TERMS OF REFERENCE
SUPPLYING OXYGEN GENERATION PLANT

1. General Background

Good Neighbors International (GNI) Nepal has been working in Nepal since 2002 with the objective of improving lives of the poor people especially children through education, child protection, and income generating activities, health, WASH, and disaster risk reduction. GNI Nepal has been operating its activities in 19 districts.

2. Activity Description and Rationale

This TOR has been designed in order:

A. To select appropriate suppliers for supply of Oxygen generation plant.

B. To maintain the quality and timeline of procurement the required materials.

a) **Number of supply items:** The required Oxygen generation plant with specification is given in **Annex I.**

3. Expected Deliverables

Followings deliverables are the expected from the suppliers;

- Supply of 3 units of Oxygen generation plant.
- Conduct quality check and physical verification of Oxygen generation plant with a GNI Nepal personnel before dispatching.
- Transportation and delivery of plant in excellent condition at 3 provinces as per government recommendation which will be discussed later and collect the transportation rate from the shortlisted vendors during final selection process.
- Provide a brief user manual or oral instructions on using the commodities (if needed) to GNI Nepal head Office.
- Replace the items in case of found any damage (during transportation, handling or delivery, and malfunctioning within one month of delivery date).

4. Duration

- After the signing of the agreement, delivery of the items to targeted area should be completed within maximum 30 days from receiving the official purchase order.
- Delivery of commodities to targeted area should be completed within the agreed time.
- Quantity details will be issued along with purchase order.

5. Budget and Payment procedure

The budget and payment procedure will be as follows:

- The supplier/firm should submit a complete budget with detailed breakdown including applicable taxes at the time of submission sealed Bid. No extra cost is entertained beyond quoted unit price.
- The supplier/firm shall bear all the tariffs, duties and applicable taxes or charges levied at any stage during the execution of the work. Any loss and/or damage of supplied commodity during packaging, transportation, and installation will be the responsibility of supplier/firm, no compensation will be provided by GNI regarding this loss/damage.

6. Acceptance of Proposal

All rights to accept or reject the proposal without giving any notice and reason shall be reserved with GNI Nepal. If deemed necessary, the supplier/firm shall be asked for modification and presentation of the proposal before approval.

7. Management of the supply

The selected supplier/firm will be responsible to supply the equipment at respective district office and be accountable for the timely delivery of the expected quality and quantity of equipment.

8. Responsibilities of the Supplier/ Firm

The supplier/firm will be responsible to accomplish the task outlined in this ToR and ensure the delivery of items stated above within the agreed budget and timeline.

9. Responsibilities of GNI Nepal

GNI Nepal guided by its policies and practices, will assist the supplier/firm to achieve the objective of this ToR.

10. Confidentiality

During the performance of the assignment or any time after expiry or termination of the agreement, the supplier/firm shall not disclose to any person or otherwise make use of any confidential information which the supplier/firm has obtained or may obtain in the course of the work relating to partner organization/GNI Nepal, the respondents or otherwise.

11. Documents to be submitted

The application shall contain following documents:

A. **Detailed financial proposal:** The proposal should include the price of equipment including tax, transportation cost and any other applicable costs at unit price or separately whichever is feasible. Prices of equipment can be quoted for different qualities/standard of the same item mentioning specifications of each quality.

   A complete list of proposed equipment with their clear photographs (colored) should be included with the financial proposal. The Financial proposal can be submitted as per the table attached on **Annex II** along with specification of supply equipment.

B. Details of the supplier/firm: The proposal should also include the following details of the firm:

   a) Copy of company/firm registration
   b) A copy of Tax clearance certificate (2076/077)
   c) PAN/VAT registration
   d) Any other relevant documents

12. Procedures for the submission of bid:

Interested and eligible suppliers/ firms are requested to submit the bid courier/hand delivery to Good Neighbors International Nepal Office Address or email to procurement@gninepal.org clearly marking the subject with **"Bid for Supply of Oxygen Generation Plant"** till **27th May 2021, 17:00 hrs** (Nepali Time).

