Amine Systems

Process Plant Under Construction - Amine System

Product Definition

Frames Amine Systems efficiently sweeten gas by removing hydrogen sulfide, and/or carbon dioxide. Using proven amine technology and fulfilling the requirements of our clients, Frames Gas Sweetening is a reliable and cost-effective solution that increases the value of gas resources.

Product Description

At Frames, we focus on helping our clients select the best possible technology to optimize the value of their natural resources. Using well-understood technology, Frames Amine Gas Sweetening Systems chemically remove the contaminants hydrogen sulfide (H_2S) and carbon dioxide (CO_2) to produce high-value gas streams ready for downstream applications. This robust process is widely used to treat a range of gas streams, including natural, associated, tail and flare gas.

Customized for your unique operating environment
Increasingly, our industry is having to work with oil and gas fields containing corrosive and toxic components. By efficiently removing CO_2 and H_2S, Frames Amine Systems protect downstream equipment, improve worksite safety, and reduce the environmental footprint of site operations.

Our team of engineers will work with your business to provide the right solution. Based on gas composition, production rates and the end-use of treated gas, Frames will create a custom-designed amine system that will deliver maximum value from your natural resources.

Chemical absorption and amine regeneration
Frames Amine Systems chemically absorb both H_2S and CO_2, or can be designed to selectively remove H_2S. Our engineers are experts in specifying the right amine for each project, and in addition to using generic MEA, DEA, DGA and MDEA solvents, we work with leading suppliers to produce formulated amine solutions for demanding projects.

Optimized heat integration and low-foaming, low-fouling design
To optimize energy consumption, we focus on using the best heat integration and heat transfer technology, such as using waste gases to fuel the reboiler unit.

We also use sharp design to improve the production process, like installing a coalescer filter in the feed stream to the amine contactor to reduce foaming and sequential amine loss. Our systems also maintain a low skin temperature on the reboiler heater bundle to prevent amine degradation on the bundle surface.

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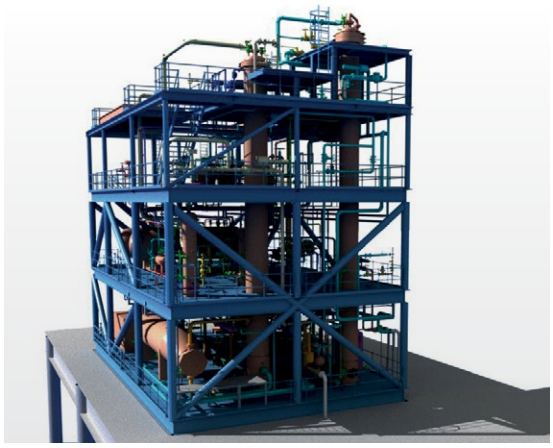
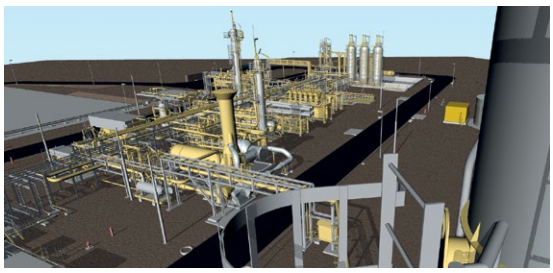
Amine Systems



Gas Sweetening



3D Model

Viura

Dragados

Process Description / Product Design

Frames Amine Systems use a chemical absorption process to sweeten gas by removing H_2S and CO_2, followed by a regeneration process that recycles the amine for reuse.

In the absorption section, sour gas is flowed counter-current with lean amine. The amine chemically absorbs H_2S and CO_2 to produce a sweetened gas stream. We are experts in specifying an absorption section that effectively reduces contaminants to a cost-efficient level tailored to our client's demands.

The H_2S and/or CO_2-rich amine then enters the regeneration section where flash gases are removed in a flash vessel. Warmed in a heat exchanger, the amine is then routed to the regeneration section. The regenerated lean amine is cooled in the heat exchanger before being fed back into the absorption section.

A Frames Amine System can simultaneously remove both H_2S and CO_2. Amine regeneration can be heated using oil, steam, electricity or waste gases according to the latest heat integration technologies.

