

Interface Level Detection Switch

Applications:

- Oil/Water Interface
- Gasoline/Water Interface
- Three Phase-Air/Hydrocarbon/Water Interface

Application Background:

Separation Tanks are common in industrial situations where mixtures of water and hydrocarbon products are produced by the process. Pumping oil from the ground and pumping gas from the ground using “fracking” fluids both produced mixtures of hydrocarbon and water that must be separated.

Separation Tanks allow the water to settle to the bottom of the tank while the oil or other hydrocarbon product surface to the top. The valuable hydrocarbon product is drained through a valve located on the tank above the water level. The dump water is drained through a valve below the water level. This is a continuous, ongoing process.

The key is to monitor the interface between the hydrocarbon and water to ensure that the separation is well defined and mixtures are not allowed to be discharged through the wrong discharge valves.

Application Solutions:

There are many interface switch technologies including: manual sticking, manual sampling, sight glass, conductivity probes, floats, capacitance probes, etc. All have proven to work with varying degrees of success. Some rely on operator’s attention and memory. Some have mechanical parts and prone to wear and failure. Still other electronic type probes require conducting fluids or fluids with different capacitance.

A better solution for the interface detection is the Thermal Differential Switch. The TD Switch has two thermal sensing devices (RTD’s) encased in stainless steel tips. One sensor detects the temperature of the fluid while the second has a very small current applied to create a thermal differential above the fluid temperature. The differential temperature between water and a hydrocarbon is different. Therefore detection of the interface is achieved reliably, with excellent repeatability.

With a single process connection into the separation tank either through the side (horizontally) or through the top (vertically) a TD probe is strategically located to optimize the interface point between the two fluids (ex. Oil and water). With the dual channel VersaSwitch product from Delta M Corporation it is easy calibrate one switch channel for the hydrocarbon and the second switch channel for water. Separate relays activate depending upon with the sensor probe is covered by water or by the hydrocarbon.

For full details go to www.deltamcorp.com , click on Products, then Manuals, then VS5100-Dual Channel Switch and see Section 4.4.4 of the manual for Three Phase (Dual Interface)-Model VS5100 VersaSwitch application.