified installation readiness, commissioning and decommissioning on site in good and healthy conditions as per the requirement.

Bidder shall ensure at their own cost, the availability of all consumables and associated accessories other than those mentioned in above, required for the execution of the job.

Contractor shall note down the dispenser performance before and after carrying out the maintenance. Contractor to submit report of Percentage difference between Mass Flow Meter and Non-rest-table Totalizer on fortnight or Monthly basis as per order of EIC. Later on after continuous operation, if calibration of installed Mass Flow Meter will be required. Same will be executed by Contractor atsite with the help of laptop and suitable software. Only in case of lab calibration, if established by Contractor in front of HOGPL Site Incharge through proving exercise by Standard Master Calibration Device (CNG Prover), During CAMC Contractor will be entitled to send the Mass Flow Meter ,PG,PT, safety relief valve for calibration at its own cost.

Preventive maintenance will be carried out on Monthly basis during non-peak hours in consultation with EIC. Any maintenance that needs to be taken up shall be well planned in advance with due approval of EIC.

The contractor shall produce the compliance report of each maintenance activity on the next Working day to the Engineer - In - Charge. Compliance report shall be descriptive in nature. Provide proper communication facilities to all contractor personnel such as engineers, Technicians etc.

Contractor shall carry Proving and Zero Calibration of Mass Flow Meter as per frequency suggested by HPOIL and/or as and when it is required for which HPOIL will provide Prover equipment's / facility. Only manpower for the same shall be provided by Bidder within the scope of work.

Contractor shall carry out PG/PT Calibration installed in Dispenser as per the frequency suggested by HPOIL, a detailed calibration/testing report also need to be prepared and submitted to HPOIL

The contractor shall use only OEM's certified genuine spares during maintenance. In case, the schedule maintenance of the OEM manual recommends checking and replacing parts, same shall be replaced or used further only on approval from the HPOIL representative. However, any untoward consequences for non-replacement of such parts shall be the responsibility of the Bidder & if Downtime of Station increases applicable Penalty Terms will be imposed.

The contractor shall inform the Company, names and mobile numbers of all the service personnel who will be deployed for providing the services during the CAMC. An alternate number will also be informed to the company, which can be contacted in case

all service personnel's mobile are not reachable. Changes, if any, will be notified to the company.

### **8.1.2 Break down Repair:**

On receiving information from the CNG control room/Dealer, contractor shall ensure that his team reaches the concerned retail outlet. Attend to dispenser breakdown service calls on 24X7 basis. The service personnel will report to the call site within 2 hours from the time of receiving service call in Kolhapur site or at whatever site dispensers are installed (Prior Information will be provided for location of installation of Dispensers).

Before proceeding to the outlet, the contractor personnel shall collect all necessary spares required for the repair depending on the nature of the complaints received. Upon reaching the retail outlet, the contractor personnel shall contact the CNG Control room to advise his attendance on site, and confirm the breakdown reporting.

The contractor shall coordinate with the Company representative for instructions on undertaking the repair work. After solving the complaint, the contractor shall inform CNG control room. Provide proper communication facilities to all contractor personnel such as engineers, technicians etc., Maintain records of the services provided, and submit the same to the company, once in a Month.

Commissioning and warranty spares & Consumables to be provided and shall be included in the base price of dispenser. A list of such spares and consumables shall be furnished with the bid.

All spares & Consumables required during AMC & dispenser operation are in the contractor's Scope. The Bidder shall submit the list of critical spares which are to be stored necessarily in the bidder's store during AMC

### **8.1.3 Reports to be submitted:**

- a. Reports (in soft copy and print form) of individual equipment as and when the dispensers are undertaken for preventive maintenance/break down/on complaint service. Report shall be descriptive in nature including nature and quantity of material used or repaired.
- b. Monthly cumulative list on preventive maintenance/breakdown repair/ on complaint service of dispensers carried out with actual date and time of service.
- c. Monthly cumulative list on consumption of spares in each dispenser consumed during preventive maintenance/breakdown repair/ on complaint service attend.
- d. Separate analysis report on breakdown if anything particular occurred which needs special attention.
- e. Report of Percentage difference between Mass Flow Meter and Non-rest- table Totalizer as per guaranteed parameter declared at the time of supply.
- f. Availability of spares report at Kolhapur GA store needs to be submitted every month.

### **8.1.4 Break down penalty: (During Warranty & CAMC Period)**

In case, the contractor's service personnel are unable to reach the break downsite within stipulated time, or is unable to complete the maintenance within stipulated time, following penalty will be applicable. This amount will be deducted from the invoice raised by the contractor, at the end of the month

- a. Penalty for hour delay in reaching at all site from complaint logged to control room.

- Rs 500/- per arm per dispenser.
- b. Penalty for 2-hour delay in reaching at all site (ie, within 4 hours instead of 2 hours)- Rs 1000/- per arm per dispenser.
- c. If the shutdown time, which will be calculated from the time the dispenser is offered to service person on reaching site, is extended beyond 4 hours, a penalty of Rs 500/- per hour will be applicable.
- d. Rs 2500 towards non availability of mandatory spares at operational sites.
- e. Rs. 1000/- per instance for postponement of preventive maintenance for lack of recommended spares.
- f. Rs. 500/- against re-occurrence of repeat complaint due to poor workmanship or partial work.
- g. Rs. 25,000/- and necessary legal actions against any manipulation / malpractice.
- h. If the Technician is not in uniform or not using PPE, then Rs.500 per instance will be levied as penalty.
- i. Rs.1000/- per instance if the service provider fails to submit Monthly Report by mutually agreed date of Subsequent month.
- j. Rs.1000/- per instance if the service provider fails to submit RCA Report for Major Failure within 1 Month
- k. The max penalty per month shall not be more than 50% of per month charge against O&M quoted by the supplier
  
- l. Contractor shall not deploy the employee of age less than 18 years in any of the activities. If it is found, then it will be viewed seriously and heavy penalty of Rs. 20000/-per instance and also the termination/blacklist will be done from our approved vendor list.
- m. The contractor shall provide full Personal Protective Equipment (PPE) to each individual employee including, soft hat, eye protection, ear plug, and safety shoes. It is mandatory for all personnel to wear said PPE whilst performing their duties, failing which a penalty @ Rs. 500/- per incidence will be levied in addition to dismissal of the person.





**CITY GAS DISTRIBUTION PROJECT  
OF  
KOLHAPURDISTRICT**

**HPOIL GAS PRIVATE LIMITED (HOGPL)**

**CITY GAS DISTRIBUTION PROJECT OF  
& KOLHAPUR DISTRICT**

**TECHNICAL SPECIFICATION - CAR DISPENSER AND COMBO  
DISPENSER (CAR CUM BUS DISPENSER)**




---

## Contents

1.0	SCOPE .....	3
2.0	DISPENSER .....	3
3.0	UTILITY SPECIFICATION .....	6
4.0	INSPECTION AND TESTING .....	6
5.0	PERFORMANCE GUARANTEE .....	7
6.0	VENDOR DATA REQUIREMENT .....	7
7.0	PROTECTION DURING SHIPPING .....	8
8.0	SCOPE OF INSTRUMENTION .....	9
9.0	DESIGN PHILOSOPHY.....	10
10.0	SPECIAL INSTRUCTION TO VENDOR .....	10
11.0	REQUIREMENT FOR AUTOMATION SYSTEM IN DISPENSER .....	16
12.0	VENDOR DATA REQUIREMENTS .....	17
13.0	INSPECTION AND TESTING .....	17
14.0	LIST OF ATTACHMENTS .....	18
15.0	SCOPE OF ELECTRICAL.....	19
16.0	CODES AND STANDARDS.....	19
17.0	AREA CLASSIFICATION AND EQUIPMENT SELECTION .....	20
18.0	EQUIPMENT SPECIFICATIONS.....	20



## 1.0 SCOPE

This specification provides vendor the technical and operating conditions the CNG Dispenser must fulfill. Additional features other than those indicated herein which call for a better design, increase in efficiency, enhance reliability, optimization may be accepted subjected to Client's approval. Gas supply line and delivery connection shall be made at site.

The vendor shall bid their main offer, items according to the technical specifications mentioned below.

## 2.0 DISPENSER

**2.1** The specifications described herewith are intended to give vendor the technical & operating conditions the Dispenser must fulfill. These are to be referred along with relevant document attached with tender. Vendor may indicate in his bid, the additional features, which dispenser has in terms of better design, enhance reliability etc., however such feature may be accepted subject to Client's review and approval.

**2.2** The specifications of FLOW METER are described under Instrumentation & Control clause in this Specification below.

**2.3** The **Car dispensers** shall be designed to handle flow rate of 15 kg/min under discharge to atmospheric condition. The dispensers shall be suitable for a turn down of not less than 50:1 on flow.

