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Gas Dehydration

Glycol

Introduction

The use of Glycol to dehydrate gas streams is an established method that has proven its functionality and versatility over many years.

There are 3 common types of Glycol used for Gas Dehydration:

- Mono-Ethylene Glycol (MEG)
- Di-Ethylene Glycol (DEG)
- Tri-Ethylene Glycol (TEG)

The type of Glycol used and the package design depends on several factors, and the end-users specific requirements and objectives for the gas stream being processed.

Each package is typically designed in close consultation with the client to ensure the best overall design is achieved.

Design Basis

The design of TEG and MEG Dehydration Systems is unique for every requirement and the overall package design will vary to meet the specified moisture content of the gas at the process conditions.

Each system is typically designed and built as a complete turn-key package with particular emphasis given to the following issues:

- Discharge gas moisture content
- High gas dehydration capacity
- Minimum glycol losses
- Minimum power consumption
- Optimum plant efficiency & design integrity
- Compliance with HSE requirements
- Environmentally conscientious design

Process Description

In a typical TEG package, water saturated gas enters near the bottom of the Contactor Tower and flows upwards through the internal trays/packing (1). Lean Glycol enters the Contactor Tower near the top and cascades down through the Contactor internals (9), making contact with the up-flowing gas stream. The counter-current flow path of the Glycol and the high contact surface area enhances water absorption into the Glycol from the gas stream.

Origin Energy, Spring Gully TEG Dehydration Package
Location: Queensland, Australia

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Dehydrated gas flows out of the top of the Contactor, while the Rich Glycol flows out of the bottom of the Contactor and to the Glycol Regeneration Package.

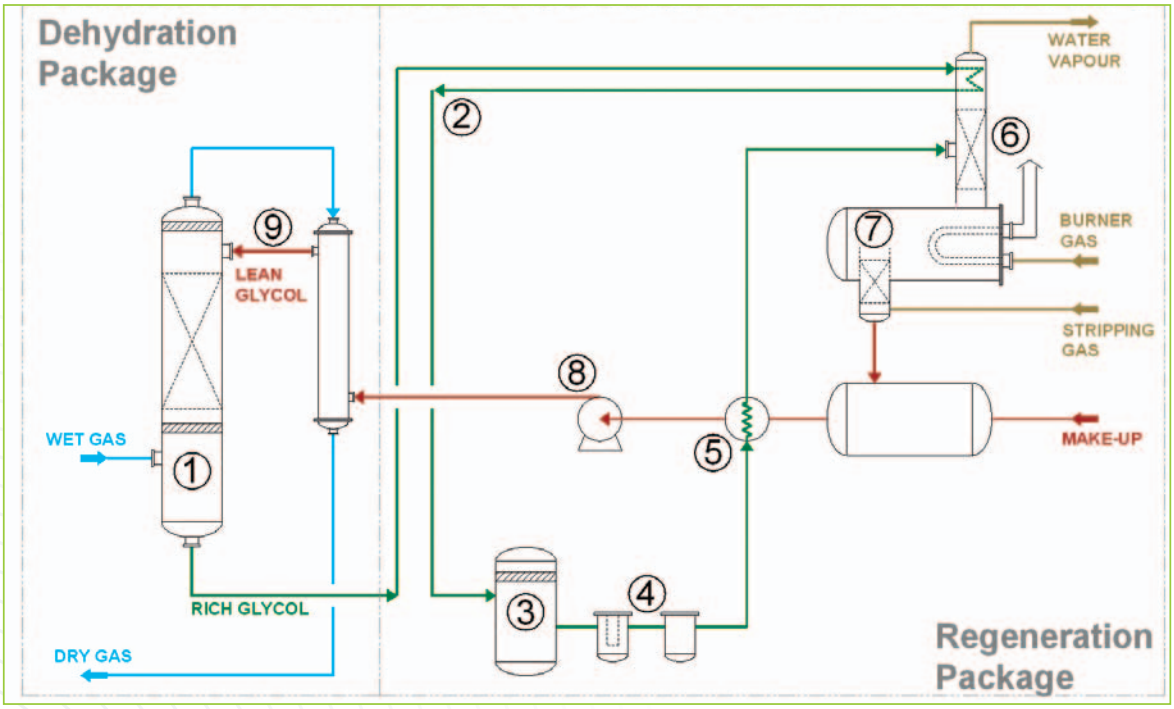
The TEG Regeneration process typically involves passing the Rich Glycol through the still column to gain some heat (2) before entering the Flash Drum (3).

The Glycol is then passed through Particle Filters to remove particulates and Activated Carbon Filters to remove any dissolved hydrocarbon and/or chemical compounds (4). The Rich Glycol is heated in a cross exchanger to preheat the feed (5) to the Still Column where the Glycol present in the water vapour leaving the Reboiler is recovered (6).

Depending on the application, it may be necessary to increase the Lean Glycol concentration by using stripping gas (7), or running the Reboiler/Still Column under a slight vacuum. Lean TEG (typically →99wt%) is then cooled and pumped back to the top of the Contactor Tower (8) to repeat the process.

Reference Clients

- Chevron
- Shell
- ENI Australia
- Origin Energy
- Santos Australia
- Cairn Energy
- Bahrain Petroleum
- Arrow Energy
- Anzon Australia
- Iranian Offshore Oil Co.
- Chinese National Offshore Oil Co.
- Japan-Vietnam Petroleum Co.



A 'typical' Glycol Dehydration Package:
a number of process components are added / modified / removed to suit the requirements of each individual application