श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, तिरुवनंतपुरम- 11, केरल
Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram- 11, Kerala
(भारत सरकार के अधीन राष्ट्रीय महत्व संस्थान)
(An Institute of National Importance under Government of India)
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CORRIGENDUM -1 DTD 11.02.2021
TENDER NO. SCT/H/PMSSY/I/2020-21/3
MEDICAL GAS PIPE LINE SYSTEM

Particulars	Dates given as per tender dtd. 01.01.2021	To be read as
Date of Publishing of corrigendum after pre-bid meeting	**20.01.2021**	**11.02.2021**
Last date and time of online submission of bids	**15.02.2021 upto 5.00 pm**	**16.03.2021 upto 5.00 pm**
Last date and time of submission of **Original EMD along with hardcopy of Techno-commercial Bid** with supporting documents **(price bid has to be submitted online only).** ***The tender will stand rejected if the price bid is submitted along with hardcopy of techno-commercial bid***	**19.02.2021 upto 1.00 pm**	**20.03.2021 upto 1.00 pm**
Date of tender Opening	**20.02.2021 from 2.30 pm**	**22.03.2021 from 2.30 pm**
Note : Revised Lay out**,** Manufactures authorization statement XIII A & XIIIB, Proforma for performance statement, Section VIII Qualification Criteria, Technical Compliance sheet, Techno-commercial check list, BOQ (Indigenous and Import) are provided in MS WORD/EXCEL format in e-tender portal.		

All other terms and conditions shall be as per our e-Tender document dtd 01.01.2021 and subsequent amendments.

For more details please visit www.tenderwizard.com/SCTIMST.

श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, त्रिवेंद्रम, तिरुवनन्तपुरम - 695 011, केरल, भारत
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY, TRIVANDRUM
THIRUVANANTHAPURAM - 695 011, KERALA, INDIA
(एक राष्ट्रीय महत्व का संस्थान, विज्ञान और प्रौद्योगिकी विभाग, भारत सरकार)
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CORRIGENDUM -1 DTD 11.02.2021

TENDER NO. SCT/H/PMSSY/I/2020-21/3

MEDICAL GAS PIPELINE SYSTEM (MGPS)		
Sl.No.	Description	Amended as
Page. 46 of 97 Responsibility of Bidder	Bidder shall provide switch/socket for MGPS Area alarms (Above false ceiling level) on the location as approved/required by consignee.	SCTIMST will provide switch/socket for MGPS Area alarms. MGPS Areas alarms should come with standard 3 pin plug for electrical connection
Page. 46 of 97 Responsibility of Bidder	The storing of raw materials of MGPS system during installation period and the security of the materials is the responsibility of MGPS vendor.	The storing of raw materials of MGPS system during installation period and the security of the materials is the responsibility of MGPS vendor. Storage space will be provided by SCTIMST. But enclosing the area and construction of store using removable materials to be done by contractor.
Page. 45 of 97 Responsibility of Bidder	Bidder will be responsible for trenching or other associated work related to installation and commissioning of complete MGPS system.	Deleted.
Page. 45 of 97 Responsibility of Bidder		Added: Any product / equipment / system should be third party certified by LLOYD'S/SGS/Bureau Veritas or any certifying agency approved in writing by SCTIMST.
Page. 45 of 97 Responsibility of Bidder		Added: Product certification from NFPA/ISO/HTM should be certified by an approved third-party certification agency.
Page. 45 of 97 Responsibility of Bidder		Added: All the consumables including oil, filters etc. any spares that requires to be replaced under standard preventive/ breakdown maintenance/ calibration checklist within the time frame as mentioned in the original printed manual supplied by OEMs should be covered during the warranty and Comprehensive AMC period.
Page. 45 of 97 Responsibility of Bidder		Added: Letter of authorisation required from OEM Company for equipment/products except Copper pipes in Form XIII A. Copper pipes and line isolation valves manufacturer authorization required in Form XIII B.
Page. 58 of 97 – 7(t) Technical Specification	The standard range of Medical Gas Terminal Units and Conversions are 'CE' marked under the Medical Devices Directive 93/42/EEC with approval from notified body no. 0086. Under this directive, the specified products are	The standard range of Medical Gas Terminal Units and Conversions are 'CE' marked under the Medical Devices Directive 93/42/EEC with 4 digit notified body number. Under this directive, the

