



Aerospace
Engineered Materials
Filtration
Fluid Connections
Hydraulics
Instrumentation



Natural Gas Dehydration

Glycol Dehydration Process

Filtration Solutions with PECO Products



Oil & Gas
(Midstream)



ENGINEERING YOUR SUCCESS.



In today's demanding global market, Natural Gas processes present complex challenges. Parker, with its wide range of PECO Brand Oil and Gas Filtration products, presents solutions by offering innovative and application-specific filtration to ensure integrity and purity throughout the midstream process.

Filtration for process efficiency

From well pad to distribution

MIDSTREAM DEMANDS

Whether it's a well pad, gathering compression station, or storage facility, glycol dehydration systems are needed to remove moisture out of well head gas before it can be processed further. An integral part of the dehydration process and performance is a range of filtration needs that ensure optimal efficiency and reliability. Parker's brand of PECO Oil & Gas filtration products, presents solutions designed specifically around glycol regeneration systems to optimize performance, reduce costs and decrease downtime.

GLYCOL DEHYDRATION

The objective of a Glycol (TEG) Dehydration system is to remove water (H_2O) from Natural Gas. Natural Gas typically contains a high concentration of water. Water in the gas stream can cause many issues if not removed shortly after being withdrawn from the well bore. Without dehydration, dissolved water can drop out of the gas phase forming free water causing upsets, fouling, and corrosion in downstream process equipment. Depending on the gas composition, dissolved water mixed with the gas can form hydrates at varying pressures and temperatures plugging off equipment and causing costly failures. To protect against these potential issues, most customers require the water moisture content not to exceed 7 lbs/MMscf.

COMMITTED TO PROCESS OPTIMIZATION

Parker recognizes that, due to hazards associated with maintenance in production and midstream facilities, along with high disposal costs, minimizing both change-out frequency and process downtime are very important issues. Parker optimizes our filtration products to ensure that the total cost of ownership for contaminant control is balanced, without compromising process efficiency.



For over 80 years Parker's PECO Brand products has led the way in Oil and Gas Filtration Solutions. Customers trust the PECO Brand for quality and performance to handle complex contaminant management issues.

PROPER FILTRATION ON DEHYDRATION SYSTEMS

- Minimize foaming
- Decrease Glycol loss
- Ensure gas stays within spec
- Prevent heater tube hot spots and failure
- Eliminate carbon carryover
- Protect tower trays
- Stop formation of heat stable salts
- Protect downstream processing equipment
- Improve production and efficiency
- Reduce process upsets and downtime
- Lower maintenance costs

GLYCOL PROCESS DESCRIPTION

Wet natural gas fed from a pipeline system passes through a filter-coalescer vessel to remove free liquids and solids that would foul and effect the performance of the dehydration process. Wet gas is then introduced at the bottom of the contact tower and lean glycol is introduced at the top of the tower. As the two process streams contact one another the glycol reacts with water pulling it out of the natural gas stream. Dry natural gas leaves the top of the contact tower. The gas passes through a coalescer vessel to remove any glycol that carried over out of the tower. This gas is now ready for further processing or use. The water saturated (rich) glycol stream leaves the bottom of the contact tower to be regenerated and circulated back into the contact tower. This rich glycol passes through a flash tank designed to flash gas out of the glycol. Rich glycol then passes through a series of particulate and carbon vessels to remove any solid particles, oil, and degradation products present. Rich glycol is lastly passed through a reboiler where the temperature is elevated to around 375° F to remove the water. At this point the glycol is regenerated (lean) and is ready to be recirculated.

GLYCOL PROCESS CONTAMINANTS

- Salts
- Particulates
- Compressor Oil
- NGL
- Injection Chemicals
- Inhibitors/additives

GLYCOL UNIT - KEY ISSUES

FOAMING

Glycol foaming can occur from a multitude of contaminants. NGL condensate, salt, particulates and inhibitors all cause foaming when mixed with glycol. This foaming occurs on the trays in the tower and decreases the contact of the glycol with gas resulting in the gas not meeting moisture level spec. Foaming also causes higher levels of glycol carryover out of the tower.

HIGH DEW POINT

Excessive amounts of oil from upstream compression/wells entering the glycol regeneration loop will settle in the tower and the reboiler giving false readings on actual amount of glycol in the systems. Oil and other contaminants will cause foaming which reduces tower mass transfer efficiency resulting in higher dew points and off-spec gas.

GLYCOL LOSS

Some glycol loss is expected to occur, but contaminants plugging trays in the tower increases velocities and glycol loss rates.

FIRETUBE FAILURES

Salts dissolved in the glycol fluid will crystalize in the reboiler and settle on the firetube. The salts accelerate corrosion and create hot spots on the firetube resulting in failure.