For Electronic (email) submission, Financial proposal shall be submitted in PDF format protected with a password. The password shall be sent via email only upon request from procurement dept.

Bid received after the deadline will not be considered and only shortlisted firms/suppliers will be called for further process. Canvassing at any stage of process shall lead to automatic disqualification. The organization reserves all rights to qualify/disqualify application with or without providing any reasons whatsoever. All bids will be treated with the highest confidentiality.

Annex-I
TECHNICAL SPECIFICATIONS OF OXYGEN GENERATION PLANT

Suppliers/Firm can submit their bid for the capacity of either 5 Nm3/ hr, 10 Nm3/hr or 17 Nm3/hr or for all

S.N.	Purchaser's Specifications		Bidder's Offer		
	Oxygen Generation Plant with filling system		**Yes/ No**	**Page no. in catalogue**	**Remarks (if any)**
	Manufacturer				
	Brand				
	Type / Model				
	Country of Origin				
1.	**Description of Function**				
	For Supply, Installation, Testing and Commissioning of microprocessor based, fully automatic oxygen generator plant.				
2.	**Operational Requirements**				
	The plant, complete with Compressed Air System consisting of Air Compressor, refrigerated air dryer, air receiver tank, filters, Oxygen generation plant, a series of modules of two adsorption vessels (Modular systems), where each vessel is filled with an appropriate molecular sieve, oxygen filling system and empty cylinders etc.				
3.	**Technical Specifications**				
3.1	**Oxygen Generation System**				
3.1.1	Shall operate on (PSA) Pressure Swing Adsorption technology with series of modules of two adsorption vessels.				
3.1.2	Must be heavy duty medical Oxygen gas generators plant able to operate to work 24/365 days.				
3.1.3	Generator capacity should be not less than 17 Nm^3/hr. Capacity of generation should be equal to 60 or more cylinders/day of 6.8m3 cylinder capacity				
3.1.4	Oxygen Purity should be 93±2%.				
3.1.5	Must have non-corrosive materials, like aluminium and stainless steel, as standard for all process components				
3.1.6	Oxygen sensor should be Zirconium oxide Sensor.				
3.1.7	Outlet Pressure – approx. 5 to 6 bar				
3.1.8	Oxygen dew point: approx. - 40°C				

3.1.9	Column vessels should be manufactured according to pressure equipment directive			
3.1.10	Adsorbent material must be of highest quality, long-life molecular sieve [ZEOLITE] with industry leading energy air factors and warranty for ZEOLITE must be 10 years from the date of complete installation and commitment of the same shall be provided by the manufacturer.			
3.1.11	It 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.			
3.1.12	High class process dual filter should be fitted to ensure inlet and outlet gas quality.			
3.1.13	The system shall have 3 or more filtration layers (with activated carbon and dryer) for purification of oxygen from moisture, particles, bacteria etc.			
3.1.14	Process Valves: Self-lubricating pneumatic process valves with stainless steel body and piston stems with fitted valve status indicator			
3.1.15	Pipes should be of maximum durability and leak free operation.			
3.1.16	Must be according to standard US & European pharmacopeia and compliances with ISO standards.			
3.1.17	Should feature an automatic restart after power failure function as required ISO standard			
3.2	**Control and monitoring system**			
3.2.1	Should have color touch screen control panel of 5" or more			
3.2.2	The control panel display should show operating and measurement values for purity, outlet pressure, operating hours, sensor values and display of trends			
3.2.3	Should have alarm management with audit trail for raised alarms & alarm notification with automatic push e-mail/SMS.			
3.2.4	Should have onscreen message and remote desktop notification.			
3.2.5	Should have facility for data export of all process values via Ethernet or USB.			
3.2.6	It should also have automatic service reminder for periodic maintenance due.			
3.2.7	Backup UPS system shall be provided for monitoring and database.			
3.2.8	Portable digital mass flow meter shall be supplied with the plant enabling the hospital staffs to locate any leakage.			
3.2.9	Should provide with external purity sensor.			
3.2.10	Must have following sensors installed: • Purity analyzer and sensor • Outlet pressure sensor • Inlet pressure sensor • Inlet temperature sensor • Digital mass flow meter			
3.3	**Oxygen Production Tank**			

