

KOCKEN

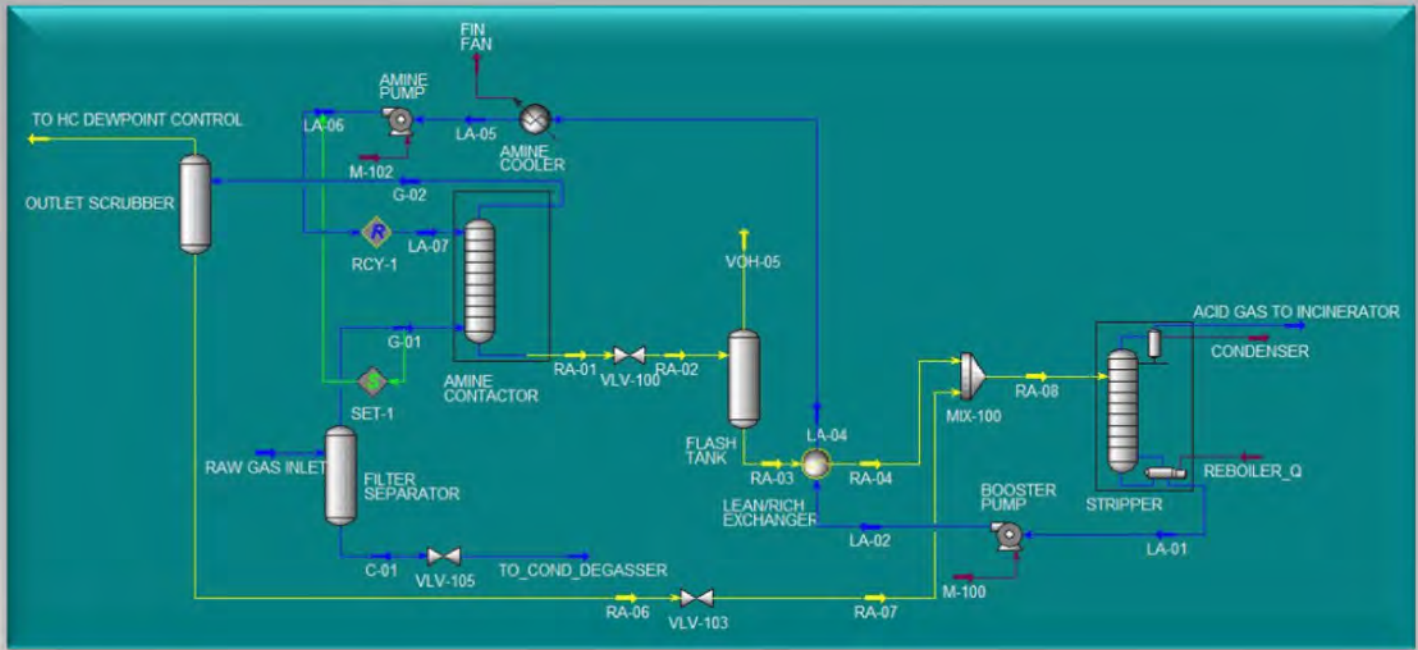
SISTEMAS DE ENERGIA INC.

REMOVAL OF H₂S AND / OR CO₂



H₂S, CO₂ and other contaminants are commonly found in natural gas streams. H₂S is an extremely toxic and corrosive gas that provides the serious risk to human life in the case of equipment and/or pipeline leaks and drastically shortens equipment life due to accelerated corrosion in carbon steel materials. CO₂ drastically reduces the heating value of natural gas; and, where CO₂ concentrations exceed 2-3 mol%, the natural gas becomes un-marketable. CO₂, when combined with water, forms a carbonic acid that is extremely corrosive to carbon steel materials.

Several methods can be employed to reduce the content of H₂S and/or CO₂ in natural gas. Kocken Sistemas de Energia Inc. applies the most common using a variety of liquid solvents. All systems are designed in accordance with GPSA Sections 7, 19 & 21; API 660 & 661; ASME Section VIII, Division 1; NACE, TEMA 'C' and 'R' requirements and applicable customer specifications.



PFD for Typical Liquid Solvent Based (Amine) H₂S Removal Plant

Simplified Process Description: Sour gas flows vertically through the Contactor Tower while lean solvent flows counter-currently downwards thereby absorbing H₂S and/or CO₂ from the sour gas stream and producing a sweetened effluent gas stream. The H₂S and/or CO₂ rich solvent solution flows out of the Contactor Tower and to the Regeneration System. The rich solvent is pre-heated in the Lean/Rich Heat Exchanger. The rich solvent then flows downward through a Distillation Column and to the Solvent Reboiler. The Solvent Reboiler generates steam which flows counter-currently in the Distillation Column and strips the H₂S and/or CO₂ from the rich solvent solution. The steam is then condensed and refluxed back into the Distillation Column. Lean solvent solution flows out of the Solvent Reboiler and through the Lean/Rich Heat Exchanger where it is pre-cooled. Further cooling of the lean solvent occurs in the Solvent Cooler. Finally, the lean solvent is recycled back to the Contactor Tower, under pressure by the Solvent Circulation Pumps.

Main System Components:

- Solvent / Gas Contactor Tower
- Lean / Rich Solvent Heat Exchanger
- Rich Solvent Particulate Filter
- Solvent Distillation Column
- Distillation Column Reflux Condenser
- Distillation Column Reflux Accumulator
- Distillation Column Reflux Pump(s)
- Solvent Reboiler
- Solvent Booster Pump(s)
- Solvent Carbon Filter
- Solvent Solvent Cooler
- Solvent Circulation Pump(s)

Common Options:

- Inlet Filtration
- Solvent Reclaimer
- Outlet Scrubber
- Acid Gas Incinerator
- Solvent Flash Tank
- Full Flow Filtration
- Standby Pumps
- Automated Electronic Control

APPLYING WORLD CLASS TECHNOLOGIES IN PURSUIT OF SUPERIOR EFFICIENCY

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