

CASE STUDY

OleumTech® Wireless Solution Improves Operational Efficiency of a Multi-Well Pad - 60 Transmitters Deployed in One Day

BACKGROUND

An Oil & Gas producer in South Texas operates a multi-well pad with 22 wells, 15 separators, and 8 production storage tanks. Their existing data collection and monitoring process involved manually collecting each process variable and recording the data on paper.

The operator sought to mitigate the following issues:

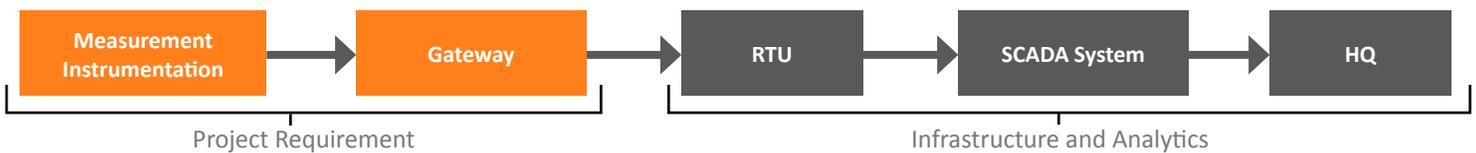
- **Data prone to inaccuracy** – Due to inevitable human error
- **Inconsistent data collection** – Reliance on personnel collecting data at inconsistent intervals
- **Incurring continuous labor cost** – Due to ongoing physical presence required on the well pad and associated travel
- **Risk to safety on-site** – Field personnel working in hazardous environments

The operator required a precise and cost-effective system to streamline the monitoring of all critical assets. With an RTU and SCADA System already selected, the right wireless sensor network solution was required to enable connectivity to their field assets.

In order to bring all well pad assets into a central location, they required wireless measurement instrumentation that would meet their operational needs today and in the future. Their requirements included:

- **Gain around-the-clock monitoring** on the health of their process
- **Improve data collection system** with high accuracy to make well-informed decisions and optimize production while lowering labor burden
- **Cost efficiency** in hardware, deployment, operation, and maintenance costs (avoid trenching and running conduit)
- **High scalability** for accommodating future wells coming online
- **High reliability and safety** to withstand harsh and hazardous environments
- **Modbus capability** to seamlessly integrate into their selected RTU and SCADA system

Process Flow Diagram:



Pictured: Multi-well pad with wireless automation

SOLUTION

After evaluating several competitive wireless options, the producer selected OleumTech for its ability to meet all project requirements: comprehensive product portfolio, high scalability and reliability, and ability to deploy the entire system in one day.

Utilizing the OleumTech OTC Wireless Sensor and I/O Platform, the wireless solution provided full visibility over the multi-well pad with 24/7 remote access to critical data of each asset.

The OTC solution comprised of the following wireless products:

At the 22 Wellheads

- 22 Wireless Analog Pressure Transmitters (AD1)

At the 8 Storage Tanks

- 8 Wireless Resistive Level Transmitters (LL3) with Flex Sensors

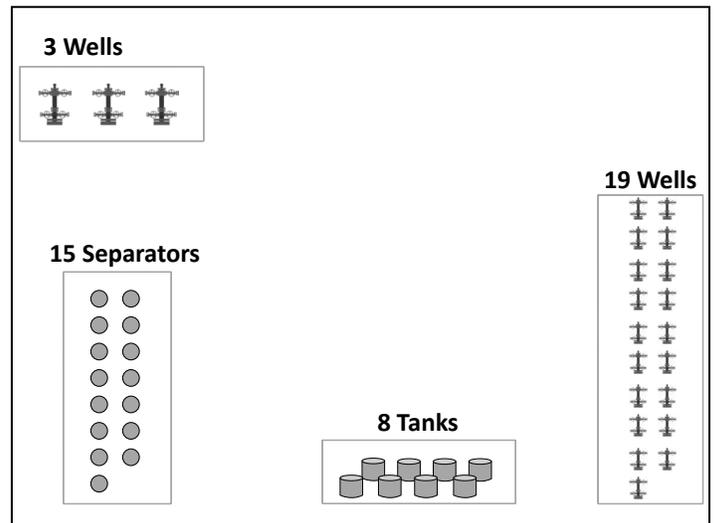
At the 15 Separators

- 30 Wireless Flow Totalizer Transmitters (FT1) (15 for Oil and 15 for Water)

