OXYGEN GENERATORS
(PSA & VPSA Technology)

On-Site Gas Generation Solutions for Nitrogen, Oxygen & Hydrogen

MVS Engineering Pvt. Ltd.
‘MVS House’, E-24 East of Kailash
New Delhi - 110065, INDIA

Website : www.mvsengg.com
Email : sales@mvsengg.com
Phone : +91 (11) 4999 7000
Technology

This is Molecular sieves Technology to produce low cost Oxygen from Air. MVS 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% purity dry Oxygen gas is produced. We offer 2 designs - PSA and VPSA.

PSA DESIGN

This is PRESSURE SWING ADSORPTION process.

It has 2-vessels filled with Molecular Sieves. Clean compressed air at ambient temperature is passed through 1-vessel and oxygen comes out as product gas. The other vessel is depressurized to atmospheric pressure and purged with little quantity of Oxygen coming out from other 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.

- From PSA design Oxygen pressure is available directly up to 4 Bar without need of Oxygen compressor. So this design is preferred for medium pressure Oxygen requirements.
- Standard sizes available from 1 to 200 Cubic meter per hour Oxygen.
- Very simple in construction and very easy in maintenance. So more popular for most Oxygen requirements.
- Power consumption is 1-KW per Cubic meter.
- We add on Oxygen compressor of 150-200 Bar pressure for cylinder filling.
- These Oxygen generators are also suitable for Medical Oxygen production.

Salient Features

- Full Automation
  - All systems are designed for un-attended operation and automatic Oxygen demand adjustment.
- Lower Space Requirement
  - The design and Instrumentation makes the plant very compact, assembly on skids, prefabricated supplied form factory.
- Fast Start-up
  - Start-up time is only 5-minutes to get Oxygen purity. So these units can be switched ON & OFF as per Oxygen demand changes.
- High Reliability
  - Very reliable for continuous and steady operation with constant Oxygen purity. Plant availability time is better than 99% always.
- Molecular Sieves Life
  - Expected Molecular sieves life is around 15-years, i.e., whole life time of Oxygen plant. So no replacement costs.

“We offer the latest design and the best product to our customers. PSA Oxygen Generation and VPSA technology requires lots of experience and over the last 30 years, MVS has perfected the technology with continued design improvements and modifications. We can now boast of the best in industry efficiency and plant reliability.” - Mr. D.K. Chaudhary (Director, Technical)
VPSA Design

This is VACUUM PRESSURE SWING ADSORPTION process. In this design, there are 2 Molecular sieves vessels 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 a vacuum pump at 0.6 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%.

- Higher initial investment as compared to PSA design.
- Power consumption is lower. So this design is preferred and recommended for large capacity Oxygen plants.
- Power consumption is only 0.35 KW per Cubic meter Oxygen.
- Oxygen plant sizes available from 200 to 3000 Cubic meter per hour.
- Direct Oxygen production pressure up to 0.3 Bar. For higher pressures, Oxygen compressor is provided.

COST OF OXYGEN PRODUCTION

In small sizes Oxygen generation cost if Rs. 4 per cubic meter. In big size plants cost of Oxygen generation gradually comes down to Rs. 2 per cubic meter.

- Oxygen Purity
  - Oxygen purity available from 85% to 95% as per customer's requirement. Commonly used 93% purity Oxygen has 2.5% Nitrogen and 4.5% Argon.
- Plant Capacities
  - PSA Oxygen Plants: 1 to 200 Cubic meter per hour.
  - VPSA Oxygen Plants: 200 to 3000 Cubic meter per hour.
- Utilities Needed
  - The only utilities required are Cooling water & Electrical power. So cost of electricity consumed is the cost of Oxygen production.

MEDICAL OXYGEN

These Oxygen generators are very suitable for Medical use as well, for providing Oxygen round the clock. As per US Pharmacopeia 93% purity Oxygen is very suitable for Hospital use. Thousands of such Gas generators are in use in Hospitals worldwide. This installation avoids Hospital dependency on scarce Oxygen Cylinders. Benefits include Low cost, decreased Administrative work & continuous and reliable Oxygen supply available round the clock.

“We used to rely on liquid Oxygen for our pulp mill Oxygen needs. However, we were continuously struggling with delivery issues and also high cost of Oxygen. So, we got in touch with MVS Engineering since they have supplied many plants for Oxy-bleaching purposes in the paper industry. Ever since we installed the Oxygen plant, we now never have to worry about Oxygen availability and MVS provides us with good after-sales service.”

- Utilities Head (Major Paper Mill in Southern India)

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Technical Specifications

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<tbody>
<tr>
<td>Oxygen Capacity</td>
<td>1 to 3000 NM³/hr</td>
</tr>
<tr>
<td>Purity</td>
<td>85% to 95%</td>
</tr>
<tr>
<td>Pressure</td>
<td>Up to 4 Bar (Booster optional for still higher pressure)</td>
</tr>
<tr>
<td>Installation</td>
<td>Single deck or Double deck design as per space availability</td>
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<tr>
<td>Utilities</td>
<td>Power, Instrument Air and Cooling Water</td>
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About MVS Engineering

MVS is a Turnkey supplier of Gas generators, Air dryers, Liquid dryers and Air heaters and over 7000 units have been supplied in India and the world over.

MVS started in 1977 and has become a market leader in product innovation and high quality Gas plants. MVS was the first to attain ISO 9001 certification in the Gas industry in India and continues to set new industry standards in Gas Technology.

Air & Gas Solutions by MVS

- Nitrogen Generator (PSA & Membrane)
- Oxygen Generator (PSA & VPSA)
- Hydrogen Generator (Water Electrolysis)
- Hydrogen Generator (Natural Gas Reforming)
- Gas Purification Units
- Ammonia Cracking Units
- Inert Gas Generators
- Exo-Gas Generators
- Compressed Air Drying Solutions
- High Pressure Gas Storage Tanks

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