

Qualification Criteria :

- 1 Should have sustained history of credible performance in Medical Gases Pipeline System installations with an uninterrupted experience of 7 years at least.
- 2 Experience in installation of medical Gas Pipeline System in India on turnkey basis (List of hospitals preferably along with year of installation is to be provided) with Technical bid .
- 3 Should have executed at least 10 Medical Gas Pipeline installations in India complete in all respect of similar nature and magnitude or above during the last 10 years. Out of these 10 projects at least 5 should be of Government hospital with pendants and modular panels of international standard. (Order copies & completion certificate to be provided) with Technical Bid.
- 4 Should have executed at least one medical gas pipe line projects in government hospital in India with same makes and should be running satisfactorily from last 1 years valuing at least Rs 5 crore.
- 5 Sound financial, basis justifying the capability of firm to complete the project in uninterrupted manner within the stipulated time frame. (with technical bid). The company should have a minimum turnover of Rs 20 Crores in the last financial year and average turnover for last three years should be at least 10 crores.
- 6 A positive attitude highlighting company's own positive points and achievements.
7. Sound organizational structure, (Details of manpower for project & after sales services with qualification & experience). Should be a registered company with registrar of companies of at least 5 years standing.
8. Should have PF registration and should be ISO 9001 certified company.
9. Should be providing operation , running and maintenance of at least two govt. hospitals in India .

Technical Specifications

For Medical Gases Pipeline System

A Oxygen System

- 1 **Oxygen Manifold (size 10+10)** **- Indigenous**
Oxygen manifold extendable type size 10 + 10 for bulk oxygen cylinders, Manifold should be suitable to withstand a working pressure of 140 Kg / cm² and should be Tested after Installation at 140 Kg/cm² oxygen cylinder pressure. Manifold should also have high pressure copper annealed tail pipes with one end having Brass adaptor suitable for oxygen cylinders and other end suitable for Manifold Non-Return Valves. Manifold should also have 20 brass non-return valves for individual oxygen cylinder. Manifold middle frame of 10 + 10 size should be made with circumferential mild steel flat duly powder coated with black colour & along with chain for individual bulk O₂ cylinder.
(approved make PES /Prime Automations/MDD)

- 2 **Fully Automatic Control Panel (for Oxygen)_** **- Imported**

Automatic control panel should be microprocessor based with digital display and constructed in accordance with the requirement of international standard .

The Control Panel should be **UL (Underwriters Laboratories) Listed** , should comply with **NFPA-99 (National Fire Protection Act -99),USA and CSA** approved The manifold assembly should provide two stages of pressure regulation. A single stage primary regulator, one for each cylinder bank should be used to initially reduce cylinder pressure and two single stage pressure regulators should be provided in the control cabinet for final delivery pressure regulation. One delivery pressure regulator in service and one should be ready for service in a Stand -By mode.

Cycology is a registered trademark of GE Plastics.

FEATURES:

Accepts Ohmeda Diamond / PB type Gas Specific Adapters.

Pin indexed to prevent interchangeability of gas services.

Each outlet is cleaned for medical gas service and pressure tested.

Less than 3 psi (21KPa) pressure drop through the outlet @ 120 l/min and 50 psig (345KPa) inlet pressure.

Inlet pipe can be swiveled 360 degrees for ease of installation.

Gas specific back bodies can accept either Quick connect or DISS front identification bodies.

Outlet can be adjusted up to 1 1/4" (32mm) wall thickness.

(approved makes Ohio Medical, USA/PenLon/Allied /CMS, UK/)

5. Oxygen Flow meter with Humidifier Bottle - Imported

Black Pressure Compensated flow meter should be of accurate gas flow measurement with following features:

A) Control within a range of 0-15 LPM .

B) It should meet strict precision and durability standard .

C) The flow meter body should be made of brass chrome plated materials.

D) The flow tube and shroud components should be made of clear , impact resistant polycarbonate.

E) Flow tube should have large and expanded 0-15 LPM range for Improved readability at low flows .

F) Inlet filter of stainless steel wire mesh to prevent entry of foreign particles

G) The humidifier bottle is made of unbreakable & reusable polycarbonate material and autoclavable at 134 degree centigrade

(approved makes Ohio Medical, USA/PenLon/Allied /CMS, UK/)

**6. High pressure tube - Imported
(O₂, N₂O, C.Air & Vacuum)**

It should be imported colour coded for individual services antistatic rubber tube as per ISO standards.

(approved makes Ohio Medical, USA/PenLon/Allied /CMS, UK/)

7. Valve Box - Imported

Valve box should comply with NFPA -99 and should consist of a recessed steel box. and a removable window The window should be able to be reinstalled without the use of tools, but only with the valve(s) in the open position. The window should be labeled "CAUTION: MEDICAL GAS SHUT-OFF VALVE- CLOSE ONLY IN EMERGENCY" The valves should be oxygen cleaned, full port, three piece ball-type with flanges to allow easy service and installation. The valve should have a bronze body, and a blowout proof stem. The valve ball should be bronze chrome plated, and the seats and packing should be Teflon (PTFE). Each valve in valve box should have a pressure rating of 600 psig, meet NFPA standard and be hydrostatically tested.

Type "K" copper pipe extensions that are cleaned for medical gas service should be fitted into each side of the valve. A gauge port should be drilled into one of the pipe extensions for the purpose of inserting a gauge. The gauges should have a 2" (50 mm) dial, be ASME B40.1 Grade B. The valve assembly should be plugged or capped to prevent contamination.

Each valve should have a bracket used to identify the gas being handled by means of a gas specific label. A lever type handle should be used to operate the valve(s); the valve should be changed from fully open to fully close through a quarter turn of the handle.

(approved makes Ohio Medical, USA/PenLon/Allied /CMS, UK/)

8 **Copper Piping**
(Approved makes Metal Gems/Rajco /Mexflow make)

- Indigenous

- 1.1 **Copper pipes (material):** Copper Pipes used should be solid drawn, seamless, deoxidized, non arsenical, half hard, tempered and degreased, manufactured as per BS 2871

Pipe sizes should be used as per latest BS EN 13348 standards

54mm OD X 1.2mm thk
42mm OD X 1.2mm thk
28mm OD X 1.0mm thk
22mm OD X 1.0 mm thk
15mm OD X 1.0 mm thk
12mm OD X 1.0 mm thk

Pipeline Installation: Before erection, all copper pipes, valves, fittings like bends, tees, reducers etc. should be cleaned for dirt, and Should be degreased.

Proper pipe cutters, and bending machine should be used during installation of copper pipes.

All copper pipes and fittings like bends, Tees, reducers and straight couplings Should be as per BS 864 and joined by silver brazing method for copper to copper. Inert gas welding technique Should be used by passing Nitrogen gas inside the copper pipes during silver brazing, in order to avoid carbon deposition inside the copper pipes. Copper pipes of the diameter up to 42mm OD Should be installed on the wall with the help of plastic saddles at the required span, as per HTM-2022 of U.K. and metallic white powder coated clamps Should be used for pipe sizes above 54mm OD. Wherever the pipes cross brick walls, it should be covered with plastic pipes. All pipes should be installed without springing or forcing. All pipes should be protected against mechanical injury in a manner satisfactory to authorities having jurisdiction.

Test: After erection, all the pipes should be cleaned or purged with the help of dry nitrogen gas, & Should be tested with dry nitrogen at a pressure of 10 Bar for 48 hours.

Painting: All installed pipes should be painted with two coats of synthetic enamel paint & colour codification as per IS-2379 of 1963.