

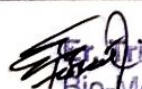
Sudurpaschim Province Government
Ministry of social development

Seti Provincial Hospital Dhangadhi kailali


 Government of Sudur Paschim Province
 Ministry of Social Development
 Seti Provincial Hospital
 Dhangadhi Kailali, Nepal
Chief Medical Superintendent

Technical Specification of Central Medical Gas Pipeline Systems

S.N.	Descriptions	Bidder Offers				Bidder Compliance sheet		
		Manufacturer	Brand	Type/Model	Country of Origine	Yes/No	page no. in catalogue	Remarks
1	Pipeline :							
1.1	Solid drawn, Seamless, de-oxidized, non-arsenical, round, de-greased Copper Tubes, materials conforming to BS: EN: 13348:2016 (as guided by HTM 02-01) suitable for Medical Gas Pipeline Systems Installation. Carbon Content test would be conducted as per EN 723 with maximum carbon presence 20 mg/per meter square. All Copper tubes will be capped from both ends.							
1.2	Copper pipe 12 mm OD x 0.7 mm thick or better 15 mm OD x 0.9 mm thick or better 22 mm OD x 0.9 mm thick or better 28 mm OD x 0.9 mm thick or better 35 mm OD x 1.2 mm thick or better 42 mm OD x 1.2 mm thick or better 54 mm OD x 1.2 mm thick or better							
2	Gas Alarm							
2.1	single Gas Alarm System							
2.1a	Pipeline Area Alarm & Area Valve Service Unit Composite unit enclosure should made of steel with Powder coating It should have below three functions in composite unit: a. Warning – Local Area Alarm b. Quick Line Function c. Provision for Emergency off-line supply							
2.2	Double Gas Alarm System HTM 02-01/2022, BS EN ISO 7396-1, and NFPA 99C.							
2.2a	Supply, installation, testing, and commissioning A microprocessor-based two-gas digital area line pressure alarm system. The panel must deliver real-time localized pressure monitoring, continuous status readouts, and immediate audible/visual alerts for exactly two dedicated medical gas lines Oxygen and Medical Vacuum.							
2.3	Three-Gas Alarm System HTM 02-01/2022, BS EN ISO 7396-1, and NFPA 99C.							
2.3a	Supply, installation, testing, and commissioning of a microprocessor-based three-gas digital area line pressure alarm system. The panel must deliver real-time localized pressure monitoring, continuous status readouts, and immediate audible/visual alerts for exactly three dedicated medical gas lines Oxygen, Air, and Vacuum							
2.4	Five Gas Alarm System HTM 02-01/2022, BS EN ISO 7396-1, and NFPA 99C.							


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2.4a	Supply, installation, testing, and commissioning of a microprocessor-based five gas digital area line pressure alarm system. The panel must deliver real-time localized pressure monitoring, continuous status readouts, and immediate audible/visual alerts for exactly five dedicated medical gas lines Oxygen, Air, Vacuum, CO2 and N2O							
3	Line Shut off Valve:							
3.1	Medical gas line ball valves shall be provided as a means of isolation on medical gas pipelines at positions specified in the medical gas pipeline system design. Valves shall operate from the fully open to the fully closed position by manual operation of a lever by 90 Degree. It should be Full bore ball valves with female/female threaded ends UNI ISO 7/1. It should have yellow steel flat plasticized handle. These valves should be manufactured in accordance with the European standard EN331. They can be properly used for gas distribution. Different Isolation Valve Size in (12,15,22,28,35,42,54)mm							
3.2	zonal valve box wall-mounted safety enclosure used in medical gas pipeline systems (MGPS) within healthcare facilities . Its primary function is to isolate and control the flow of medical gases (such as oxygen, nitrous oxide, medical air, and carbon dioxide and vacuum systems) to specific zones of a hospital like Operating Theatres (OT), Intensive Care Units (ICU), and patient wards. Technical Specification 1. Enclosure Material: The structural back box shall be fabricated from 18-gauge (minimum 1.25mm) hot-dipped galvanized steel or stainless steel, designed for flush surface mounting within drywall partitioning systems. 2. Finish: The entire assembly frame and housing must be finished with an anti-microbial, impact-resistant electrostatically applied white epoxy powder coating to withstand hospital-grade sanitizing detergents. 3. Front Access Panel: The outer window bezel assembly must feature an aesthetic perimeter overlap rim to mask rough-in drywall edges. The window must be a break-resistant polycarbonate or acrylic panel. • 5 valve box with pressure indicator • 3 valve box with pressure indicator • 2 valve box with pressure indicator							
4	Medical Gas Outlet Point with Probe							
4.1	Front Loading Type Terminal Outlets is designed to dispense medical to the secondary equipment (flow meters, Suction regulators, etc.) at the point of use and is gas specific so that secondary devices cannot be "attached" to the wrong gas. The base part made of brass alloy. Twice outlet connection with shut-off valve can maintain without having to interrupt gas delivery to other outlets. Only accept British standard (BS) quick connect adapters. Different gas type with different quick connects adapters. When not in use the gas in a non-flowing state within the Outlet (Terminal unit) sealed by "O" ring.							