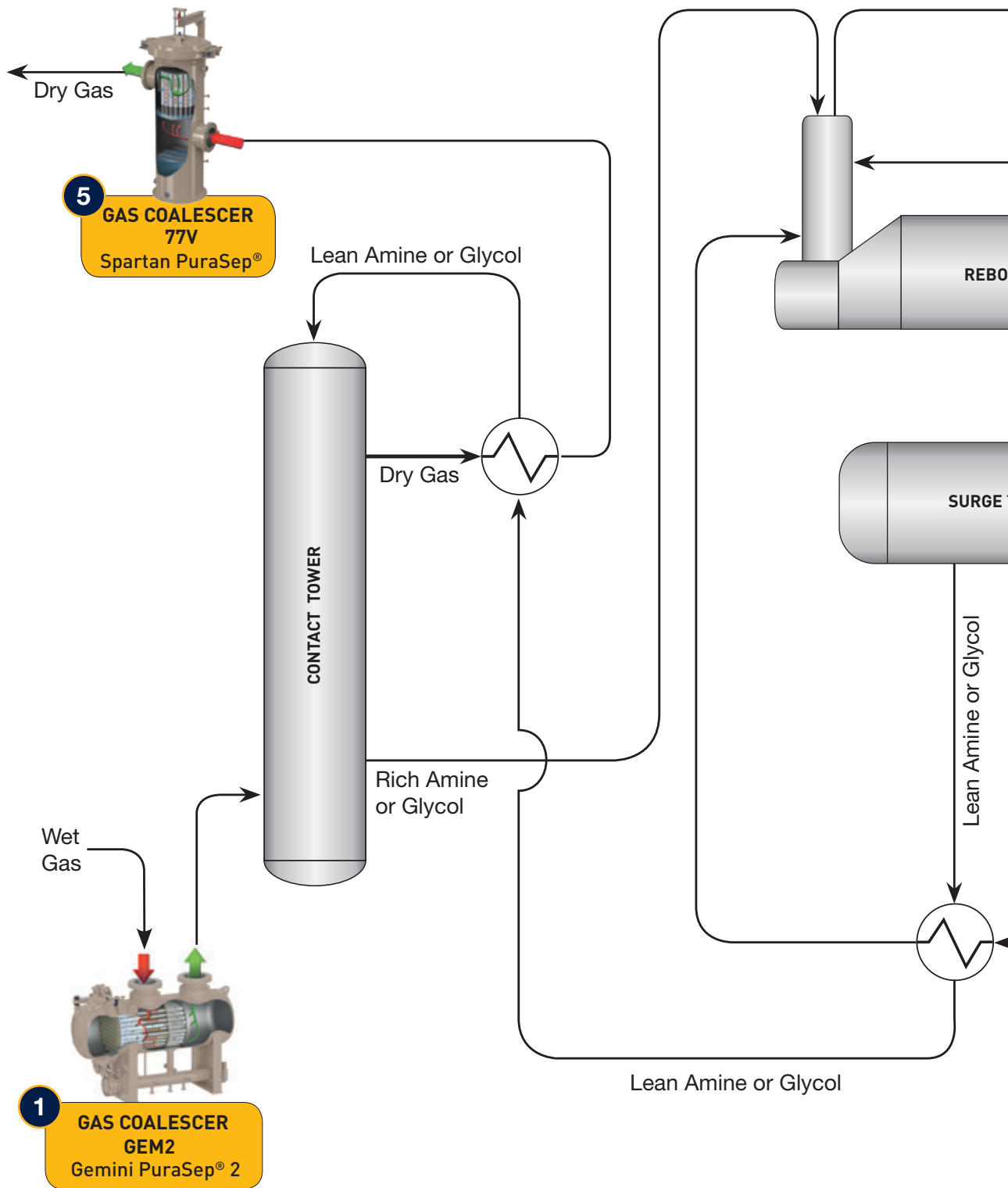
HIGH SOLIDS

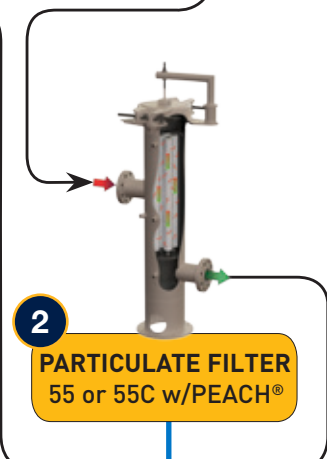
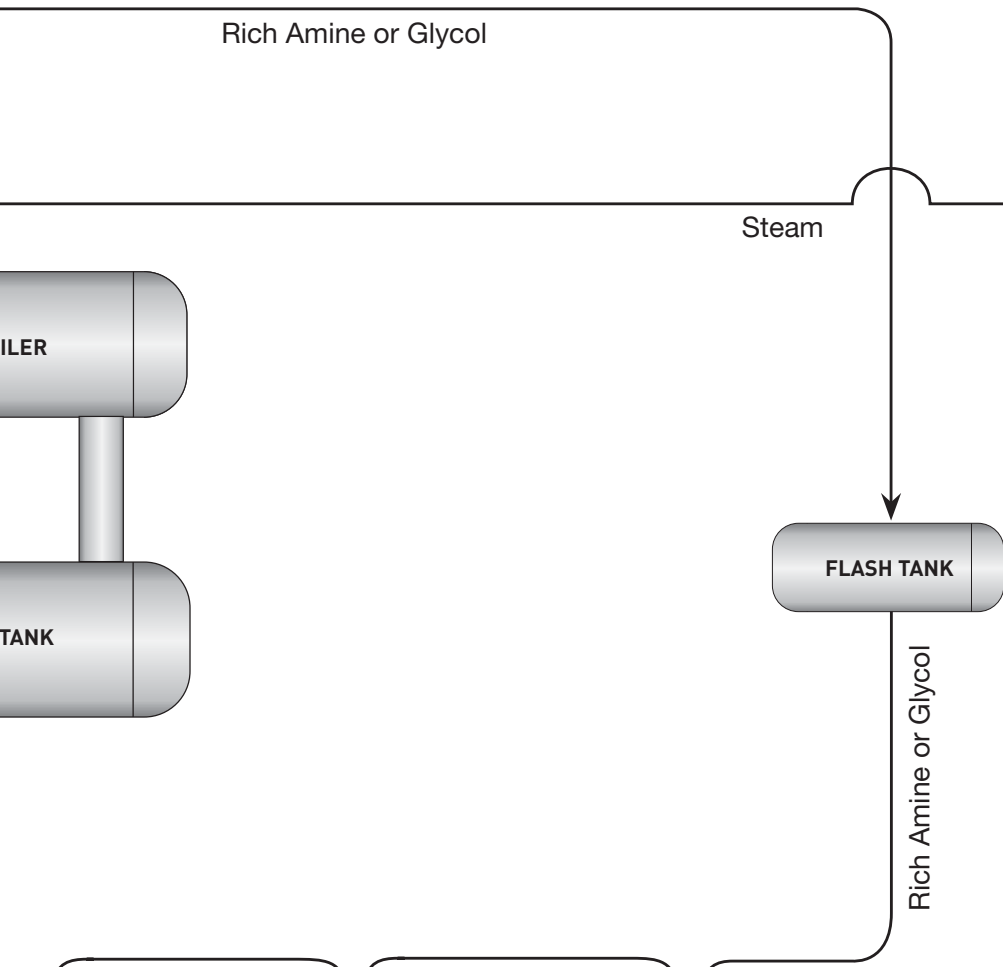
Above 200 mg/L of suspended solids exceeds standard practice for a glycol regeneration system. High solid levels lead to plugging of trays and pumps, foaming, high dew point and shorter filter life.



GAS DEHYDRATION - GLYCOL UNIT

FILTRATION & SEPARATION EQUIPMENT





WET GAS FILTRATION (SATURATED GAS)

1 Gas Filter-Coalescer

PECO, PEACH Gemini PuraSep® 2 Series GEM2 horizontal coalescer with PGC2 cartridges

- High efficiency 0.3 micron coalescer
- Prevents hydrocarbon liquids and solids from entering the dehydration system
- Reduces Glycol foaming
- Lowers antifoam/inhibitor consumption
- Reduces Glycol makeup
- Provides higher gas removal efficiency
- Lowers energy consumption in reboiler
- Protects Absorber Contact Tower
- Lowers dehydration unit operational costs

RICH GLYCOL FILTRATION

2 Particulate Filter

PECO, Chemelean® Series 55C Filter with 6" diameter CM cartridges or PECO, Series 55 Filter with 2.5"/3" diameter PEACH® P90/PPL cartridges

- Minimizes solid contaminants in the Glycol
- 10 micron filtration or smaller recommended
- Reduces fouling in Carbon Adsorber downstream

3 Carbon Adsorber

PECO, Series 10 Carbon Adsorber with bulk activated carbon or PECO, Series 10FB Carbon Adsorber with activated carbon canisters, or PECO, Series 14 Carbon Block Adsorber with XtreamSorb Cartridges

- Carbon removes degradation products & liquid hydrocarbons in Glycol and significantly lowers BTEX levels in system
- Carbon needs to be changed on a regular basis

3A System Upgrade

System upgrade with a Series 14, utilizing XtreamSorb technology, reducing the need for three housings down to one.