	classified as Class IIa Medical Devices.	specified products are classified as Class IIa Medical Devices.
Page. 60 of 97 – 9(s) Technical Specification	Line Isolation Valves	All Line Isolation Valves inside AVSUs to be 22mm except for CO2 in all Operation Theatres which will be 15 mm.
Page. 48 of 97 – 1.1(s) Technical Specification		Added: LMO/Concentrator Connection with necessary valves and safety systems including pressure loss alarms, relief valves etc. as per technical specification .The VIE connection set comprises of NRV 42 MM, Line isolation valve 42 mm, Pressure regulator single stage - 1no,Pressure safety valve(PSV) -rated 16 bar and provision for connection to master plant alarm inside manifold room.
Page. 49 of 97 – 2(e) Technical Specification	All regulators should be protected from over-pressurization by relief valves which are vented to atmosphere. There should be a bypass valve fitted to the 2nd stage regulators to allow CO2 to be vented outside the manifold room during the commissioning stage. Regulators shall comply with BS EN ISO 10524-2 and shall have documented test reports available confirming successful completion of the oxygen ignition tests stated therein. Multi stage regulators combined into single unit is not acceptable.	All regulators should be protected from over-pressurization by relief valves which are vented to atmosphere. There should be a bypass valve fitted to the 2nd stage regulators to allow CO2 to be vented outside the manifold room during the commissioning stage. Regulators shall comply with HTM 02-01/ NFPA 99 C/EN/DIN/ ISO 7396-1 and shall have documented test reports available confirming successful completion of the oxygen ignition tests stated therein. Multi stage regulators combined into single unit is not acceptable.
Page. 47 of 97 – 1.1(c) Technical Specification	The typical configuration for central gas supply systems is in accordance with HTM 0201 / DIN EN ISO 7396-1 & consists of 3 supply sources.	The typical configuration for central gas supply systems is in accordance with HTM 0201 / NFPA99C/DIN EN ISO 7396-1 & consists of 3 supply sources.
Page. 56 of 97 – 5(a) Technical Specification	Duplex AGSS System with twin stand-alone AGSS pumps of 3phase 1500 LPM Capacity each with built in flow indication and pressure regulation valve.	Duplex AGSS System with twin stand-alone AGSS pumps of 3phase 1000 LPM Capacity each with built in flow indication and pressure regulation valve.
Page. 56 of 97 – 5(b) Technical Specification	Anesthetic Gas Scavenging System (AGSS) of minimum 1500 LPM as Primary & 1500 LPM as Standby(LPM as mentioned in BOQ),It should be US FDA / European CE Certified with 4 digit notified body number or American ETL/ American UL listed (In-case of NFPA 99c the control panel of Plant must be UL/ETL Listed and Undertaking from manufacturer must be submitted for using the same control panel in the system offered)and should comply with HTM 02-01/ NFPA 99 C/EN/ISO 7396-1. It should be European CE Certified or UL listed under Medical Devices Directive. It shall confirm to ISO 7396-1 / 2007 HTM 02-01 /DIN.	Anesthetic Gas Scavenging System (AGSS) of minimum 1000 LPM as Primary & 1000 LPM as Standby(LPM as mentioned in BOQ),It should be US FDA / European CE Certified with 4 digit notified body number or American ETL/ American UL listed (In-case of NFPA 99c the control panel of Plant must be UL/ETL Listed and Undertaking from manufacturer must be submitted for using the same control panel in the system offered)and should comply with HTM 02-01/ NFPA 99 C/EN/ISO 7396-1. It should be European CE Certified or UL listed under Medical Devices Directive. It shall confirm to ISO 7396-1 / 2007 HTM 02-01 /NFPA99C.
Page. 48 of 97 – 1.4(i) Technical Specification	Humidifier Bottle should be covered under warranty & CMC.	Deleted.
Page. 49 of 97 – 1.4(k) Technical Specification	Should be BIS/European CE certified with 4 digit notified body no/ UL Listed/US FDA/ETL listed	Deleted.
Page. 49 of 97 – 1.5(i) Technical Specification	Humidifier Bottle should be covered under warranty & CMC.	Deleted.
Page. 49 of 97 – 1.5(k) Technical Specification	Should be BIS/European CE certified with 4 digit notified body no/ UL Listed/US FDA/ETL listed	Deleted.
Page. 55 of 97 – 4.6(h) Technical	Jar should be covered under warranty and CMC.	Deleted.

