



Glycol Dehydration

PROBLEM

Common problems in a glycol dehydration unit are fouling and foaming. Many problems in a glycol dehydration plant such as foaming, reboiler and exchanger fouling, tray plugging and pump failures can be traced to an excessive amount of liquid and solid contaminants present in the process stream.

Foaming in the contactor can result in huge glycol losses, reduced operating capacity, and off-spec product. Glycol carried over into the dry gas can result in fouling of downstream equipment like desiccant beds, compressors, heat transfer equipment, and burners. Foam stability is dramatically increased by the introduction of heavy hydrocarbons, organic materials, amines, and suspended solids into the recirculating glycol.

Fouling can result in reboiler tube failure, tray plugging in both the contactor and the regenerator, exchanger failures and frequent pump seal replacements. The typical contaminant is iron oxide which is formed in the circulating glycol system. Iron oxide particulates tend to be less than 10 micron in size.

PALL SOLUTION

A Pall SepraSol™ Liquid/Gas coalescer in the gas feed line will remove virtually all of the entrained liquids in the feed gas. This eliminates the problem of hydrocarbons and amines mixing with the glycol, minimizing any problems with foaming.

Pall disposable filters are recommended on the recirculating glycol stream to remove iron oxide particulates. Since the glycol is a circulating system, the solids concentration will gradually increase unless removed by a filter. The high solids result in equipment fouling and stabilize foaming. The circulating glycol should contain less than 1ppm by weight of suspended solids and should be filtered to an efficiency of 10 µm absolute. This circulating glycol system often requires that coarser filters be installed at first to clean the system of solids which have been accumulating over a period of time. Progressively finer filters are introduced to the system until a filter efficiency of 10 µm absolute is obtained.

Figure 1. Glycol Dehydration System

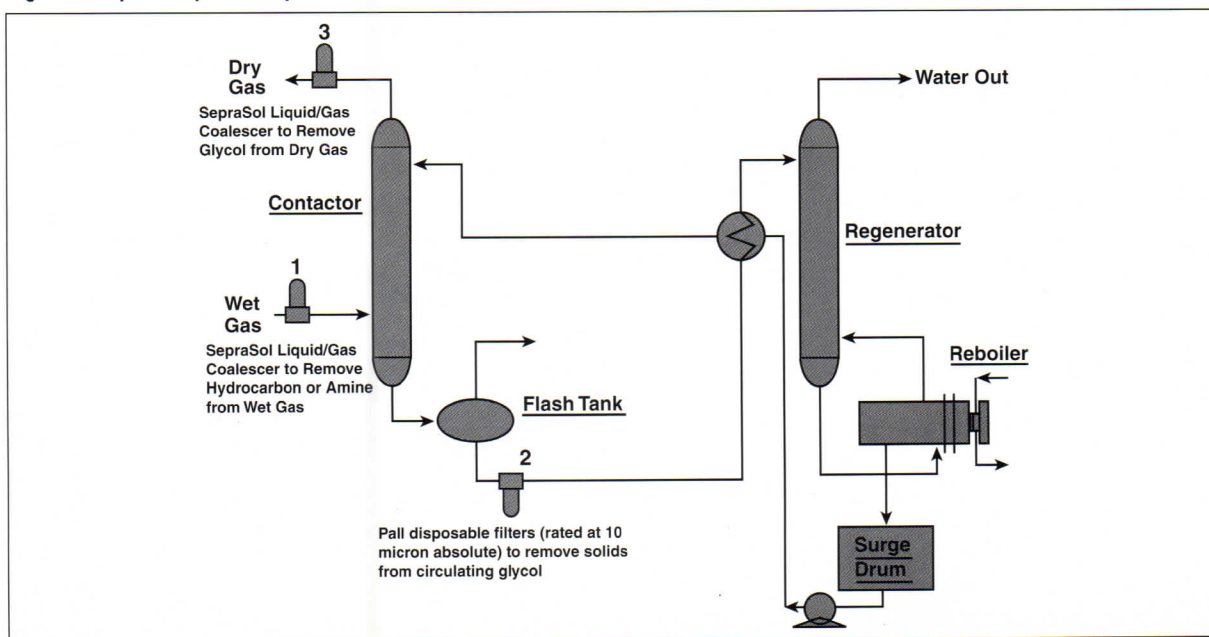


Table 1. HCP Filter Recommendations

Filter Location	Recommended Pall Assembly	Purpose of Filtration	Benefits of Filtration
1	Pall SepraSol Liquid/Gas Coalescer: CC3LG7A CC3LGO2-H13 CS604LGH13	Removes water, hydrocarbon, carried over amines and other liquids and solids from gas feed	<ul style="list-style-type: none"> • Reduces foaming problems • Increases absorber efficiency • Prevents exchanger and reboiler fouling
2	Pall Profile® II or Ultipleat® High Flow cartridge: 10 µm	Removes scale, solid particles	<ul style="list-style-type: none"> • Reduces foaming problems • Reduces glycol losses • Increases energy efficiency • Increases absorber efficiency • Prevents exchanger and reboiler fouling
3	Pall SepraSol Liquid/Gas Coalescer: CC3LG7A CC3LGO2-H13 CS604LGH13	Removes water, carried over glycol, and liquid hydrocarbon	<ul style="list-style-type: none"> • Protects downstream processes • Reduces downstream equipment maintenance costs

If glycol losses are significant due to operating at higher than design capacity, Pall's SepraSol Liquid/Gas coalescers can be installed downstream of the contactor overheads to recover glycol and protect downstream equipment like compressors, desiccant beds and heat transfer equipment.

MINI-MARKETS

Gas Processing Plants
Petroleum Refineries

REFERENCES

1. GAS 4100 – Guide to Gas Filter & Housings
2. PR-900 – Separations Technology in Petroleum Refining
3. GAS 4102 – SepraSol Liquid/Gas Coalescers
4. GAS 4104 – SepraSol Liquid/Gas Coalescers (double open ended)
5. E54 – SepraSol Plus Liquid/Gas Coalescers
6. UHF-100 – Ultipleat High Flow Filter Systems
7. PRO-400 – Profile II Filters
8. WER-5104 – Pall Profile II Filters
9. COA-100 – Coalescer Brochure



Industrial Process

Pall Process Filtration Company
2200 Northern Boulevard
East Hills, New York 11548-1289

888.873.7255 toll free
516.484.5400 phone
516.484.0364 fax

Visit us on the Web at www.pall.com/coalescer

Select-A-FAX* 800.664.7255

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