

### PRESSURE SWING ADSORPTION

Pressure Swing Adsorption can be used to produce N<sub>2</sub> or O<sub>2</sub> from compressed air, which is fed to the unit that uses adsorption phenomena to remove the contaminants: N<sub>2</sub> when the desired pure gas is O<sub>2</sub>, or O<sub>2</sub> when the desired pure gas is N<sub>2</sub>. Also, in both cases, H<sub>2</sub>O and CO<sub>2</sub> are removed as well as other minor contaminants.

The PSA unit contains two columns packed with a selective adsorbent that has affinity towards the component to be removed: A carbon molecular sieve is used to produce N<sub>2</sub> and zeolites are used to produce O<sub>2</sub>.

Each column undergoes a cyclic sequence of high and low pressure steps that guarantees the production of a continuous flow of high purity gas.

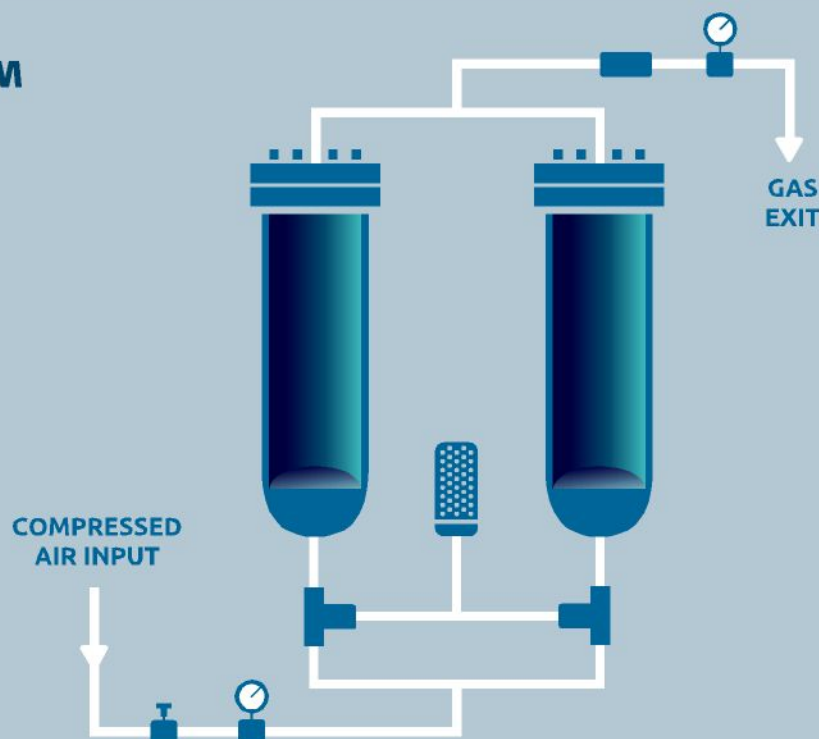
In the high pressure step, the adsorbent retains the contaminants present in the compressed air and the

desired gas (N<sub>2</sub> or O<sub>2</sub>) is obtained from the top of the columns.

The regeneration is accomplished in the low pressure step, with the release of contaminants retained by the adsorbent.



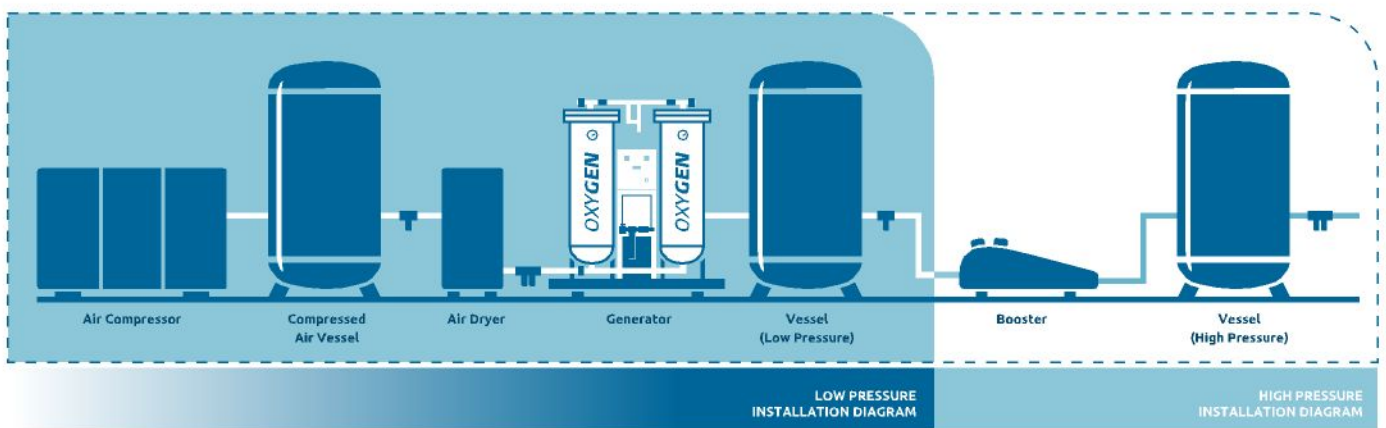
### PSA DIAGRAM



## PSA SYSTEM ADVANTAGES

### PRESSURE SWING ADSORPTION

- **Economy** - 90% reduction in the cost of Nitrogen | Oxygen
- **Convenience** - elimination of logistical and administrative operations
- **Continuous availability** - elimination of orders and deliveries
- **Modularity / Scalability** - your installation grows with you
- **Robustness, reliability and durability**
- **Reduced maintenance**
- **Security**
- **Ready-to-use Engineering Solutions**



# VARIOPSA

## VARIABLE FLOW PSA TECHNOLOGY

Standard PSA cycles have fixed production and regeneration time cycles designed for optimum efficiency at a constant nominal production.

Some processes have a gas consumption demand that can vary along the production shifts or different production steps, thus requiring variable gas flows at a fixed purity. Standard PSA tend to be less efficient under these consumption scenarios. Lower than the nominal consumption rates will have an effect on the standard PSA which is purity increase, thus decreasing efficiency by higher than needed air consumption.

Sysadvance VARIO option allows for a smart control of the PSA cycle times by continuous monitoring of the outlet purity thus adapting the PSA production capacity to the fluctuating process demand keeping constant the specific air consumption, therefore maximizing efficiency on a variable consumption scenario, while maintaining a constant required purity.