Specification		
Page. 55 of 97 – 4.7(i) Technical Specification	Jar should be covered under warranty and CMC.	Deleted.
Page. 56 of 97 – 4.8(d) Technical Specification	Jar should be covered under warranty and CMC.	Deleted.
Page. 47 of 97 – 1.1(n) Technical Specification	Control panel should provide following displays. i. Display of system pressure ii. Display of gas flow iii. Display of currently active source iv. online checklist for the cylinder change v. Range calculation for the active source	Control panel should provide following displays. i. Display of system pressure ii. Display of gas flow iii. Display of currently active source
Page. 47 of 97 – 1.1(p) Technical Specification	Recording of all alarm messages including the date of occurrence for each message.	Deleted
Page. 46 of 97 – 1.1(a) Technical Specification	Automatic control panel should be constructed in accordance with the requirement of international standards. The fully automatic oxygen control panel should comply with HTM 02-01/NFPA 99C/ DIN / EN / ISO-7396-1 standards. It should be US FDA / European CE Certified with 4 digit notified body number or American ETL/ American UL listed.	Automatic control panel should be constructed in accordance with the requirement of international standards. The fully automatic oxygen control panel should comply with HTM 02-01/NFPA 99C/ DIN / EN / ISO-7396-1 standards. It should be US FDA / European CE Certified with 4 digit notified body number or American ETL/ American UL listed wherever applicable.
Page. 49 of 97 – 2.1(b) Technical Specification	The Manifold Control System should supply any type of medical gas from both left and right hand manifold banks. Operation and performance criteria should fully satisfy the requirements of HTM 02-01/ NFPA 99 C/EN/DIN/ ISO 7396-1 standard. The fully automatic CO2 control panel should comply with the standard. It should be European CE Certified or UL listed under Medical Devices Directive.	The Manifold Control System should supply any type of medical gas from both left and right hand manifold banks. Operation and performance criteria should fully satisfy the requirements of HTM 02-01/ NFPA 99 C/EN/DIN/ ISO 7396-1 standard. The fully automatic CO2 control panel should comply with the standard. It should be European CE Certified or UL listed under Medical Devices Directive wherever applicable.
Page. 50 of 97 – 2.2(b) Technical Specification	The primary head should be mounted on an 8 cylinder rack which can be connected to the left and right inlets of automatic Control Panel. Each header should have a class D type bulk cylinders with high pressure shut off valve. Corner connector should be available to enable installation of manifold headers around corners of the room. The manifold supply system cylinder rack should locate vertical gas cylinders which should be restrained by chains. It should be made from steel for durability and with powder coated paint finish.	The primary head should be mounted on a 6 cylinder rack which can be connected to the left and right inlets of automatic Control Panel. Each header should have a class D type bulk cylinders with high pressure shut off valve. Corner connector should be available to enable installation of manifold headers around corners of the room. The manifold supply system cylinder rack should locate vertical gas cylinders which should be restrained by chains. It should be made from steel for durability and with powder coated paint finish.
Page. 50 of 97 – 3.1(a) Technical Specification	Air-cooled Oil-Less reciprocating compressors for continuous duty application with highest output of compressed air, low power consumption and very low vibration resulting in low noise level.	Air-cooled Oil-Less screw/scroll compressors for continuous duty application with highest output of compressed air, low power consumption and very low vibration resulting in low noise level.
Page. 51 of 97 – 3.1(c) Technical Specification	QUADRULEX AIR PLANT MUST HAVE 4 RECIPROCATING OILFREE COMPRESSORS IN COMPACT SUPER SOUND ABSORBING TOWER DESIGN COMPLETE WITH ALL REQUIRED COOLING, CONTROL AND MONITORING FACILITIES FOR OPERATIONS IN SYSTEM WITH 2 COMPRESSORS RUNNING & 2 COMPRESSOR STANDBY, A CONTROL PANEL, 2 AIR RECEIVERS OF 1000 LTR EACH, 2 DRYER AND FILTRATION UNIT, 3 STAGE CONDITIONING SYSTEMS WITH FILTERS AND ADSORPTION DRYER AND A PRESSURE REDUCER STATION. THE INSTALLATION AND SUPPLYMUST FULLY COMPLY WITH THE STANDARD EN ISO 7396-1: 2007/ HTM-02-01/DIN. THE PRODUCED AIR MUST BE FOR	Triplex air plant must have 3 oil less screw/scroll compressors in compact super sound absorbing tower design complete with all required cooling, control and monitoring facilities for operations in system with 1(One) compressor running and 2(two) compressor standby system, A control panel, Multiple Air receivers of total combined capacity 4000 liters or more, 2 duplex dryer and filtration unit, 3 stage conditioning systems with filters and adsorption dryer and a pressure reducer station. The installation and supply must fully comply with the standard EN ISO 7396-1/HTM-02-01/NFPA99C. The produced air must be for medical use