**2.4** **Combo dispenser** -The Car & Bus dispensers shall be designed to handle flow rate of  $\geq 15$  kg/min and  $\geq 75$  kg/min respectively, under discharge to atmospheric condition. The dispensers shall be suitable for a turn down of not less than 50:1 on flow at car end and turndown of not less than 20:1 on flow at bus end. Car arm shall be three bank sequential filling & bus arm shall be single bank sequential filling. The sequential panel shall be within the cabinet of the dispenser itself and not as a separate unit. Sequencing should be on flow rate and pressure. Bus Dispensers shall have Single Bank fill system as per the requirement.

**2.5** The normal operating pressure of CNG at dispenser inlet shall be 250Kg/cm<sup>2</sup> (g). However, supply from dispenser to the Car shall get positively cut off at outlet pressure of 200 Kg/ cm<sup>2</sup> (g) to ensure the safety of the vehicle.

**2.6** 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 dispenser shall be (-) 10 °C to 55°C.



**2.7** The Dispenser shall automatically and immediately shut-off CNG supply to fill hose individually (with error codes for diagnose) in case of:

- Power failure or excursion beyond permissible limit.
- Loss of display
- Power failure of mass meter (Provided with Single Error code for Power failure in Mass meter).
- Failure for metering (Provided with single error code if Mass meter becomes faulty & will not work)
- Flow beyond high and low limits
- Failure of totalizer
- Overfill by quantity and/or pressure
- Failure of pressure sensing transmitter
- Malfunctioning / Passing of electro valve/Pneumatic Valve
- Repeated operation of reset or start/ stop switch as per Client customization.
- Removal of any electrical wire connected to controller.
- Program step is in hold due to any error.

**2.8 Fill Hose & Fill Nozzle**

**a) For Car Dispenser**

Two CNG flexible electrically conductive twin (fill & vent) hose shall be included for supply of Dispensers meeting the requirement of NFPA-52 and NGV 4.2.

Both fill hose for car dispenser shall be suitable with NGV-I for filling of vehicles (NZS for one side and NGV-1 for another side). The nozzle shall meet the requirements of NGV-1 Type-2, Class B nozzle. Vendor shall include the supply of 3-way valve with each hose for Filling & venting of gas. Vendor shall also include supply of Breakaway Coupling, suitable for NGV Industry, in the hose. Hose shall be 3/8" ID 5000 psig, at least 3m long. Vendor shall demonstrate the function of breakaway coupling during performance test.

**b) For Combo Dispenser**

Two CNG flexible electrically conductive twin (fill and vent) hoses shall be included for supply of dispensers meeting the requirement of NFPA-52 and NGV 4.2.

**For CAR Filling:** - One fill hose shall be fitted with NGV-I for filling of vehicles. The nozzle shall meet the requirements of NGV-1 Type-2, Class B nozzle. Vendor shall include the supply of 3-way valve with each hose for Filling & venting of gas. Vendor shall also include supply of Breakaway Coupling, suitable for NGV Industry, in the hose. Hose shall be 3/8" ID



5000 psig, at least 3m long. Vendor shall demonstrate the function of breakaway coupling during performance test.

**For BUS filling:** One CNG flexible electrically conductive twin (fill and vent) hoses with one NGV 2 (OPW/sherex CT-5000) (with captive vent) transit fill nozzle include the supply of 3-way valve for filling & venting of gas. Vendor should also include supply of breakaway coupling, suitable for NGV Industry, in hose. Hose shall be 1/2" ID working pressure 5000 psig and at least 4 m long.

Designing of the dispensers would take into account severity of service. The dispensers 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) 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.

### 3.0 DESIGN BASIS

Gas from storage cascade or compressor through priority panel is dispensed to CNG vehicles like Car/Auto, and Bus via dispenser. The CNG Car Dispenser shall have Twin Arms, each with a flow capacity of 15 kg/min and double arm for combo dispenser with a flow capacity of 15 kg/min for car side and 75 kg/min for Bus side under discharge to atmospheric condition. Pneumatic actuated or electro valves shall be used, If Pneumatic actuated valve, Instrument air / Exe proof electronically controlled solenoid then Instrument Air shall use for pneumatic controls of Dispenser. For electro valves operation power requirement shall be provided by bidder during detail engineering.

Each unit to have full automatic microprocessor based sequencing of 3 cylinder banks connected to dispenser through independent high pressure Stainless Steel (SS) tubes. Dispenser to have pressure control device to restrict fill pressure to 210 kg/cm<sup>2</sup>g at maximum allowable filling pressure for natural gas vehicle cylinder as per standard supply. Pressure control device to ensure complete shut off of gas flow at the pre-set pressure with dead band shift and shut off error within 2% of range. The preset fill pressure can vary from 150 kg/cm<sup>2</sup>g to 255 kg/cm<sup>2</sup>g. The pressure control device to have provision to manually set pressure between above range.

The supplier should prepare the design basis required to meet the requirement with respect to technical specification and liaise with PMC/Client to obtain necessary confirmation and approval.



#### **4.0 UTILITY SPECIFICATION**

##### **4.1 Electric Power Supply**

Single phase, AC, 230 Volts  $\pm$  10%, 50Hz  $\pm$  3% will be provided by Client. Surge protector is to be provided by the vendor at the 230 VAC inlets. All instrument (such as mass meter, solenoid, pressure transmitter/ switch etc.) supply as approved by PESO & ATEX. Suitable voltage conditioning unit shall be in the scope of vendor wherever required.

Note: Vendor to confirm that supplied dispensers are suitable with the above power supply. Vendor to include suitable voltage conditioning unit in their scope, if required.

Instrument air supply @ 5-7 barg will be provided by client.

For further details, refer Electrical Specification, attached with this job specification.

#### **5.0 INSPECTION AND TESTING**

- The following activities shall be covered under inspection at vendor's works:
- Review of Q.A. documents.
- Review of calibration certificates for flow meter, dispenser, pressure transmitters, pressure gauges and all instruments.
- Review of all statutory certificates including W &M, type approval from PESO, Govt. of India.
- Review of area classification compatibility of all items including bought out items.
- Review of Mill Test reports.
- Review of NDT reports.
- Review of bought out sub-assemblies/major components, test/inspection certificates.
- Dimensional checks as per approved drawings and data sheets.
- Safety shutdown of dispensers.
- Immediate cut off of dispensers due to abnormalities.
- Functional Test
- All the dispensers shall be tested to demonstrate the functioning of all the components and controls.



- Performance Acceptance Test at Site
- All the dispensers shall be performance tested for flow capacity, measuring accuracy and dispenser
- Functioning with CNG/Nitrogen. CNG/Nitrogen shall be arranged by vendor.
- During the shop test of dispenser, in case the dispenser flow capacity from inlet of dispenser to the outlet of Filling nozzle is found below the specified capacity the dispenser shall stand rejected.
- During the shop testing if the dispenser batch accuracy is found beyond  $\pm 1.5\%$  dispenser shall stand rejected.

## **6.0 PERFORMANCE GUARANTEE**

**6.1** The vendor shall guarantee the satisfactory performance of dispensing unit as per the operating parameters indicated in data sheets. The dispensers shall be performance tested after installation at site. Vendor shall carry out tests as required by Govt. Statutory Agencies.

**6.2** Guaranteed Performance for the Dispensers shall be as follows:

Flow Rate (15 kg/min for Car Dispenser)

Flow Rate for combo dispenser ( $\geq 15$  kg/min for Car end and  $\geq 75$  kg/min for Bus end)

Batch Accuracy of + 1.5%.

Note:

1. All the dispensing units shall be tested by Vendor for their function & performance in presence of Client's authorized representative.
2. Vendor to execute performance test of all the dispensing unit after commissioning for accuracy and repeatability and safety parameters.
3. Vendor to make all arrangements for carrying out performance test viz. Std. Mass Flow Meter, Laptop etc., and Vendor shall also carry out tests as required by Govt. statutory agencies.
4. Any part or component, which is not functioning to the satisfaction of Client, shall be repaired or replaced by the vendor without cost & time implication to purchaser and performance test shall be carried out all over again.

## **7.0 VENDOR DATA REQUIREMENT**

Vendor data requirement shall be as per document number: -1007-00-ME-VDR-3007



## 8.0 PROTECTION DURING SHIPPING

The Dispenser shall be packaged to withstand rough handling during ocean shipping and inland journey. It shall be vendor's responsibility to avoid and protect system with any deterioration and that occurs during shipment. Sling points shall be clearly indicated on crates.

## 9.0 GAS COMPOSITION

Component	Range mole %	Design case mole %
Methane	84.50-98.77	89
Ethane	0.69-9.00	5
Propane	0.3-4.00	1.5
Butane	0.00-2.00	0.5
Pentane	0.00-0.35	0.35
Hexane	0.00-0.15	0.15
Heptane	0	0
Carbon dioxide	0.00-4.50	3
Nitrogen	0.05-1.25	0.5
<b>Sum</b>	<b>100</b>	<b>100</b>

### Note:-

- O<sub>2</sub> not more than 0.5% mole.
- CO<sub>2</sub> less than 4%.
- Temp of gas shall be 10 to 55° C
- Total non-hydrocarbon –Not more than 2.0%
- Total S including sulfur content of odorant Not more than 20 mg/m<sup>3</sup> by volume.
- Max H<sub>2</sub>S content shall not exceed 5 ppm.
- Moisture content shall not exceed 5 mg/m<sup>3</sup>.





