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PC Pumps transfer paraffinic crude oil sludge without clogging

At Chevron's 425,000 b/d Cabinda, Angola operations, heavy crude is pumped onshore, with sweet crude going to one treatment area and sour crude to another where they undergo degassing, desalting, and various other treatment processes before storage, transfer to super-tankers, and shipment to customers.

Following processing and prior to shipment, oily water is drawn off manually from the bottom of each storage tank. This oily water is transferred to 20 ft. by 60 ft. skimmer pits. There, crude sludge floats to the top, where a boom moves the mixture over a weir into a separate sump. The remaining water then flows by gravity from the pits for further processing.

The starting situation

The oily residue from the sumps was the problem. This operation was using a redundant pair of pumps at each skimmer pit to pump the oily sludge out of the sumps. The primary air operated diaphragm (AOD) pump was backed up by an electrically powered centrifugal pump. Because of the high paraffin content, the inlet side of the AODs and the impellers of the centrifugals were clogging, resulting in unreliability in the form of frequent production down-time and expensive repairs at a level unacceptable to management.

The solution

To cut maintenance costs and improve the reliability of its sump pump operation, Chevron purchased four seepex range BEO 35-6L semi-submersible progressive cavity pumps. Designed to convey liquids of fluctuating viscosities and degrees of corrosiveness from deep holding tanks, each unit consists of a carbon steel housing, Duktil-coated rotor, and molded to size Buna stator. With a capacity of 146 gpm, each pc pump has a submersible depth of 8.5 ft. (2.6m). Each pump and its 10 hp drive are mounted as an integral block on a circular base plate and installed at the edge of the skimmer pit sumps.

Vertical pumps for oil sludge save space and minimize downtime.

The benefit

As a result of installing the pc units, Chevron's wastewater treatment operation proceeds smoothly and efficiently. The facility reports that it no longer incurs the high costs of repairing both the AOD and the centrifugal pumps; reliability has increased dramatically with no major downtime from paraffin clogging reported. The Management has since purchased additional seepex units for other areas of operation.

Key Facts

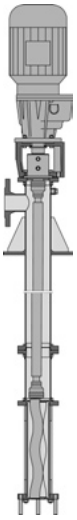
- Able to handle corrosive and abrasive materials, as well as fluctuating viscosities and flow rates
- Submersible depth of 8.5 ft. (2.6 m)
- No valves to clog or foul

Significant Cost Savings

- Low life cycle and operational costs
- Minimal repairs from paraffinic clogging
- Increased efficiencies

Installed Pump Type

- Range BEO



Range BEO

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