

Increasing Amine System H₂S and CO₂ Recovery

REFCOMM

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Highly Qualified Process / Project Engineers
Engineering Services Based on First-Principles
Petroleum Refining, Petrochemical, & Complex Chemical Processes
Reliable Process Solutions
Very Large Inventory of High-Quality Process Equipment
(HX, Chillers, Cooling Towers, Generators, etc.)
Service Centers Throughout the USA
Qualified Service Technicians
Round-The-Clock Service
Project Documentation
Client Staff Training

ACID GAS REMOVAL USING AMINES

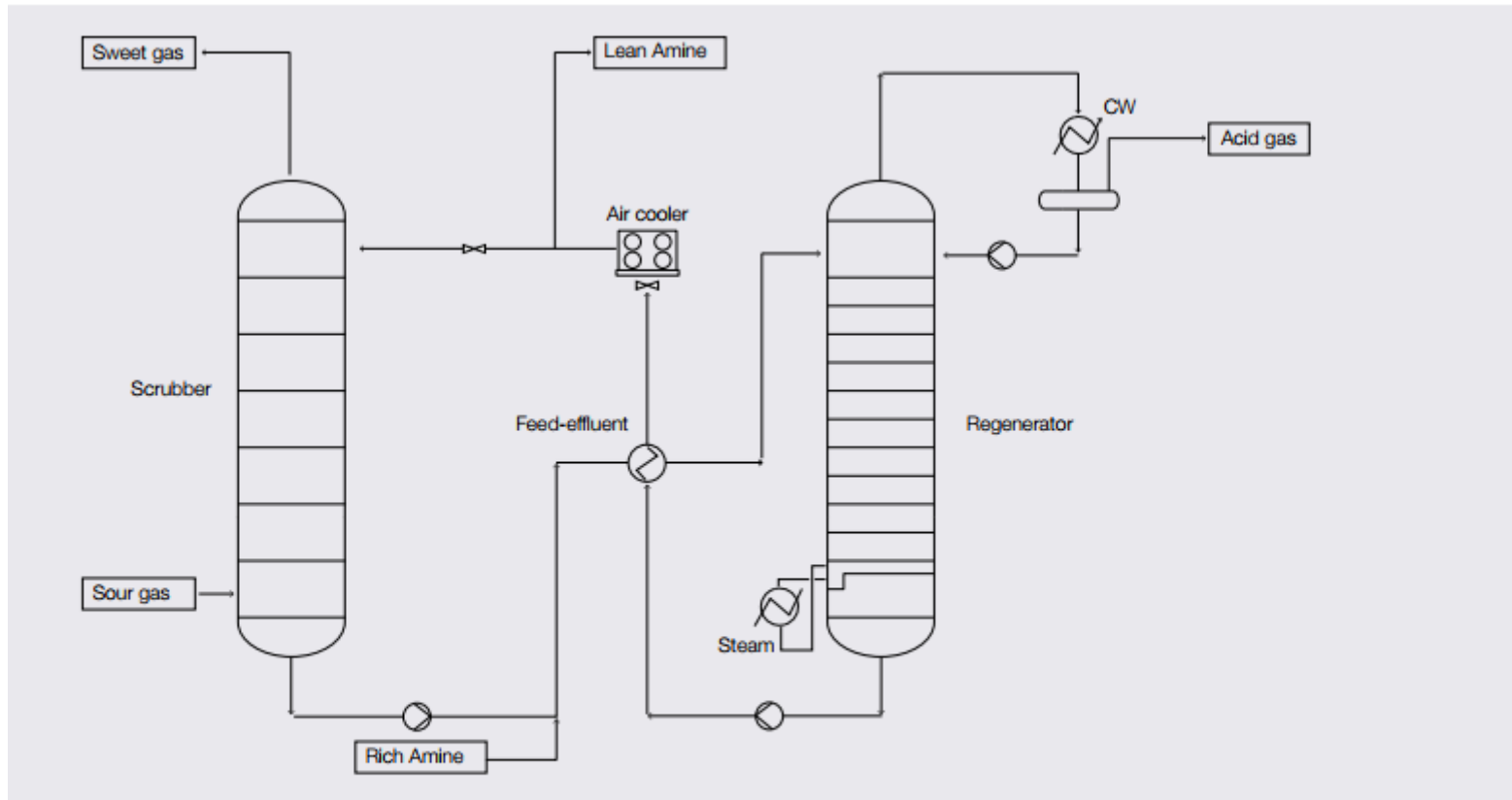


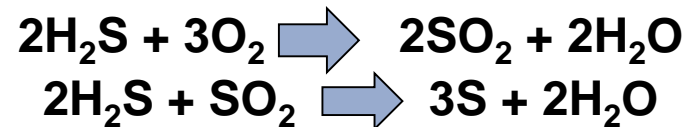
Figure 1 Amine System

ACID GAS REMOVAL - ISSUES

H₂S is lethal at very low ambient concentrations

H₂S is generated in hydrotreaters, hydrocrackers, and catalytic reformers and exists in many natural gases

H₂S removal from refinery fuel gas is an extremely important part of refining operations (environmental regulations). CLAUSS PROCESS:



Solvents include MEA, DEA, MDEA, and DIPA

Scrubber – Regenerator system, solvent recirculation

Regenerated solvent cooled by Feed / Effluent HX plus air and / or water cooler

Lean amine temperature determined by HX design and ambient / CW temperature

Poor scrubbing and regenerator efficiency caused by:

Fouling of column internals

Fouling of reboiler

Excessive foaming in amine solution causes:

Amines in regenerator drum

Condenser corrosion

Amines in sweetened gas

Fouling of lean amine lines and cooling equipment:

Increased lean amine temperature to scrubber ->

Reduced acid gas removal efficiency

PROBLEMS:

Increased acid gas loading
Reduced acid gas removal efficiency

NORMAL SOLUTION:

Try to increase amine circulation rate

HOWEVER:

Scrubber / Regenerator already close to maximum loading

RESULT:

Cut upstream unit throughput  huge economic losses

FACT:

Reducing lean amine temperature to scrubber is crucially important
This restores acid gas removal efficiency

AGGREKO SOLUTION:

Provide supplemental cooling of lean amine stream

METHODOLOGY:

Insert highly efficient Aggreko HX in recirculating loop
Aggreko's methodology requires no unit shutdown; causes no disturbance
Aggreko cooling towers or refrigerated chillers provide supplemental cooling

RESULT:

Throughput and efficiency restored  economic losses averted

“Aggreko Whitepaper - Increasing Amine System H₂S and CO₂ Recovery Efficiency”

QUESTIONS?