PSB INDUSTRIES

Air • Gas • Liquid

PURIFICATION • DRYING • SYSTEMS

c UL us

ASME

CRN

MADE IN U.S.A.

PSB ENGINEERING AND FABRICATION

PSB industries is a leading packager of modular and skid mounted process equipment with over 65 years of experience producing dehydration equipment currently serving the **Air Separation**, **Oil & Gas**, **Chemical**, **Petrochemical**, **Refining**, **Fuel Gas**, and **Electronics** markets. PSB's fabrication capabilities and quality of packaged systems are unmatched. All processes are completed under one roof from start to finish, allowing PSB to closely monitor and quickly react to scope changes.

We maintain “U”, “UM”, “S”, and “R” stamps for complete manufacturing of pressure vessels and boilers. All pressure vessels and process piping are built in accordance to ASME Section VIII, Division 1 requirements boiler and external boiler parts are built to ASME Section 1 requirements.

Our standard and custom packaged systems remove moisture and other contaminants from process streams. Adsorption technologies utilizing activated alumina, molecular sieve, activated carbon, and other selective adsorbents are employed to dehydrate, treat and purify the fluid stream to the required exit specification. Catalyst Purification systems are also designed and often incorporated with adsorption packages for purification.

QUALITY-POLICY STATEMENT

It is the policy of the organization to consistently meet customer requirements through the education, implementation, and maintenance of PSB’s documented system in compliance with applicable codes/standards, and to enhance customer satisfaction through continual improvement and prevention of nonconformity. The organization will establish and periodically review quality objectives in an effort to enhance our quality system.

PSB Packaged Systems

From originating PROCESS DESIGN to meeting OUTLET SPECIFICATION, PSB ensures your process and mechanical requirements are satisfied, on time and under budget.

Engineering & Design

- Process design
- Mechanical design
- 3D modeling
- PLC programming & testing

Quality

- ASME/ANSI
- Code fabrication
- CRN
- NDE
- Quality dossier
- QC documentation
- UL, CSA, code as required

Fabrication

- Specialized cleaning & painting
- Standard piping is designed, manufactured & tested per ASME B31.3 /31.12
- Structural fab per AWSD1.1
- Export crating or containerization per ISPM 15

After Shipment

- Project management
- On site training & start up
- Single-point warranty & technical support
- Aftermarket sales/parts

Applications Using Solid Adsorbents

- **Molecular sieve**
- **Selective adsorbents**
- **Activated alumina**
- **Activated carbon**
- **Catalyst**
- **Silica Gel**

REMOVING WATER AND CONTAMINANTS FROM:

GASES

- **Inorganic Gas**
  - Air
  - Ammonia
  - Argon
  - Carbon Dioxide
  - Carbon Monoxide
  - Chlorine
  - Helium
  - Hydrogen
  - Hydrogen Sulfide
  - Mixed Gases
  - Neon
  - Nitrogen
  - Oxygen
  - Sulphur Dioxide
  - Synthesis Gas
- **Organic Gas**
  - Butane
  - Ethane
  - Ethers
  - Ethylene
  - FCC Offgas
  - Landfill/Digester/WWTP Gas
  - Methane
  - Methylene Chloride
  - Mixed Hydrocarbon Gases
  - Natural Gas
  - Propane
  - Propylene

LIQUIDS

- **Solvents/Other**
  - Acetone
  - Benzene
  - Comonomers
  - Ethanol
  - Freons
  - Heat Transfer Fluids
  - IPA
  - Methanol
  - Monomers
  - NGL
  - Trichloroethylene
  - Toluene
  - Xylene
- **Refinery Products**
  - Butadiene
  - Butane
  - Butene
  - Ethane
  - Isobutane
  - Isopentane
  - Kerosene
  - Naphtha
  - Pentane
  - Propane
  - Propylene
  - Raffinates

GAS AND LIQUID PURIFICATION

- ***Removal of sulfur compounds, such as mercaptans and hydrogen sulfide.***
- ***Removal of carbon dioxide.***
- ***Removal of water, nitriles, oxygenates, and sulfur compounds.***

CATALYTIC PURIFICATION

- ***Revomval of oxygen*** from nitrogen, argon, methane, etc.
- ***Removal of hydrogen*** from helium or other gases.
- ***Removal of H2/CO*** from air for high-purity process.
- ***Catalytic oxidation*** of hydrocarbons.