	MEDICAL USE ACCORDING TO THE EUROPEAN PHARMACOPOEIA AS FOLLOWING. EACH COMPRESSOR SHOULD HAVE MINIMUM FAD OF 2000 LPM (PLANT OUTPUT WILL BE 4000 LPM).	according to the European pharmacopoeia as following. Each compressor should have minimum FAD of 4000 LPM. (Plant Output will be 4000LPM) at 10 Bar.
Page. 51 of 97 – 3.1(e) Technical Specification	It should be Oil-Less reciprocating Compressors to produce the plant output of {minimum Liters Per Minutes (LPM) Plant capacity} as mentioned in BOQ as primary and same capacity as standby.	It should be Oil-Less screw /scroll Compressors to produce the plant output of {minimum Liters Per Minutes (LPM) Plant capacity} as mentioned in BOQ as primary and dual standby(Triplex System)
BOQ 4.1	Supply installation, testing and commissioning of Quadruplex Compressed air plant complete with - 4 reciprocating oil free compressors, each compressor should have minimum free air delivery of 2000 LPM with 2 air receivers with automatic drain valves of capacity 2000 litres, 2 air purification system to ensure medical air quality as per European Pharmacopeia, pressure reducing station, control panel, automatic drain valves, ball valves etc. and as per technical specifications mentioned in the tender document. Oil-Free Reciprocating Air compressor- Each Compressor should be suitable for both continuous and frequent start/stop operation at a nominal plant pressure of 10bar or more.	Supply installation, testing and commissioning of Triplex Compressed air plant complete with - 3 oil less screw/scroll compressors, each compressor should have minimum free air delivery of 4000 LPM at 10 Bar with multiple air receivers with automatic drain valves of total combined receiver capacity 4000 litres or more, 2 air purification system to ensure medical air quality as per European Pharmacopeia, pressure reducing station, control panel, automatic drain valves, ball valves etc. and as per technical specifications mentioned in the tender document. Each Compressor should be suitable for both continuous and frequent start/stop operation at a nominal plant pressure of 10bar or more.
Page. 50 of 97 – 3.1 Technical Specification	Air Compressor-4 Nos	Air Compressor-3 Nos
Page. 52 of 97 – 3.2 Technical Specification	Air Receiver-2 Nos	Air Receivers: Multiple receivers of total combined capacity 4000 litres or more
Page. 52 of 97 – 3.2(a) Technical Specification	The capacity of each receiver shall be 2000 Liter in terms of free air delivered at normal working pressure	The total capacity of all receivers combined shall be 4000 Litres or more in terms of free air delivered at normal working pressure.
Page. 54 of 97 – 4.1(h) Technical Specification		Added: The medical vacuum plant shall fully comply with the requirements of the HTM 02-01/ NFPA 99 C/EN/DIN/ISO 7396-1. It should be US FDA / European CE Certified with 4 digit notified body number or American ETL/ American UL listed (In case of NFPA 99c the control panel of plant must be UL/ETL Listed and Undertaking from manufacturer for this tender reference must be submitted for using the same.
BOQ 5.1	Supply installation, testing and commissioning of Vacuum plant complete with 3 rotary vane type vacuum pumps, each vacuum pump should have minimum free air aspirated of 3000 LPM at 450 mmHg, 2 vacuum receivers of 2000 litres, secretion trap, bacteria double filter, control panel, ball valves etc. Each pump should be suitable for both continuous and frequent start/stop operation at a nominal plant pressure of 500mmHg and 660 mmHg.	Supply installation, testing and commissioning of Vacuum plant complete with 3 rotary vane type vacuum pumps, each vacuum pump should have minimum free air aspirated of 4000 LPM at 450 mmHg, 2 vacuum receivers of 2000 litres, secretion trap, bacteria double filter, control panel, ball valves etc. Each pump should be suitable for both continuous and frequent start/stop operation at a nominal plant pressure of 500mmHg and 660 mmHg.
Page. 53 of 97 – 4.1(a) Technical Specification	Triplex Vacuum plant must have 3 rotary vane type vacuum pumps directly driven by motor, Operations in system with 2 Vacuum pumps	Triplex Vacuum plant must have 3 rotary vane type vacuum pumps directly driven by motor, Operations in system with 2

