PSB INDUSTRIES

LNG Dehydration & Heavy Hydrocarbon Removal

LNG Dehydration

Natural gas has a list of impurities that need to be removed before being liquefied. Water being one of them causes significant operational problems, including:

- **Ice and hydrate formation that blocks pipelines and equipment**
- **Damage to cryogenic heat exchangers and cold boxes.**
- **Freeze-up of valves, instrumentation, and process equipment**
- **Reduced plant efficiency and costly unplanned shutdowns**

To match the ultra-dry requirements of the gas, molecular sieve based dehydration using a temperature swing adsorption (TSA) principle technology is used as an industry-standard.

PSB Industries, Inc. is a market-leading USA-based designer, engineer, and manufacturer of molecular sieve dehydration systems, headquartered in Erie, Pennsylvania. With decades of industry experience and an unmatched track record, PSB Industries stands at the forefront of LNG dehydration technology.

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LNG Dehydration (cont.)

PSB's skid mounted LNG dehydration systems are custom designed with single to multi-layered bed design to encounter varying process parameters, meet stringent outlet water requirements and provide ease of on-site installation.

Typical Process Parameters			
Flow	- 1 MMSCFD to 200 MMSCFD	**Temperature**	- 50 to 122°F
Pressure	- 150 to 1450 psig	**Outlet water content**	- < 1 ppmv / < -100°C (-148°F) dewpoint

Heavy Hydrocarbon Removal

Heavy hydrocarbons (HHC) (C6+, naphthalene, benzene or toluene) can be present in LNG depending on multiple factors like the geology of the reservoir, reservoir maturity, pre-treatment efficiency at the wellhead, degree of gas blending from other sources or reservoir depletion over time. These impurities freeze up the downstream liquefaction train, plate and fin heat exchangers and in some cases, lead to off-spec product gas.

While NGL extraction columns/ scrubbers are predominantly used for HHC removal for large baseload LNG plants, TSA based adsorption technology can be used for removing HHC for small-scale LNG/ peak shaving LNG plants.

PSB's skid mounted TSA based systems are designed to remove HHC from the gas with regeneration taking place in an open, closed or a semi-closed loop manner. For small scale/ peak shaving LNG applications facing budget and real-estate constraints, this technology is highly cost effective with minimal footprint.

Typical Process Parameters			
Flow	- 1 MMSCFD to 100 MMSCFD	**Temperature**	- 50 to 122°F
Pressure	- 430 to 1,200 psig	**Outlet water content**	- < 0.1 to 1 ppmv

HHC removal can be combined with moisture removal systems using a multi-layered bed design thereby offering an optimized design which saves CAPEX and footprint.

Features Of PSB's HHC and Dehydration System

- PSB's dehydration systems are closed looped with zero gas emission/ gas losses for water removal and open/ semi-closed/ closed loop for HHC and/ or water removal.
- High efficiency coalescing and particulate filters upstream and downstream of TSA vessels to ensure protection of adsorbent media from aerosols and downstream equipment from dust/ particulates.
- Dry product gas is used for regeneration. Contact PSB for OPEX saving options.
- The systems are automatic and heat regenerative with either an electric or a gas fired heater being used as a source of heat.
- Air cooler or shell and tube heat exchanger utilized for cooling the gas
- To optimize the overall operating cost (OPEX) of the system, PSB can provide heat integration options with upstream/ downstream compression.

SCAN TO LEARN MORE

Why PSB Industries

- 350,000 ft² facility in Erie, PA — USA
- In-house ASME code welders and vessel fabrication
- ASME SECTION VIII "U" & "R" stamps
- UL-508A control panel shop

PSB Industries Inc. | 1202 West 12th Street - Erie, PA. USA | Phone: 814-453-3651
http://www.psbindustries.com | psbsales@psbindustries.com