3.3.1	The plant should be equipped with an oxygen product tank of not less than 2000 litres size and a maximum permissible operating pressure of 10 bar.			
3.3.2	The design criteria for the tank should fully comply and meet with the requirements of the standards.			
3.3.3	Should have pressure manometers for both oxygen and compressed air control.			
3.4	**Air Compressor**			
3.4.1	Compressed air should be Oil injected/ oil free rotary screw type.			
3.4.2	Heavy duty dust filter should be installed in the compressor intake.			
3.4.3	Compressor should have capacity of discharge flange with installed motor power and maximum outlet pressure of approx. 10 bar.			
3.4.4	Should have air end and premium efficiency motor, together with a coupling and coupling flange, form a compact, durable, and low-maintenance assembly.			
3.4.5	Must be fitted with a direct drive for lower energy consumption. The rotor motor power in (Kw) must be sufficient (approx. 35KW) to reach/produce desired oxygen volume according to ambient condition mentioned in above point. Please specify the motor power.			
3.4.6	Should have Modular system with control unit, input/output modules, network components and web server			
3.4.7	Should be fully automatic monitoring and control			
3.4.8	Must have provisions of exhaust of hot air.			
3.4.9	Compressor should be Air cooled asymmetric rotary screw type with close coupled motor wound for AC 230/400 V / 50 Hz, supply.			
3.4.10	Should have integral oil separator.			
3.4.11	Should be mounted in a premade steel housing complete with anti-vibration mountings. The noise production level should be as low as possible. should be 70db or less at a distance of 1m.			
3.4.12	The compressors should be suitable for continuous running with full off load starting.			
3.4.13	The compressor operation should be with high and low-pressure alarms, and connectivity to give voltage free contacts for remote start and remote stop and general alarm.			
3.4.14	It should fully comply and meets with the requirements of the standards.			
3.5	**Air dryers**			
3.5.1	The compressed air system should be fitted with a refrigerant type after coolers and dryer capable of reducing the moisture content to a pressure dew point of +3°C or less.			
3.5.2	The dryers shall be suitable for operation with R407C refrigerant or equivalent.			

3.5.3	Dryer with capacity of 40°C or more to achieve +3°C pressure dew point at reference conditions.			
3.5.4	It should fully comply and meets with the requirements of the standards.			
3.6	**Air Buffer Tank**			
3.6.1	The plant should be equipped with an air buffer tank of not less than 2000 liters size and a maximum permissible operating pressure of approx. 11 bar.			
3.6.2	The tank should be corrosion proof with inlet and outlet valves, safety valve, pressure gauge.			
3.6.3	The design criteria for the tank should be fully complies and meets with the requirements of the standards			
3.7	**Filtration and Purification System**			
3.7.1	It should consist of an activated carbon bed type filter with food grade epoxy coating for air purity and bacterial filtration			
3.7.2	Filtration should be mounted to ensure particle filtration to less than 0.01micron.			
3.7.3	It should be mounted with electronic level-controlled condensate drains for energy saving.			
3.7.4	Air quality after filtration should meet the ISO 8573:2010 class 1.			
3.8	**Ambient/ Operational Conditions**			
3.8.1	The ambient site conditions must be referenced and the entire plant must be calculated designed and constructed to perform as per the maximum conditions stated: • Altitude: up to 2000 meter above sea level. • Temperature min/max +0° to +50°C • Relative humidity max.: 80%			
3.9	**Automatic Change Over System**			
3.9.1	Automatic pressure reduction and changeover system for medical gas supply network from cylinders without manual resetting.			
3.10	**Main Electrical Control Panel**			
3.10.1	As per required, 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.			
3.10.2	The panel should be provided with all Ampere Meters, Voltmeters for visual indication of the electric supply and LED indicators for each phase.			
3.10.3	All the main components and equipment of oxygen generator plant should be integrated and power controlled through one control.			
3.10.4	It should fully comply and meets with the requirements of the standards. It should be CE certified and certificate of origin must be submitted.			
3.11	**High Pressure Booster (Oxygen Compressor)**			