	running and 1 vacuum pump standby, a control panel, 2 Vacuum receivers of each 2000 LTR capacity, Secretion Trap and bacteria filter. The installation and supply must fully comply with standards EN ISO7396-1: 2007/ /DIN. Each Vacuum should have minimum volume of free air aspirated of 3000 lpm at 450mmHg, It should be fully automatic.	Vacuum pumps running and 1 vacuum pump standby, a control panel, 2 Vacuum receivers of each 2000 LTR capacity, Secretion Trap and bacteria filter. The installation and supply must fully comply with standards EN ISO7396-1: 2007/ /DIN. Each Vacuum pump should have minimum volume of free air aspirated of 4000 lpm at 450mmHg, It should be fully automatic.
BOQ 13.4	Concealed flush type unit's single point without outlets	Concealed flush type unit's single point with outlets.
BOQ 13.5	Surface mounted medical gas points without outlets	Deleted
BOQ 11	Gas Outlet Points/ Terminal Units with probe: Supply, Installation, testing and commissioning of Gas outlet points for Oxygen, Nitrous Oxide, Medical Air 4 Bar, Vacuum, CO2 and AGSS as per specification.	Gas Outlet Points/ Terminal Units with probe: Supply, Installation, testing and commissioning of Gas outlet points for Oxygen, Medical Air 4 Bar, Vacuum, CO2 and AGSS as per specification. Outlets with Probes for concealed / BHU/Pendant Mounting. All the products /items/ equipment should be as per one of the following standards. HTM 02-01/NFPA/ISO.(DIN/BS/NFPA)
BOQ 11.1	O2 Outlets with Probes concealed / BHU/Pendant Mounting-DIN	O2 Outlets with Probes
BOQ 11.2	Air (4 bar) Outlets with Probes - BHU/Pendant Mounting-DIN	Air (4 bar) Outlets with Probes
BOQ 11.3	Air (7 bar) Outlets with Probes - BHU/Pendant Mounting-DIN	Air (7 bar) Outlets with Probes
BOQ 11.4	Vac Outlets with Probes concealed / BHU/Pendant Mounting-DIN	Vac Outlets with Probes
BOQ 11.5	CO2 Outlets with Probes - BHU/Pendant Mounting-DIN	CO2 Outlets with Probes
BOQ 11.6	AGSS - AGSS-Terminal unit with probe for the purpose of conveying scavenged anesthetic gases to an appropriate place of discharge or Equivalent AGSS system with required accessories fully comply with the standard ISO7396-1 / EN 737 / HTM 02-01/ DIN. - Imported. Anesthetic Gas Scavenging System for BHU/Pendant Mounting-DIN.	AGSS - AGSS-Terminal unit with probe for the purpose of conveying scavenged anesthetic gases to an appropriate place of discharge or Equivalent AGSS system with required accessories fully comply with the standard ISO7396-1 / EN 737 / HTM 02-01/ DIN or BS/NFPA. Anesthetic Gas Scavenging System for BHU/Pendant Mounting-DIN/BS/NFPA.
BOQ 12.2		Added: 1000 metres Cabling for master plant alarm to be quoted. All necessary accessories to connect to the AVSUs, protocol convertors etc as required for the satisfactory functioning should be part of the master alarm and AVSU alarm systems.
BOQ 9.5		Added: Supply of NIST CO2
Page. 58 of 97 – 7(r) Technical Specification	Matching probes with one end suitable for Medical Gas Outlet Point & other end suitable for hose. The probe should comply with BS 5682:1998 for gases & Vacuum & BS 6834:1987 for AGSS.	Matching probes with one end suitable for Medical Gas Outlet Point & other end suitable for hose. The probe should comply with BS 5682:1998 or NFPA99 standard for gases & Vacuum & BS 6834:1987 or NFPA99 standard for AGSS.
Page. 58 of 97 – 8(b) Technical Specification	The master alarm management system must be certified as per Medical Device Directives (93/42/EEC) having the CE mark/UL Listing along with the four-digit code from the certifying agency.	The master alarm management system must be certified as per Medical Device Directives (93/42/EEC) having the CE mark/UL/ American ETL/Listing along with the four-digit code from the certifying agency.
Page. 61 of 97 – 11(d) Technical Specification	Pendent must meet International safety standard CE mark / UL Listing	Pendent must meet International safety standard CE mark / UL Listing and should comply with US FDA / European CE Certified with 4 digit notified body number or American ETL/ American UL listed. All the products/items/equipment should be as per one of the following standards. HTM 02-01/NFPA/ISO. System protocols, back-

