

195 MMSCFD Acid Gas Recovery Unit - (AGR) for Sale

Capacity: 195 MMSCFD

Raw Materials: Raw Synthetic Gas (Syngas) or other process gas containing hydrogen sulfide (H₂S) from an oil refinery or a natural gas production facility

End Products: H₂S Acid Gas, Purified Syngas

Process Information

Selective H₂S-CO₂ Absorption is possible with MDEA (a tertiary amine) due to the differences in the rate of reaction between the H₂S and the CO₂ with the MDEA. The H₂S reaction is an acid-base reaction that is nearly instantaneous for all amines. The rate at which the H₂S is absorbed by the solvent is limited almost exclusively by the mass transfer (or diffusion) of the H₂S from the vapor phase to the vapor-liquid interface. The CO₂ reaction is also nearly instantaneous for primary and secondary amines, but is kinetically limited for tertiary (such as MDEA) and hindered amines. The generally accepted mechanism is a base catalysis of the direct reaction of CO₂ with water, where the base is an amine.

Major Equipment

- (3) 1-Stage Absorber Towers
- Top and Bottom Interstage Coolers
- Lean-Rich Shell & Tube Heat Exchanger
- (1) 12-Stage Stripper
- Condenser
- Reboiler



BRIEF PLANT DESCRIPTION

Phoenix Equipment has for sale a 195 MMSCFD Acid Gas Recovery Unit (AGR) from a refinery complex. This AGR is originally designed to remove acid gases (hydrogen sulfide H₂S and carbon dioxide CO₂) from the raw syngas generated from a petroleum coke or coal gasification plant. This amine-process AGR can also be used to remove H₂S and CO₂ from the gases generated by oil refinery processing units and natural gas production plants. Feedstock syngas, containing carbon monoxide (CO), hydrogen (H₂), carbon dioxide (CO₂) and H₂S, flows to the acid gas absorber to form the rich solvent. The purified syngas leaves from the absorber onto end uses such as a power plant gas turbine, boiler or furnace. The rich solvent flows to AGR splitter and other downstream equipment before the fluid of high concentration H₂S goes to a Sulfur Recovery Unit, which finally produces element sulfur from the acid gas. This AGR uses MDEA (tertiary amines) wash for acid absorption and improves its performance by increasing the H₂S-CO₂ selectivity of the solvent in the absorber.

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