

TX Thermal Dispersion Switch Detects Oil/Water Flow for Discharge Protection

A common problem with mechanical flow switches is the inability to distinguish between liquids, specifically water versus oil. This can be quite problematic when oil flows where water flow is expected. The K-TEK model TX Thermal Dispersion flow switch allows detection and alarm relays for two liquids with up to two set points. This ability allows users to detect water flow versus oil flow, which is critical in water discharge applications. Using the dual switch option, two alarm points can be set on a single switch.

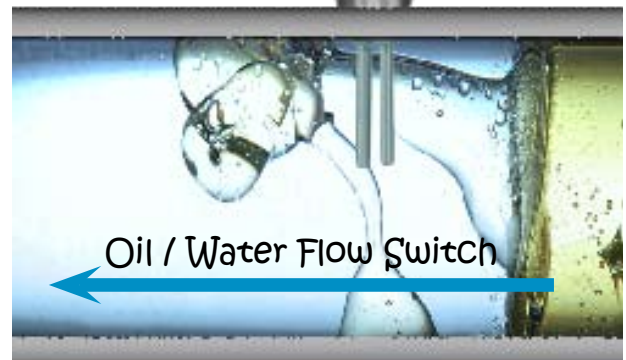
How does it work?

The TX switch can be thought of as a "thermal conductivity" transmitter with set point alarms via a potentiometer. The TX switch is constantly maintaining a temperature differential between the two sensors on the probe. An mV output is generated by the electronics as the heater in the sensor tries to maintain a temperature differential based on the conditions the probe sees, ie. air, water, oil, flowing liquid, etc. *Continued on page 2 . . .*



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TX Thermal Switch



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The mV output is based on how “thermally conductive” the medium is. This mV output is always changing depending on the conditions the sensor sees, and it is proportional to the change in thermal conductivity. Therefore, it is a thermal conductivity transmitter. This unique capability allows the TX switch to detect the presence of a liquid/gas or flow rate of a liquid/gas.

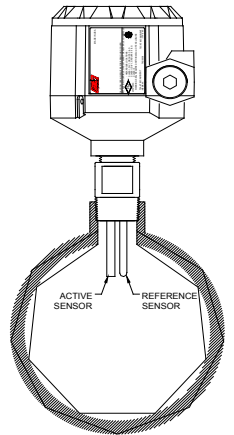
Within the range of the instrument, there will be an mV output in relation to a flow velocity. To set the switch at a specific flow rate, one can simply turn the potentiometer until the LED and relay change state while maintaining the alarm relay flow rate. This sets the potentiometer and alarm to the mV output at the given flow rate. As the flow rate changes, the mV will change. This mV output can be followed with a digital multimeter.

As an example, water flow at 1 FPS (approximately 2 GPM in a 1” pipe) may have an output of 25 mV, while standing water may have an output of 30-

32 mV and oils will be over 40 mV. As a result, one can detect oil flows versus standing water or flowing water because of the high mV output (40mV) based on the oils thermal conductivity. For every flow condition the TX switch will generate an mV output.

The TX switch is unique in that it can detect and alarm at a given water flow rate and alarm at an oil flow rate with the dual switch option. This is invaluable for applications that require a continuous water flow rate, but don’t want oil to flow past the sensor.

For more information regarding K-TEK’s complete Thermal Dispersion product line, please contact Product Manager **Winston Landymore** at wlandymore@ktekcorp.com or Ext. 163.



Customer Training Program



Thank you to ENI Petroleum for scheduling and attending a customer training session at the K-TEK Corp. Factory on June 8. For information about K-TEK’s Customer Training Program or to schedule a training session for your company, contact Marketing Communications Manager **Jill McGee** at jmcgee@ktekcorp.com.

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