

Amine Filtration

For Amine Treating Units in Oil Refineries, Natural Gas Processing Plants and Ammonia Plants

Market Application Publication



Customer Value Proposition

Amine solutions are used to purify gas streams by removing hydrogen sulfide (H_2S) and Carbon Dioxide (CO_2). The most commonly used amines for removal of H_2S and CO_2 gases are Monoethanolamine (MEA), Diethanolamine (DEA) and Methyldiethanolamine (MDEA).

Particulate contaminants in the amine solution can cause serious processing upsets which reduce gas processing capabilities.

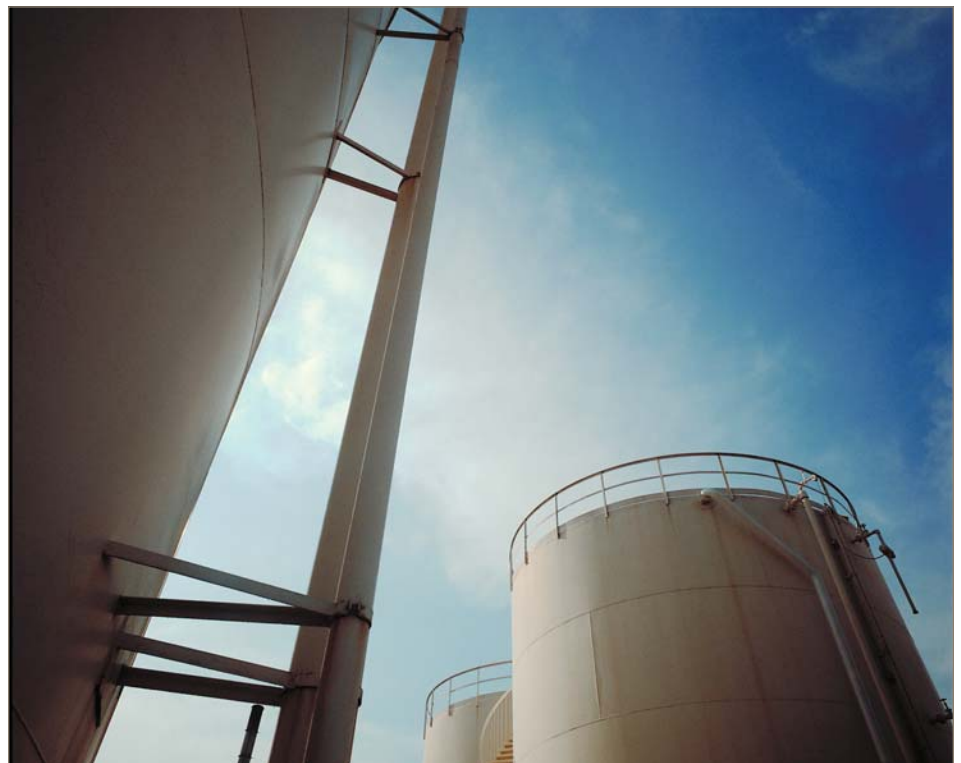
Parker's amine filtration vessels and cartridges help reduce particulate contaminate levels in the amine for improved process control, greater gas processing capabilities, and increased life of your amine solution.

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Natural gas for residential and commercial use must have CO_2 (reduces heat value) and H_2S (toxic in high concentrations) filtered out. Plant gas, a by-product in oil refineries, is used to fire heaters or boilers, and requires H_2S removal as well.

Challenge

Solids entering amine units can include:

- Pipe scale, rust and iron sulfide
- Salt precipitate from the sweetening process
- Mineral precipitate from makeup water
- Charcoal fines from carbon filters

These solids can cause a variety of problems in amine units:

- Iron sulfide and other solids can contribute to foaming in towers
- Solids that build up on the trays reduce system efficiencies
- Solids that build up in the system cause corrosion, plugging, and poor heat transfer

ENGINEERING YOUR SUCCESS.