---

## **INSTRUMENTATION SPECIFICATION**

### **10.0 SCOPE OF INSTRUMENTATION**

The purpose of this specification is to define the minimum general requirements and philosophy of instrumentation & control for the dispenser package.

This specification covers the design, engineering, procurement, supply and testing, calibration & commissioning of instrumentation and control system with all accessories and materials and any special test requirements required for completing the job in all respects.

Coriolis mass flow meter, electronics and other accessories shall be provided as required for the Dispenser arms.

Vendor's scope of instrumentation and control for the dispenser package shall include the following as:

- Basic instrumentation and control indicated in this document.
- All local and field-mounted instruments in dispenser panel.
- All additional instruments and control system necessary for safe and efficient operation of the dispensers which are not listed specifically in this document but which are required as per vendor's experience/recommendations.
- Impulse & pneumatic piping/tubing including all miniature valves, fittings and mounting to install all sub vendor supplied instruments.
- All other erection material necessary for mounting of instruments in vendor's scope.
- Shop testing of all instruments and control system under vendor supply.
- Calibration, loop checking, pre commissioning and commissioning of the complete system.
- All weather proof and explosion proof double compression type cable glands or as approved by PESO for all instruments, junction boxes, dispenser panel etc.
- All pressure relief valves.

In case of further clarifications, bidder shall obtain clarification/confirmation from Client/PMC before proceeding.

All instruments must be procured from Client recommend vendor list. However, for those instrument/equipment, which are not covered in the list, the sub vendors shall be approved by Client.



## **11.0 INSTRUMENTATION UNIT DESIGN PHILOSOPHY**

- 10.1 All Electrical and electronic instruments shall be installed in accordance with NFPA 70, IEC for Gas Group IIA, IIB & Temperature Class T3 and shall have approval of a recognized certifying authority.
- 10.2 Mass flow meter shall be CORIOLIS type and shall conform to AGA 11 standard. Each and every mass flow meter 'zeroing' shall be done before delivery from vendor's works.
- 10.3 Mass flow meter design considerations, piping, meter, zero verification and proving facility shall be as per AGA 11 standard.
- 10.4 Control valve, actuator and solenoid valves shall be of conventional type design, no integral design is acceptable.
- 10.5 Control valve body and trim materials selection shall be done by the bidder to ensure that there is no erosion, cavitation and flashing. Trim & seat shall be fully stellite.

## **12.0 SPECIAL INSTRUCTION TO VENDOR**

- 12.1 Supply of Car dispenser with twin arm of flow rate 15 kg/min under differential pressure of 200 kg/cm<sup>2</sup>g.
- 12.2 Supply of Combo dispenser with twin arm each having flow rate 75 kg/min for bus side and 15 kg/min for car side under differential pressure of 200 kg/cm<sup>2</sup>g.
- 12.3 Each dispenser arm shall have Coriolis type mass flow meter with necessary sensor, electronic and special cable recommended by vendor. Performance record and Weight and Measure (W&M) certification of the meter to be submitted for acceptance.
- 12.4 Three rows liquid crystal backlit displays for night viewing showing total sale in Rupees of (00000.00), quantity of gas sold in Kg. (00000.000), unit price of CNG in Rs/Kg (000.00) for each hose of the dispenser (total two sets and three rows for each dispenser).
- 12.5 Unit Price Per kg shall be displayed in three-digit format. Program should be updated as per the requirement by HOGPL time to time basis.
- 12.6 Vendor shall make a provision to change the price of CNG through the keypad inside the dispenser unit that shall be covered with security lock. RS 485 port shall also be provided for price change. In case standard RS485 port is not available in the dispenser, then RS232C to RS485 convertor with all relevant hardware and software to be provided by vendor.



- 12.7** Non-resettable and non-volatile totalizer up to 999999.99 (8 digits and a decimal) for total CNG sold in Kgs. Since the dispensers are used for custody transfer purpose, the totalizer must not reset/change/jump in any eventuality not even in the case of electronic failure/power supply failure or excursion beyond permissible limit. If there is any abnormality in power circuit during filling, the running batch value should be added in totalizer. Dispenser electronics shall be common for both totalizers.
- 12.8** Totalizer figure would be displayed only when it is recalled through a remote keypad or some device integral to dispenser. The totalizer value would cover up to the last transaction details at the time of recall. These remote key pad devices should not be used for any programming of the dispenser and are distinct from those, if used for programming the dispenser while operating these keys in no way shall hinder the operations, functioning, veracity of display, storage of parameters and values. These remote keys can be used even when the filling is on without affecting up-counting/real time data.
- 12.9** Dispenser shall be capable of communicating with outside system using the open system architecture/protocol (OPC)/RS 485. Bidder must handover the details of communication port of dispenser and signals to be transferred to Client. It should be possible to transfer the data through twisted pair wires, transaction data as also flow meter data (both process and diagnostic) RTU.
- 12.10** One number of three bank electronic software and controller including hardware. Vendor shall include solenoid operated valve made of ANSI 316 SS for dispensing of gas. Vendor to ensure the system design in such a way that in both options any gas if passes, should be recorded by dispenser and there should not be any possibility of unmetered gas supply through dispenser in case of malfunctioning of valves. The valve assembly shall be fatigue free and tight shut off characteristics at least for 8000 operation hours.
- 12.11** Two number of Liquid filled 4" dia. (0-400 Kg/cm<sup>2</sup>g) pressure gauges showing the vehicle filling pressure for each filling arm. Pressure gauge shall be provided with shatterproof glass. Vendor to provide a bypass isolation valve with associated tubing to facilitate routine servicing/calibration of Pressure gauge without shut down of the dispenser.
- 12.12** One set each of (1/2 " for car with 1/2 " to 3/4" adapter and 3/4" for bus) isolation 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.



- 
- 12.13** Temperature compensator to limit fill pressure to an adjustable value (with normal value 200 Kg/cm<sup>2</sup>g) equivalent at 15-degree C. A temperature compensation facility button shall be provided to enable or disable the temperature compensator.
- 12.14** To limit fill pressure to 200 Kg/ cm<sup>2</sup> g, Vendor to provide the following options per hose / arm of the dispenser:  
Pressure limiter (electronics transducer) (with adjustable value up to 250 Kg/cm<sup>2</sup> g) and one number pressure relief valve as final safety to avoid overfilling.
- 12.15** Back-up Power supply for displays so that display remains at least for 5 minutes after power failure. Vendor shall provide battery backup of 72 hours to the RAM of dispenser controller.
- 12.16** Hardware required with the dispenser for Weights and Measures (W&M) certification.
- 12.17** All parameter setting shall be password protected. Facility of change of password also to be provided to enhance the security of password.
- 12.18** Car Dispensers shall be designed for handling flow rate of more than or equal to 15 kg/min. flow capacity with turn down of not less than 50:1.
- 12.19** In Combo dispenser - Bus arm shall be designed for handling flow rate of more than or equal to 75 kg/min. flow capacity with turn down of not less than 20:1.  
Car arm shall be designed for handling flow rate of more than or equal to 15 kg/min. flow capacity with turn down of not less than 50:1.
- 12.20** The batch accuracy of dispensed gas shall be within  $\pm 1.5\%$  or better.
- 12.21** Bidder shall indicate overall flow coefficient Cv of dispenser from inlet to the dispenser up to outlet of nozzle including mass flow sensor, interconnecting tubing, valves, hose, fill valve etc.
- 12.22** Normal operating inlet pressure of dispenser shall be 220-250 Kg/cm<sup>2</sup>g. The dispenser supply to the vehicle shall be positively cut off at outlet pressure of 200 Kg/cm<sup>2</sup>g.
- 12.23** Normal operating temperature of wetted parts of dispenser shall be -10 to 55 deg C.
- 12.24** Vendor shall confirm that any momentarily flow of gas shall be registered in dispenser totalizer. Vendor shall envisage a temper proof design. Dispenser shall generate error signal in case of passing valve with date and time and display on the dispenser LCD.



- 
- 12.25** After power on, the controller delay time to start filling be such that the mass meter and pressure transmitter are initialized properly to avoid any un-metered gas.
- 12.26** Complete control loop would be so fast that if the filling is terminated at any point of filling, the flow would stop immediately.
- 12.27** Reset switch assembly should be suitable for failure free operation and the same shall be supported with proper PTR for CNG duty.
- 12.28** Controller shall be in reset state for the SOV open signal to be generated. Any departure to this shall stop the dispenser. Dispenser controller shall monitor the status of flow, monitor the status of flow meter / transmitter and in case of any abnormality from set condition the dispenser shall shut down.
- 12.29** In case the power supply is beyond acceptable limit the dispenser shall not start at all. The controller shall provide an operational alarm with pre-stated error code and it shall be displayed on LCD display.
- 12.30** Flow meter signal shall be considered as the highest level of interrupt. It shall not be possible to fill any vehicle cylinders by repeated operations of reset switches. Reset time delay is required with adjustable time.
- 12.31** A Provision shall be available in dispenser unit, which shall be suitable for programmable/changeable filling pressure from 180kg/cm<sup>2</sup>g to 220kg/cm<sup>2</sup>g in vehicle. Original filling shall be same as defined elsewhere in data sheet.
- 12.32** Emergency stop switch is required on both side of the dispenser. However, the filling on both sides should stop in emergency condition, when any one of the emergency switches is pressed. However, during activation of emergency switch, the power supply to the dispenser should be available.