3.11.1	The generator can be set up to fill the hospital pipeline directly and use the filling ramp as a backup system. Oxygen cylinders can be filled simultaneously or during hours with low consumption. Used for filling cylinders of any size up to 150 bar and minimum flow rate of 8m^3/hr. The filling capacity ranges from 10 cylinders per day. a. Microprocessor based filling plant having touch screen display. b. Filling pressure – max.150 bar c. Cylinder size – 6.8 Nm^3 d. Filling Per day – at least 10 cylinders e. Oil free, reciprocating system, HP flexible hoses. f. Filling ramp for min. 4 cylinders to be connected at a time. g. Fully automatic with micro controller based with remote monitoring system			
3.11.2	It should fully comply and meets with the requirements of the standards. Should be ISO and CE certified and certificates of origin must be submitted along with the bid.			
3.12	**SERVO Stabilizer**			
3.12.1	Shall supply servo for complete medical oxygen plant of minimum capacity of 100KVA			
3.13	**UPS for PSA generator**			
3.13.1	Shall be of minimum 1000 VA (1KVA)			
3.13.2	Shall be online UPS with minimum backup of 30 mins			
4	**Standards and safety Requirements**			
4.1	Complete oxygen generation system must be classified as class IIb medical device and must be European CE certified and manufacture should provide the valid quality control certificate of the same & Copy of valid EN ISO 13485:2012			
5	**Warranty**			
5.1	Three years comprehensive warranty shall be given for all equipment, accessories, spares and consumable goods which are replace as per PPM schedule including the defective parts and accessories and molecular sleeve are to be replaced free of cost applicable from the date of handover			
5.2	Consumables for next 2 year after completion of warranty must be quoted compulsory a) Air compressor spares b) Oxygen booster spares c) Medical oxygen spares d) All additional accessories not mentioned to be quoted.			
5.3	Warranty of molecular sleeve (zeolite) for 10 years. commitment letter from manufacturer for same must be submitted.			
6	**Documentation**			
6.1	A valid distributor authorization certificate from manufacturer shall be required along with the bid documents and after sales service must be locally available.			

6.2	The supplier must submit the original brochure with specification in English Language.			
6.3	Copy of plan design, Operating manual in English Language for the proposed Plant.			
6.4	Operating manual, Service manual, Circuit diagram, Other detail drawings, PPM schedule, Spares parts catalog, Guarantee / warranty Certificate, Performance Test Certificate should be provided at the time of installation & in English Language.			
6.5	Certificate of calibration and inspection from factory			
7	**User/ Technician Training**			
7.1	User/Technical training should be provided on site operators / technicians.			
7.2	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.			
8	**Installation and commissioning**			
8.1	Must supply all standard accessories, maintenance kits & one set necessary tool set.			
8.2	Loading / unloading and shifting of equipment's to foundation / sites and any other items which is not mentioned specification and requirements must be considered by the supplier.			
8.3	During installation & commissioning you shall provide necessary tools and tackles, welding sets, gas cutting set and consumables, free of cost.			
8.4	The bidder must arrange the plant to be installed and commissioned by certified or qualified personnel, any prerequisites for installation to be communicated to the hospital in advance in detail.			
9	**Miscellaneous**			
9.1	Mode of delivery: Turn key The hospital will give site for installation only, any other electrical, civil, plumbing requirements should be done by the bidder's itself.			
	Note: The bidder must completely fill the Technical Specification Form (TSF). Only yes/no/all complies should not be written. Page number in the original catalogue of all the required parameters must be clearly mentioned and specification be highlighted in the catalogue. Failure in doing so may lead to rejection of the bid from technical committee			

Annex-II
Financial Proposal

Suppliers/Firm should develop a financial proposal format and fill it.