FILTRATION APPLICATIONS IN GLYCOL DEHYDRATION

The primary function of glycol dehydration is to remove water vapor from natural gas streams to meet typical pipeline and process specifications. The type of glycol used is dependent on several factors including endusers specific requirements and objectives; but the three most common types are Mono-Ethylene Glycol (MEG), Di-Ethylene Glycol (DEG), and Tri-Ethylene Glycol (TEG). Typical industries that perform glycol dehydration includes: gas production/processing plants, LNG facilities, refineries, petrochemicals, etc.

The benefits of an optimized filtration solution:

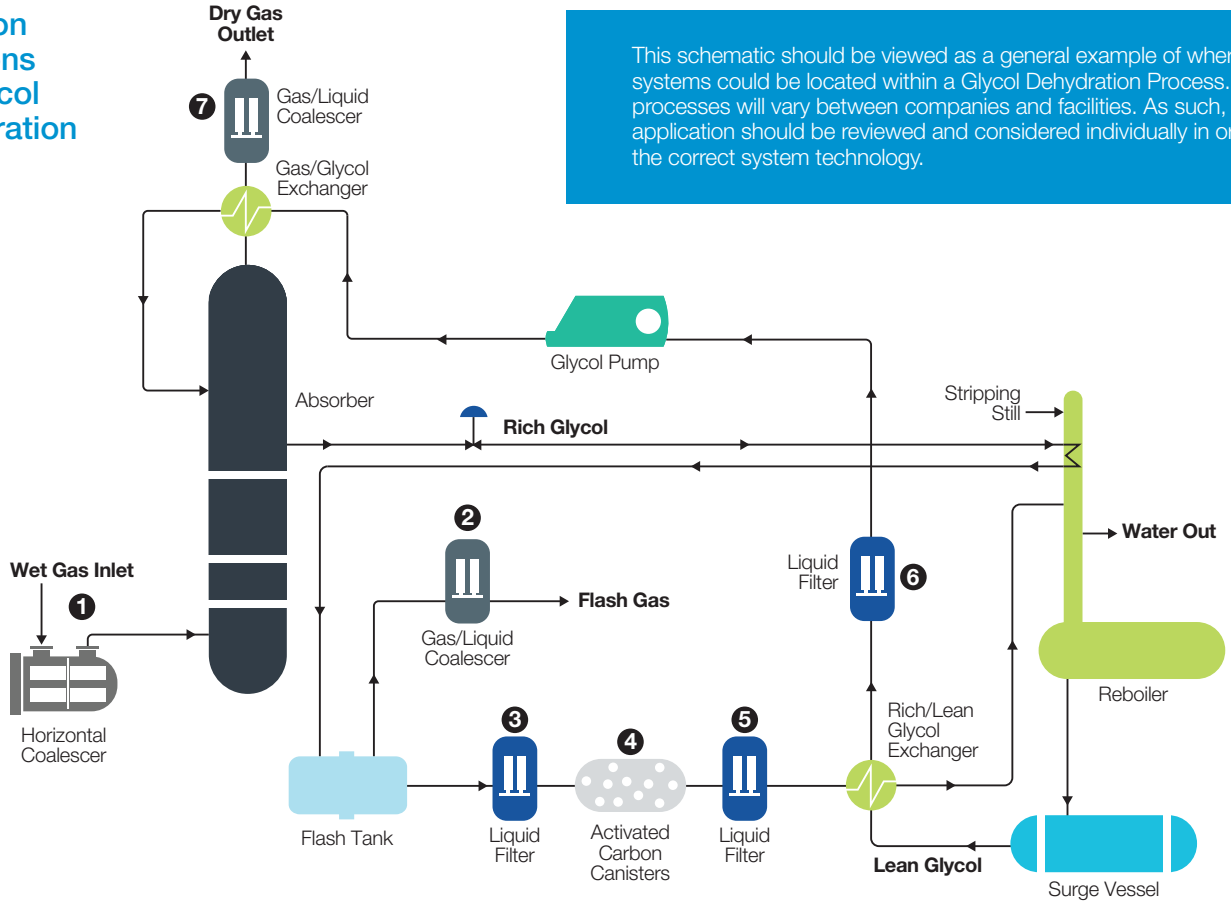
- Reduction in absorber plugging
- Prevention of glycol foaming
- Reduction in equipment fouling
- Increased carbon bed life
- Reduced glycol consumption
- Lower operating and maintenance costs
- Increased plant capacity

