

mfs

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GAS DEHYDRATION & GAS SWEETENING UNITS

MFS-CO.COM



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DESIGNER AND MANUFACTURER OF
MECHANICAL, PROCESS EQUIPMENT AND PROCESS SKID PACKAGES
FOR OIL, GAS, PETROCHEMICAL, POWER AND
UTILITIES INDUSTRIES

GAS DEHYDRATION UNITS

Gas dehydration packages is the process used to remove water from natural gas. It is required to prevent formation of hydrates and condensation of free water in processing and transportation facilities, meet a water content specification, and finally prevent corrosion.

Liquid desiccant dehydration equipment is simple to operate and maintain. It can easily be automated for unattended operation, e.g., glycol dehydration at a remote production facility.

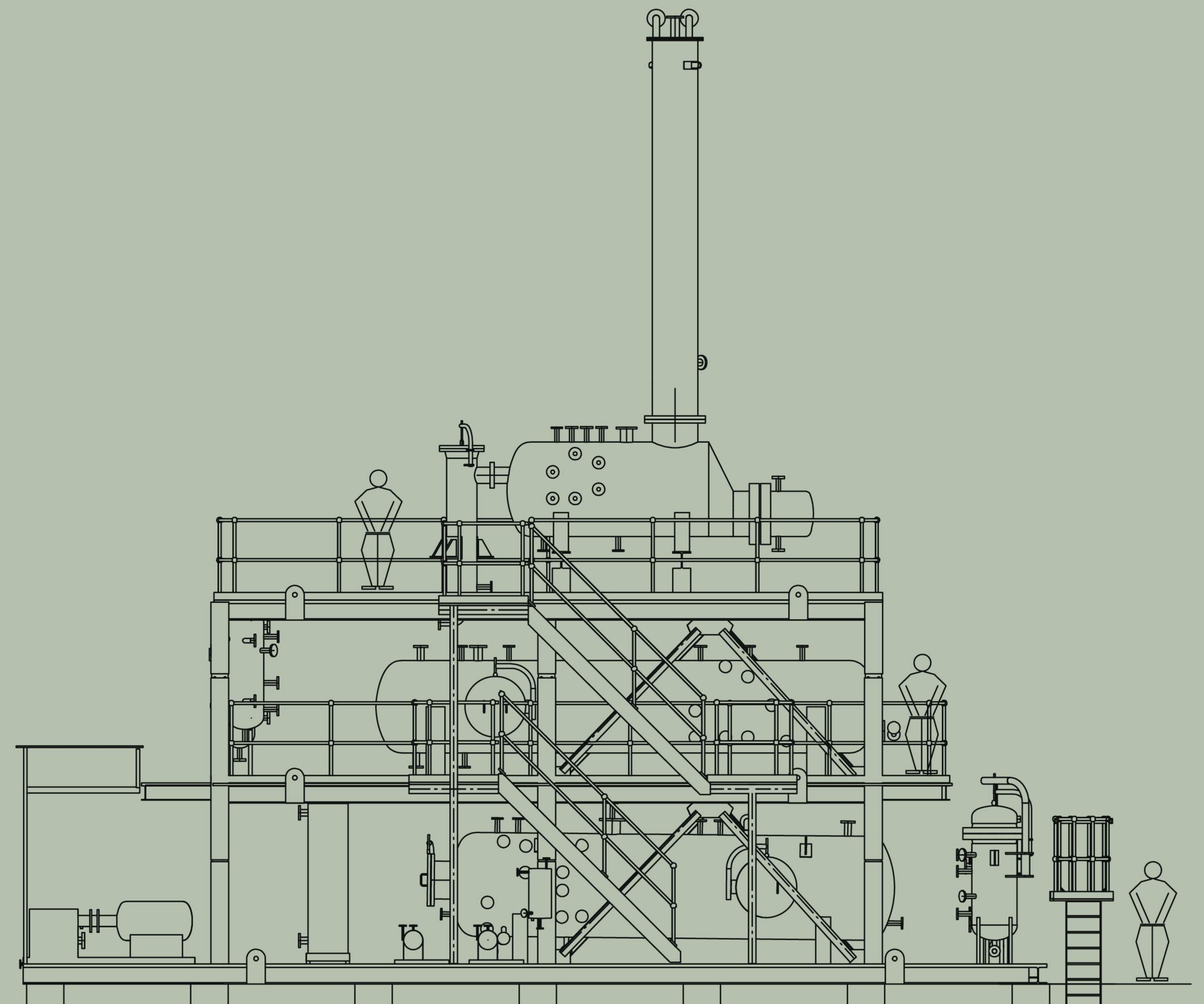
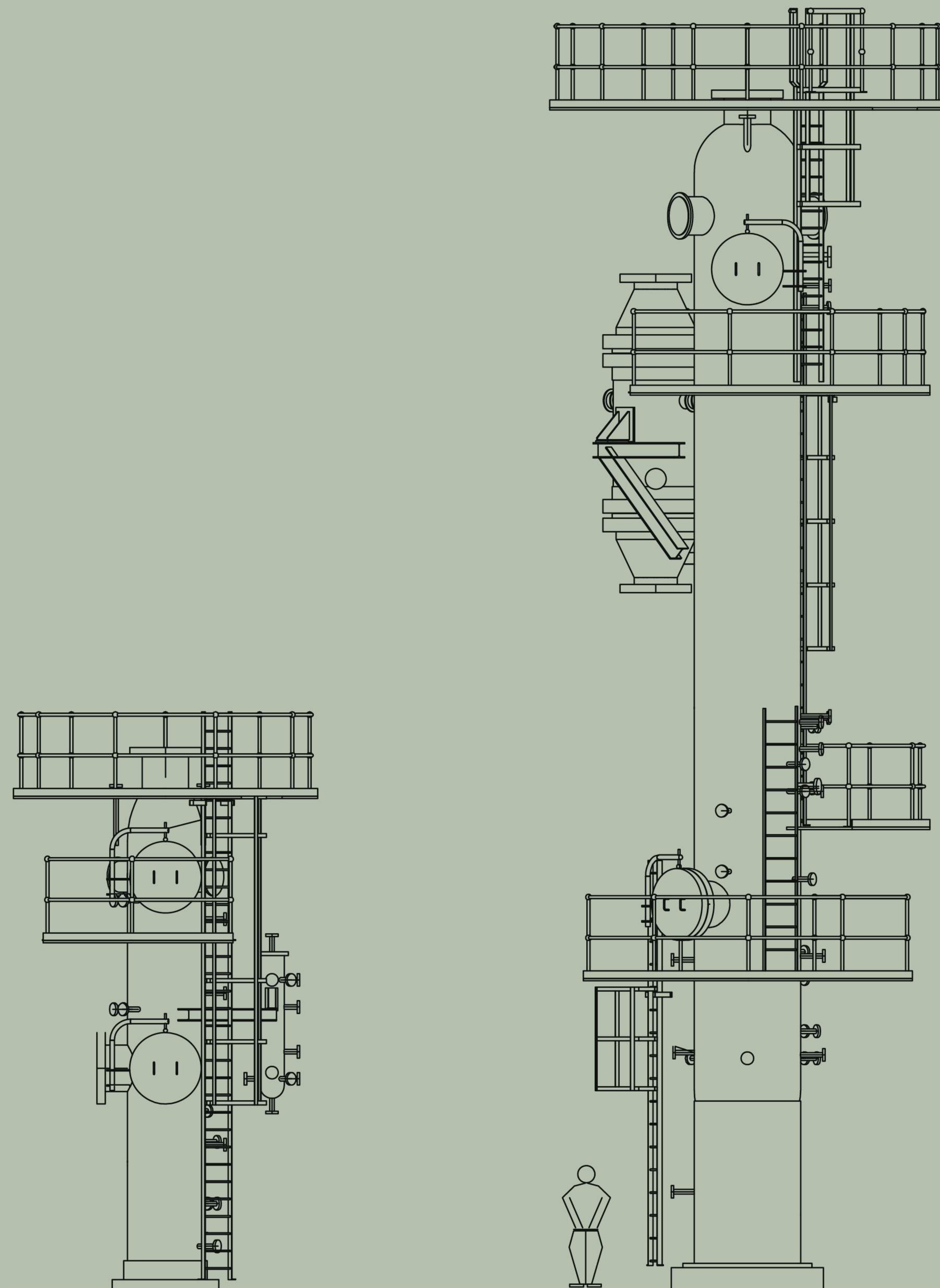
Triethylene Glycol (TEG), Diethylene Glycol (DEG) and Monoethylene Glycol (MEG) are used as liquid desiccants, but TEG is the most common for natural gas dehydration due to its stability and as it operates with minimizes glycol losses.

