

# PSA Technology Oxygen Generators



On-site oxygen production



# On-site oxygen production



## Dependable / Durable / Economical

Pressure Swing Adsorption generators can deliver a constant flow of up to 93% ( $\pm 3\%$ ) oxygen purity at 60 psi.

Standard production is between 12 lpm to 2358 lpm (*litres per minute*)

**OGSI** presence in over 70 countries from 1994, including India. Cistron Systems are the official distributors for India. Cistron Systems have factory trained engineers to handle supply, installation, training and after sales service PAN India.

OGSI's hospital oxygen equipment is designed and fabricated in accordance with all pertinent codes (ASME, ANSI, NEMA, CE) and can be configured to meet most relevant CRN, ISO, HTM and CSA standards. Oxygen produced meets the United States Pharmacopeia (USP) XXI Oxygen 93% Monograph as well as European and other Pharmacopeia.



## Cylinder Filling Plants (CFP'S)

**OGSI** offers a complete line of cylinder filling plants (CFP's). These plants can be designed to produce oxygen up to 93% ( $\pm 3\%$ ) purity for most oxygen applications, including breathable hospital requirements.

Complete CFP's that are capable of filling 1 to 180 cylinders per day are currently available in (11) standard sizes. The cylinder size referenced is 6m<sup>3</sup> size (K or H size) oxygen cylinders. Custom sizes available.

OGSI CFP's include all the support equipment required such as air compressors, air dryers and oxygen compressors to complete turnkey systems. All models are factory tested and most are skid mounted. These plants are designed to be shipped in standard 20 or 40ft ocean containers for worldwide transit. Onsite commissioning and training is available from OGSI-Cistron engineers. Electrical power and an enclosure for the plant are all that is required at the customer's site to get started.



## Cylinder Filling Station CFP-15M

The CFP-15M (military) combines the high pressure and variable flow rate available from an oxygen cylinder with the oxygen generation and replenishment of an oxygen concentrator. Empty oxygen cylinders become a thing of the past! By simply connecting an empty oxygen cylinder(s) (up to two H-size at once) to its discharge line and turning it on, it will automatically refill them to 220 psig. The CFP-15M turns itself off once the desired level of pressure is reached. *All this is a very mobile military grade package.*

### BENEFITS OF THE CFP-15M

- Generates medical grade oxygen (93% purity)
- Easily transported to battlefield hospitals
- Can be assembled onto its own cart for mobility
- Saves space and eliminates tripping hazards
- Runs automatically and requires little attention
- Shuts down if oxygen purity drops (using display and audible alarms)



## Cistron Automatic change over system – PP Admin



“PP Admin” automatically regulates the flow from generator to the central pipeline system to maintain the required pressure and demand flow rate of oxygen with built in control mechanism to switch to secondary source under critical conditions like drop in purity and pressure in the oxygen reservoir. The system is with a built-in audio-visual alarm system for all critical parameters. The power supply to this unit is through UPS having battery for backup.



### Parameters Monitored

- Feed air Pressure–low alarm
- Power Supply Monitoring
- Oxygen reservoir pressure-low alarm
- Oxygen purity in percentage, with 7 segment display and low purity cutoff
- Secondary source Pressure Monitoring

## FEED AIR SYSTEM

### Kaeser Compressors (Screw type)

- Matches the quality class of ISO8753 class 1.4.1
- 3 phase 420 VAC
- 3 phase reverse tripping system
- Over current sensing system to save motor
- Digital temperature monitoring and over heat cut off
- Displays running hours and service hours separately
- Has emergency stop switch
- Compressor output has a cyclone separator with automatic drain valve (Eco drain - loss less drain)



### Refrigerating Dryer

- Capable of providing 33°F dew point, with inbuilt auto drain. (Eco drain)
- The dryer will have analog with digital scale to monitor dew point
- Automatic high dew point cutoff will shut down the compressor on dryer failure

### The System has following filters

- Particulate filter (0.1micron) with color indication
- Activated carbon filter (0.01micron) is capable of removing 99.999% of oil and aerosol

## Are oxygen generators economical ?

PSA oxygen generators are economical than oxygen transported in cylinders or liquid oxygen