**12.33 Overfill Protection**

Overfill protection shall be through electronically programmed hose to terminate the fill after 200 Kg/cm<sup>2</sup>g. Vendor shall include 2 No. pressure transducer or 1 no. pressure transducer with 1 no. mechanical regulator and 1 No. Pressure relief valve per hose to avoid overfilling. Relief valve set pressure shall be at 250kg/cm<sup>2</sup>g with resetting at 245kg/cm<sup>2</sup>g. Relief valve setting to be adjustable from 225kg/cm<sup>2</sup>g to 260kg/cm<sup>2</sup>g with resetting at 220 to 255 kg/cm<sup>2</sup>g respectively. Calibration certificate shall be provided.

**12.34 Electronics**

Electronics shall be microprocessor based. The processor shall be the latest available in the field and shall be capable of processing the data faster. All the electronic cards shall be located in flameproof boxes inside the dispenser cabinet. No parts of electronics shall be filled with epoxy resin etc. The controller electronics should have immune to EMI interference and vendor to provide relevant certification in this regard.



The dispenser electronics should have self-diagnostic features and should generate error code accordingly. Vendor should define such error codes in trouble shooting guide and procedure of their rectification. Error code related to operational parameters should also be displayed and defined in trouble shooting guide. Password protection should be provided for entry of critical data through key pad.

The change in setting shall be done either through lap top computer or through hand held configurator through the port provided for this purpose with security lock.

Vendor shall provide suitable electronics for processing both arms dispenser data. Totalizer display and display for both arms in the dispenser shall be shown separately

### **12.35 Tubing & Fittings**

Materials used for the tubing shall be SS 316 fully annealed (Bright annealed) seamless conforming to ASTM A269 with maximum hardness of RB80 or less and suitable for bending and flaring. Open ends on fittings and vents shall be provided with caps/dust plugs.

### **12.36 Certification:**

Equipment/instrument/systems shall be certified for use by statutory authorities for their use in area of their application.

For all intrinsically safe/flame proof equipment/instruments/systems, certification by any approving authority like BASEEFA, FM, UL, PTB, LCIE, Petroleum & Explosive safety organization (PESO), India is mandatory.

The supplier should specify the hazardous area in accordance with the IS 5572 / Australian Re-fueling Standard AG901 / NZS5425. All electrical equipment cabling and earthing should be appropriate for the zone in which it is fitted, and all cables passing from the hazardous to safe area should be equipped with appropriate barriers where necessary.

All Instruments should be suitable for an area classification of "Class 1, Division 1, Group D as per NEC" OR "Zone 1, Group IIA / IIB as per IS 5780 / IEC 6007". All dispensers mounted transmitters & temperature element should be intrinsic safe "exd" as per IEC 79-11. Solenoid Valves, Switches and related junction boxes should be flame proof "Exd" as per IEC 79-1.

Other special equipment / instruments, where intrinsic safety is not feasible or available, should be flameproof as per IEC 79-1. Flying leads from any of the instrumentation items are not acceptable. The Electronics of the dispenser shall not be open and shall be provided within a suitable enclosure. A



complete dossier of all electrical equipment will be provided, showing area classification and certification of equipment.

**12.37** The mass flow meter design having transmitter with local integral display, the mass flow meter signal through the transmitter shall be wired to the mother board used in the dispenser and there shall not be any difference in reading between this integral display unit and non-resettable display in the electronic control unit.

**12.38** Dispenser manufacturer is required to submit approval of weight & measure department, Gov. of India. For the dispenser unit or for the mass flow meter installed in the dispenser unit. In future, if any non-conformity or objection is raised by W&M department or if any penalty action is taken against Client, vendor shall be fully liable, indemnify Client against any liquidity and shall bear all the cost implication, if any.

**12.39** One no. of non-resettable and non-volatile totalizers per hose of the dispenser i.e. one integral local digital totalizer with display along with mass flow meter transmitter and the second totalizer of liquid crystal backlit display in kg. (999999.99) on the front panel of the dispenser shall be provided.

There shall be a non-resettable & non-volatile totalizer per hose of the dispenser with liquid crystal backlit display in kg. (999999.99) on the front panel of dispenser.

**12.40** All equipment should be communicated with the common communication protocol. (MODBUS/PROFIBUS/HART)

**12.41** All the safety norms to be followed by vendor as per Client guidelines.

**12.42** All the approvals and certification to be provided by vendor for the hardware, software supply as per Client requirements.

**12.43** During installation & commissioning vendor will ensure that routine operation of the equipment will not suffer or vendor will install the equipment as per Client guidelines.

**12.44** RFID Systems

The dispenser must be compatible with future RFID system suitable for monitoring and control of vehicle/vehicle on-board cylinder authentication mechanism. (TBD)



---

### **13.0 REQUIREMENT FOR AUTOMATION SYSTEM IN DISPENSER**

**13.1** It is intended to monitor / control following parameters through automation system:

- Mass Totalizer from Dispenser Motherboard.
- Mass Flow per Filling. (Note that Gas sale data- the reading which is visible to customer and used for billing purpose is mandatory to be transmitted to server whether it is from flow meter or motherboard or from both)
- To Read Gas Selling Price from Dispenser.
- To download the gas selling price into the dispenser from Server system.
- Mass Flow Meter Status.
- Tripping Status Dispenser.
- Reset Switch Operation Status.
- Dispenser Power Supply Status.
- Identity of vehicle using RFID (In-built option to be provided).

**13.2** In addition to above bidder shall make provision for monitoring and control of following parameters as well

#### **A. Shift Reports**

Shift – A: 6:00 to 14:00)

(Shift – B: 14:00 to 22:00)

(Shift – C: 22:00 to 06:00)

- Showing Date /Start time/ Finish time of every shift.
- Individual Arm-wise and Dispenser-wise totals.
- Total sale for each shift in Kgs and Rs.
- Total sale with variable pricing.
- Full day report with total Sale for the 24 Hr. period.

#### **B. Remote Price Change facility to facilitate**

- Station-wise sortable and selectable
- Time-wise selectable
- Area-wise selectable
- Variable price change in a day

#### **C. Transaction reports**

Remotely the following parameters can be viewed in transaction reports





- Station Name and Dispenser serial number.
- Showing Date /Start time/ End time of every filling.
- Individual Arm-wise and Dispenser-wise totalizer at start of filling and end of filling.
- Transaction number totals for individual Arm-wise, Dispenser-wise and Station-wise to count number of fills in selectable particular duration. (Monthly and daily basis)
- Batch reading of fill.
- Sale for each batch in Kgs and Rs.
- Unit price Data.
- Dispenser power ON/OFF count.
- Pressure during last fill
- Vehicle pressure at start of filling
- Vehicle pressure at end of filling
- Temperature during the last fill
- End of sale indicator (Code number showing the reason that the last sale stopped. This is useful if a dispenser stops during a fill for no apparent reason).

**13.3** The remote monitoring and automation will consist of reading, transferring and controlling all the data/parameter from the dispensers to RTU and then to owner supplied centralized remote server in India as per Client requirement.

**13.4** The above list is tentative and final list shall be decided during execution phase.

#### **14.0 VENDOR DATA REQUIREMENTS**

Vendor data requirement shall be strictly as per scope of work.

Vendor shall furnish all the filled data sheets for the approval of Consultant / Client. Vendor shall clearly indicate deviation if any in the respective data sheet.

##### **•INSPECTION AND TESTING**

- Functional and simulation test for the following shall be carried out at vendor's works and shall be witnessed by Client/Third party.
- Control panels along with all instruments mounted in it.
- Following tests shall be carried out by bidder at his works or his sub-vendor's works and test certificates shall be furnished:
  - a) Calibration/test certificates for all instruments, control valves & safety valves.
  - b) Seat leakage test for control valve and safety valve.



- c) Test certificates for safety valve set pressure and reset pressure.
- d) Radiographic test certificates for control valve and safety valve used for ANSI 600 lbs and above rating.
- e) Material test certificates for all line mounted instruments.
- f) Sub-vendor conformity certificates.

## **16.0 LIST OF ATTACHMENTS**

- Data sheet for CNG Dispenser.
- Data sheets formats (along with calibration certificate wherever applicable) for Mass flow meter



---

## **ELECTRICAL SPECIFICATION**

### **17.0 SCOPE OF ELECTRICAL**

**17.1** This specification defines the requirements of design, engineering, supply and installation, testing and commissioning of electrical facilities for CNG Dispenser Package.

**17.2** 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 interchange ability of equipment.

### **18.0 CODES AND STANDARDS**

**18.1** 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.
- d. Regulations laid down by local statutory authorities and Electrical Inspectorate.

