OleumTech® Helps Save $25k per Site for a Global Producer with M2M Automation Solutions

CHALLENGE

A global producer of oil and gas desired to automate their pipeline pigging systems located throughout the Wilburton, OK region. Each site consists of a vessel (slug catcher) that collects produced water along with its pigs and a storage tank where the water is drained to and from the vessel. The producer can greatly benefit from having an automated system since it would drastically reduce the manual labor required to monitor the arrival of pigs and tank levels. An automated system would provide an around-the-clock monitoring of the pigging system so that they can efficiently deploy their field operators to maintain the system and know exactly when to offload the storage tanks.

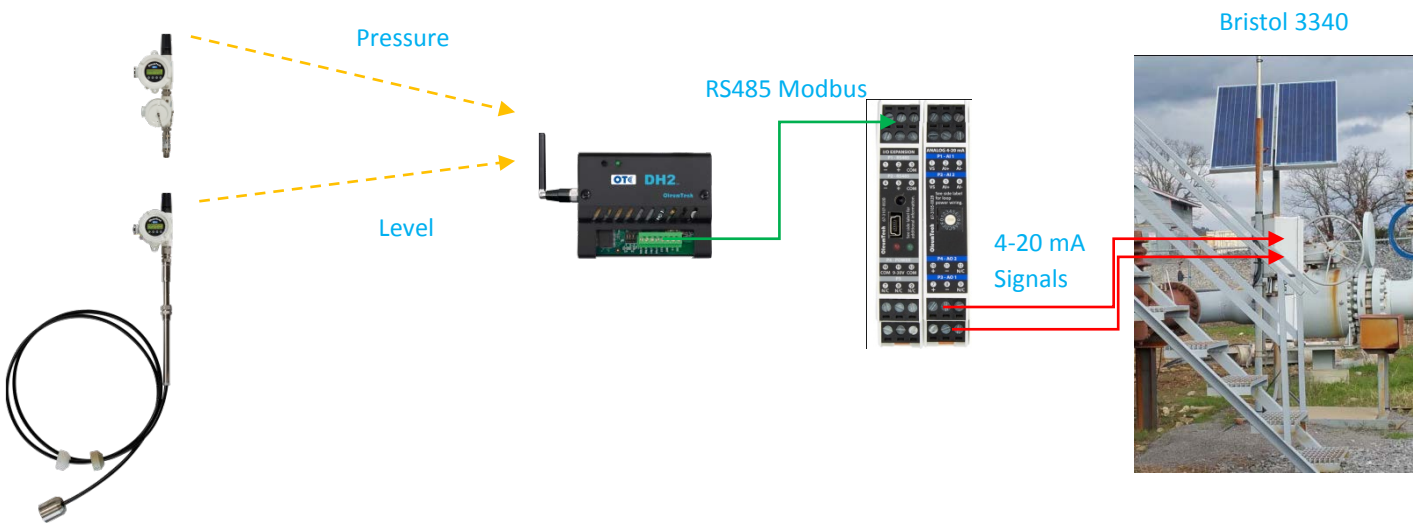
To automate these processes, a pressure sensor is required at the vessel to detect pig arrivals. A high pressure detection would simply mean there is an oncoming pig and low pressure would tell otherwise. Additionally, a tank level gauge is required to monitor the fluid level to prevent spills and perfectly time the offloading schedules of produced water.

The producer faced two major challenges. First, hardwiring sensors was not an option due to the distances between these assets to the RTU, underground pipes, and economics that were involved. Second, the producer did not want to tamper with the programming of the legacy Bristol 3340 RTUs operating at these facilities. Thus, the only possible solution was to output 4-20 mA signals from the sensor to analog inputs that were available at the RTU panel. In the eyes of the operator, getting these two process variables were thought to be nearly impossible or extremely costly to achieve.

SOLUTION

OleumTech® and Thurmond McGlothlin, an OleumTech channel partner, were put to the task of solving this challenge. Once the key obstacles were identified, the team knew right-of-way that this problem can be solved using the OTC Wireless Sensors and I/O Network.