Liquid desiccants can be used also for sour gases, but additional precautions in the design are needed due to the solubility of the acid gases in the desiccant solution. The dry outlet gas specification obtained in TEG dehydration units is in the range of 3 to 7 lb water/MMSCF gas.

MFS CAN PROCESS DESIGN, MECHANICAL DESIGN AND SUPPLY VARIOUS TYPES OF GAS DEHYDRATION UNITS WHICH INCLUDES:

- Process sizing for whole package components include Contactor Regeneration section (Still Column, Boiler, Reflux Condenser), Surge Drum, Pump, Air Cooler Lean/Rich Exchanger, Lean Teg Air Cooler (or Lean Teg/Gas Exchanger), Filters, Etc.
- Process and mechanical detailed design
- All required Instruments
- Cabling and cable tray within the skid edge
- 3D Model
- Piping within the Gas Dehydration Packages skids
- Ladder and platform
- Pump control stations
- Reboiler Burner Management Panels (BMS)

Applicable Design Codes:	Design Software's:	
ASME,GPSA, NACE, ASTM, THEMA	In-house	Hysys



GAS SWEETENING BY AMINE GAS

Gas Sweetening is a technology that removes Hydrogen Sulfide(H_2S), Carbon dioxide (CO_2), Mercaptan and other contaminants from sour gas through absorption and chemical reaction. Both acid gases (CO_2 , H_2S) lead to corrosion issues, especially in combination with free liquid water, but hydrogen sulfide requires a particularly careful evaluation of material selection for equipment and piping, as many metals are sensitive to sulfide stress cracking.

The process is known as Amine Gas Sweetening using various alkanolamines, commonly referred to as amines. Monoethanolamine (MEA), Diethanolamine (DEA), Methyldiethanolamine (MDEA) Diglycolamine (DGA), Etc are used in Amine gas sweetening. But MDEA is the most common for gas sweetening due to high reactivity. MFS Gas sweetening design reduce residual acid content in the sweet gas to values up to 5 ppm or lower.