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	The adapter when inserted pushes the poppet inside and the gas starts flowing and sealing is ensured by the "O" ring or a seat. The Outlets are Quick Connect Type and gas specificity is accomplished by "geometric indexing". Outlets available for Wall mounting, Bed Head mounting and Pendant mounting. The outlets should have following features. Push to insert and press-to-release mechanism for probes. Allows plugging of probes from front. Self-sealing valve on disengaging the probe (Quick disconnect) Non-return valve for on line servicing/ repairing Geometric Indexed to eliminate inter-changeability of gas services Color-coded gas specific front plate Totally leak proof, safe & easy to operate							
	5 BPC Flo -meter with Humidifier Bottle							
5.1	It is used to provide oxygen to heart patient, asthma patient and during operation. The Flow meter Humidifier Bottle provided by us is made of a variety of Specification.							
	6 Vacuum system							
6.1	Vacuum pumps, should be air cooled, Oil lubricated Reciprocating type 2 nos. and each having capacity 110CFM, 7.5 HP. Total estimated capacity of the plant is 220 CFM or more And in combination of Primary and Secondary as per HTM 02-01. The pump inlet should be filtered and the exhaust should incorporate non-return valves to protect both the vacuum system. This system shall be capable of removing of oil and smoke particles from the exhaust.							
6.2	1 numbers of vacuum receiver, Vertically mounted Mild steel, each receiver capable of supply 3000 liters at 450 mm hg pressure and receiver should have all required controls and safety fittings with an automatic drain with manual by-pass.							
6.3	Medical Duplex bacterial filters should be fitted, each containing a replaceable filter element and incorporating a moisture drainage trap bowl. The pressure drop through a clean filter passing total design flow rate should not exceed 25mmHg at a vacuum of 475mmHg. The bacteria filters manually operated isolating valves, arranged to allow either sub-assembly to be on stream.							
6.4	Surface mounted Vacuum front loading outlets (first and second fix assembly)							
6.5	H.P. tubing having anti -static core Yellow color for Vacuum as per ISO Standards							
6.6	Low Pressure tubing for Medical Vacuum as per ISO Standards							
6.7	WARD VACUUM UNITS							
	The vacuum unit shall include vacuum regulator along with 0-760 mm of Hg vacuum gauge, 1000 ml capacity reusable plastic collection bottle autoclavable at 121° with overflow safety trap with plastic slide wall mounted type.							
	7 Compressed Air System							
7.1	Air Medical Gas Outlet Point with Probe (BS Type). Medical Gas Outlet Point (Air) outlets as per NFPA compliant should be quoted along with 1 probe for each out let at every bedhead panel in ICU and NICU. The outlets and probes should be CE Mark. The outlet and probe should be as specified and non- interchangeable. The gas outlets have heavy duty constituents and smooth connection and disconnection. The outlets must be labeled and color coded.							

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	The Outlets should quick connect type and Outlets should have following features: - ➤ totally leak proof, safe and easy to operate ➤ Color-coded gas specific front plate ➤ Push to release and press-to-release mechanism to probe ➤ Allows plugging of probes from front ➤ Self-sealing valve on disengaging the probe (Quick Disconnect) ➤ Non return valve for online servicing/ repairing ➤ All outlets shall be cleaned and de-greased for medical gas service, factory assembled and tested.							
8	Medical-grade Carbon Dioxide (CO₂)							
8.1	Primarily used as an insufflation gas for minimally invasive procedures (like laparoscopy and endoscopy) and occasionally as a respiratory stimulant. Technical specification ➤ Purity Concentration: ≥ 99.5% v/v minimum. ➤ Appearance: Colorless. ➤ Odor: Odorless. ➤ Moisture (H₂O): ≤ 20 ppm v/v (or ≤ 150 mg/m³). ➤ Carbon Monoxide (CO): ≤ 5 ppm v/v. ➤ Nitric Oxide (NO) + Nitrogen Dioxide (NO₂): ≤ 2 ppm v/v. ➤ Sulphur Dioxide (SO₂): ≤ 1 ppm v/v. ➤ Hydrogen Sulphide (H₂S): ≤ 1 ppm v/v. ➤ Total Hydrocarbons: ≤ 10 ppm v/v.							
9	Nitrous Oxide Main Manifold 02 + 02 Class-D Type bulk cylinders							
9.1	(Indigenous) - As per NFPA99 & shall be CE Certified. Nitrous Oxide manifold should be extendable type, of size 02 + 02 (Right & Left Bank) for Indian type bulk cylinders having frame comprising of high-pressure copper pipe with high pressure brass fitting made of high tensile brass and suitable to withstand a working pressure of 70 kg/cm² and should be tested at 140 kg/cm². The Manifold should be complete with NRV's for every cylinder & flexible SS braided HP Tailpipes with one end having brass nose suitable for cylinders and other end suitable for manifold NRV's. (Supplied without cylinders).							
9.2	Nitrous - Oxide Manifold - 01 + 01 along with High Pressure Regulator Class-D Type bulk cylinders (Indigenous) - As per NFPA99 & shall be CE Certified							

