Acid Gas Dehydration Package

Compass Model No: GAS DEHYDRATOR DG-10-1-50

Application:	Addition of a gas dehydrator to an existing natural gas field processing plant. The dehydrator will operate in the waste gas stream from an existing amine plant removing H2S and CO2 from raw natural gas.
Location:	Gordondale, Alberta
Objective:	Client intends to sequester a waste stream of CO2 and H2S (acid gas) in a disposal well. Acid gas streams are prone to hydrate formation that can block pipelines and injection wells. Removing water from acid gas will prevent hydrates.

COMPASS

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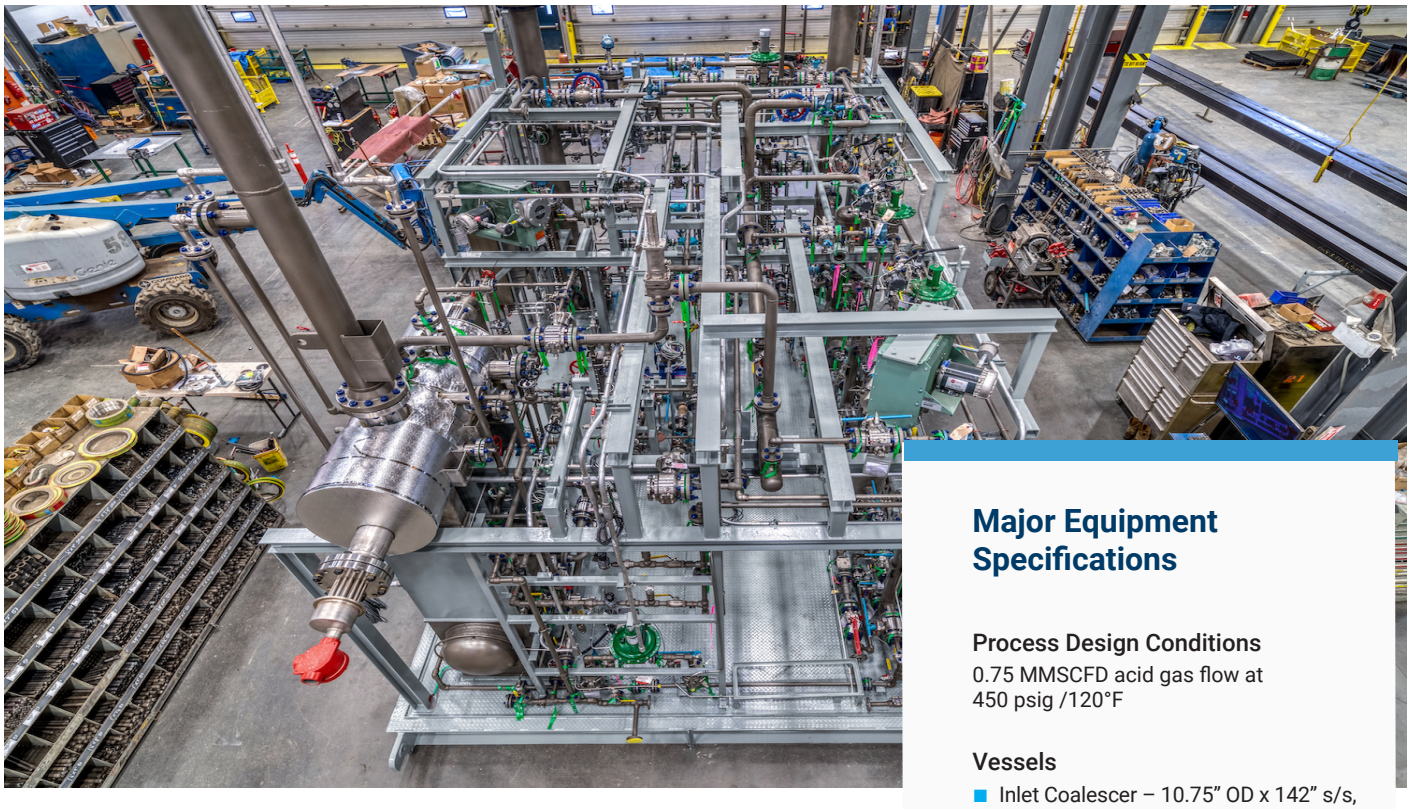

Design Challenges:

- Removing water from acid gas using a regenerating glycol stream is an uncommon application of a common piece of equipment.
- Delivering clean dry glycol to the tower for water removal is not a rudimentary issue.
- The low flowrate complicated the design as many traditional components are meant for larger equipment.
- Making the equipment safe, serviceable and durable in such corrosive and noxious service.
- Integrating the dehydrator into the existing plant presented issues for still column vapour routing, compressor control, and relief system design.

Compass Solution:

Proper regeneration of the glycol is critical to dry the acid gas. Compass balanced the rates of circulation, stripping gas injection, reboiler temperature to allow dry acid gas out, without excessive recycling of acid gas. Recycling the still column vapour was a challenge as the cost of compressing this vapour is excessive, so Compass applied an Eductor as a cost effective and application-appropriate solution.

The unit employs an electric reboiler as a unique solution to heat the glycol. The piping system for the glycol balances the need to limit leakage using socket weld joints and the availability of DIB valves in stainless steel. The size and weight of the valves and instruments compared to the pipe system introduced support challenges for detailed design.

Major Equipment Specifications

Process Design Conditions

0.75 MMSCFD acid gas flow at 450 psig /120°F

Vessels

- Inlet Coalescer – 10.75” OD x 142” s/s, 0.3 micron coalescing elements
- Flash Tank – 10.75” x 72” s/s
- Filters – dual 4” particle filters, 12.75” carbon filters
- Accumulator – 20” OD x 48” s/s

Towers

10.75” OD x 360” s/s with 15 ft of structured packing

Exchangers

20” OD x 48” s/s regeneration vessel, 50,000 BTU with still and stripping columns

Pumps

Hydracell, 0.5 GPM, 1 HP

Control Panel

Fisher Delta V Charms

Other Features

- Full 316/316L materials for all process equipment
- Fully modular with skid, building, heaters
- GWR level controls
- Full DIB isolation on all maintenance items

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