Signal chain:



At the slug catcher: deploy an OleumTech Analog Pressure Transmitter (WT-0900-AD1) with a low power 1-5 V pressure transducer.

At the tank: deploy an OleumTech Resistive Level Transmitter (WT-0900-LL3) with an 11 ft Flex Sensor for ease of installation (quick connect - no wiring involved between Sensor and Transmitter).

Thurmond McGlothlin provided the mounting bracket solution for the sensor installation.

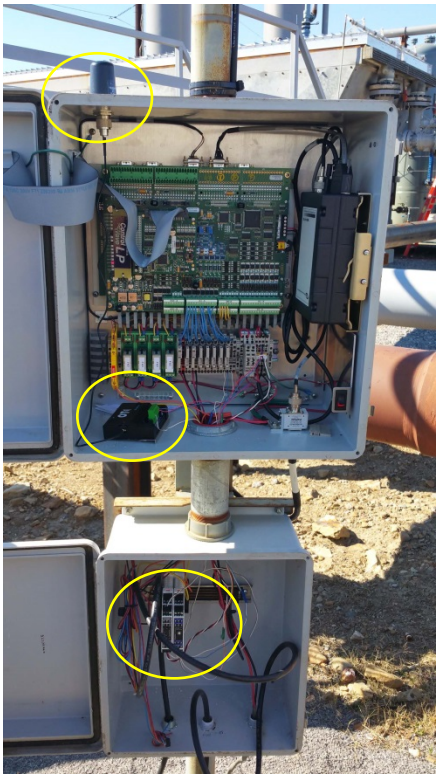
Both Transmitters are self-contained, battery-powered, and rated for Class I, Division 1 use allowing for extremely quick and safe installation and deployment.

At the RTU: deploy an OleumTech DH2 Wireless Gateway (WG-0900-DH2) with the RS485 I/O Expansion System (BM-1000-PM1K) with one 4-20 mA I/O Module (BM-0420-122) that provides 2x AIs and 2x AOs.

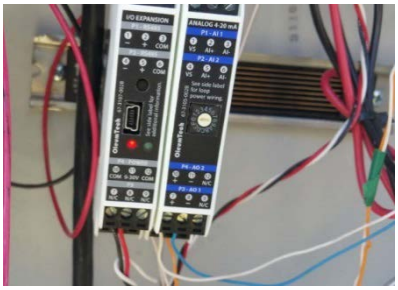
The DH2 wirelessly receives the pressure and level data and converts them to 4-20 mA signals which are then hardwired into Bristol 3340.

These signals are provided to the producer when the pigs arrive, and based on tank level, know exactly when to coordinate with their field operators to transfer the produced water.

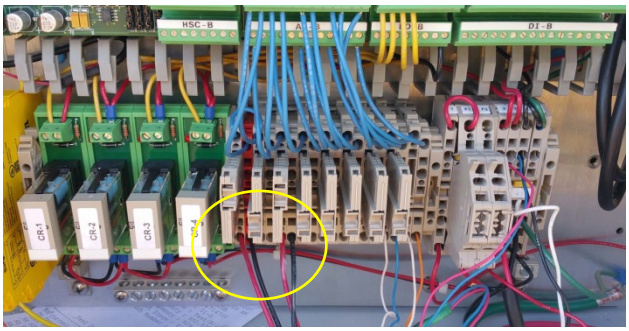
Control Panel Setup



RS485 I/O Expansion System w/ 4-20 mA I/O Module



4-20 mA Signal Hardwired for Monitoring Pressure & Level



SUCCESS

The OleumTech complete automation solution test piloted at one of the producer's most challenging sites. Automating the pigging stations without reprogramming the producer's Bristol 3340 RTU was a success. Instead of taking weeks to implement, OleumTech was able to deploy the full system in less than a day. With a cost-effective wireless and hardwired M2M automation solution, OleumTech helped save more than $25k per site for the producer. Since the success of the pilot, the producer is extremely satisfied and moving forward with using the OTC Wireless Sensors and I/O Network to automate the process on their other sites.