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	Cylinder Emergency Nitrous manifold should be suitable for Indian type bulk cylinders having frame comprising of high-pressure copper pipe with high pressure brass fitting made of high tensile brass it is connected with main line through two stage pressure regulators to ensure uninterrupted supply of nitrous oxide in case main manifold/control panel is inoperative. The Manifold should be complete with NRV's for every cylinder & flexible SS braided HP Tailpipes with one end having brass nose suitable for cylinders and other end suitable for manifold NRV's. (Supplied without cylinders). Along with Single Stage Double Gauge Mox Regulator							
9.3	N2O Medical Gas Outlet Point with Probe (BS Type).							
	Medical Gas Outlet Point (N2O) outlets as per NFPA compliant should be quoted along with 1 probe for each out let. The outlets and probes should be CE Mark. The outlet and probe should be as specified and non- interchangeable. The gas outlets have heavy duty constituents and smooth connection and disconnection. The outlets must be labeled and color coded. The Outlets should quick connect type and Outlets should have following features: - ➤ totally leak proof, safe and easy to operate ➤ Color-coded gas specific front plate ➤ Push to release and press-to-release mechanism to probe ➤ Allows plugging of probes from front ➤ Self-sealing valve on disengaging the probe (Quick Disconnect) ➤ Non return valve for online servicing/ repairing ➤ All outlets shall be cleaned and de-greased for medical gas service, factory assembled and tested.							
10	Bed Head Panel							
10.1	It shall have Efficient, Safe & Robust design in extruded aluminum section. It shall have consist of Smooth curved surfaces, and choice of base color and fascia plates. UNIT should have integrated rail system to mount accessories. The headwall system should be constructed of aluminum extrusions joined together to form a carcass to suit the particular application. UNIT should be factory assembled for electrical and mechanical components. Segregation of services i.e. Low voltage supplies, High Voltage supply and Medical gases should be maintained. Front fascia plate should be removable individually to access for respective service. It should have one rail for mounting Accessories.							
10.2	Provision of 4 Gas Outlet (O2 -1 +O2 -1 + Vac-1 and Air -1) with 5/15 Amp Switch & Sockets							
11	Surgical Pendant							
11.1	Double Arm heavy-duty ceiling-mounted workstation engineered specifically to manage the complex electronic, video, and gas routing required in modern operating theatres							

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11.2	Articulated Range: The dual-segment arm configuration (typically with combined lengths from 600 mm up to 2,850 mm) features a 340° rotation at both joints. This allows the entire tower to "wrap around" the patient bed or be completely pushed back against the wall for room cleanup							
11.3	Structural Material: To handle heavy stacks safely, units are built using heavy-duty, medical-grade aluminum alloy and finished with an anti-microbial epoxy powder coating that resists harsh disinfectants.							
11.4	Braking Mechanism: Mechanical friction or pneumatic (air) braking systems are standard. In advanced endoscopy settings, pushing a button on the control handle releases the pneumatic lock for easy, fluid positioning, locking instantly when released to avoid drifting.							
12	Fittings							
12.1	All copper fittings shall be manufacture to the highest standards complying with EN1254-1. The fittings should be manufactured in accordance with EN 1254-1 and 4 (formerly BS 864: part 2). Copper pipes would be secured to wall with LDPE saddles or to ceiling fixed MS bracket wherever necessary.							
13	Brazing:							
13.1	For copper joints, brazing material to be used will be silver-copper phosphorous alloy which shall be used without flux. For copper to brass joints 43% silver brazing rods with flux would be used. Flow of nitrogen gas would be provided to avoid oxidization inside the pipeline during brazing.							
14	Fabrication							
14.1	Cleaning: Before putting for erection all pipes, valves and fittings are cleaned and degreased.							
15	Pipe and tube joints							
15.1	For copper fittings in the copper pipeline, the brazing for copper joints shall be done without using flux and the material for jointing used will be silver-copper-phosphorous alloy. For brass joints for jointing outlet points and area/zonal valves material used is 43% silver brazing rod with specified flux. For installation of Equipments threaded connections equipped with nut, nipple & adaptors are used.							
16	Bends							
16.1	All bends are made of copper pipe of higher dia than the pipe requiring change of direction and these bends will be made out of thicker size pipe to avoid thinning and flattening at any point.							
17	Erection:							
17.1	The erection of the copper pipe shall be done only after cutting the pipes to size as per site requirements. It does not leave any scope for springing.							
18	Supports:							
18.1	To avoid weight of the pipe on the joints supports (saddles made of LDPE material) are provided at a distance of every 4-6 feet as prescribed by HTM-2022 and NFPA 99.							
19	Testing							
19.1	Joints tests:							

