

Application Success Story

Industry: Oil and Gas

Product: One Series Field Safety System (All-in-One)

Application: ESD Wellhead to Test Separator

Process: Upstream Oil and Gas extraction

Customer Information

A worldwide upstream oil and gas company has 19 wellheads feeding test separators to measure oil, gas and byproduct concentrations. To ensure pressure from the flow line to the test separator never exceeds the low and high pressure set points of 75 psi and 640 psi for optimal operation of the process and equipment, hydraulic safety shut down systems are installed at each wellhead for fail-safe and emergency shut downs (ESD) in the event of abnormal operating conditions.

Challenges

Each test separator accepts flow from 4 wellheads. During extraction of medium API crude, paraffins can coagulate, especially during colder months and cause blockages in the individual wellhead's hydraulic pressure measurement and safety shutdown system. The result is inaccurate pressure measurements and non-closure of the individual wellheads safety shutdown valve (SSV). If an abnormal condition is sensed at the test separator, the test separator's main valve accepting flow from all 4 wellheads will fail safe and shut the entire process down even though the other 3 wellheads are operating as designed. Consequently, there is significant process down time, reduced throughput (\$) and risk to the equipment and environment. Labor intensive inspection of the process is now required to determine the problematic wellhead.

Results

By combining a sensor, logic solver and a safety relay with smart diagnostics into one device, operators have reduced complexity, increased uptime and reduced risk of a complete process shut down. This 3-in-1 SIL 2 Certified Field Safety System provides high reliability and remote visibility without changing the host system.

Solution

UE's Class I Div. 1 and SIL 2 certified One Series Field Safety System consisting of a pressure transmitter, logic solver and safety relay, all integrated within a single explosion proof enclosure was implemented at each wellhead to combat the problem. With plug port detection for indication of paraffin blockage, loop powered 4-20mA output for remote continuous monitoring and high power safety relay with two configurable set points (Lo and Hi), the One Series Safety System initiates a direct fail-safe shutdown of the individual abnormal performing wellhead without shutting the entire process down.



Contact Information

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