

Engineered and manufactured gas and liquid process solutions

# LECTRODRYER

Adsorption technology experts since 1932

## HPS HYDROGEN PURIFICATION SYSTEM

The HPS Lectrodryer is specially designed for purifying hydrogen process gas streams generated by electrolysis. The HPS Lectrodryer can be used with all methods of hydrogen production and optimized for the generation method.

Current designs pair with electrolyzer sizes from pilot scale to 250MW. Removal of moisture and other contaminants like oxygen allows the hydrogen product to meet ISO 14687, SAE J2719, and other hydrogen quality standards. Dual tower, heat-reactivated design allows for continuous operation and purification. The closed-circuit design utilizes a captive volume at line pressure so no loss of process gas is required for reactivation of the adsorbent.



## Here's how the HPS works:

One column of the dual tower purifies the hydrogen gas as it passes through the adsorbent bed, then the process switches to the other column while the first column reactivates. While the captive volume is circulated, the closed system removes the condensable materials driven off the adsorbent. Reactivation is done by means of a motor-driven blower that circulates the captive gas through a heater and adsorbent tower. The desorbed moisture will be condensed by a water-cooled inner cooler and then separated and trapped for removal.

## Standard features include:

- Motor-driven circulating blower
- Water-cooled inner cooler
- Separator and condensate trap
- Over-pressure relief valves for each adsorber
- Control Box with PLC/HMI
- ASME Code designed vessels for US installations
- Thermostatic Protection of the Heater
- Pressure gauges and thermometer for each tower
- Outlet Particulate Filter
- Lectrodryer Dewpoint Sensors

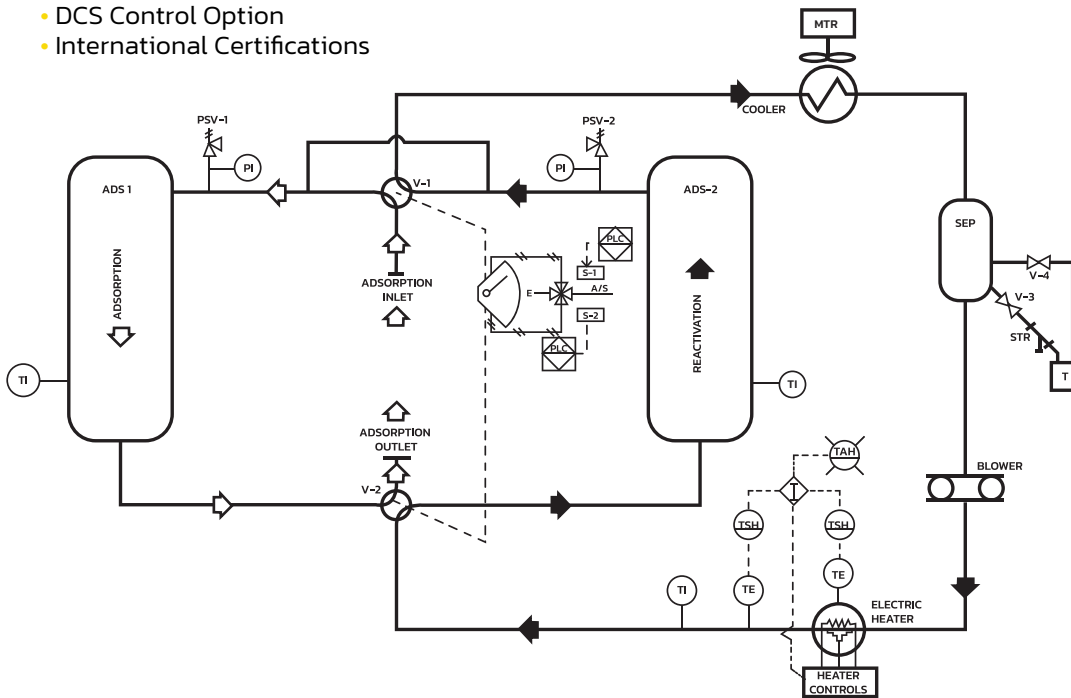
## Options available:

- Containerized ready skid
- Catalytic Deoxygenation Reactors
- Oxygen Analyzer
- Inlet Heat Exchanger
- On-board Chiller System
- Inlet Hydrogen-Water Separator
- Pneumatic or Electrical Actuation
- DCS Control Option
- International Certifications

## Sizing of HPS Lectrodryer

The selection of a particular HPS Lectrodryer is more complex than the selection of a traditional dryer system. Because of the complex nature of the selection, each Lectrodryer should be handled individually so the right model can be selected for the application. Typical, but not limited to, application conditions:

Flowrate	1.10 - 21,830 lb/hr ( 0.5 - 9902 kg/hr ) Hydrogen
Temperature	40 °F - 158 °F ( 4 °C - 70 °C )
Pressure	<1 psig - 3000 psig ( <69 mbarg - 207 barg )
Inlet Moisture Content	<= Saturated at Conditions
Desired Outlet Moisture Content	-105 °F to -40 °F ( -76 °C to -40 °C ) Atmospheric Dewpoint
Turndown Capacity	10 - 100 %



Brochure Rev. 0



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