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Proactive Diagnosis of Damaged USD 1 Part on Desalter Power Unit Saves Processing Facility Millions

Process Live service experts discover voltage imbalance in electrostatic treater unit, enabling rapid and inexpensive correction without lost production, Middle East

The operator of a Middle East oil production facility eliminated desalter downtime by using Process Live* data-enriched performance service to enhance expertise in analyzing data from the facility's numerous monitoring and control systems.

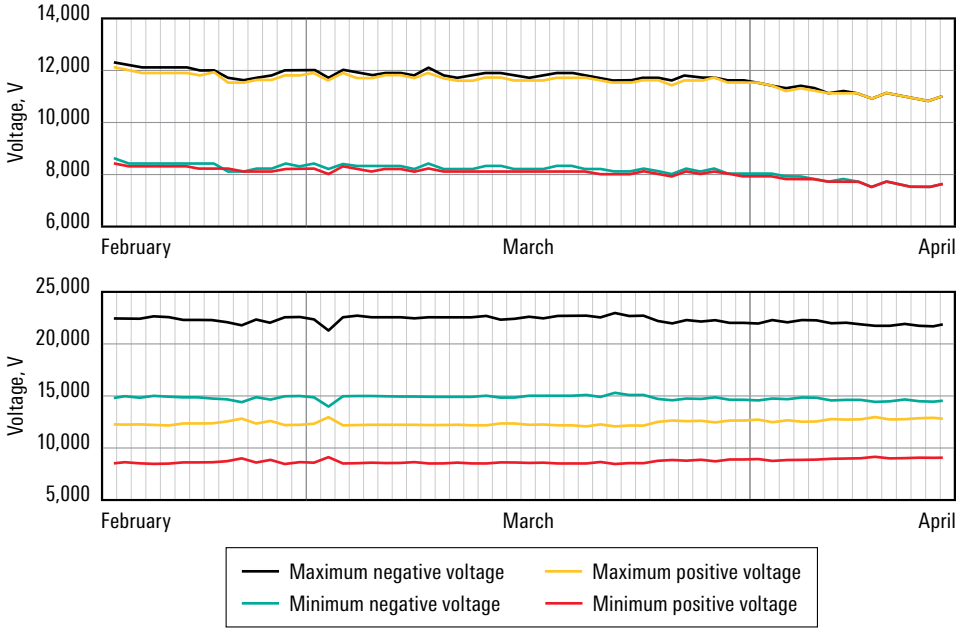
The operator's concerns

A Middle East heavy oil production facility operates in an environment with wide variations in temperature and production. The process must deliver on-specification oil with basic sediment and water (BS&W) below 0.5% and salt content less than 10 lbm/1,000 bbl. The produced fluid contains high-salinity brine with salt content in excess of 100,000 ppm.

The process system uses NATCO DUAL FREQUENCY* electrostatic treaters to meet the requirements and accommodate the variations. However, the availability of local technical maintenance support and expensive long-lead-time spare parts is limited. Any downtime for the heater treaters and desalter would result in reduced throughput and revenue.

How was desalter performance monitored?

Like most processing facilities, this one used redundant independent monitoring instrumentation systems for process safety and operations. Individual process equipment and systems had specific instrumentation and operational controllers, so only highly trained employees could monitor all of the instrumentation and processes. However, at this newly commissioned facility, the operations team had undergone formal training but lacked familiarity with the specific technology.



A Process Live service expert compared voltage data from optimized electrostatic processing equipment (top) and inefficiently operating equipment (bottom) to identify a problem, find the root cause, and eliminate it.

What Schlumberger recommended

Process Live data-enriched performance service improves equipment reliability and simplifies data analysis by integrating electrostatic power unit measurements, live process measurements, electrostatic treater domain intelligence, and application and technology expertise with cloud-based process optimization software. The service eliminates familiarity gaps by automatically detecting and notifying the operator of events such as gas breakout, input power supply fluctuations, and operation upsets.

How the facility benefitted

Within a week of deploying the Process Live service, a remote expert noticed a significant nonconformance in the streaming data related to the power unit secondary voltage operating parameters for one of the treaters. After a thorough review of the data, the root cause was identified as a poor contact alignment due to a failure of an internal connector, which led to an output voltage imbalance that, if not remediated, could have severely damaged the treater and slowed facility output. Further investigation determined that the connector had been overtightened with a wrench—rather than only hand tightened—which caused it to break. The connector, which cost USD 1, was replaced without loss of production or damage to the power unit.