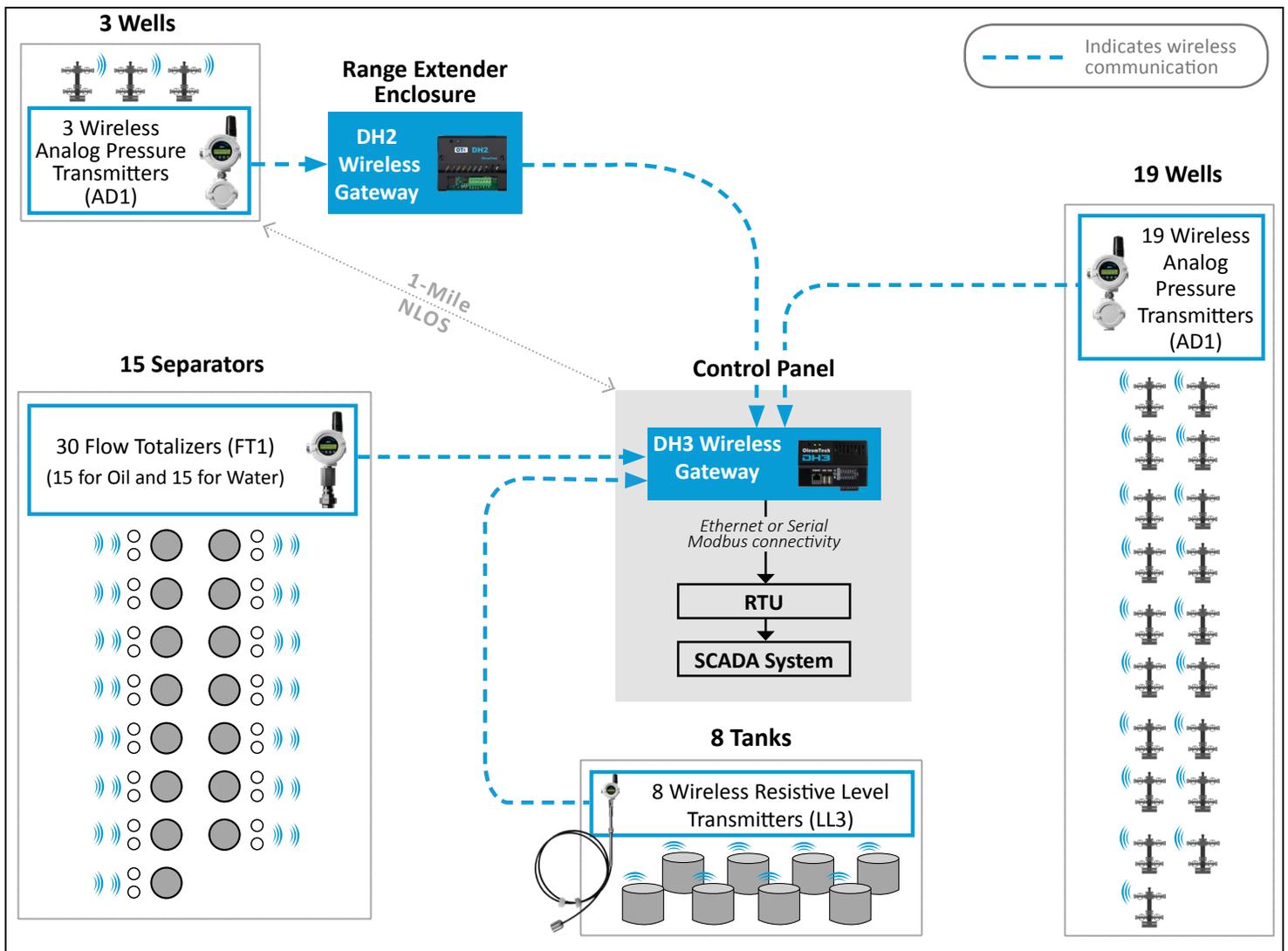
At the Control Panel

- 1 DH3 Wireless Gateway
- 1 DH2 Wireless Gateway
- 1 DH2 Wireless Gateway
- 1 DH2 Wireless Gateway

BEFORE



AFTER



AT THE WELLHEADS



Wireless Analog Pressure Transmitter (AD1)

A total of 22 Analog Pressure Transmitters (AD1), each configured with two pressure transducers, are used to collect the casing and tubing pressure of each well. At 15 minute intervals, this data is then transmitted to the DH3 Wireless Gateway, where it is then polled by the producer's RTU, acting as a Modbus Master.

The AD1's gave the operator 24/7 remote access to each wells casing and tubing pressure in addition to transmitter diagnostics for continuous monitoring and analysis.