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	The entire pipeline after erection is put to test for checking leakage of brazing joints at a pressure one and a half times of the working pressure for 24 hours. In case of drop in pressure the joints are examined with soap solution.							
19.2	Final test:							
	After repairing the joints in case leakages are found, the pipeline shall again be put to test with compressed air at a pressure of one and a half times the working pressure for 24 hours and then thereafter entire pipeline will be tested with specific gas for ant-confusion tests.							
20	Medical Gas Alarm (Indigenous) - As per HTM02 -01/ 2022 / NFPA99 & shall be CE Certified							
20.1	The Medical Gas alarm should be capable of monitoring up to 5 medical gas services by mean of pressure sensors which detect deviation from the normal operating limits of either pressure of medical vacuum. The area alarms should have a digital display of pressure and should be displayed by standardized colored Led's. It should have programming facility from front panel. Facility to connect to remote alarm box by potential free contacts provided in the alarm box. Operated by 230V ac power supply.							
21	Electrical Control Panel Combined electrical control panel for air compressors & vacuum pumps (Indigenous)							
21.1	Common Electrical Control Panel for Air-Compressors and Vacuum Pumps, cubicle type, complete with Mains Incomer, Bus Bar arrangement, Voltmeter with VSS, Phase indicating lights, Phase loss/Phase Reversal indicating light, individual MCBs for all starters, individual Ammeters for all motors, Single Phasing Preventer, Contactors, Overload Relays, Control Circuit MCB, Start/Stop Push buttons, Auto/Manual switches, Pump "ON" and Pump "TRIP" indicating lights, Sequencing Relays (Separate for Air Compressors and Vacuum pumps) with overriding feature. The Control Panel should facilitate synchronize operation of Vacuum Pump and Compressor. Electrical control panel is made of MS Sheet having thickness 16 SWG and should be epoxy powder coated. The electrical control panel would be equipped with auto manual selector, Star-Delta starters each compatible to motors for compressors and DOL starter's compatible to each electric motor for Vacuum pumps. The electrical control panel would be further equipped for duplex / cascade system for vacuum pumps & Air Compressors and also be equipped with safety equipment for the air compressors. Safety equipment for air compressors would include temperature controller temperature indicator. All terminals, switches and lights must be duly marked. Internal wiring us be duly ferruled. Incomer shall be of adequate size so that it is suitable for the total load of the system. All terminals, switches and lights must be duly marked. Internal wiring us be duly ferruled. Incomer shall be of adequate size so that it is suitable for the total load of the system.							
22	Standard & Safety Requirements							
22.1	Must submit ISO13485 and ISO 9001 for medical devices CE and							
22.2	The bidder shall submit the following valid certification for the products offered, as per their country of origin:							

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	- European Manufactured Products: Valid CE Certificate issued by an EU Notified Body, bearing the applicable four-digit Notified Body identification number. OR -UK Manufactured Products: Valid UKCA Certificate issued by a UK Approved Body, bearing the applicable identification number. OR -USA Manufactured Products: Valid UL (Underwriters Laboratories) Certificate/Certification for the offered products. OR - Indian Manufactured Products: Valid CDSCO (Central Drugs Standard Control Organization) Manufacturing License in Form MD-5, as applicable.							
23	User Training							
23.1	Must provide user training (including how to use and maintain the equipment).							
24	Warranty							
24.1	Comprehensive warranty for 2 years after acceptance							
25	Maintenance Service During Warranty Period							
25.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.							
26	Installation and Commissioning							
26.1	The entire installation shall be carried out under the direct supervision of a qualified and trained engineer who is certified as an Authorized Person under HTM 02 and holds a Level 4 Professional Award. The final Inspection Certificate must be duly signed by the said certified professional. The cost of such inspection shall be borne by the bidder. A valid certificate and relevant documents of the supervising engineer/invigilator must be submitted along with the bid.							
27	Documentations							
27.1	User and service manual in English							
27.2	All measuring equipment and instruments must be calibrated from a Government-approved NABL-accredited laboratory. Valid calibration certificates must be submitted along with the bid.							


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