

ANNEX-B TECHNICAL SPECIFICATION

DAP: Balochistan Institute of Nephro-Urology Quetta - BINUQ, Quetta PRESSURE SWING ADSORPTION (PSA) DUPLEX OXYGEN GENERATOR

Produces oxygen from compressed air, microprocessor-controlled system, Comprising of Screw Air compressor along with Vertical air receiver and refrigerated air dryer Compressed air filters and accessories

System Capacity: Minimum 35Nm³/hr. at 93% ±3% medical oxygen purity and not less than 5-6 bar outlet pressure at 1400 meters above sea level and ambient temperature conditions of + 0° C to + 40° C., Relative humidity max.: 80%.
Oxygen dew point: - 40°C.

Air Tank Capacity: should have one set of Air Tank made of Mild/Carbon Steel having food grade epoxy coating of capacity 3000L (Tested to 11 Bar) with inlet and outlet valves, safety valve, pressure gauge and level sensing auto drain valve.

Oxygen Tank Capacity: should have one set of Oxygen Tank made of Mild/Carbon Steel having food grade epoxy coating of capacity 3000L (Tested to 11 Bar) with inlet and outlet valves, safety valve, pressure gauge and level sensing auto drain valve.

Inlet pressure: 6-7 bar, **Outlet pressure:** 5-6 bar

Oxygen Purity: 93% +-3%

Display should have color touch Control, digital, numeric keys, alarm indications.

Should have external audio/visual alarm. Visual alarm is active whenever an alarm is present in the system. Audio will turn ON when an alarm appears but can be turned off from panel.

Must have non-corrosive materials, like aluminum and stainless steel, as standard for all process components

2 x Air Compressors

Should have rotary screw type and Air Cooled

Should have built-in Oil Separator and Air Filter. Controls should be Suction Throttle valve type with On-off line control & Motor stopper start control

It should have Digital Display indicating Failure, LCD display, Records at least 24 hrs. Operation data

Should have automatic safety shutdown for Main Motor overload Inverter trip (Fan Motor overload), Aired outlet high discharge, air temperature, Air/oil separator outlet, high discharge air temp, High oil case pressure, Phase reversal and phase failure

Noise Level (at 1.5 meter in front) should not be more than 70 db.

Air quality specification: Air quality after air dryer and filters should meet the ISO 8573.1:2010.2.4.1. Dew Point - 40°C. Filtration Grade 0.01 micron. (As standard US& European pharmacopeia)

Two Air Compressors should be run in automatically alternative system

2 x Air Dryer (Refrigerant) (Two Set): There should be two set of refrigerant type suitable capacity air dryer with dew point of +3 o C. Micro Processor based. It should be with level sensing auto drain valve, Integral Heat Exchanger, Eco Friendly Gas only

Filters package should have: (Two Set)

Three stage air filters to remove the dust, oil and other impurities in the compressed air.

Cyclone filter with auto drain- 1 set

Prefilled & Micro filter for filtration level up to 0.1 micron with auto drain -1 set

Micron filter with auto drain-1 set

Coalescing Filter- 1 set

Bacterial / Sterile Filter- 1 set

Coal Tower made of mild steel with food grade epoxy coating for air purity and bacterial filtration -1 set

Activated carbon filter for oil and dust removal < 0.01mg/m²

Booster Compressor: (Qty-01)

Capacity: 5 m³/hr.

Output pressure: 150 Bar

Filling Ramp:

2*4 Tube Ramp

Standards for Oxygen Plant:

Ø For Tanks (AIR & OXYGEN)

PED or ASME (1 Mandatory)

Ø For Plant

CE

ISO 9001:2015

ISO 14001: 2015

ISO 13485:2016

Ø System configuration / Design: as per HTM

Bidder have such HTM certified team to carry installation of the plant.

Vacuum Insulated Evaporated Tank for Backup Purpose:

The bidder shall be responsible for providing of Vacuum Insulated Evaporated tank, in case of breakdown, for continuity of oxygen supply (by means of cylinder or back up equipment) in the hospital.

Capacity: 3000 Liter.

Civil Work/Site Preparation for Oxygen Plant:

Note: Necessary Civil Work required for the Installation of Oxygen Generation Plant at site will be sole responsibility of the bidder. (In consultation with Civil Engineer & Bio-Medical Engineer of the Institute).

Control Panel

Automatic Electrical Control Panel for two Air Compressor and accessories

It should have color touch screen control panel.

The control panel display should show operating and measurement values for purity, outlet pressure, Inlet pressure, Row meter, Temperature, operating hours, sensor values and display of trends.

Should have alarm management with audit trail for raised alarms & alarm notification with automatic push e-mail/ SMS and remote desktop notification.

It should also have automatic service reminder for periodic maintenance due

It should have Alarm pack Relay: Low pressure product, Quick stop / E-Stop, Low pressure columns, Alarm on air compressor, Alarm on air dryer, Purity alarm, and Purity stop

Main Electrical Control Panel:

Fully automatic electric Control Panel consisting of all the MCCB's, MCB's, Digital Timer Phase Sequencer, automatic Hi/Low voltage control relay and Switches etc. must be provided. Phase reversal and phase failure

All the main components and equipment of oxygen generator plant should be integrated and power controlled through one control.

Back-up UPS system should be provided for monitoring and database for minimum 30 minutes or more

Other Items: Oxygen flow meter and internal pipes and valves

Power Supply: 230V/400V, 1 & 3 phase, 50Hz

Accessories:

All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.

Plant should be supplied with Ethernet connection to main central control system. Alarm management and password-controlled access for different levels of the program & SMS alert functionality

The oxygen generation system must with an integrated designed air dew point monitor which can remotely monitoring and alarming the dew point of the compressed air to ensure the dry air get into the oxygen generator and protect the Zeolite inside the oxygen generator.

The oxygen generation system must with Cloud service system; hospital representatives can remotely monitor the operation situation of the system through an APP in Android smart mobile phone.

User Training

Service training to maintenance staffs at the operation site for at least one week by factory trained engineers/technicians.

User/Technical training should be provided on site operators / technicians. The supplier company should provide training for operation and maintenance system to the hospital staff from the successful date of testing and commissioning of the system without any extra cost.

Warranty

Comprehensive warranty for 5 years with parts, Consumables, Maintenance and Services.

Authorization

Authorization certificate from manufacturer shall be required along with the bid documents and after sales service must be locally available.

Maintenance Service During Warranty Period

During the warranty period supplier must ensure corrective / breakdown maintenance whenever required.

Installation and Commissioning

The bidder must arrange for the equipment to be installed and commissioned by certified or qualified personnel; any prerequisites for installation to be communicated to the purchaser in advance, in detail.

Documentation

User (Operating) manual in English

Service (Technical / Maintenance) manual in English

Certificate of calibration and inspection from factory