### OXYGEN IN CYLINDERS

e.g. 40 cylinders are consumed in a hospital every day. Each cylinder refilling cost is Rs.200/- (incl. of taxes/handling costs) The cost for the hospital, every day will be (40x200) Rs. 8000/-. This will be Rs. 29.20 lakhs a year and approx.. Rs. 243,000 a month

### IF OXYGEN IS IN LIQUID OXYGEN TANKS (LMO)

40 cylinders will be equivalent to 340 cubic meters. Average cost of liquid oxygen is between Rs. 18/- to Rs.30/- per cubic meter. Taking the figure of Rs. 18/-, the cost every day will be (340x18) = 6120/- and yearly 22.34 lakhs. This is Rs. 186,000 a month

### OXYGEN FROM GENERATORS

If the same quantity has to be produced by an oxygen generator, what will be the costs ?

Any oxygen generator producing the quantity will be approximately 200 litres per minute flow rate, which requires 15KW power per hour. If electricity rate is considered as Rs.7/- per unit, then the cost of power daily will be (15x7x24) = Rs. 2520/- The maintenance cost for this capacity plant will be Rs. 1500/- per day approx.. This totals up to (2520+1500) = Rs. 4020 per day, which is 14.67 lakhs yearly and Rs. 122,500/- monthly

Yearly savings against cylinders – (29.20-14.67) = 14.53 lakhs

Yearly savings against liquid oxygen – (22.34-14.67) = 7.67 lakhs

### CONCLUSION:

- 1.Hospitals using cylinders now, will recover the investment in approx.. 3 years
- 2.Hospitals using liquid oxygen now, will cover the investment in approx....5 years



Oxygen Generators



Both can be as a secondary source or for back up



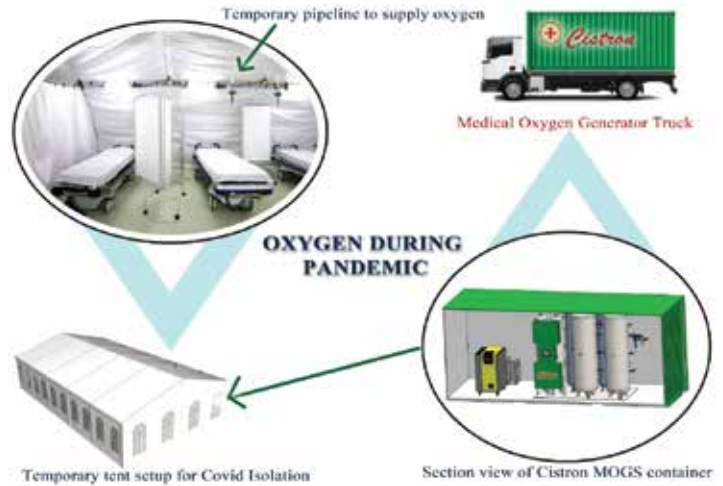
Customers using oxygen generators have understood the savings clearly over conventional supply of oxygen through 3<sup>rd</sup> party vendors and also realised the importance of the concept of on-site of medical oxygen production. Unlike Liquid oxygen tanks, these generators do not require any licence to install in the hospital. They can be installed in the terrace also. The PSA oxygen generators are highly dependable. The zeolite sieve is factory sealed in solid steel tanks, and rarely needs replacement. With very few moving parts, the generators are built to provide thousands of hours of continuous, reliable service. Routine maintenance is as simple as changing an air filter.



## Mobile Oxygen Generators

During pandemic (or) disaster management, medical oxygen is required at various locations in a very short notice. Oxygen Generators are mounted on a 20ft/40ft container and deployed to different medical & relief camps to provide continuous supply of oxygen to every patient. Logistics of refilling cylinders & liquid oxygen tanks be avoided.

Alternatively with the help of “High Pressure Oxygen Compressors” cylinders also can be filled at 2200 psi pressure.



The investment in these mobile units will not get wasted after any pandemic or disaster. They can be installed in any hospital for regular supply of medical oxygen, instead of cylinders or liquid oxygen.



