

AMINE SYSTEMS - GAS SWEETENING Product Applications

THE PROBLEM

Contamination of amine systems (Refer to Figure 1 on following page) results in operational and environmental challenges for the operator. Contaminants include:

- Particles such as iron sulfide with the feed
- Heat stable salts
- Surface active agents
- Liquid hydrocarbon in the gas feed
- Carboxylic acids formed from oxygen entering the amine system
- Corrosion inhibitors and water treatment chemicals entering with makeup water and wash water

These contaminants contribute to the formation and stabilization of foam and emulsions in the amine units. When foaming overcarry or hydrocarbon undercarry occur in the amine contactor, the following problems can occur:

- Reductions in production rates, sales volumes, and unit operating efficiency
- Excessive amine losses due to foam and entrainment
- Reduced energy efficiency
- Sales gas contamination
- Reduced gas treating capacity and efficiency
- Increased defoamer consumption
- Environmental issues may result from hydrocarbon in the acid gas
- Regeneration efficiency is decreased
- Damage to downstream gas compressors.

THE SOLUTION

Wet Gas Meter - UpStream & Amine MultiPhase Meter - MidStream

The WGM (Water Gas Meter) can detect contaminant loading of the entrant gas stream. To the amine system; when combined with the AmPm (Amine Multiphase Meter) measurement on both rich and lean streams will increase exchange efficiency & throughput, while reducing upset conditions & unscheduled downtime 25-40%.

Foam in the Amine Contactor or Regenerator

The Agar Foam Detector can detect the presence of foam far earlier than a ΔP cell, pressure gauge or other technologies. The probe can initiate or increase the anti-foam chemical injection rate causing the foam to dissipate. As a result, the antifoam chemical feed rate is optimized, reducing the operator's overall chemical costs. Contamination of sales gas with amine or foam can be controlled while protecting downstream compressors.

Hydrocarbon Undercarry from the Amine Contactor or Regenerator

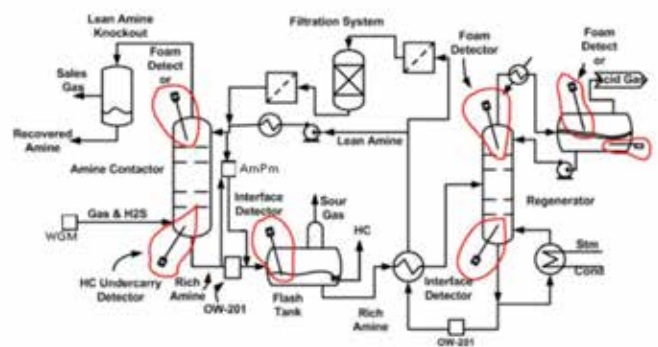
The Agar ID-201 probe can detect very low concentrations of hydrocarbon in the rich amine solution in the bottom of the contactor or regenerator. In the case of the Amine Contactor, the hydrocarbon is drawn off to protect downstream equipment and to minimize the problems resulting from hydrocarbon contaminated amine leaving the contactor. For the Regenerator, an Agar OW-201 is installed to ensure that lean amine with minimal hydrocarbon content is sent out to the contactors for maximum absorption efficiency.

Rich Amine Contaminated with Hydrocarbon from the Flash Tank

Interface control in the Flash Tank will eliminate hydrocarbon undercarry with the rich amine going to the Regenerator and acid gas stream.

Regenerator Reflux Drum

An Agar ID-201 may be installed to initiate a low level alarm to prevent hydrocarbon from being fed into the regenerator from the reflux drum.



Gas Sweetening Application

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