**18.2** Vendor shall provide all assistance required for obtaining approvals from statutory authorities for materials, plant design/drawings and complete installation.

**18.3** 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.

**18.4** 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.



---

## **19.0 AREA CLASSIFICATION AND EQUIPMENT SELECTION**

- 19.1** 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.
- 19.2** 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).
- 19.3** Certificate from recognized agency to the effect is required to be produced that equipment supplied and/or installed conforms to above area classification.”
- 19.4** 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.
- 19.5** 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.

## **20.0 EQUIPMENT SPECIFICATIONS**

- 20.1** 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.



- 20.2** 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.
- 20.3** All electrical components and equipment shall be sized to suit the maximum load under the most severe operating conditions.
- 20.4** All electrical equipment shall be supplied with double-compression cable glands, made of nickel-plated brass, tested and certified to be used in zone-1, hazardous area.
- 20.5** 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.
- 20.6** Name of the manufacturer, type of enclosure protection and certificate no. with name of testing/Certifying agency shall be furnished with bids / for approval.
- 20.7** 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.

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

- 20.8** 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.

- 20.9** 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.



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

---

Provision for connecting earth strip at two points inside the dispenser.

Supply cable entry to dispenser shall be suitable for armoured 2.5sq.mm. 4 core.

- 20.10** 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 vendor's shop.



## **MECHANICAL SPECIFICATION**

### **Hoses:**

Two CNG flexible electrically conductive (fill & vent both should be separate) hose, having following specification:

#### **1. Car long hose breakaway to nozzle:**

- Car Dispenser & Bus side dispenser Fill hose (Long)
- Hose ID- 3/8" & 1/2" (Combo dispenser) and 3/8" for Car dispenser.
- OD- 0.77" & 0.5" (Combo dispenser) and 0.77" for car dispenser.
- Length- 3000 mm
- Minimum Bend Radius-4",
- End SIZE 1: - 9/16"-18 UNF SAE6(M)
- End SIZE 2: - 1/4 NPTM, in SS 316
- Nominal Size-3/8",
- Working Pressure: 5000 PSI (345 Bar),
- Minimum Burst Pressure: 20000 PSI (1379 Bar),
- Temperature Range: -40° C to 65° C,
- Electrically conductive polymer core tube, two or more layers of fiber reinforcement, and abrasion resistant urethane cover. Cover must be pinpricked for use with CNG. High-strength conductive polymer core tube is required to dissipate static electrical build-up. Thick urethane covers for abrasion and wear resistance.
- Spring guards must be provided at both ends for the assembly.
- Hose should conform to NFPA 52 & ANSI / CSA NGV 4.2-2014 / CSA12.52-2014

#### **2. Car short hose dispenser to break away:**

- Car Dispenser Fill hose- 1800 mm (Short),
- Hose ID- 3/8" & 1/2" (combo dispenser) and 3/8" in car dispenser.
- OD- 0.77" & 0.5" (combo dispenser) and 0.77" in car dispenser.
- Length- 1800 mm,
- Minimum Bend Radius-4",
- End Size 1- 9/16"-18 UNF SAE 37\* JIC (F) Swivel
- End size 2- 9/16"-18 UNF SAE6(M) (Both Ends), in SS 316
- Nominal Size-3/8",



- Working Pressure :5000 PSI (345 Bar)
- Minimum Burst Pressure: 20000 PSI (1379 Bar),
- Temperature Range: -40° C to 65° C,
- Electrically conductive polymer core tube, two or more layers of fiber reinforcement, and abrasion resistant urethane cover. Cover must be pinpricked for use with CNG. High-strength conductive polymer core tube is required to dissipate static electrical buildup. Thick urethane covers for abrasion and wear resistance.
- Spring guards must be provided at both ends for the assembly.
- Hose should conform to NFPA 52 & ANSI / CSA NGV 4.2-2014 /CSA .52-2014

### 3. Vent hose:

- Vent hose- 3000mm,
- Hose ID- 1/4",
- OD- 0.63",
- Length- 3000 mm
- Minimum Bend Radius-2",
- End SIZE 1: - 9/16"-18 UNF SAE6(M)
- End SIZE 2: - 1/4 NPTM, in SS 316
- Nominal size - 1/4"
- Working Pressure: 5000 PSI (345 Bar),
- Minimum Burst Pressure: 20000 PSI (1379 Bar),
- Temperature Range: -40° C to 65° C,
- Electrically conductive polymer core tube, two or more layers of fiber reinforcement and abrasion resistant urethane cover. Cover must be pinpricked for use with CNG. High-strength conductive polymer core tube is required to dissipate static electrical buildup. Thick urethane covers for abrasion and wear resistance.
- Spring guards must be provided at both ends for the assembly.
- Hose should conform to NFPA 52 & ANSI / CSA NGV 4.2-2014 / CSA52-2014

### Nozzles:

Both hose shall be fitted with NGV-I nozzle for filling of vehicles. Specification for NGV 1 nozzle is as follows:

Nozzle Type	NGV-1 TYPE 2 , CLASS B
-------------	------------------------





**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

Normal working pressure	PN 200 bar
Temperature Range	0 deg C to +85 deg C
Max. Length	Max. 115 mm
Cv minimum	1.05
Max. weight	0.65 kg
Min flow rate	1500 SCFM @ 3000 Psig
Max nozzle body diameter	2 inches
Filling Line Male Thread	UNF 9/16"-18 Female or 1/4" Male NPT

**3-way valve:**

Vendor shall include the supply of 3-way valve with each hose for filling & venting of gas. Specifications are as follows:

Connection Size	:	1/4 "NPT Female (All three end)
Pressure Rating	:	5000 PSI (minimum)
Temperature Rating	:	0 to 70 deg. C
Minimum Life	:	40000 cycles at site conditions (one on & off is considered as one cycle)

**Material of construction**

Body	:	SS 316 as per ASTM A276 or as per ASTM A479 or ASTM A 182
Ball	:	SS 316 ASTM A479 or Alloy S21800 as per ASTM A276
Stem	:	SS 316 ASTM A479 or as per ASTM A276
End connection	:	SS 316 ASTM A479 or ASTM A 276
Seat carrier	:	SS 316 as per ASTM A276
Seat springs	:	Alloy X-750 / AMS 5542 / 17-7 PH
Seat	:	PEEK
O-rings	:	BUNA-N or BUNA-C or Fluorocarbon FKM
Backup rings/bearings	:	PEEK / PTFE
Orifice Size / Cv	:	min 4.75 mm / min 0.62
Weight	:	Max. 350 grams.

**Design Features**

1. The valve should be of trunnion ball design.

- 
2. Blow out resistant two-piece ball/stem.
  3. Should have positive handle stoppers.
  4. Flow direction indication must be there on handle.
  5. Directional indication must be provided for panel mounting.
  6. Complete repair kit must be available and comprises of (all internals installed in valve body) following items:
    - a. Stem
    - b. Stem washer
    - c. All sealing rings for stem i.e. stem o-rings, primary backup rings, secondary backup rings etc.
    - d. All Seat with carrier
    - e. All Seat retainer o-rings, backup rings, guide, springs etc.
    - f. Connector end seals
    - g. Ball trunnion
    - h. Trunnion bearing

**Break away: -**

Vendor shall also include supply of Breakaway Coupling, suitable for NGV Industry. Vendor shall Demonstrate the function of breakaway coupling during performance test.

**NOTE:**

**Similar detail for (combo) Bus side dispenser as applicable.**



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

<b>CAR DISPENSER DATASHEET</b>			
<b>S.No</b>	<b>PARAMETRER</b>	<b>SPECIFICATION</b>	<b>OFFERED</b>
1.0	<b>Dispenser</b>	Car	
1.1	Make		
1.2	Model		
1.3	Normal inlet Pressure Kg/cm <sup>2</sup> g	255	
1.4	Maximum Fill Pressure kg/cm <sup>2</sup> g	200	
1.5	Operating Temperature range of wetted parts	(-) 10 °C to 60 °C	
1.6	Flow Rate (kg/min)	15	
1.7	Normal flow (kg/min)		
1.8	Minimum flow (kg/min)		
1.9	Overall Cv of dispenser from inlet of dispenser to outlet of fill nozzle		
1.10	Batch accuracy	1.5%	
2.0	<b>Electrical supply</b>	AC 230 Volts 10% 50 Hz 3 %	
2.1	Tolerance value of voltage range for accurate operation		
3.0	<b>Fill Nozzle</b>		
3.1	Type	NGV1 for both side. Hose shall be suitable for NZS 5425 also.	
3.2	Make	Refer Technical specification	
3.3	Pressure Rating kg/cm <sup>2</sup> g	255 Kg/cm <sup>2</sup> g	
4.0	Flexible fill & vent hose	Both should separate	
4.1	Type		
4.2	Make		
4.3	Pressure rating kg/cm <sup>2</sup> g		
5.0	<b>Sequential filling</b>	Three Bank	
6.0	<b>Mass Flow Meter</b>		
6.1	No. of metering lines	Two independent	
6.2	Metering principle	Coriolis	
6.3	Make		
6.4	Model		
6.5	Mas flow accuracy for gas meter (inclusive of linearity, hysteresis, repeatability errors)	0.5 %	
6.6	Repeatability	0.25%	



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

7.0	<b>Temperature compensation</b>	yes	
8.0	<b>Breakaway coupling</b>	yes	
NOTE: For all Electrical/Instrumentation items vendor shall provide certificates issued by statutory Inspection Authority confirming suitability of Design/Construction for specified Hazardous Area Classification.			