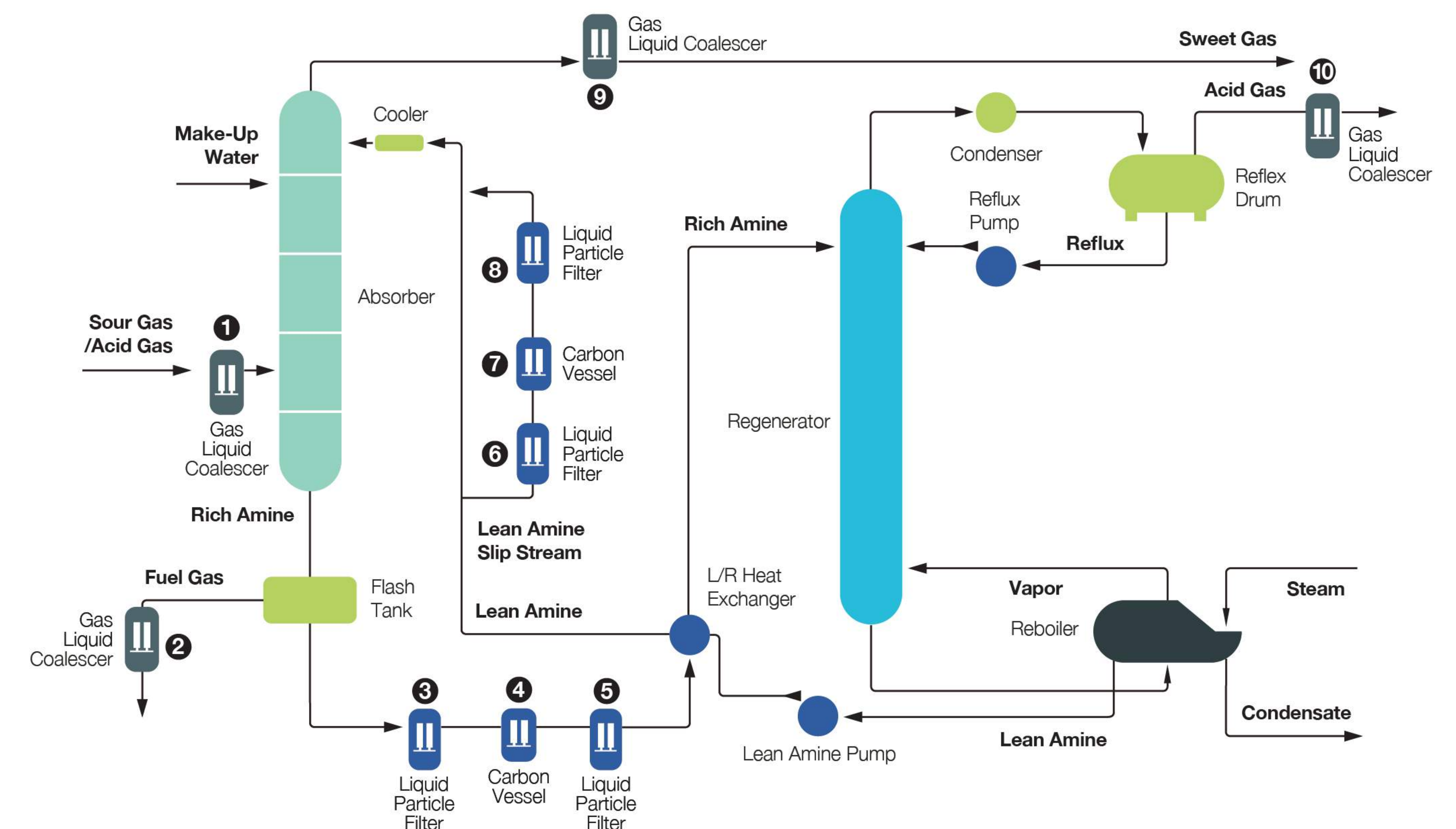
MFS WORKS WITH THE HELP OF WELL-KNOWN EUROPEAN PARTNER TO ENSURE EACH PLANT IS OPTIMIZED TO:

- Meet sales gas CO₂ and H₂S specifications
- Remove impurities to minimize foaming
- Operating efficiency
- Materials compatibility
- Minimize solvent losses

MFS take pride in helping our clients find the right-sized plant for their specifications.

EQUIPMENT IN MFS'S AMINE GAS SWEETENING PACKAGE INCLUDE BELOW ITEMS:

- Amine contractor tower
- Reboiler
- Surge tank
- Reflux condenser
- Pump control stations
- Filter for rich solvent
- Control panel
- Outlet scrubber and accessories
- Flash tank and accessories
- NACE accessories
- All required Instrument
- Ladder and platform
- Reboiler Burner Management Panels (BMS)



GAS SWEETENING BY ADSORBENT

Gas sweetening by adsorbents is a technology that, the surface of a substrate captures the acid gases (adsorbates). MFS with the help of well-known European partner designs this package with the use of in-house and simulation Software according to client request.

The sorbents most commonly used are zeolites (molecular sieves), activated carbon (AC), polymers. These adsorbent materials remove water, mercaptans and other sulfur species, in addition to H_2S and CO_2 . The adsorption onto solid sorbent is a batchwise process.

