

SIL 2 Flow/Level FlexSwitch Detects Fluid Interface In Oil Well Separation Tank Processes

Fluid Interface Detection Eliminates Process Stream Contamination



San Marcos, CA — Petroleum engineers responsible for the process of separating crude oil, gas and water will find the SIL 2 rated [FlexSwitch® FLT93S Flow/Level/Temperature Switch](#) from [Fluid Components International \(FCI\)](#) provides precision interface detection of fluids to manage separation tank operations.

After extracting crude oil, the first step in the refining process is to separate the oil, gas and water into separate process streams using either two-phase (oil/gas and condensate) or three-phase (oil, gas and water) separation tanks. There are various types and classes of separation tanks based on multiple technologies, but fluid interface detection of the oil, gas and water is always important for successful operations.

Detecting the interface of oil, gas and water in a tank is difficult because each of these fluids differs in their fundamental characteristics. If the fluid interface detection isn't accurate, troublesome emulsion layers of oil/water and gas/condensate can contaminate the individual process streams and affect the refining process.

With its advanced thermal dispersion sensing technology, the FLT93S Switch ensures accurate interface detection of oil, gas and water. The FLT93S Switch performs monitoring, controlling and alarming of flow rates or levels of critical fluid layers in tanks such as emulsion layers, foams, liquids and slurries.

With its rugged industrial design and housing, the FLT93S Switch features superior reliability rated to SIL 2 and a long service life under the harshest petrochemical industry conditions. The FLT93S Switch is a dual-function insertion-style instrument that offers either flow/temperature sensing or level/temperature sensing in a single device.

A single FLT measures and monitors flow or level and temperature simultaneously with excellent accuracy and reliability. Dual 6A relay outputs are standard and are assignable to flow, level or temperature.

Unlike density displacers, which are often used for level and interface control, the FLT93S Switch relies on the specific heat transfer properties of the media to identify the

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interface of different products. With its unique thermal dispersion sensing capability, the FLT93S monitors the interface of products with similar densities for highly reliable control in separation tanks and other vessels.

FCI's FLT93S can identify the interface between any type of media including foam, emulsion layers, liquids and slurries. The FLT93S Switch's dual switch point option allows one instrument to control two different product interfaces. Two or more switches are used to control product discharge and intake at specified points.

The FLT93S operates over a wide setpoint range in hydrocarbon liquids from 0.01 FPS to 5.0 FPS [0.003 MPS to 1.5 MPS], in gas/air from 0.25 SFPS to 120 SFPS [0.08 SMPS to 37 SMPS] and in water from 0.01 to 0.3 FPS [0.003 MPS to 0.9 MPS]. Level/interface accuracy is ± 0.25 inch (± 6.4 mm), and measurement repeatability is ± 0.125 inch (± 3.2 mm). The standard FLT93S withstands operating temperatures from -40°F to 350°F [-40°C to 177°C], and an optional configuration is available for temperatures from -100°F to 850°F [-73°C to 454°C].

With its thermal dispersion flow sensor the FLT93S features built-in temperature compensation, which ensures repeatable and reliable operation, even in extreme environments, such as those found in the high temperature chemical refining and other process industries. This automatic compensation adjusts the instrument for changes in operating environment temperatures to ensure the trip points will remain accurate and will prevent false alarms or alarm failures to improve end-product quality, to maximize safety and to allow alarms to be set within a narrower set point range.

A wide selection of process connections is available for the FLT93S. The electronic control circuit can be integrally-mounted with the sensing element, or it can be located in a remote location. The standard enclosure is made from a coated aluminum alloy. It is suitable for use in ATEX locations and is rated for NEMA Type 4X (IP66) environments. Stainless steel or fiberglass enclosures also are available.

Fluid Components International is a global company committed to meeting the needs of its customers through innovative solutions to the most challenging requirements for sensing, measuring and controlling flow and level of air, gases and liquids.

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