<b>CAR CUM BUS COMBO CNG DISPENSER DATASHEET</b>			
<b>SR. No</b>	<b>PARAMETRER</b>	<b>SPECIFICATION</b>	<b>OFFERED</b>
1.0	<b>Dispenser</b>	Car Cum Bus Combo	
1.1	Make		
1.2	Model		
1.3	Normal inlet Pressure Kg/cm <sup>2</sup> g	255	
1.4	Maximum Fill Pressure kg/cm <sup>2</sup> g	200	
1.5	Operating Temperature range of wetted parts	(-) 10 °C to 60°C	
1.6	Flow Rate (kg/min)	15 (car side) & 75 (bus side)	
1.7	Normal flow (kg/min)		
1.8	Minimum flow (kg/min)		
1.9	Overall Cv of dispenser from inlet of dispenser to outlet of fill nozzle for fill nozzle		
1.10	Batch accuracy	1.5%	
2.0	<b>Electrical supply</b>	AC 230 Volts 10% 50 Hz 3 %	
2.1	Tolerance value of voltage range for accurate operation		
3.0	<b>Fill Nozzle</b>		
3.1	Type	NGV1 and NGV 2	
3.2	Make	Refer vendor list	
3.3	Pressure Rating kg/cm <sup>2</sup> g	255 Kg/cm <sup>2</sup> g	
4.0	Flexible fill & vent hose	Both should separate	
4.1	Type		
4.2	Make		
4.3	Pressure rating kg/cm <sup>2</sup> g		
5.0	<b>Sequential filling</b>	Three Bank for CAR end and single bank for BUS end	



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

6.0	<b>Mass Flow Meter</b>		
6.1	No. of metering lines	Two independent	
6.2	Metering principle	Coriolis	
6.3	Make		
6.4	Model		
6.5	Mas flow accuracy for gas meter (inclusive of linearity, hysteresis, repeatability errors)	0.5 %	
6.6	Repeatability	0.25%	
7.0	<b>Temperature compensation</b>	yes	
8.0	<b>Breakaway coupling</b>	yes	
NOTE: For all Electrical/Instrumentation items vendor shall provide certificates issued by statutory Inspection Authority confirming suitability of Design/Construction for specified Hazardous Area Classification.			

<b>MASS FLOW METERS (CORIOLIS TYPE) FOR DISPENSER</b>					
<b>units</b>	Flow - >CNG		CNG- Kg/Hr Pressure- >	Temperature- > °C	Level /Length- >mm
<b>General</b>	1	Tag			
	2	Line No			
	3	Service			
<b>Meter</b>	4	Type			
	5	Function			
	6	Conn size : size & rating			
	7	Facing & Facing			
	8	Body material			
	9	Wetted Parts Material			
	10	Enclosure			
	11	Conduit Connection			
	12	Range			
	13	Accuracy			
<b>Convertor</b>	14	Load resistance - ohms			
	15	Output			
	16	Power supply			
	17	Area classification			
	18	Intrinsically safe /Expl. Proof			
	19	Enclosure			
	20	Conduit connection			
	21	Mounting			
22	Distance from control room				
<b>Options</b>	23	Filter/Mesh Wire			



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

	24	Mounting Brackets			
	25	Interconnecting			
	26	Special cabling			
	27	Cable glands			
	28	Accessories for hot tap			
<b>Service Conditions</b>	29	Fluid & state			
	30	Maximum Flow			
	31	Minimum Flow			
	32	Normal Flow			
	33	Pressure – Open. Max.			
	34	Temp. C – Open. Max.			
	35	Oper. S.G. Mol. Wt			
	36	Max. Order Viscosity mpa. s(cp)			
	37	Max. Allowable Pr. Drop			
	38	Model No. Meter c convertor			
	39	Specification Remarks			
	40	Specification Remarks			

**QUALITY ASSURANCE PLAN  
OF  
CNG DISPENSER AND COMBO DISPENSER (CAR CUM BUS DISPENSER)**

S.No	OPERARATION / PARAMETER	CHARACTERISICS / PARAMETERS	ACCEPTANCE CRITERIA & CERTIFICATION	VENDOR	TPIA	CLIENT/PMC	REMARKS
1	Dispenser Frame	Visual, Dimensional, Fitment & Alignment, Physical Test, Chemical Test	Technical specification in PO	P	W	R	
2	Mass Flow Meter	Visual, Dimensional, Fitment & Alignment, Physical Test, Chemical Test, Calibration	Calibration certificate of all measuring test / instruments and gauges & Technical Specification in PO	P	W	W/R	
3	Actuator Valves	Visual, Dimensional, Fitment & Alignment, Physical Test, Chemical Test, Running Test, Leak Test	Calibration certificate of all measuring test / instruments and gauges & Technical Specification in PO	P	W	R	
4	Filling Hose	Visual, Dimensional, Fitment & Alignment, Physical Test, Chemical Test, Running Test, Pressure Test	Technical specification in PO	P	W	W/R	
5	Totaliser	Visual, Dimensional, Fitment & Alignment, Dispenser should automatically stop in case of failure of totaliser	Calibration certificate of all measuring test / instruments and gauges & Technical Specification in PO	P	W	W/R	
6	Software	Check for single & three bank system	Technical specifications in PO	P	W	W/R	
7	Pressure Gauge	Visual, Dimensional, Fitment & Alignment, Physical Test, Chemical Test, Calibration	Calibration certificate of all measuring test / instruments and gauges & Technical Specification in PO	P	W	R	
8	Pressure Transducer	Visual, Dimensional, Fitment & Alignment, Physical Test, Chemical Test, Calibration	Calibration certificate of all measuring test / instruments and gauges	P	W	W/R	



			& Technical Specification in PO				
9	Shut off valves	Visual, Dimensional, Fitment & Alignment, Physical Test, Chemical Test, Check for manual shut off	Calibration certificate of all measuring test / instruments and gauges & Technical Specification in PO	P	W	W/R	
10	Performance test (using CNG)	Batch accuracy test, Flow capacity test	W&M Certificate from country of origin, Calibration certificate of all measuring test / instruments and gauges & Technical Specification in PO	P	W	W	
11	Dispenser response	Power failure, Failure of metering, Failure of totaliser, Noise & vibration, Paint shade Verification, Test certificate for bought out components	Calibration certificate of all measuring test / instruments and gauges & Technical Specification in PO	P	W	W	

Notes:

1. The above testing and acceptance criteria are minimum requirements; however, manufacturer shall ensure that the product shall also comply to the additional requirements as per particular Technical Specification (PTS) and Data Sheet.
2. The supplier shall submit their own detailed QAP prepared on the basis of above / Technical specification for approval of Owner/Owner's representative.
3. Supplier shall submit calibration certificates of all instruments/Equipment to be used for inspection and Testing to TPIA with relevant procedures and updated standards for TPIA review/Approval. All reference codes / documents shall be arranged by vendor for reference of TPIA at the time of inspection.
4. Owner / Owner's representative include TPIA will have the right to inspect activity of manufacturing at any time.
5. TPIA along with Owner / Owner's representative shall review/approval all the documents related to QAP/Quality manuals/Drawings etc., submitted by supplier.
6. Contractor shall in coordination with supplier/sub vendor shall issue detailed production and inspection schedule indicating the dates and the location of facilities Owner/Owner's representative and TPIA to organise inspection.
7. Special manufacturing procedure have to be specially approved or only previously approved procedures have to be used, in case of conflict between specification more stringent condition shall be applicable.