REGENERATION OPTIONS

"X" – External/Separate Source
For use when customer has dry, clean regeneration gas available.

"A" – Split Stream
A portion of the process is split off, used to regenerate bed, then returned to the process.

"C" – Atmospheric Air
Is typically known as blower purge and uses ambient air for regeneration.

"E" – Closed Loop
A captive volume of gas is recirculated to heat and cool the regenerating bed.

Typical Custom Applications

METHANE DEOXO SKID

- O2 removal by catalytic reaction
- Methane/treated landfill gas / CO2 coming off pre-treatment sources
- Outlet Oxygen as low as 1 ppmv
- Stainless steel materials used in high temperature sections
- Class 1, Division 2, Group C & D electricals
- Sulfur guard bed option

PROPYLENE DRYER

- Gulf coast refinery
- 14,300 BPD at 400 psig
- 0.5 ppmw outlet water
- Dual steam heaters
- Split stream regeneration - no loss of product
- Valve status lights on local PLC enclosure
- Galvanized base with deck plate

HYDROGEN DRYER

- Chlor-Alkali facility
- 28 MMSCFD @ 410 psig
- Eight vessel system
- HCI removal, lead-lag
- Sulfur removal
- Dexo/RCI catalytic conversion
- Heat recovery
- Final moisture removal

Typical Custom Applications

CO_2 DRYER

- SS piping on wet areas
- Steam and electric regeneration heaters
- Particulate after filter
- Coalescing pre filter
- (2) Dryer vessels (not shown)

NGL DRYER

- (2) Dryer vessels (not shown)
- Vaporizer and superheater
- Dual after filters
- PLC control
- Molecular sieve adsorbent

BENZENE DRYER

- 525 lb/hr with 1,600 ppmw water
- <16 ppmw water outlet
- Split stream regeneration, no loss of product
- Fully assembled, ready for piping and electrical connection

NG Series - Natural Gas Dryers

NG-SRD

Dual Vessel Manual Regeneration

A dual vessel system allowing for continuous drying. While one vessel is drying the other can manually regenerate without interrupting the drying flow.

NG-EV

Fully Automatic Regeneration

An ideal system for drying medium to large volumes of natural gas needing 24/7 operation. Each unit is conservatively sized to remove moisture from natural gas.

While one vessel is on stream drying, the other vessel is regenerating or on standby mode and ready to be placed back on stream.

“DDP” (Digital Dew Point Meter) is provided to indicate the effluent dew point, confirming performance.

PSB’s standard package includes factory fit pre filter for removing dirt/aerosols or contaminants and after filter for removing desiccant dust.

Dryer Design Features of both NG-SRD and NG-EV Dryers:

- Dual vessel design manufactured and stamped per ASME code Section VIII. Alternatives available.
- Piping designed per ASME B31.3.
- NEMA/NEC electrical construction standard.
- Closed-loop regeneration of the molecular sieve adsorbent.
- Pre filter and after filter complete with differential pressure indicators.
- Insulated adsorber vessels and electric heater for heat conservation.
- Incoloy sheath low watt density flanged immersion type electric heater.

Parts/Customer Service/Technical Support

- Spare parts for Pritchard, Brown Fintube, Zurn and PSB Dryers
- Filter replacement elements
- All types of desiccant
- Domestic and international technical support

Specialized Dryer Products

Activated Carbon Bed

The AC Series utilizes a bed of carbon to remove vapor phase oil through adsorption. The Activated Carbon Bed removes vapor phase oil to protect down stream components.

Tank Vent Air Dryers

The Storage Tank Vent Dryers are designed to reduce the water content of air entering a liquid storage tank, thus decreasing internal corrosion and entrained water. These dryers work on the principle of absorption. The desiccant is consumed and needs replenished as required. They are designed to efficiently dry air at atmospheric or near atmospheric conditions. Carbon or stainless steel construction is available.

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Activated Carbon Bed

Tank Vent Dryer