

Molsieve-based Dehydration Technology



Molecular Sieve Package - Dumbarton Field Development

Our team of engineers will design and commission a cost-efficient gas drying system using molecular sieves. However, selecting the best adsorbents is only the first step in system design. Our in-house experts deliver exceptional system performance by working together with leading desiccant suppliers. And to enhance performance and add further value, we incorporate specific switching valves and use heat conservation and energy-saving technologies.

Product Definition

Frames Molsieve-based Dehydration Technology achieves very low dew points for natural gas, associated gas and CO₂. Our systems allow you to efficiently remove water and hydrocarbons in order to achieve clean gas streams ready for gas compression or even liquefaction (LNG/LPG).

Product Description

The operation of demanding production systems strongly depends on a continuous supply of clean gas with very low dew points. Compared to common absorption (glycol) or low temperature separation (LTS) technology, Frames Molsieve-based Dehydration Units can achieve dew points as low as -80°C, and if required, right down to -100°C (<10ppm).

Full design service

At Frames, we are committed to optimizing system design, including capital expenditure and operating expenses over the life of the production facility.

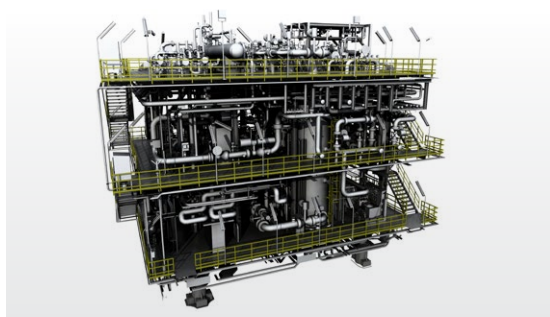
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Desiccant Dehydration - Dolphin Onshore Gas Plant Project



Molecular Sieve Package 3D Drawing
- Dumbarton Field Development



Molecular Sieve Package - Replicantes

Process Description

Feed gas enters the top of the Frames Dehydration Units and flows downwards through a molsieve desiccant bed which removes the water. The dried gas then exits at the bottom of the unit and is ready for downstream processing.

Two-vessel system for peak performance

Frames Units typically use a multi vessel system with each vessel automatically alternating between an adsorption and a regeneration phase. The flow is automatically switched between the columns to optimize system performance. Switching frequency is normally determined by the required dew point and the selected desiccant, and can either be time-based or dew point-based.

In the regeneration phase, the bed is first heated by a slipstream of product gas to remove all water (and hydrocarbon) components. If required, further heat can be supplied by an electrical heater or a furnace. The dry adsorbent bed is then cooled by dry product gas and is ready for re-use.

Dry versus wet regeneration gas

Adsorber regeneration can be achieved by using either dry or wet gas. Dry gas is normally preferred when the adsorption system must be maintained at a higher operating pressure. Because the dry regeneration gas is extracted from the downstream process, the adsorber capacity must be correspondingly increased. A compressor may also be required to re-inject the dry gas into the system.

Wet gas regeneration gas has no impact on the system's adsorption capacity. The wet gas system does not require a compressor, typically resulting in a relatively higher pressure drop. However, specific measures must be taken to ensure safe and efficient cooling of the adsorption beds.

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Project Management

At Frames, we look at the bigger picture. Our team of in-house experts works with our clients to understand their business, and challenge them to examine better solutions that give them the competitive edge.

From optimizing production to cutting operating costs, we work to fully integrate our Frames solutions into your production system within budget, on time, and in spec for years of trouble-free operation.

We understand your expectations for high performance, and use industry-leading project management and document control to design, construct, and commission quality products where and when you need them. Our centralized engineering and construction teams in the Netherlands work together to find effective answers to each unique project, with our global network of offices, suppliers, and trusted service providers giving us the global reach to fully accomplish the most challenging projects.

Technical Details

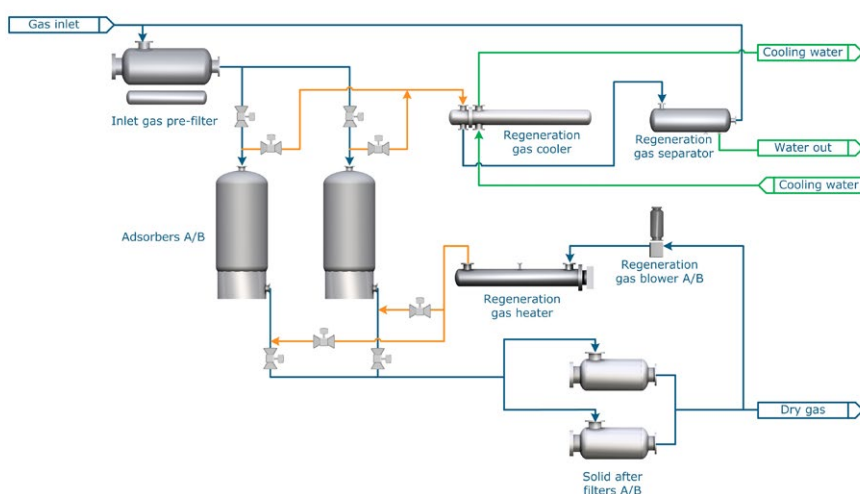
- Removal of water from natural gas, associated gas or CO₂
- Multi-vessel systems for continuous batch gas drying
- Fully-integrated adsorption and regeneration units
- Choice of dry or wet gas regeneration systems

Added Value Frames

- Robust and reliable units that drive downstream productivity
- Tailored to your system's unique gas composition and operating conditions
- Reduced energy consumption thanks to smart heat integration technology
- Designed with lean engineering, using high-end materials
- Worldwide service with full, expert support

References

- Maasvlakte Power Plant - E.On, the Netherlands
- Dumbarton Field - Mærsk Oil, United Kingdom
- Gas Plant Project - Dolphin Energy, Qatar
- Bergermeer Gas Storage - TAQA, the Netherlands



Contact

+31 172 504800

oilgasprocessing@frames-group.com

Frames Family Tree

