



Application

Removal of carried-over caustic from straight run LPG in a refinery "satgas", "gascon" or "light ends recovery" (LER) unit.

Problem

The refinery was experiencing LPG quality issues and unit operating difficulties due to high corrosion rates in the LER unit de-propaniser column caused by salt deposition.

The caustic separation equipment at the outlet of the Merox¹ extractor was not providing effective caustic removal from the LPG. On a regular basis, the unit operators had to wash the heat exchanger train, and depropaniser column internals just to keep the unit operational. This action required a reduction in throughputs and resulted in loss of revenue to the refinery each time this was done.

As the situation worsened, the LER unit was confronted with a complete unscheduled outage for large-scale maintenance to correct the problem. Without addressing the root cause of the problem (caustic carryover), repairs to the depropaniser, heat exchanger train and reboiler would not be a permanent solution.

Solution

After evaluating other options (waterwash, sand coalescer) they contacted Pall references with similar installations and received very favorable reports about Pall's PhaseSep[®] L/L coalescers. The refinery placed an order in August of 2006 for the following equipment:

Eliminate Caustic Carryover from LPG



Fig. 1: Skidded pre-filter and PhaseSep[®] Liquid/Liquid Coalescer Unit

Pre-Filter: 15WF41204F3-300-CS w/ ABGN4N20018J
Coalescer: 12PHH2404F3-300-CS w/ LCS4H1AH

Results

Equipment was delivered in Dec. 2006, and started-up in April 2007.

Benefits

- Lean/rich exchanger fouling has been eliminated as evidenced by a stable heat transfer co-efficient
- Re-boiler energy efficiency has increased
- The refinery has reported improved depropaniser column performance and a reduction in reprocessing costs
- 18 months after start-up, the column and heat exchangers have not required cleaning, compared to 2–3 times/year prior to installation of the PhaseSep skid
- Estimated revenue improvement & cost savings after 18 months is in excess of US\$500,000

¹ – Merox is a registered trademark of UOP.

Contact us at www.pall.com