Garo

PATENTED LIQUID RING COMPRESSORS SYSTEM FOR FLARE GAS RECOVERY

GARO® WAIS Washing Amine Integrated System

Building on a legacy of innovation, the engineers at Garo sought to improve flare gas recovery by analyzing the processes involved and seeing where enhancements could be made. The result: GARO's patented Washing Amine Integrated System (WAIS), which uses amine solution as a service liquid in the compression phase of flare gas recovery.

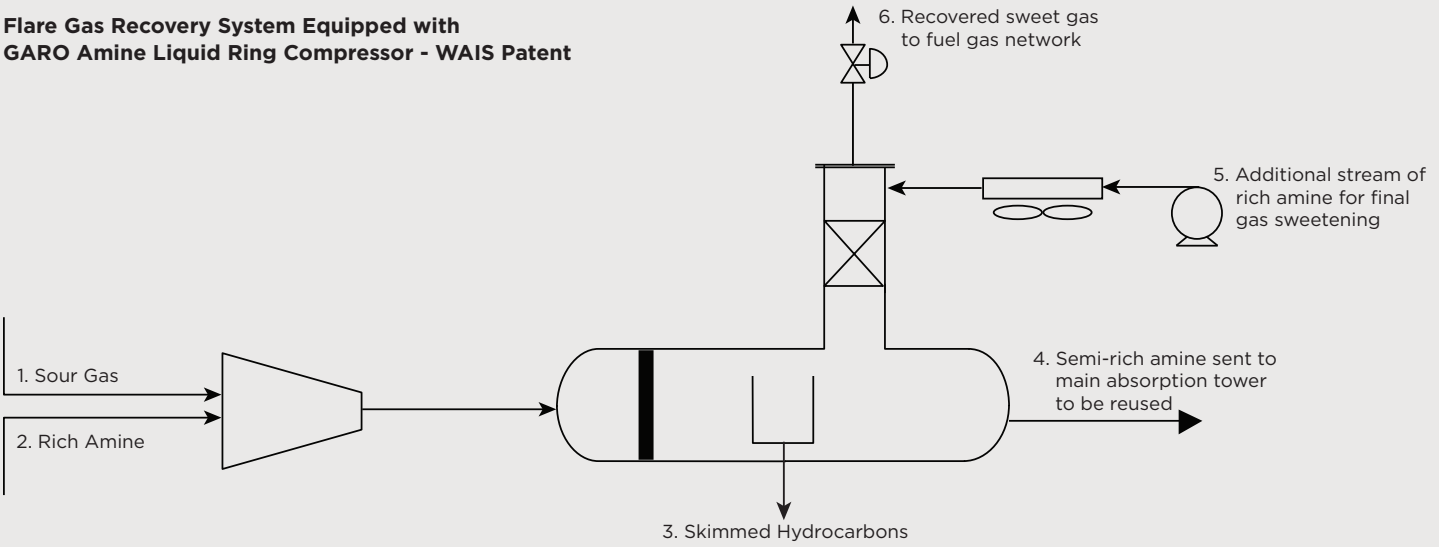
Compared to traditional systems, WAIS simplifies the flare gas recovery process by removing the need for a gas treating unit; in addition to the need for cooling and treatment water, while allowing the system to produce a sweet gas with a residual content of Sulfur related compounds low enough to comply with environmental regulations, without the need to further scrub the gas.

The result is a Flare Gas Recovery system that is safe, flexible, and reliable, and can provide significant cost savings to refineries.

- No SWS Treatment
- No need for amine washing unit
- No cooling water
- No process water
- Reduced operating costs
- Complete system warranty

NASH
by Gardner Denver

Flare Gas Recovery System Equipped with GARO Amine Liquid Ring Compressor - WAIS Patent



HOW IT WORKS

Garo's WAIS replaces the gas/liquid separator used in earlier systems with an innovative three phase separator. Though similar in appearance to conventional flash tanks, which work by receiving streams of rich amine evolving gas by pressure release, the three phase separator does not rely on pressure release and the material exiting the compressor is a mix composed of gas, liquid, and aerosol. The diagram below is a process scheme that shows how the open loop Garo WAIS system works.

From an operational point of view, the system recovers gas by maintaining a slight positive pressure on the flare header, which is located upstream of the liquid seal drum. If the volume of gas released into the flare system exceeds the capacity of the gas recovery system, pressure in the flare header will build until it exceeds the back-pressure created by the liquid level of the liquid seal drum. At this point, excess gas volume will begin to flow to the flare.

If the volume of gas relieved into the flare system is less than the full capacity of the gas recovery system, the system is automatically turned down by staging compressors, and the discharge gas is diverted back to the suction header ensuring continuous operation during varying load turndown.

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