

# OXYGEN GENERATORS

(PSA & VPSA Technology)



**JYH BIG ENGINEERING & CONSULTANTS**  
(An ISO 9001:2015, ISO 14001:2015, ISO 45001-2018 Certified Company)

Plot No. A- 190, Flat No. - 499,  
Ashtavinayak Co-operative Housing Society,  
Sector 4, Ghansoli, Navi Mumbai 400701, Maharashtra India  
Contact : + 91 9082834712, 9004176561

E-mail : [info@jyhairseparation.com](mailto:info@jyhairseparation.com)  
[ykjyhbic@gmail.com](mailto:ykjyhbic@gmail.com)  
Website : [www.jyhairseparation.com](http://www.jyhairseparation.com)

## TECHNOLOGY

This is Molecular Sieves Technology to produce low cost Oxygen from Air. JYH has long experience and know-how in design and manufacturing of such plants. Molecular sieves remove moisture and nitrogen from air. So up to 95% pure dry Oxygen gas to produced. We offer 2 designs – PSA and VPSA.

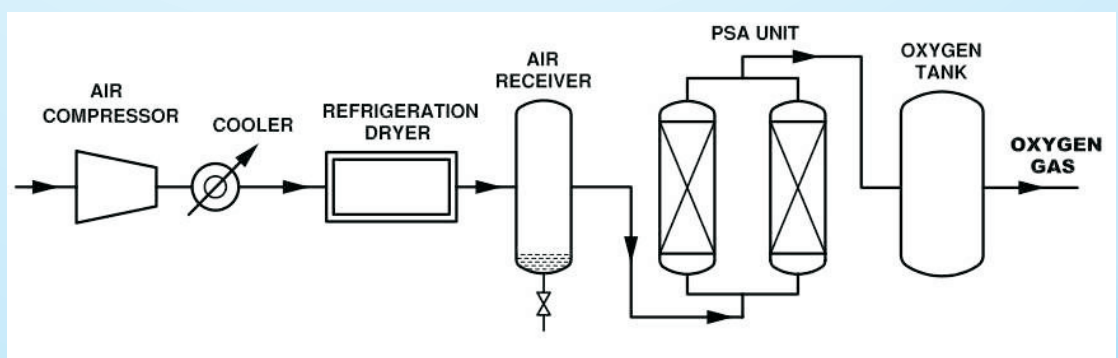
## PSA DESIGN

This is PRESSURE SWING ADSORPTION process.

This system got 2-vessels filled with molecular sieve. Clean & oil free compressed air at ambient temperature is passed through 1-vessel and oxygen comes out as product gas. The 2nd vessel is depressurized to atmospheric pressure and purged with little quantity of Oxygen coming out from 1st vessel. This regenerates molecular sieves for use in next cycle. Thus 2-vessels keep cycling alternately in Oxygen production and Regeneration making Oxygen gas available continuously.

These units are designed and supplied for 90% to 95% Oxygen purity.

- Oxygen gas pressure can be achieved up to 4-5 bar directly in PSA design without oxygen compressor. So, this design is preferred for medium pressure Oxygen requirements.
- Standard capacity available from 1 to 150 m<sup>3</sup>/hr Oxygen.
- Very simple in construction and easy in maintenance. So, more popular for Oxygen requirements.
- Power consumption is approx. 1-KW per cubic meter.
- We add on Oxygen compressor Booster of 150-200 Bar pressure for cylinder filling.
- These Oxygen generators are also suitable for medical Oxygen production.



## **SALIENT FEATURES**

### **1. Complete Automatic**

These systems are designed for un-attended operation and automatic oxygen demand adjustment as per requirement.

### **2. Less space requirement**

The design and instrumentation makes the plant very compact, assembly on skids, prefabricated supplied from our factory.

### **3. Fast Start-up**

Start-up time is only 10 -15-minutes to get oxygen purity. So, these units can be switched ON & OFF as per oxygen demand.

### **4. High reliability**

Most reliable for continuous and steady operation with constant Oxygen purity. Plant availability time is better than 99% always.

### **5. Molecular sieves life**

Expected molecular sieves life is around 15 years, i.e. whole lifetime of oxygen plant. So, no replacement cost

## **VPSA Design**

This is vacuum pressure swing adsorption process.

In this design there are two molecular sieves towers which cycle alternately – In Production and in regeneration. Feed air pressure is generally 1.5 Bar(A) which gives oxygen production at 1.3 bar(A). Regeneration of molecular sieves is done by vacuum pump at 0.06 bar vacuum. The waste gas is 85% nitrogen and 15% oxygen which is vented to atmosphere through a silencer. Product oxygen gas purity is 90% to 95%.

1. Higher initial investment as compared to PSA design.
2. Power consumption is lower. So, this design is preferred and recommended for large capacity oxygen plants.
3. Power consumption is only 0.35 KW per cubic meter Oxygen.

4. Oxygen plant sizes available from 150 to 5000 cubic meter per hour.
5. Direct Oxygen production pressure up to 0.3 bar. For higher pressures, oxygen compressor is provided.

### **Oxygen purity**

Oxygen purity available from 85% to 95% as per customer's requirement. Commonly used 93% purity oxygen has 2.5% Nitrogen and argon 2.5%.

### **Plant capacity**

PSA oxygen plants: 1 to 150 cubic meter per hour. VPSA oxygen plants: 150 to 5000 cubic meter per hour.

### **Utilities Required**

The only utility required are cooling water and electrical power. So, the cost of electricity produced is the cost of oxygen production.



## **JYH BIG ENGINEERING & CONSULTANTS**

(An ISO 9001:2015, ISO 14001:2015, ISO 45001-2018 Certified Company)

Plot No. A- 190, Flat No. - 499,  
Ashtavinayak Co-operative Housing Society,  
Sector 4, Ghansoli, Navi Mumbai 400701, Maharashtra India  
Contact : + 91 9082834712, 9004176561

E-mail : [info@jyhairseparation.com](mailto:info@jyhairseparation.com)  
[ykjhbig@gmail.com](mailto:ykjhbig@gmail.com)  
Website : [www.jyhairseparation.com](http://www.jyhairseparation.com)