

for applications with large capacity demands...

THE EXPERIENCE

Hi-Tech Engineered Solutions, one of the world's leader in Installing, Manufacturing Turn key based VPSA (Vacuum Pressure Swing Adsorption) Technology Plants, also offers Custom Engineered VPSA Oxygen Systems that are designed to Specific Requirements of Installation with Capacities Ranging from 3000 SCFH (79Nm³/hr) to 20000SCFH (500Nm³/hr)

Hi-Tech's high-efficiency, rugged 2-bed VPSA oxygen process design offers extremely low energy consumption, on-stream efficiency of 99%, easy operation, and long-term Plant life of 15 years or more under standard tests.

Hi-Tech Engineered Solutions has designed and supplied more than 50 VPSA/PSA plants including the largest units. Plants are currently in use all over the world in remote, harsh, and demanding environments throughout globe.

Besides Oxygen VPSA plants, the major PSA applications are the recovery of high purity hydrogen, methane and carbon monoxide as well as the generation of Nitrogen and Oxygen.

Recently the VPSA process has gained importance of the bulk removal of carbon dioxide from steel-mill furnace / Chimney flue gases.

THE OXYGEN GENERATION PLANT

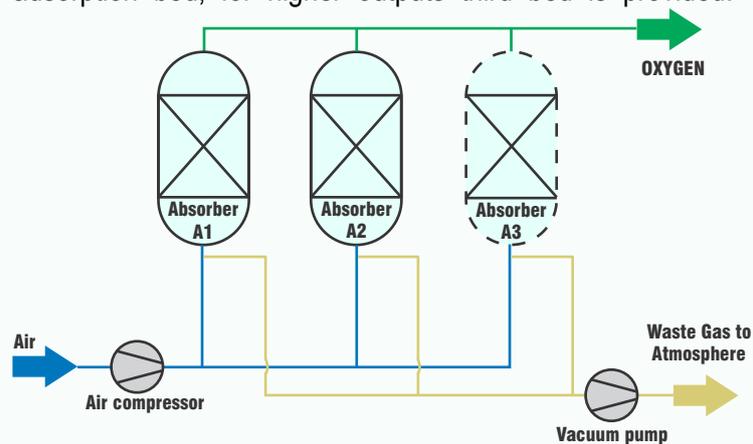
The Hi-Tech's VPSA Technology Based Oxygen Generation Plants are designed for on-stream application with need for low-cost oxygen with a purity of around ~ 90% to 94% V/V and balance gas consisting of Nitrogen and Argon, where it is not economical to produce the required oxygen with on-site cryogenic units or take it from Cryogenic liquid oxygen storage Tanks/Systems.

The VPSA oxygen plants are providing low-cost oxygen with a reliable, flexible and trouble free process the capacities of the oxygen plants range from small plants with product requirements of only several Nm³/hr up to large scale plants with several thousand Nm³/hr oxygen product flows.

THE PROCESS

The production of gases with the aid of the adsorption technology is based on the capability of porous adsorption agents to bind gases the individual constituents of gas mixture are adsorbed to differing degrees on the very large surfaces of the adsorbent agents. this effect is used within a Vacuum pressure swing adsorption process to continuously separate out one constituent from a feed gas mixture or feed air.

Zeolite Molecular Sieves are used as adsorption agents when producing oxygen from the air by adsorptive means they adsorb nitrogen, water vapor and carbon dioxide to a much higher degree than oxygen this means that a product flow comprising essentially only oxygen and argon can be removed from the process air being passed through the adsorption bed, for higher outputs third bed is provided.



Typical Process Flow Diagram

The compressed air enters Absorbers and Nitrogen is adsorbed while the oxygen product leaves the vessels after a certain time the adsorption is interrupted and evacuation by a vacuum pump desorbs the enriched nitrogen gas. The oxygen product flow is compressed to the required discharge pressure, if required and fed to end use process.