The Parker Solution

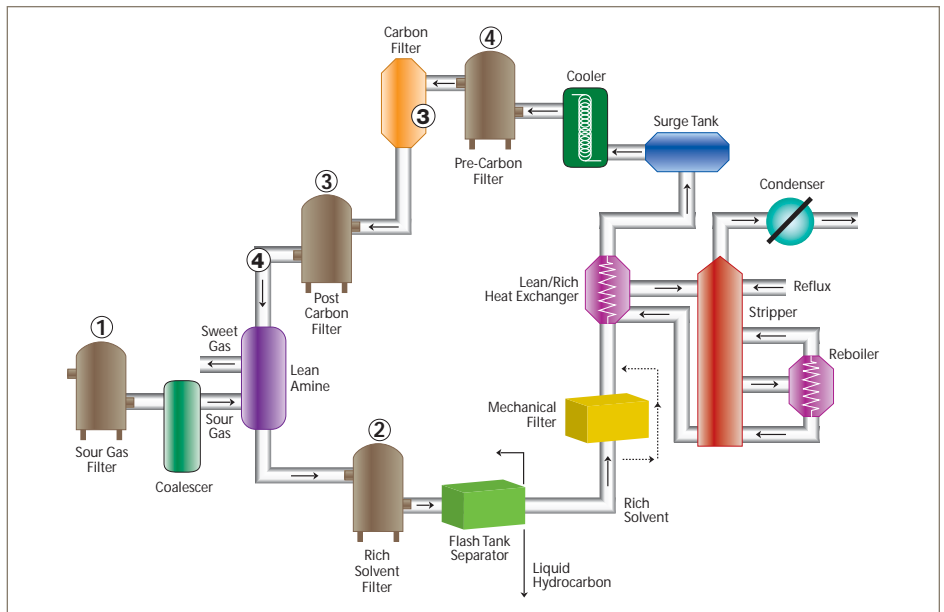
Filtration takes place at the inlet gas stream prior to the entrance to the contactor (1) to remove solids prior to a coalescer that removes entrained liquids from gas streams. Placement of a filter on the rich side (amine that contains absorbed acid gases) of the amine (2) protects fouling of the flash tank, lean/rich exchangers, stripper and reboiler, provided the filter housings are flushed with water prior to media changeout, to drive out any hydrogen sulfide gas. This location is on the cool side of the process and is well-suited to the use of polypropylene filters such as MegaBond Plus, PolyMate or ParMax.

Filters should also be placed ahead (3) of the charcoal filter to prevent fouling of the bed and after (4) the charcoal filter to trap carbon fines that may migrate from the bed onto the contactor trays.

The recommended Parker filtration media for use in amine solutions include:

- ProBond Resin Bonded Depth Filter Cartridge Series
- MegaBond Plus Melt Blown Filter Cartridge Series
- Abso-Mate Pleated Filter Cartridge Series
- PolyMate Pleated Filter Cartridge Series
- ParMax Pleated & Large Diameter Filter Cartridge Series
- MaxGuard High Capacity Filter Cartridge Series

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POSITION	APPLICATION	PURPOSE	FILTER	MICRONS
1	SOUR GAS	PROTECTION OF COALESCER	PROBOND MEGABOND + ABSO-MATE MAXGUARD	5 - 10
2	RICH AMINE	REMOVAL OF SCALE, RUST	PROBOND ABSO-MATE POLYMATE PARMAX MAXGUARD	5 - 25
3	PRE-FILTER TO CARBON BED	PREVENT CARBON BED FOULING	PROBOND ABSO-MATE POLYMATE PARMAX MAXGUARD	5 - 25
4	POST FILTER CARBON BED	PREVENT CARBON FINE MIGRATION	ABSO-MATE POLYMATE PARMAX MAXGUARD	5 - 25

Summary

High quality particulate-reduction filtration using the filter types provided will increase product and intermediate yields by measurable percentages, depending on the levels of contaminants present and the degree (rating) of filtration selected. Consult your Parker representative or Parker Technical Services for the best recommendation and product selection for your specific application.