		ups, design flow to be as per HTM/ISO Guidelines. Any product / equipment / system should be third party certified by LLOYD'S/SGS/Bureau Veritas or any certifying agency approved in writing by SCTIMST
Page. 60 of 97 – 10(l) Technical Specification	BHU should be tested for Oxygen enrichment test as per ISO-11197.	Deleted.
Page. 60 of 97 – 10(n) Technical Specification	Distance between Oxidized Gas TU to nearest electrical exposed component is 0.2 m as per ISO 11197 standard.	Deleted.
Page. 60 of 97 – 10(o) Technical Specification	Product must meets IP 2X (Ingress Protection class of 2X means equipment protected in such way that live electrical parts will not get in contact with operator, patient etc.)	Deleted.
Page. 61 of 97 – 10(p) Technical Specification	BHU should be safe and tested for safety against electrical hazards to patient, operator and bystander as specified in ISO 11197.	Deleted.
Page. 61 of 97 – 10(q) Technical Specification	BHU should comply with protection against mechanical hazards of Medical Electrical (ME) equipment as specified in ISO 11197.	BHU should comply with protection against mechanical hazards of Medical Electrical (ME) equipment as specified in ISO 11197 or equivalent in NFPA.
Page. 61 of 97 – 10(u) Technical Specification	BHU layout is attached as annexure.	Image is reference only to showcase the dimensions and requirements from the client and any certified product that matches the specification is acceptable. The product must have ease of connection/operation of the medical gas outlets and electrical sockets. Revised layout also attached.
Page. 62 of 97 – Rotation Control Technical Specification	The arms may be fitted with pneumatic brakes or electromechanically breaks to prevent inadvertent movement.	The arms may be fitted with pneumatic brakes, electromechanical or electromagnetic brakes to prevent inadvertent movement.
Page. 58 of 97 – 8(a) Technical Specification	The master alarm management system must comply with the latest international standard ISO 7396-1:2007/ HTM 02 01 certification.	The master alarm management system must comply with the latest international standard ISO 7396-1:2007/ HTM 02 01/NFPA99C certification.
Page. 60 of 97 – 9(k) Technical Specification	Modular Type Valve box along with Nist connection, pressure gauge and Alarm , Top entry & exit connection and concealed type as per HTM 02-01/ NFPA99 standard /EN Standards. BMS Compatible, fully complying with ISO 7396-1:2007 or as per equivalent national standards, as per technical Specifications.	Modular Type Valve box along with Nist connection, pressure gauge and Alarm , Top/Side entry & exit connection and concealed type as per HTM 02-01/ NFPA99 standard /EN Standards. BMS Compatible, fully complying with ISO 7396-1:2007 or as per equivalent national standards, as per technical Specifications.
Page. 48 of 97 – 1.1(r) Technical Specification	Supply installation testing and commissioning of Mass flow meter with digital display for measuring and monitoring the oxygen consumption.	Supply installation testing and commissioning of Mass flow meter with digital display for measuring and monitoring the oxygen consumption. Medical oxygen consumption monitor to be part of control panel or separate equipment for the same certified by the approved third party certification agency is acceptable.
Page. 56 of 97 – 5(c) Technical Specification	The package should consist of duplex rotary vane type vacuum pumps, a control panel with automatic changeover, and mounted on a common base frame.	The package should consist of duplex rotary vane/rotary blower type vacuum pumps, a control panel with automatic changeover, and mounted on a common base frame.
Page. 53 of 97 – 3.3(k) Technical Specification	Capacity of Duplex dryers-Each 2000 LPM	Capacity of Duplex dryers-Each 4000 LPM. Desiccant duplex dryers comprise of 2 towers of 4000 lpm each making it 4000 lpm per dryer in 1 working 1 standby arrangement.

Page. 42 of 97 – Preamble to BOQ	Notwithstanding that practical care was exercised in preparing the BOQ, but all quantities given herein shall be deemed to be estimated quantities of the work to be done but they are not to be taken as actual and correct quantities of the work to be executed and they are not to absolve the contractor of his obligations under the Contract. They are not to be taken as guarantee that the actual quantities increase or decrease, and any claim whatsoever submitted for cost or extra expenses incurred from such increase or decrease will not be accepted by Employer/Engineer except where else stipulated in the Contract.	Notwithstanding that practical care was exercised in preparing the BOQ, but all quantities given herein shall be deemed to be estimated quantities of the work to be done but they are not to be taken as actual and correct quantities of the work to be executed and they are not to absolve the contractor of his obligations under the Contract. They are not to be taken as guarantee that the actual quantities increase or decrease, and any claim whatsoever submitted for cost or extra expenses incurred from such increase or decrease will not be accepted by Employer/Engineer except where else stipulated in the Contract. Engineering BOQ will be prepared once awarded and Low side items like Pipes, outlets valves etc will only vary, subjected to a maximum limit of +/- 10%. It is the responsibility of the medical gas contractor to prepare / adhere to the engineering BOQ.
Page. 42 of 97 – Preamble to BOQ	The Engineer has the right to increase, decrease or even cancel any specific item in the BOQ without any change in unit or contract price.	The Engineer has the right to increase, decrease or even cancel any specific item in the BOQ without any change in unit or contract price. Engineering BOQ will be prepared once awarded and Low side items like Pipes, outlets valves etc will only vary, subjected to a maximum limit of +/- 10%. It is the responsibility of the medical gas contractor to prepare / adhere to the engineering BOQ.
BOQ 14.1	**Supplying and Fixing Anesthesia Pendent with Double Arm:** Terminal unit -O2 - 2 no, Air 4-1no,Vac-2no,and AGSS-1no,330 degree angle rotation of column and arm, with pneumatic break as standard for arm system, 2shelves with one drawer ,IV pole with arm-1no.,10 nos Electrical and 2 data points. Unit must meet the Basic requirement of the Medical Device Directive (MDD 93/42/EWG) standards for a safe and reliable operation in the OR . The supply unit must have upgrading capability of new functions for adaptation to future requirements. All surfaces resistant against corrosion and disinfectants. Colour of painted surfaces: RAL 9002 The functional units of the supply unit are to be completely assembled and tested by the manufacturer. General Requirements for Ceiling Supply Units Ergonomic, optimized supply unit consisting of the following functional units: - Ceiling fixture set for installation to Deck sheet, concrete ceiling structure.- Ceiling interface for connection of supply unit with electrics and gases delivered from site.- Horizontal swiveling and electrically/Mechanically-driven adjustable arm system.- Media column with terminal units for medical gas supply/gas evacuation, high- and low voltage power supply according to specification.- Double braking system, consisting of Pneumatic brake or electromagnetic or electromechanically brakes for fixation of adjusted arm position.- The above mentioned functional units must be coordinated mechanically, functionally and ergonomically, thus presenting a complete medical supply unit. 1) Double Arm Pendant with 1750mm (750mm+1000mm) Arm System.	**Supplying and Fixing Anesthesia Pendent with Double Arm (MOTORIZED):** Terminal unit -O2 - 2 no, Air 4-1no,Vac-2no,and AGSS-1no,330 degree angle rotation of column and arm, with pneumatic break as standard for arm system, 2shelves with one drawer ,IV pole with arm-1no.,10 nos Electrical and 2 data points. Unit must meet the Basic requirement of the Medical Device Directive (MDD 93/42/EWG) standards for a safe and reliable operation in the OR . The supply unit must have upgrading capability of new functions for adaptation to future requirements. All surfaces resistant against corrosion and disinfectants. Colour of painted surfaces: RAL 9002 The functional units of the supply unit are to be completely assembled and tested by the manufacturer. General Requirements for Ceiling Supply Units Ergonomic, optimized supply unit consisting of the following functional units: - Ceiling fixture set for installation to Deck sheet, concrete ceiling structure.- Ceiling interface for connection of supply unit with electrics and gases delivered from site.- Horizontal swiveling and electrically/Mechanically-driven adjustable arm system.- Media column with terminal units for medical gas supply/gas evacuation, high- and low voltage power supply according to specification.- Double braking system, consisting of Pneumatic brake or electromagnetic or electromechanically brakes for fixation of adjusted arm position.- The above mentioned functional units must be coordinated mechanically, functionally and

