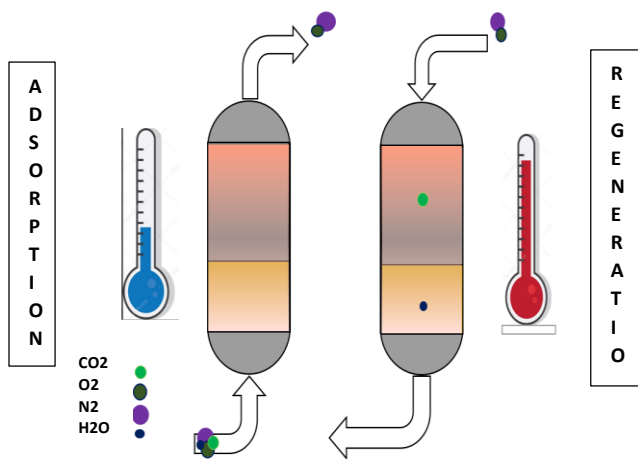


HP TSA Technology

- Temperature Swing Adsorption (TSA) is used in oil & gas sector for various applications such as air drying, product drying etc.
- HPCL R&D developed In-house HP TSA technology for following applications:
 - CNU Pre-Purification Unit
 - Moisture guard bed for FG/PG grade Hexane
- HP TSA Technology can be extended to various other applications.

Process Schematic



Commercial Unit Process Details

CNU Pre-Purification Unit at HPCL-VR:

- Capacity: 12750 Nm³/h
- Inlet feed specification:
 - ❖ Stream: Ambient air
 - ❖ CO₂: ~500 ppm
 - ❖ Water vapor: Saturated at op. Temp
- Product specification:
 - ❖ CO₂: <3 ppm
 - ❖ Water vapor: - 100°C dew point

Moisture Guard Bed for FG/PG Hexane at

HPCL-MR:

- Capacity: 10300 kg/h
- Inlet feed specification:
 - ❖ Stream: Raw Hexane
 - ❖ Water content: 300 ppm
- Product specification:
 - ❖ Moisture content: < 1 ppm

HP TSA Technology



Benefits

- Indigenization of technology
- Superior adsorbents
- Lower regeneration cost (Less OPEX)
- Modular design

Other Potential Applications

- Moisture removal from various refinery streams
- Direct air capture (CO₂ from air)
- Drier for H₂ produced from electrolyzers
- Natural gas drying
- Ethanol dehydration
- Atmospheric Water Harvesting
- Effluent water treatment