

CASE STUDY 301

AMINE TREATER REGENERATOR VENT SCRUBBER

BACKGROUND

The following application concerns the removal of H₂S from a water saturated CO₂ gas stream that was produced from an alkanolamine sweetener.

A natural gas plant located in the northwestern New Mexico, removes acid gas with alkanolamine absorption and regeneration. The resulting acid gas rejected in the regenerator vent contains over 99% CO₂ and as much as 150 ppm H₂S. Reducing the H₂S concentration to 10 ppm or less permits the gas to be discharged to the atmosphere.

SYSTEM DATA

Gas Flow Rate	5 MMScfd
Gas Composition	99 + %CO ₂
Pressure	17-21 psig
Incoming H ₂ S	150 ppm
Outgoing H ₂ S	0-7 ppm

Enviro-Scrub® Consumption

0.035 to 0.040 gallons per ppm H₂S per million Scf. 2.11 to 2.41 lbs. sulfur per gallon of product.

SOLUTION

- Enviro-Scrub® is injected via an atomizer into a horizontal line just ahead of a static mixer in the rich amine feed to the regenerator. Before the CO₂ reaches the contact tower, the H₂S concentration drops from 150 ppm to 40 ppm. The remaining H₂S is removed in the regenerator.

RESULTS

- The contact tower is on liquid level control.
- The 10 ppm permit H₂S level is easily achieved and the air discharged into the atmosphere.
- The spent Enviro-Scrub® is disposed of in permitted disposal wells.

This continuous system has produced substantial economic benefits for the customer.

TAKE-AWAY:

- H₂S level reduced so that air can be discharged into atmosphere using Enviro-Scrub®.