

## **PROCESS DESCRIPTION OF VPSA OXYGEN PLANT**

**Basic Principle:** Atmospheric Air Contains 78% of Nitrogen and 21% of Oxygen. Oxygen in VPSA method is generated by Physical separation of Oxygen from Atmospheric air. This is done by using a special Molecular sieves which have selective adsorption affinity for adsorption of Nitrogen and let the Oxygen go out. This phenomenon of adsorption of Nitrogen gas under Vacuum/pressure is known as **Vacuum Pressure Swing Adsorption i.e. V. P. S. A.**

### **Process Steps**

1. The clean filtered air by blower is allowed to pass through the CW/CHW Cooler to VPSA module. In VPSA module the air entering one of the tower is allowed to pass through the bed of molecular sieve, This adsorption continues for a given time, After a the tower get saturated with nitrogen and thus the tower is switched automatically to other tower for nitrogen adsorption and oxygen generation. The previous tower which is saturated with nitrogen is thus allowed to vent out the nitrogen to atmosphere then create vacuum by vacuum pump system.
2. This process is cyclic and you get a regular supply of oxygen from either of the tower which is collected in the surge vessel.
3. The oxygen is analyzed for its purity of oxygen ( & Moisture also if opted for as dew point measurement is optional ) by an online oxygen analyzer
4. In case the oxygen is greater than desired quality it is then allowed to go to storage tank.
5. The system is provided with vent valves which do-not allow the nitrogen of unwanted quality to go for storage and thus use. It let the impure oxygen vent out till the desired purity is achieved.

## **SAFETY FEATURES AND AUDIO VISUAL ALARMS**

The Oxygen Gas Generator is Skid Mounted and Pre-commissioned at Our Works. It is fully automatic and virtually requires no attention of the Operator. Once started it can be left-attended. All operations take place automatically and Oxygen Purity remains very consistent. In case of any abnormality the gas Generator would trip automatically with Audio Visual Alarms for Necessary action.