	2) Minimum Load Capacity - 250 Kg. 4) Gas Outlets Only cut-out - O2-2Nos./Air 4-1Nos. /VAC-2Nos./AGSS-1Nos. 5) Handle without function 6) Electrical Sockets Only cut-out – 12 Nos. with 1 No. RJ45 Data points & 1 RJ11 Telephone Point. along with 1 HDMI and 1 S video port 7) IV Pole with Swivel Arm. 8) Shelf - 2 Nos. with one drawer	ergonomically, thus presenting a complete medical supply unit. 1) Double Arm Pendant with 1750mm (750mm+1000mm) Arm System. 2) Minimum Load Capacity - 250 Kg. 4) Gas Outlets Only cut-out - O2-2Nos./Air 4-1Nos. /VAC-2Nos./AGSS-1Nos. 5) Handle without function 6) Electrical Sockets Only cut-out – 12 Nos. with 1 No. RJ45 Data points & 1 RJ11 Telephone Point. along with 1 HDMI and 1 S video port 7) IV Pole with Swivel Arm. 8) Shelf - 2 Nos. with one drawer
BOQ 14.2	**Supply installation , testing and commissioning of Surgeon Pendent with Double Arm:** , Terminal unit -O2 - 1no, Air 4-1no, Air7 - 1no, Vac-2no,and CO2-1no,330 degree angle rotation of column and arm, 3shelves,12 nos Electrical and 2 data points as per disposition shared by the institute. unit must meet the Basic requirement of the Medical Device Directive (MDD 93/42/EWG) standards for a safe and reliable operation in the OR .The supply unit must have upgrading capability of new functions for adaptation to future requirements. All surfaces resistant against corrosion and disinfectants. Colour of painted surfaces: RAL 9002 The functional units of the supply unit are to be completely assembled and tested by the manufacturer. General Requirements for Ceiling Supply Units Ergonomic, optimized supply unit consisting of the following functional units: - Ceiling fixture set for installation to Deck sheet, concrete ceiling structure. .- Ceiling interface for connection of supply unit with electrics and gases delivered from site.- Horizontal swiveling and electrically/Mechanically-driven adjustable arm system. - Media column with terminal units for medical gas supply/gas evacuation, high- and low voltage power supply according to specification. - Double braking system, consisting of Pneumatic brake or electromagnetic or electromechanically brakes for fixation of adjusted arm position. - The above mentioned functional units must be coordinated mechanically, functionally and ergonomically, thus presenting a complete medical supply unit. 1) Double Arm Pendant with 1750mm (750mm+1000mm) Arm System. 2) Minimum Load Capacity - 100 Kg. 3) Gas Outlets - O2 – 1Nos. / Air 4 – 1 Nos. /Air 7 – 1 Nos / CO2 – 1 Nos. VAC - 2Nos. 4) Handle. 5) Electrical Sockets – 12 Nos. 6) Data Point - 2 Nos. 7) Shelf – 3 Nos.	**Supply installation , testing and commissioning of Surgeon Pendent with Double Arm (NON-MOTORIZED):** , Terminal unit -O2 - 1no, Air 4-1no, Air7 - 1no, Vac-2no,and CO2-1no,330 degree angle rotation of column and arm, 3shelves,12 nos Electrical and 2 data points as per disposition shared by the institute. unit must meet the Basic requirement of the Medical Device Directive (MDD 93/42/EWG) standards for a safe and reliable operation in the OR .The supply unit must have upgrading capability of new functions for adaptation to future requirements. All surfaces resistant against corrosion and disinfectants. Colour of painted surfaces: RAL 9002 The functional units of the supply unit are to be completely assembled and tested by the manufacturer. General Requirements for Ceiling Supply Units Ergonomic, optimized supply unit consisting of the following functional units: - Ceiling fixture set for installation to Deck sheet, concrete ceiling structure. .- Ceiling interface for connection of supply unit with electrics and gases delivered from site.- Horizontal swiveling and electrically/Mechanically-driven adjustable arm system. - Media column with terminal units for medical gas supply/gas evacuation, high- and low voltage power supply according to specification. - Double braking system, consisting of Pneumatic brake or electromagnetic or electromechanically brakes for fixation of adjusted arm position. - The above mentioned functional units must be coordinated mechanically, functionally and ergonomically, thus presenting a complete medical supply unit. 1) Double Arm Pendant with 1750mm (750mm+1000mm) Arm System. 2) Minimum Load Capacity - 100 Kg. 3) Gas Outlets - O2 – 1Nos. / Air 4 – 1 Nos. /Air 7 – 1 Nos / CO2 – 1 Nos. VAC - 2Nos. 4) Handle. 5) Electrical Sockets – 12 Nos. 6) Data Point - 2 Nos. 7) Shelf – 3 Nos.
BOQ 14.3	**Supply, Installation, testing and commissioning of single arm Perfusion pendants**: including fixing of installation prefixtures to be installed to the true slab, Terminal unit provisions on the column nos as per the Disposition table shared by the institute, 330 degree angle rotation of column,	**Supply, Installation, testing and commissioning of single arm Perfusion pendants(NON-MOTORIZED):** including fixing of installation prefixtures to be installed to the true slab , Terminal unit provisions on the column nos as per the Disposition table shared by the institute,

