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New Mixer Optimizes Crude Desalting Plant

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Abstract

Saudi Aramco Gas Oil Separation Plants (GOSPs) utilize conventional static mixers (usually globe valves) for mixing of crude with fresh water (wash water) as part of the desalting process. This mixing method often results in consuming high quantities of wash water and chemicals with relatively low mixing efficiency.

In order to optimize GOSPs' operations, a trial test of a new mixing technology provided by ProPure was conducted at Shedgum GOSP-4 during the period December 2007 – May 2008. The ProPure mixing system technology (ProSalt mixer system) was installed at the inlet line of the desalter in parallel to the arrangement of the conventional mixing valves (three in parallel).

The objective of the test was to evaluate the technology performance and reliability in optimizing desalting processes for Saudi Aramco crude processing facilities. This can be achieved by providing more efficient and effective use of wash water and chemicals while maintaining GOSPs treated crude specifications within Saudi Aramco acceptable criteria which are salt content below 10 PTB (Pounds per 1000 Barrels of Crude) and BS&W (Basic Sediment & Water) below 0.5% by volume.

At the end of the trial test, the Saudi Aramco team evaluated the ProPure mixing technology in comparison to the conventional type and concluded the following results;

- Pressure drop across the ProPure mixing system decreased by 60%
- Wash water rate was reduced by 40% (from 50 GPM to 30 GPM)
- Oil in water content reduced by 40%
- The salt content and BS&W have been on spec all the time

The paper describes the mixer concept and results at Shedgum GOSP-4 and further quantifies the implications on installation, treatment capacity and consumables as wash water and demulsifier.