4 Particulate Filter

PECO, Chemelean® Series 55C Filter with 6" diameter CM cartridges or PECO, Series 55 Filter with 2.5"/3" diameter PEACH® PPL/P90 cartridges

- High efficiency filter that minimizes solids in Glycol
- 10 micron filtration or smaller recommended
- Post carbon filter that removes carbon fines from Glycol
- Protects reboiler and fines from getting into contact tower

DRY GAS (DEHYDRATED GAS)

5 Gas Coalescer

PECO, Spartan PuraSep® Series 77V vertical coalescer with NGGC cartridges

- High efficiency 0.3 micron liquid coalescing
- Removes Glycol carryover from the contact tower
- Liquid carryover can cause issues with downstream processes



CHANGE-OUTS SHOULDN'T BE A PAIN!

REVOLUTIONIZE YOUR PROCESS PURIFICATION, UPGRADE CARBON CANISTERS TO XTREAMSORB®

- INCREASED SAFETY
- Smaller Capital Footprint
- Reduced CAPEX Cost
- 50% Change-Out Time Reduction
- 66% Weight Reduction
- 80% Reduction in Disposal Space

CHANGE-OUT COMPARISON



GRANULAR CARBON
CANISTER

XTREAMSORB
CARTRIDGE

For more information visit www.parker.com/ipf/peco

Filter Products for Glycol



SERIES GEM2, PEACH GEMINI PURASEP 2 HORIZONTAL GAS FILTER-COALESCER

The PEACH Gemini PuraSep 2 is an innovative product in gas coalescing technology which provides the solids loading capabilities of a filter-separator with the liquid removal efficiency of a vertical coalescer. This patented design provides ultra-clean gas with high efficiency removal of solid and liquid contaminants down to 0.3 microns. It can effectively handle higher inlet solids and liquid loads versus conventional vertical coalescing equipment and is designed to remove a wide range of liquid contaminants such as lubricating oils, low surface tension liquids and aerosol mists.



SERIES 77V, SPARTAN PURASEP VERTICAL GAS COALESCER

The Spartan PuraSep gas coalescer is a highly efficient mist and aerosol remover down to the 0.3 micron level. Series 77V coalescers work best with minimal solids and low surface tension liquids such as lube oil and NGL with minimal liquid loading.



SERIES 55 OR 55C LIQUID PARTICULATE FILTER

The Series 55 & 55C liquid vessels fit a range of different styles of 2.5", 3" & 6" diameter cartridges with a variety of material choices for compatibility and performance needs. The vessels can be equipped with PEACH P90G cartridges specifically designed for glycol service.



SERIES 10 CARBON ADSORBER

The Series 10 carbon vessel utilizes high quality virgin activated carbon canisters to adsorb liquid impurities from process streams such as air, gas, water, amine and glycol. Removal of these impurities is critical to prevent problems such as foaming, odor and contaminant buildup.



SERIES 14, XTREAMSORB FILTER-ADSORBER

The Series 14 Filter-Adsorber with XstreamSorb Carbon Block filters revolutionizes process purification. The design acts as a particulate filter while ensuring 100% contact with the carbon block to adsorb liquid impurities from process streams such as air, gas, water, amine and glycol. Removal of these impurities is critical to prevent problems such as foaming, odor and contaminant buildup. The outer PEACH filter's oleophilic nature attracts hydrocarbon droplets and semi-solids, decreasing loading on carbon block. The carbon block's depth structure ensures removal in a single pass while not releasing carbon fines into the downstream process.

GLOBAL OIL & GAS FILTRATION OFFICES

North America

USA Oil & Gas Filtration

Mineral Wells, TX
940-325-2575
industrialprocess.na@parker.com

Canada Oil & Gas Filtration

Calgary, Canada
403-717-2891
industrialprocess.na@parker.com

Asia Pacific

Malaysia Oil & Gas Filtration

Kuala Lumpur, Malaysia
+603-8941-2366
IPF_Malaysia@parker.com

Korea Oil & Gas Filtration

Gyeonggi-do, Korea
+82-31-359-0782
KFDsales@parker.com

Europe & Middle East

Europe Oil & Gas Filtration

United Kingdom
+44 (0)191-402-9200
peco.emea@parker.com

Middle East Oil & Gas Filtration

Dubai, UAE
+971-4-886-5401
peco.emea@parker.com

Latin America

Latin America Oil & Gas Filtration

São José dos Campos, Brazil
+55-12-4009-3500
falecom@parker.com



© 2020 Parker Hannifin Corporation
BR-OG-MID-GASDEHYDRATION-200624

Parker Hannifin Corporation
Industrial Process Filtration Division
www.parker.com/ipf

