

Vacuum variable pressure adsorption (VPSA) oxygen systems



Suzhou XITE is a leading manufacturer of VPSA oxygen equipment. We have extensive experience in costing and designing VPSA (vacuum variable pressure adsorption system) and PSA (variable pressure adsorption) customized oxygen systems with capacities from 3600SCFH (100Nm³/hr) to 53000SCFH (1500Nm³/hr) according to specific requirements. Highly efficient 2-4 bed VPSA oxygen process (4 beds for higher capacity requirements). These technologies offer extremely low energy consumption, 99% continuous efficiency, simple operation and long plant life.

How a VPSA plant works.

In this process, it consists of 2 or 4 beds filled with molecular sieves. These beds are alternately circulated in production and regeneration. The feed air pressure is provided by a blower at 0.25 to 0.5 bar and oxygen can be produced at 0.20 to 0.45 bar. The regeneration of the molecular sieve is achieved by a highly efficient water-cooled vacuum pump at a pressure of 0.6 bar. As a result, the purity of the product oxygen reaches about 90-95%. This means that a product stream consisting essentially only of oxygen and argon can be removed from the process air passing through the adsorption bed. The compressed air enters the adsorber. The nitrogen is adsorbed, while the oxygen product leaves the vessel. After a certain time, the adsorption is interrupted, evacuated by a vacuum pump and the enriched nitrogen is desorbed. If required, the oxygen product stream is compressed to the required discharge pressure.

Standard features of the VPSA oxygen system include.

Monitoring and recording of key process parameters every 250 ms through a digital log generator. Remote monitoring of system operation via scada and dcs systems. Flexible pressure drop capability from 100% to 30% oxygen flow design capability. * Continuous, uninterrupted supply and guaranteed purity. Design according to international safety standards. * Low power consumption. * Fast start-up. * Modular design. * Long life and low maintenance. * Scada and Dcs options available.

VPSA oxygen applications: * Chemical industry for oxidation reactions and incinerators. * Metallurgical industry for oxygen enrichment in furnaces. Pulp and paper mills for oxygen bleaching and delignification. Water/wastewater treatment. Ozone gas generation. Oxygen fuel burners. Furnace enrichment. Gold purification. Uranium recovery. Glass industry. Steel mills.