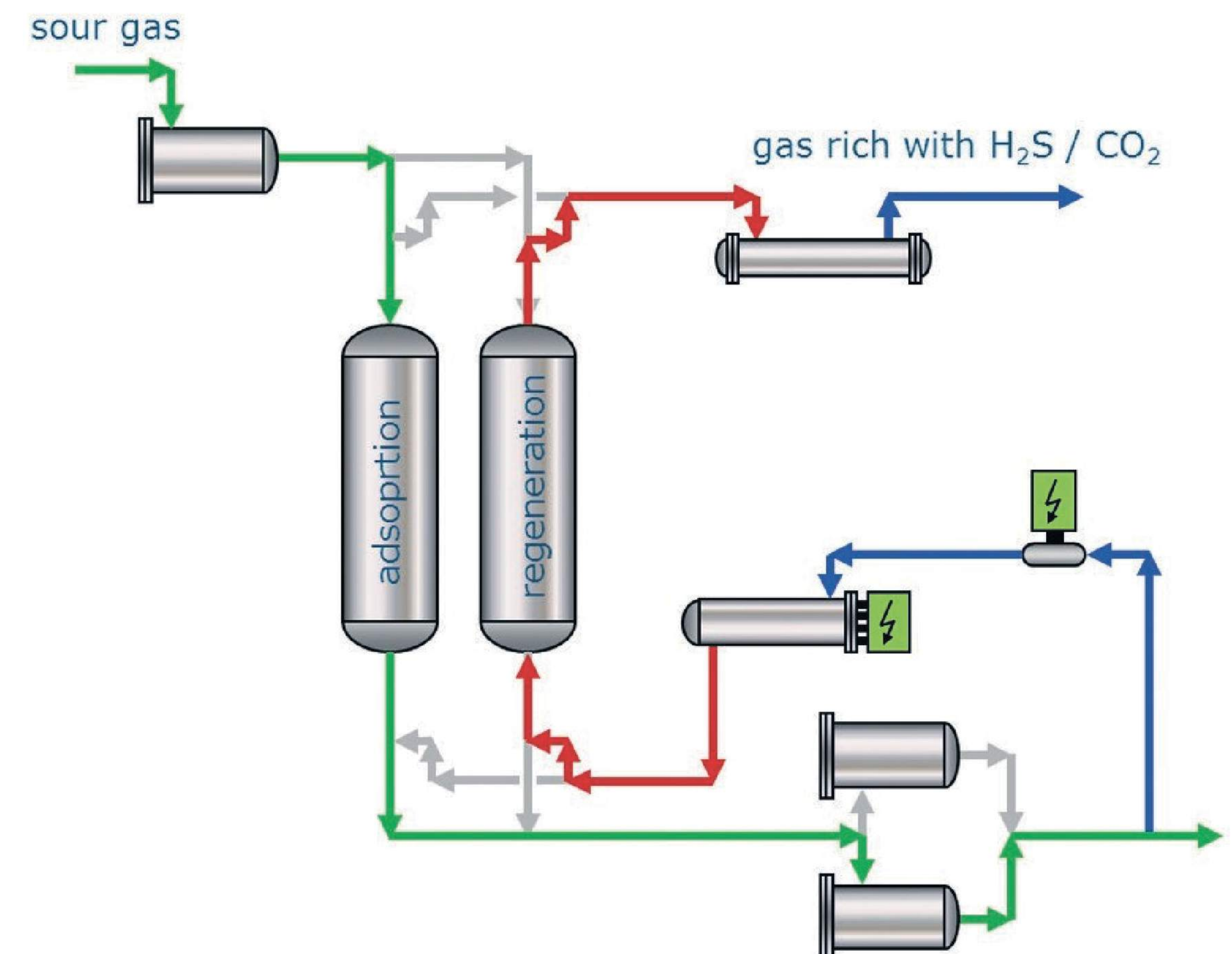
Exhausted adsorbents can be easily regenerated using two regeneration methods: thermal regeneration and regeneration at reduced pressures. MFS usually used the thermal regeneration (about $150^\circ C$) indicated a better result comparing to regeneration at reduced pressures.

MFS WORKS WITH THE HELP OF WELL-KNOWN EUROPEAN PARTNER TO ENSURE EACH PLANT IS OPTIMIZED TO:

- Meet sales gas CO_2 and H_2S specifications
- Operating efficiency
- Materials compatibility
- Maximize capacity adsorption

EQUIPMENT IN MFS'S GAS SWEETENING PACKAGE BY ADSORBENTS INCLUDE BELOW ITEMS:

- Adsorption towers
- NACE accessories
- All required Instrument
- Control panel
- Regeneration (usually type of direct fired heater)
- Flash tank and accessories
- Filter (if required)
- Burner Management Panels (BMS)
- Adsorbents



GAS SWEETENING BY MEMBRANE

When the Acid gas volume is low, **Gas sweetening by membrane is suitable.**

This technology separate components in natural gas such as water, CO₂, H₂S and hydrocarbons according to their permeabilities. The driving force for separation of a gas component in a mixture is the difference between its partial pressure across the membrane.