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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

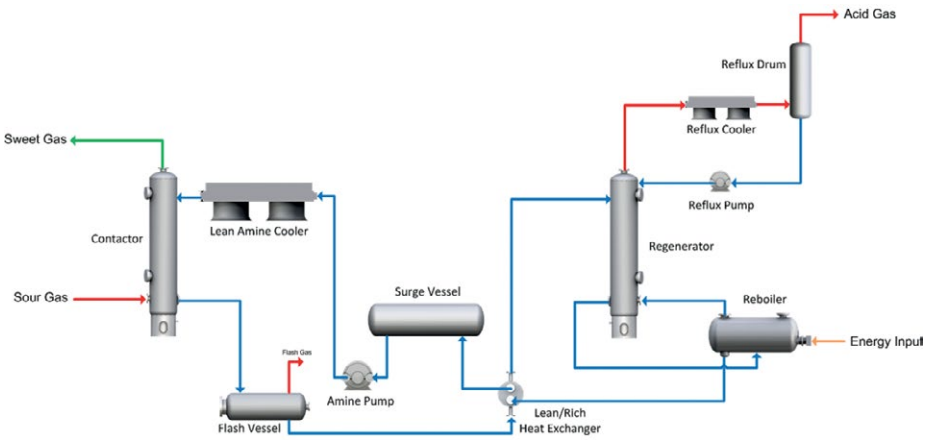
- Selective removal of H_2S and/or CO_2
- Efficiently achieves low outlet concentrations of H_2S and CO_2
- Suitable for generic or formulated amine solutions
- Wide range of heat sources can be used in the regeneration process

Added Value Frames

- Modularized design that minimizes the amount of interfaces during project execution and cuts installation time and costs
- Complete module with small footprint for offshore applications.
- Independent solvent selection from industry-leading suppliers
- Energy-efficient design with options to heat the unit with waste gas

References

- CB-Litoral-A Platform, Dragados – Mexico
- Viura, Union Fenosa Gas E&P – Spain



Frames - amine

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Frames Family Tree

Onshore | **Offshore** | **Floaters**

Oil & Water

Multiphase Separation
- Production Separators (High & Low Pressure)
- Test Separator
- Degasser & Knock-Out Drum
- Water Oil Separator (WOSEP)

Compact Inline Separation
- SwirlSep

Electrostatic Coalescers
- Dehydrator
- Desalter

Produced Water Treatment
- Deoiling & Desanding Hydrocyclones
- Gas Floatation
- Media Filtration
- Solids Removal & Cleaning
- Stripping

Separation Internals

Heat Exchangers

Gas

Gas Separation
- Demisting
- Scrubbers
- Filters
- SwirlSep

Heat Exchangers
- Shell & Tube Heat Exchangers

Air-Cooled Coolers

Gas Sweetening (H_2S & CO_2)
- Amines
- Thiopaq O&G
- Solid Bed Scavenger
- Membrane
- Molecular Sieve

Gas Dehydration
- Glycol (TEG)
- Molecular Sieve

Dew Point Control
- Low Temperature Separation (LTS)
- Solid Desiccant

Hydrate Inhibition
- MEG/DEG Recovery
- Methanol Recovery
- MEG/DEG Desalination

Light Hydrocarbon Recovery
- Condensate Stabilization
- Fractionation

Fuel Gas Treatment

Flow Control & Safeguarding

Hydraulic Systems
- Wellhead Control
- Subsea Hydraulic Power Units
- Hydraulic Power Units
- IWOCS (Intervention Workover Control Systems)
- TUTU (Topside Umbilical Termination Unit)
- Cargo Ballasting Systems

Safety Instrumented Systems
- High Integrity Protection Systems (HIPS)

Chemical Injection
- Chemical & Methanol Injection Systems
- Chemical Distribution Systems
- Seawater Electrochlorination Systems

Valve Automation Center
- Actuators and Actuated Valve Packages
- Control Systems

Automation
- Buoy Control
- Tank Farm Control & Safeguarding

Services

Asset Life Cycle Management

Maintenance & Field Services

Commissioning

Spare Parts

Operator Training

Engineering Studies
- Conceptual
- FEED and Basic

Integrated Solutions

Total Plant Solutions

Industrial CO_2

Modules

Early Production Facilities

Wellsite Packages

Biogas

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FRAMES
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