	Provision for 10 nos Electrical and 2 data points. Accessories including IV pole and one monitor arm Perfusion pendant 1) Single Arm - 750mm Arm 2) Column – 600mm. 3) Maximum Load Capacity - 80 Kg. 4) Gas Outlets Only cut-out - O2-2Nos./Air 4-1Nos. /VAC-1Nos 5) Handle without function 6) Electrical Sockets Only cut-out – 6 Nos. with 2 No. RJ45 Data points	330 degree angle rotation of column, Provision for 10 nos Electrical and 2 data points. Accessories including IV pole and one monitor arm Perfusion pendant 1) Single Arm - 750mm Arm 2) Column – 600mm. 3) Maximum Load Capacity - 80 Kg. 4) Gas Outlets Only cut-out - O2-2Nos./Air 4-1Nos. /VAC-1Nos 5) Handle without function 6) Electrical Sockets Only cut-out – 6 Nos. with 2 No. RJ45 Data points
BOQ		REVISED BOQ UPLOADED.

Page 40 of 97 Part II : Required Delivery Schedule	**For Indigenous or Imported goods:** Supply, Installation and Commissioning to be completed within **90 days** from the date of Purchase Order or date of opening of LC or date of approval of layout drawing (in case applicable) or readiness of site as certified by the institute whichever is later. (In case of LC opening, necessary documents like valid Performance Security and Proforma Invoice are to be submitted within 30 days from the date of release of Purchase Order. In case layout drawing approval is applicable, it should be submitted by the supplier within 21 days from the date of release of Purchase Order.) For delayed delivery and/or installation and commissioning liquidated damages will get applied as per GCC clause 23. Readiness of site should be ensured by the supplier before delivery of goods.	**For Indigenous or Imported goods:** Supply, Installation and Commissioning to be completed within **120 days** from the date of Purchase Order or date of opening of LC or date of approval of layout drawing (in case applicable) or readiness of site as certified by the institute whichever is later. (In case of LC opening, necessary documents like valid Performance Security and Proforma Invoice are to be submitted within 30 days from the date of release of Purchase Order. In case layout drawing approval is applicable, it should be submitted by the supplier within 21 days from the date of release of Purchase Order.) For delayed delivery and/or installation and commissioning liquidated damages will get applied as per GCC clause 23. Readiness of site should be ensured by the supplier before delivery of goods.
Page 70 of 97	Lay out	Revised Lay out enclosed
Page 86 of 97	Manufacture's Authorization Form	Revised Manufacture's Authorization Form attached. (Section XIIIA & XIIIB)
Page 80 of 97	Proforma for performance statement	Revised format enclosed.
Page 79 of 97	Qualification Criteria (Section VIII)	Revised qualification criteria (Section VIII) attached.