MFS RECOMMENDS MEMBRANE FOR BELOW CASES:

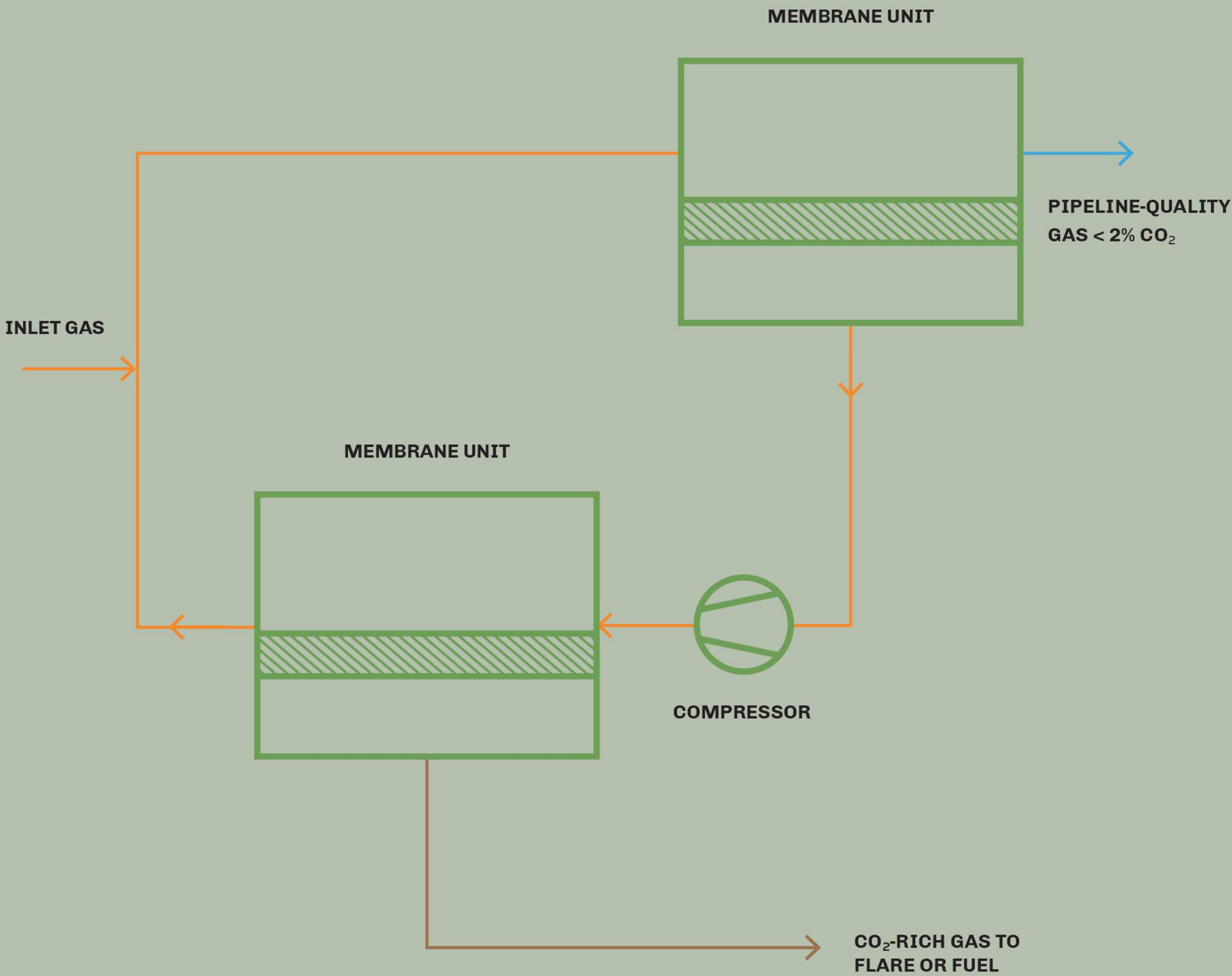
- Little need for plot space, low weight
- High efficiency especially for CO₂ rich fields

Applicable Design Codes:

ASME,GPSA, NACE, API, THEMA

Design Software's:

In-house Hysys



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