



APPLICATION SPOTLIGHT

Wireless Remote Monitoring of Thief Hatches in Oil Fields



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APPLICATION:

Oil fields contain many tanks that store a variety of volatile liquids. Tank hatches provide workers with access to take samples, monitor levels, and/or perform maintenance. Sometimes after use, tank hatches are inadvertently left open or only halfway closed. When ajar, tank hatches (a.k.a. thief hatches) can release vapors into the atmosphere, creating an immediate hazardous condition or a longer-term environmental situation. Stringent regulations governing uncontrolled emissions can result in substantial fines. Workers need a remote monitoring system for tank hatch management to know when the aperture is closed or open at any given moment.

PRODUCT SUPPLIED:

- TiltSCOUT - Intrinsically safe wireless inclinometer for tank hatch detection
- Gateway Stick - Integrated Gateway and High-Gain Antenna
- Two way-mesh network allows wireless nodes to automatically setup without configuration

CHALLENGE:

Cost effectively retrofitting a mechanical device such as a thief hatch with a sensor to monitor its open state can be expensive. Plus, many tanks store dangerous or volatile materials that require an intrinsically-safe sensor control system certified to operate in hazardous locations. Multiple tank hatches, often, must be monitored in one network.

SOLUTION:

The SignalFire Remote Sensing System™ (SRFSS) offers an intrinsically-safe solution that wirelessly monitors tank hatch position to help mitigate environment and safety risks associated with accidental emissions from tanks. Operating as the wireless node of the SRFSS, the TiltSCOUT monitors the angle of the hatch to determine if it is opened, closed or partially opened in real-time.

Attached by a set of screws instead of wires, this C1D1-certified inclinometer continually monitors tank hatch orientation and reports status to a central Gateway that connects to a control center for remote monitoring. With feedback from the angle sensor, operators can now quickly respond to any deviation from a hatch-close position to avoid hazardous emissions. Modbus or digital alarming is available at the Gateway of the remote monitoring and control network.

The maintenance-free, non-contacting three-axis sensor incorporates a 900MHz radio and an internal battery pack that supports long-term operation of five years. Multiple TiltSCOUTs easily integrate with each other into one wireless remote monitoring network to provide feedback on the status of different hatches. Software dashboards make it easy to monitor the output of different TiltSCOUTs located throughout an oil field.