**CITY GAS DISTRIBUTION PROJECT  
OF  
& KOLHAPURDISTRICT**

**HPOIL GAS PRIVATE LIMITED (HOGPL)**

**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

**VDR- CNG DISPENSER AND COMBO DISPENSER (CAR CUM BUS  
DISPENSER)**



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

S. No.	DESCRIPTION	To be submitted with Bid	To be submitted for Approval		To be submitted for Shipment		Submit as certified Final / As Built	
			Required	Days after PO	Required	Days after PO	Required	Days after PO
1.0	<b>GENERAL</b>							
1.1	Filled in Material Requisition Compliance Schedule & checklist	✓						
1.2	Filled in Deviation Schedule.	✓						
1.3	Duly filled up "Experience Record Schedule". Vendor to note that information furnished by them shall be used to assess the provenances of offered Dispensers and Qualification of vendor, Accordingly vendor to furnish references of those cases which are matching with offered Dispensers.	✓						
1.4	Installation manual						✓	✓
1.5	List of components of Dispenser with Make & Specification of components. Vendor shall also submit "Technical Catalogues" of components	✓	✓		✓		✓	
1.6	Start-up, (SOP) operation & maintenance manual showing assembly details and critical tolerances. A copy of all certified drawings & documents to be enclosed.				✓		✓	
1.7	Lubricant list with specification				✓		✓	
1.8	Battery limit (interface) drawing/ information	✓	✓	21				



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

S. No.	DESCRIPTION	To be submitted with Bid	To be submitted for Approval		To be submitted for Shipment		Submit as certified Final / As Built	
			Required	Days after PO	Required	Days after PO	Required	Days after PO
1.9	Drawing list and submission schedule		✓	14				
1.10	Project implementation schedule, ordering and inspection schedule for long lead and major items		✓	14				
1.11	Pre-commissioning & commissioning procedure		✓	21				
1.12	Performance guarantee test procedure		✓	21				
1.13	Weights & Measures Certificates from the country of origin for offered models of CNG Dispensers unit model/mass flow meter model for dispensing specified mass flow rate at specified overall batch accuracy.		✓	14			✓	
1.14	The "Test Certificate" for mass flow meter.		✓	21			✓	
1.15	Weights & Measures approval from Indian Authorities.		✓				✓	
1.16	Type approval for the offered dispenser from Petroleum & Explosive safety organization, Govt. of India	✓	✓				✓	
<b>2.0</b>	<b>DESIGN</b>							
2.1	Process flow diagrams (PFDs) and Piping & Instrumentation diagrams (P&IDs) of sub systems and complete system with write-up on operation		✓				✓	



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

S. No.	DESCRIPTION	To be submitted with Bid	To be submitted for Approval		To be submitted for Shipment		Submit as certified Final / As Built	
			Required	Days after PO	Required	Days after PO	Required	Days after PO
2.2	Data sheets of Bus & Car CNG Dispensers, Mass flow meter duly filled up.	✓	✓				✓	
2.3	Basic design calculations for system design, equipment selection		✓				✓	
2.4	Performance data, vendor literature for equipment selection, performance curves with duty point marked for individual equipment		✓				✓	
2.5	Specification for piping material & valves.		✓				✓	
2.6	Utility requirement	✓	✓				✓	
2.7	Detail of control wiring diagram, interlock/shutdown/control scheme with write up on operation. Sizing calculation for instrument items.		✓				✓	
2.8	Dispenser communication port details and requirement information as per specification and list of signals		✓				✓	
<b>3.0</b>	<b>CONSTRUCTIONAL FEATURES</b>							
3.1	G.A. drawing of Dispensers showing maintenance clearances required.	✓	✓				✓	
3.2	Cross section drawings of individual equipment/skid, material & parts list.		✓		✓			
3.3	Termination & Wiring Diagrams		✓		✓			
<b>4.0</b>	<b>SPARES</b>							



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

S. No.	DESCRIPTION	To be submitted with Bid	To be submitted for Approval		To be submitted for Shipment		Submit as certified Final / As Built	
			Required	Days after PO	Required	Days after PO	Required	Days after PO
4.1	List of spares with rates for two years normal operation per CNG Dispensers.	✓						
5.0	Drawings, documents, data as asked under Electrical & Instrumentation specifications of this Material Requisition.		✓		✓		✓	



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

**VENDOR DATA REQUIREMENT (INSTRUMENTATION)**

S. No.	DESCRIPTION	To be submitted with Bid	To be submitted for Approval		To be submitted for Shipment		Submit as certified Final / As Built	
			Required	Days after PO	Required	Days after PO	Required	Days after PO
1	Drag and Document Schedule	✓						
2	Piping and Instrument Diagram	✓	✓				✓	
3	Instrument Index	✓					✓	
5	Sub- Vendor List for Instruments and Accessories		✓					
6	Instrument Sizing calculations		✓	21			✓	
7	Utility requirements	✓						
8	Level Sketches	✓						
9	Functional schematic	✓					✓	
10	Logic diagrams		✓	21			✓	
11	Instrument loop drawings		✓				✓	
12	Control room layout		✓	14			✓	
13	Panel front arrangement		✓	21			✓	
14	Power Supply Distribution		✓				✓	
15	Wiring diagram for panels		✓				✓	
16	Configuration diagram		✓					
17	I/O assignment	✓					✓	
18	Details of OPC, configuration port, signals details etc		✓				✓	
19	Instrument Duct/Tray layout		✓				✓	
20	Instrument Cable schedule		✓				✓	
21	Instrument location plans		✓				✓	



**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

S. No.	DESCRIPTION	To be submitted with Bid	To be submitted for Approval		To be submitted for Shipment		Submit as certified Final / As Built	
			Required	Days after PO	Required	Days after PO	Required	Days after PO
22	Instrument installation drawings		✓				✓	
23	Bill of material for installation items		✓				✓	
24	Spare part list for						✓	
	(a) 2 years operation						✓	
	(b) Start up and commissioning						✓	
	(C) Spare instruments (10%).				✓		✓	
25	Inspection and test procedures		✓		✓			
26	Complete catalogues with part list for all vendor supplied instruments, controls etc.	✓					✓	
27	Installation, operation and maintenance manuals						✓	

Note: -

This list indicates the minimum drawings and document requirements. However, vendor shall submit a complete list of document and drawing schedule listing all drawings and documents to be submitted by them during the course of execution of the job. The schedule shall list all drawings and documents along with their number and expected date of submission.





**CITY GAS DISTRIBUTION PROJECT OF  
DISTRICT & KOLHAPUR DISTRICT**

S. No.	DESCRIPTION	To be submitted with Bid	To be submitted for Approval		To be submitted for Shipment		Submit as certified Final / As Built	
			Required	Days after PO	Required	Days after PO	Required	Days after PO
22	Instrument installation drawings		✓				✓	
23	Bill of material for installation items		✓				✓	
24	Spare part list for						✓	
	(a) 2 years operation						✓	
	(b) Start up and commissioning						✓	
	(C) Spare instruments (10%).				✓		✓	
25	Inspection and test procedures		✓		✓			
26	Complete catalogues with part list for all vendor supplied instruments, controls etc.	✓					✓	
27	Installation, operation and maintenance manuals						✓	

Note: -

This list indicates the minimum drawings and document requirements. However, vendor shall submit a complete list of document and drawing schedule listing all drawings and documents to be submitted by them during the course of execution of the job. The schedule shall list all drawings and documents along with their number and expected date of submission.



**CITY GAS DISTRIBUTION PROJECT  
OF  
& KOLHAPUR DISTRICT**

**HPOIL GAS PRIVATE LIMITED (HOGPL)**

**CITY GAS DISTRIBUTION PROJECT  
OF  
& KOLHAPUR DISTRICT**

REV	DATE	DESCRIPTION	PREP	CHKD	APPR
D1	26.07.2020	ISSUED FOR BID	SS	RNR	RNR



## CITY GAS DISTRIBUTION PROJECT OF & KOLHAPUR DISTRICT

SR. NO.	NAME OF TPIA	ADDRESS	PHONE NO.	FAX NO.
1	Tata Projects Ltd.	22, Sarvodaya Society, Nizampura, Baroda-390002	0265-2392863	0265-2785952
2	Bax counsel Insepection Bureau Pvt. Ltd.	303, Madhava, Bandra Kurla Complex, Bandra(E), Mumbai-400051	022-26591526, 022-26590236	022-26591526
3	Germanischer Lloyd	4th Floor, Dakshna Building, Sec-11, Plot NO.2, CBD Belapur, Navi Mumbai 400 614	022-4078 1000	022-4024 2935
4	ABS Industrial Verification Ltd., Mumbai	404, Mayuresh Chambers, Sector-11, CBD Belapur(E), Navi Mumbai-400614	022-27578780 /1 /2	022-27578784 / 5
5	Certification Engineers International Ltd.	EIL Bhavan, 5th floor, 1, Bhikaji Camma Place, New Delhi-110066	011-26167539, 26102121	011-26101419
6	Dalal Mott MacDonald	501, Sakar -II, Ellisbridge, Ahmedabad-380006	079-26575550	079-6575558
7	International Certification Systems	E-7, Chand Society, Juhu Road, Juhu, Mumbai-4000049	022-26245747	022-226248167
8	SGS	SGS India Pvt. Ltd., SGS House, 4B, A.S. Marg, Vikhroli(W), Mumbai-400083	022-25798421 to 28	022-25798431 to 33
9	Intertek Moody	9th Floor, Kanchenjunga Building, 18- Barakhamba Road, New Delhi-110001	011-4713 3900	011-4713 3999
10	TUV SUD South Asia	C-153/1, Okhla Industrial Ara, Phase-1, New Delhi-110020	011-3088 9611/9797	011-3088 9598
11	TUV Rheinland (India) Pvt. Ltd.	F-51, Kailash Complex GF, Veer Savarkar Marg, Vikhroli Park Site, Vikhroli(W), Mumbai-400079	022-4215 5435	022-4215 5434
12	Vincott International India Assessment Service Pvt. Ltd.	C-301, Mangalya Premises Cooperative Soc. Ltd, Off. Marol Maroshi Road, Andheri(E), Mumbai-400959	022-4247 4100	022-4247 4101
13	Meenaar Global Consultants	Regd. Off : C-8, 8327, Vasant Kunj, New Delhi-110070 Optn. Off.: HN-592, Sector-16A, Faridabad-121002, Haryana, India. Mr. Jayesh Narang Mr. Nitin Taneja (Project Manager)	M: +91-9818724663 M: +91-9711212783 M: +91-9810755700 T: +91-129-4072836	Web : www.meenaar.in Email : nitin.taneja@meenaar.in ; meenar2@gmail.com
14	DNV			



