



# FILTRATION APPLICATIONS IN GAS (AMINE) SWEETENING SYSTEMS

Gas Sweetening is a critical procedure in gas processing facilities. To meet sales specifications and maintain efficient operations, natural gas goes through a sweetening process to remove contaminants; primarily  $H_2S$  because of its corrosiveness and  $CO_2$  for its lack of heating value. Amine solvents are widely used to remove these contaminants from natural gas or lighter hydrocarbon products. Typical industries that perform gas sweetening include: gas production sites, gas processing plants, refineries, LNG facilities, petrochemicals, etc.

Because of highly corrosive and contaminant laden environment, amine processes require an optimum filtration/separation system to operate properly. Seldom is a single contaminant responsible for amine system operating problems. These contaminants can include fine solid particulates such as iron sulfides and liquid hydrocarbons in aerosol form.

The most common filtration problems in an amine unit are foaming and fouling. Foaming will reduce effective absorption in the contactor tower resulting in high amine carryover rates and replacement costs.

Treatment of gas extraction will dramatically decrease resulting in reduced flow and the injection of costly foaming inhibitors to regain control of the amine system.

Fouling occurs from excessive particulate concentrations and can lead to poor amine/feed gas contacting and off-spec gas. Resulting problems include: tray plugging in the absorber and regenerator towers, heat exchanger/reboiler failure, carbon bed fouling, etc. In addition, corrosive contaminants can degrade amine strength, decrease gas treatment capacity, increase energy usage, and lower equipment life.

## Benefits of an optimized filtration/separation system include:

- Reduction of burner tip fouling
- Reduction in absorber (contactor) plugging
- Prevention of amine foaming
- Reduction in use of costly anti-foaming inhibitors
- Reduction in equipment fouling
- Increased carbon bed life
- Reduced amine consumption
- Lower operating and maintenance costs