In natural gas systems, water vapor needs to be removed to reduce pipeline corrosion and eliminate line blockage caused by hydrate formation. In addition if acid gases are removed by amine treatment, the gas will be water saturated and will need to be dehydrated before entering the pipeline.

Because of its highly corrosive and contaminate laden environment, glycol dehydration processes require an optimum filtration/separation system to operate properly. Seldom is a single contaminant responsible for operating problems. Solid and liquid contaminants in the absorber feed gas and recirculation glycol stream will cause foaming, tray plugging, heat exchanger and reboiler fouling, and pump seal failures.

Foaming in the absorber can result in glycol losses, reduced operating capacity and off-spec product. A poorly designed filtration system will lead to frequent and unnecessary element changes, off-spec gas, excessive downtime, and high operating costs.

Filtration Solutions for Glycol Dehydration



This schematic should be viewed as a general example of where filtration systems could be located within a Glycol Dehydration Process. These processes will vary between companies and facilities. As such, each application should be reviewed and considered individually in order to choose the correct system technology.

- Wet gas enters the absorber column flowing upwards through a series of trays and is counter-contacted with dry glycol as it passes downward absorbing the H2O. Dehydrated gas exits at the top of the absorber column and is fed either to a pipeline system or gas plant.
- Rich glycol leaves the absorber and is pre-heated by passing throughthe still column than flows to a flash tank where hydrocarbon vapors are removed and any liquid hydrocarbons are skimmed from the glycol.
- After leaving the flash tank, the rich glycol passes through particle filters to remove particulates and activated carbon filters to remove dissolved hydrocarbon and chemical contaminants. The rich glycol is heated in a cross exchanger and fed to the stripping column.
- In the stripping column, water vapor is stripped from the glycol and exits the still.
- The lean glycol flows downward to the surge vessel which maintains a constant supply of lean glycol to the glycol pump.
- The hot lean glycol is circulated back to the absorber after passing through the rich/lean glycol cross exchanger and a lean solution cooler.

	Filter Solution	Filter Purpose	Filter Benefit
01	0.3 micron Horizontal Coalescer with Twist-LOK™ technology.	Removal of hydrocarbon, water, and other liquids and solids from wet gas inlet feed.	Reduces absorber foaming and fouling, increases absorption and carbon bed efficiency.
02	0.3 Micron vertical gas coalescer using TRI-SHiELD™ Technology.	Removal of carried over glycol, water, and heavy hydrocarbons.	Coalesces liquids that may be carried over and provides a clean gas that may be re-compressed or used for fuel gas.
03	Liquid Particulate filter using LiquiPleat™ Cotton Series.	Removal of scale and solid contaminants and protect the carbon filter system.	Extends life of carbon adsorber by reducing contaminant that can occupy the effective contact area which is needed to maintain proper adsorption kinetics.
04	CarboPUR™ Series Activated Carbon Canisters.	Removal of dissolved hydrocarbons and chemical compounds.	Reduces foaming, fouling, and minimizes glycol loss.
05	Liquid Particulate filter using LiquiPleat™ Cotton Series.	Removal of carbon bed fines.	Protects downstream equipment. Prevents heat exchanger and reboiler fouling which can lead to high energy usage and frequent cleaning of fire tube bundle in reboiler.
06	Liquid Particulate filter using LiquiPleat™ Cotton Series.	Removal of carried over contaminants from the regeneration process.	Captures any contaminant on the lean side of regeneration process that may damage pumps or be reintroduced into the contact tower.
07	0.3 Micron vertical gas coalescer using TRI-SHiELD™ Technology.	Removal of carried over glycol and liquid contaminants.	Protects downstream equipment and processes.

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