THE SCOPE OF SUPPLY

The scope of supply mainly comprises the following-

- ✓ Air Compressor
- ✓ Vacuum pump
- ✓ Absorber vessels
- ✓ Specially selected adsorbent material
- ✓ Valve Pre-Piped skid
- ✓ Touchscreen Control system
- ✓ Oxygen product analyzer
- ✓ Interconnecting pipelines

TYPICAL APPLICATIONS

Oxygen VPSA Plants supplied by Hi-Tech Engineered Solutions range in the size of a few 50 Nm³/hr up to 600 Nm³/hr with an oxygen product purity of ranging from 90% ~ 95% V/V.

For many Processes using oxygen rather than air reduces vent gas quantities and reduces energy and capital cost requirements.

Metal Industry

Furnaces in lead, copper and zinc industry.

Oxygen-Fuel Burners.

Chemical leaching for minerals extraction.

Uranium Recovery.

Pulp and Paper industry

Oxygen bleaching and oxidation.

Chemical Industry

Chemical oxidation reaction using oxygen reduces vent gas quantities and hence energy and capital cost.

Water and Waste Water treatment

Oxygenation and Ozone Treatment.

Glass Industry

Furnace enrichment oxygen burners have a much more intense flame, So the heat transfer is greater & furnace can be smaller and less fuel is consumed.

Hospital

For artificial respiration.

PLANT UNIQUE FEATURES

- ✔ Completely Pre-Piped & Skid Mounted.
- ✔ Containerized Shipments right from factory.
- ✔ Critical process parameters monitored and recorded every 500 milliseconds.
- ✔ Automatic turndown capability from 100% to 0% flow capacity.
- ✔ Designed in accordance with local standards.
- ✔ Automatic and unattended operation.
- ✔ On-site start-up assistance by Hi-Tech's Engineered Solutions technicians anywhere in the world.

WORLDWIDE LOCATION

Hi-Tech Gas Equipment & Hardware
262 KM Stone, National Highway-1,
Mandi Gobindgarh-147 301, Punjab
India

☎ +91-1765-500999

☎ +1-302-996-5818

🌐 www.hitechgas.com

✉ sales@hitechgas.com

NORTH AMERICA LOCATION

Hi-Tech North America LLC
1408, Old Capital Trail, # 554
Wilmington, DE- 19808
United States of America

☎ +1-302-298-1374

☎ +1-302-996-5818

🌐 www.hitechgas.us

✉ sales@hitechgas.us

YOUR LOCAL CONTACT



SPECIFICATIONS

Our VPSA System from 79 to 526 Nm³/hr of oxygen. Use the following table to determine which model is most suitable to your application.

Model	Capacity		Building Size
	SCFH	Nm ³ /hr	
VO-3000	3,000	79	32 x 24 x 20 ft. (9.8 x 7.3 x 6.1 m)
VO-5000	5,000	132	35 x 24 x 20 ft. (10.7 x 7.3 x 6.1 m)
VO-8000	8,000	210	38 x 24 x 20 ft. (11.5 x 7.3 x 6.1 m)
VO-10000	10,000	263	42 x 24 x 20 ft. (12.8 x 7.3 x 6.1 m)
VO-15000	15,000	395	50 x 28 x 22 ft. (15.2 x 8.5 x 6.7 m)
VO-20000	20,000	526	58 x 33 x 25 ft. (17.7 x 10.1 x 7.6 m)

-Optional 99% purity or Higher working pressures

-Custom Built Models also Available

-All Plants 0.41 kWh ±5% per Nm³ of total flow, nominal 93% oxygen at 0.21 Bar G Oxygen Outlet pressure at maximum plant capacity.

Note- Specifications are subject to change without prior notice.

ADVANTAGES

1 Economics

Cost saving in the range of 40-60% over liquid supply Systems and up-to 80% for Cryogenic Plant.

2 Highest Reliability

The VPSA system provides highest reliability the control system allows for the production of oxygen at the specified flow & purity within a short time of demand using a simple push button. this on/off operating capability is not available from cryogenic plants.

3 Easy Partial Load Operation

The plant is automatically adjusted to the actual product flow requirement and operates in an energy saving partial load mode.

4 Energy Efficiency

Lower energy consumption than cryogenic units.

5 Fully Automatic Operation

PLC based control system controls the purity and the flow by automatically adjusting the cycle time of the VPSA system.

6 Remote control

A Profinet or LAN port is provided for the communication with complete Plant Directional Control System with optional Modem Board for Remote Control.