Product Definition

Fuel gas conditioning systems are used for treatment of raw production gas. They are designed to deliver clean, treated gas that is necessary for gas-driven equipment such as turbines and generators. The treated gas can also be used as seal gas, blanketing gas or utility gas. Fuel gas conditioning systems are commonly referred to as fuel gas skids, fuel gas systems or fuel gas filtration and heating packages.

Product Description

If produced gas is left untreated before entering the combustion chamber of gas driven generators, it can result in major damage. Even small amounts of liquids and/or solids or over-pressurized gas entering the combustion chamber will have detrimental effects. Our systems are designed to protect gas-fueled engines and turbines from over-pressure, liquids, solids and aerosols. Furthermore, heating the gas properly above the dew point of the water and hydrocarbon prevents liquid condensation in the combustion chambers.

Frames has more than 20 years of experience in building fuel gas related packages, and extensive knowledge with regard to high-quality gas requirements. We design, engineer and manufacture each fuel gas package as a customized solution, tailored to the specific requirements of the client. All gas conditions and desires of the fuel gas consumer are taken into account, whether it concerns a turbine, engine or any other equipment that relies on conditioned gas. Frames ensures that the package is safe, delivers the correct amount of gas at the exact pressure and conditions, with full instrumental control and feedback systems to monitor every parameter of the package.

Frames designs the system and performs simulations to ensure all requirements are met or exceeded, and the design conditions for the package are set and safe. We usually adjust the following parameters in a fuel gas package:
1. Temperature
2. Pressure
3. Solid removal (dust and particles)
4. Condensate and water removal (liquids)

Reducing the pressure, scrubbing, filtering, cooling and/or heating the gas ensures that clean and dry gas is delivered to the combustion chamber at the required pressure and temperature.
Fuel Gas Conditioning

Process Description

The package design typically consists of a scrubber vessel or knockout drum, filter-coalescer units, heaters, pressure reduction valves, emergency and operational valves, and (flow) metering, and is often placed downstream of production header, glycol contactor or separator for conditioning. Depending on the feed gas inlet conditions, fuel gas systems may be equipped with heaters or coolers.

Frames fuel gas conditioning systems use pressure control valves to reduce the pressure of the production gas to the level required by the user. The resulting adiabatic cooling effect can cause condensates to form. Liquids entrained in the gas and condensates will be scrubbed to avoid any liquid carry-over into downstream equipment. The gas is channeled to the filter-coalescer units to further remove any liquid carry-over as well as solid particles. In some cases, pre-heating is required before the gas is let down.

During the final steps of the process, the gas can be superheated to ensure temperatures above the dew point far downstream, ready for delivery to the consumer.
Project Management

At Frames, we understand that success depends on sharp project management. As our client, we are driven to supporting your business, with our dedicated project team always on hand for one-on-one contact, providing you with the best possible service.

From concept through to design, production, testing and delivery, our project team will know your operating environment, and will use the latest technology to precisely meet your needs.

We are solution orientated, understand your industry and always use strict document control and professional planning to exercise tight process control and meet all delivery deadlines. Our global office network, international supply chain and partnerships with leading vendors mean we are always able to supply the best systems and meet all of the local requirements and regulations.

Technical Details

- Materials ranging from carbon steel to alloys, such as super duplex, Hastelloy and Inconel.
- Process piping designed to code, such as ANSI, fabrication to ASME Section IX
- Vessels designed to code, such as ASME / PED / PD5500 & National Board Registered (U-stamp) when required
- Instrumentation tubing, also used as process piping
- Valves including control and operation (ESD, PSD, switch-over)
- Electric process heaters with withdrawable elements or cast heaters with exact heater duty calculations
- Certified for use in Zone 1 or Class 1
- Compact duplex configuration filter-coalescer units for continuous operation
- Filtration fineness down to 1 micron and efficiencies up to 99.9%
- Pressures up to 400 bar(g) or higher upon request

Added Value Frames

- Optimized and custom-built process system design, fully validated by industry-leading software, including UniSim® and HYSYS®
- Full service for guaranteed progress and single-point accountability
- Cost-effective modular units with low installation and operating costs
- Built to match your unique gas composition and operating conditions
- Suitable for onshore and offshore, harsh environments and tight plot spaces
- Proven processes and cutting-edge technology

References

- Haewene Brim FPSO – Bluewater Services Ltd., the Netherlands
- G16a-B – GDF SUEZ E&P Nederland B.V., the Netherlands
- B13 Platform – Chevron Exploration and Production Netherlands B.V., the Netherlands
- Leman AK Platform – Shell U.K. Ltd., United Kingdom
- K5-CU Platform – Total E&P Nederland B.V., the Netherlands

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