**CITY GAS DISTRIBUTION PROJECT  
OF  
KOLHAPURDISTRICT**

**HPOIL GAS PRIVATE LIMITED (HOGPL)**

**CITY GAS DISTRIBUTION PROJECT  
OF  
KOLHAPUR DISTRICT**

**LIST OF APPROVED VENDOR FOR  
BOUGHT OUT ITEMS**




**1. Mass flow meter**

- a. All MFM certified by W &M India for CNG application, some are
- b. Micro Motion (CNG 50) with integral display
- c. Mass Flow Measuring System COMPAC- KG80 with display
- d. E&H (CNG Mass) with integral display

**2. Pressure Transmitter**

- a. Druck
- b. Wika
- c. Honeywell
- d. ABB
- e. Rosmount

**3. Pressure Regulator & slam shut valve**

- a. M/s Pietro Fiorentini S.p.A (Italy)
- b. M/s Emerson Process Management
- c. M/s RMG Regel Messtechnik (Germany)
- d. M/s Mokved Valves BY (Netherlands)
- e. M/s Tartarini
- f. M/s Fisher
- g. M/s Gortter controls (Netherlands)
- h. M/s Dresser
- i. M/s Nirmal (UPTO # 600)

**4. Ball Valves**

- a. Hopkinsons Limited (UK)
- b. O.M.S. Saleri (Italy)
- c. Pibi Viesse
- d. Perar SPA (Italy)
- e. Larsen & Toubro Ltd. (Audco India Ltd Chennai)
- f. Microfinish Valves Ltd. (Hubli)
- g. Pietro
- h. Fiorentini (Italy)
- i. Swagelok
- j. SS Ball Valves – Parker (USA)

**5. Pressure Safety Valve**

- a. M/s BHEL, OFE & OE Group (New Delhi)/
- b. M/s Keystone Valves (India) Pvt. Ltd. Baroda
- c. M/s Sevim Sarasin Valves India (P) Ltd. (New Delhi-Halol-Gujarat)
- d. M/s Tyco Sanmar Ltd. (New Delhi)
- e. M/s Parcol SPA, Italy
- f. M/s Sarasin, France
- g. M/s Tai Milano SPA, Italy
- h. M/s Fisher Rosemount (Now M/s Emerson Process)
- i. M/s Parker

**6. Pressure Gauges & temperature Gauges**

- a. M/s AN Instruments Pvt. Ltd., New Delhi



- b. M/s Altop
- c. M/s General Instruments Ltd., Mumbai
- d. M/s WIKA,

**7. Fittings**

- a. M/s Swagelok
- b. M/s Parker

**8. SS valves (2/3 way)**

- a. M/s Swagelok (USA)
- b. M/s Parker (USA)

**9. SS Tubing**

- a. Sandvik
- b. Tubacex
- c. Parker (USA)

**10. Solenoid Valve**

- a. M/s ASCO
- b. M/s Rotex
- c. M/s parker Hanifen

**11. On / Off Pneumatic Valve**

- a. M/s Parker
- b. M/s Swagelok

**12. Cables & wires**

- a. INCAB
- b. Universal
- c. ASEAN
- d. CCI
- e. FORT Closter
- f. Finolex
- g. KEI
- h. Cord

**13. Barrier/ Isolators/Surge protector**

- a. MTL
- b. Phoenix
- c. P&F

**14. Fuelling Nozzle**

- a. NGV/NZS
- b. OPW5000 series / Sherex
- c. WEH
- d. COMPAC
- e. STAUBLI
- f. Parker

**15. NGV Nozzle**



- a. OPW
- b. Staubli
- c. Hoses
- d. Parker
- e. Swagelok
- f. Eton

**16. Breakaway coupling**

- a. OPW ILB1
- b. Weh
- c. Parker
- d. Staubli

## CHECKLIST - TECHNICAL

### CHECKLIST – TECHNICAL

Bidder confirms following, as a minimum, has been enclosed in the offer.

S.NO.	Requirements	Compiled by Bidder(Tick)
1	Reference List of previous supply of Procured item	<input type="checkbox"/>
2	Filled – up Data Sheets, duly signed and stamped by bidder enclosed.	<input type="checkbox"/>
3	List of recommended commissioning spares and accessories for Procured item.	<input type="checkbox"/>
4	List of recommended spares and accessories for two year normal operation for procured item.	<input type="checkbox"/>
5	Compliance statement duly filled and stamped enclosed.	<input type="checkbox"/>
6	GA & assembly drawings, cross section drawings including part list & material list enclosed.	<input type="checkbox"/>
7	Other technical details & vendor's product catalogues enclosed.	<input type="checkbox"/>



**COMPLIANCE STATEMENT**

**COMPLIANCE STATEMENT**

S.No	Requirement	Bidder's Confirmation
1	Bidder confirms that all materials proposed by the bidder are same/ superior to those specified in specification/ data sheets enclosed.	
2	Bidder confirms that the offer is in total compliance with the Technical requirements of the Material Requisition. Bidder confirms that deviation expressed or implied anywhere else in the offer shall not be considered valid.	
3	Bidder confirms that all spares and accessories required for two years of normal operation have been quoted separately.	
4	Bidder confirms that prices for start-up/commissioning spares and accessories have been included in the quoted items.	
5	Bidder confirms that in the event of securing order for the requisitioned item(s), good for manufacturing drawings of ordered item(s) shall have complete details with dimensions, part list and material list including back-up calculations in the first submission, failing which the vendor shall be solely responsible for any likely delay in delivery of item(s).	

**Bidder's Signature with Stamp**


## DEVIATION SHEET

### DEVIATION/ EXCEPTION/ CLARIFICATION SHEET

Sr. No.	Contractor's Inquiry Reference	Contractor's Requirement	Proposed Deviation by Supplier, with Technical Justification	Cost Impact, if any	Contractor's Conclusions

#### NOTES

- 1- Bidder confirms that apart of from the deviations/exceptions/clarifications listed above, the bid is in full compliance with Inquiry requisition.
- 2- Bidder shall submit this sheet duly filled up and signed by him along with his bid. In case there is no deviation, then also supplier shall submit this sheet along with his bid indicating NIL deviation.

(Contractor's Name and Signature with Seal)

REV	DATE	DESCRIPTION	PREP	CHK	APPR
0	25.05.2017	ISSUED AS STANDARDS	AS	GS	AD

	<b>DRAWINGS &amp; DOCUMENTS</b>	
--	---------------------------------	--

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

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

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.
2. Filled in Quality Assurance Plan (QAP) for Purchaser's/ Consultant's approval. These QAPs shall be submitted in two copies within 15 days from LOI/ FOI.
3. Detailed completion schedule activity wise (Bar Chart), within one week of placement of order.

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

0	25.05.2017	ISSUED AS STANDARDS	AS	GS	AD
<b>REV</b>	<b>DATE</b>	<b>DESCRIPTION</b>	<b>PREP</b>	<b>CHK</b>	<b>APPR</b>

	<b>INSTRUCTION TO BIDDER</b>	
--	------------------------------	--

**INSTRUCTION TO BIDDERS**

1. Bidder to note that no correspondence shall be entered into or entertained after the bid submission.
2. Bidder shall furnish quotation only in case he can supply material strictly as per this Material Requisition and specification/data sheet forming part of Material Requisition.
3. If the offer contains any technical deviations or clarifications or stipulates any technical specifications (even if in line with MR requirements) and does not include complete scope & technical / performance data required to be submitted with the offer, the offer shall be liable for rejection.
4. Bidder must submit all documents as listed in checklist with his offer.
5. Supplier must note that stage wise inspection for complete fabrication, testing including the raw material inspected to be carried out.
6. Vendors for bought out items to be restricted to the approved vendor list attached with bid document. Approval of additional vendor if required, for all critical bought out items shall be obtained by the supplier from the purchaser before placement of order. Credentials/PTR of the additional vendor proposed to be submitted by supplier for review and approval of Purchaser/ Purchaser's representative

0	25.05.2017	ISSUED AS STANDARDS	AS	GS	AD
<b>REV</b>	<b>DATE</b>	<b>DESCRIPTION</b>	<b>PREP</b>	<b>CHK</b>	<b>APPR</b>

	<b>LIST OF SPARES</b>	
--	-----------------------	--

<b>LIST OF SPARES</b>			
S.No.	Part No.	Description	Quantity(Minimum)
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

**REFERENCE LIST**

**REFERENCE LIST**

SI No.	Project	Year of Supply	Client , Address and Contact No.	Email	Size and Rating / thk	Service

|| Bidder' s Signature with stamp