AT THE SEPARATORS



Wireless Flow Totalizer Transmitter (FT1)

A total of 30 Flow Totalizer Transmitters connected to 3rd-party turbine flow meters were installed at the separators. 15 were used to monitor the flow rate of water and 15 for oil.

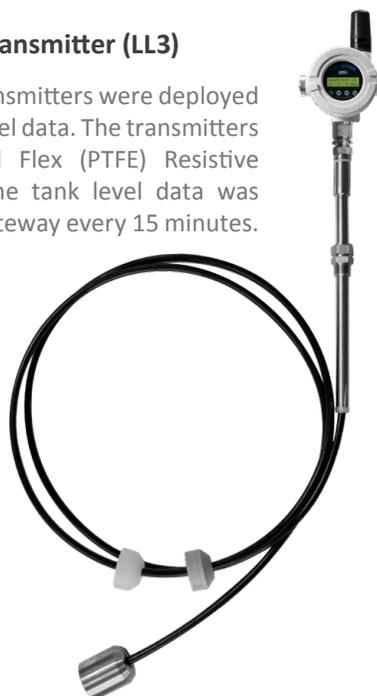
The totalizer constantly reads the turbine meter pulse counts, then on 5-minute intervals, reports that data in terms of instantaneous flow rate, today's volume, yesterday's volume along with transmitter diagnostic data to the DH3 Gateway, delivering greater visibility to optimize each separator.

AT THE STORAGE TANKS

Wireless Resistive Level Transmitter (LL3)

8 Wireless Resistive Level Transmitters were deployed at the tanks to collect tank level data. The transmitters used OleumTech's patented Flex (PTFE) Resistive Sensors with dual floats. The tank level data was wirelessly sent to the DH3 Gateway every 15 minutes.

Installed in minutes. The OleumTech sensor with quick connect requires no wiring, eliminating error and hassle. The OleumTech level solution provides the ability for the producer to monitor product level, interface level, and temperature using a single, high precision Resistive Level Sensor.



AT THE CONTROL PANEL



DH3 Wireless Gateway (DH3)

The DH3 Gateway serves as the primary data collection point, collecting critical process data from all Wireless Transmitters and the DH2 Gateway.

The data collected is stored in its 1920-point Modbus register holding table. The RTU was connected to the DH3 by Ethernet and polled the DH3 via Modbus TCP, making that data available to the SCADA host system.

Providing both event-based data logging and time-based trending/logging capabilities, the producer was able to centrally and securely collect actionable data for analysis.



DH2 Wireless Gateway (DH2)

To collect data from transmitters at 3 wells with non-line-of-sight (NLOS) to the control panel 1-mile away, a DH2 Gateway is configured as a peer-to-peer device with the DH3 Gateway.

The DH2 Gateway acted as a range extender that provided the operator a secure and cost-effective avenue to migrate data from remote wells to the primary collection point.



Pictured: OleumTech DH3 Gateway in the control panel

CONCLUSION

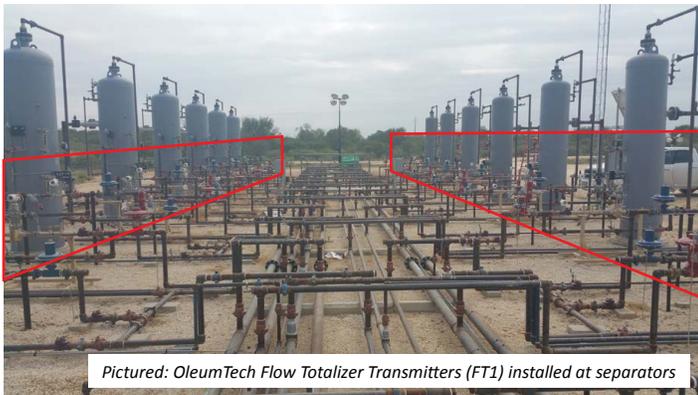
With remote access to accurate, near real-time data at each well, tank, and separator, OleumTech's wireless solution completely changed the ball game for the end user, which ultimately helps them make better decisions to improve operational efficiencies to increase profitability.

Reduced Labor and Operational Costs

The OleumTech wireless solution eliminated the need for any digging, permits, running conduit and wire, and reduced the frequency of field technician visits. As a result, associated labor and operational costs were substantially reduced.

Rapid Deployment

The entire set of 60 OleumTech sensors/transmitters and 2 gateways were installed and deployed in one day. Something that is impossible to achieve with a hardwired system.

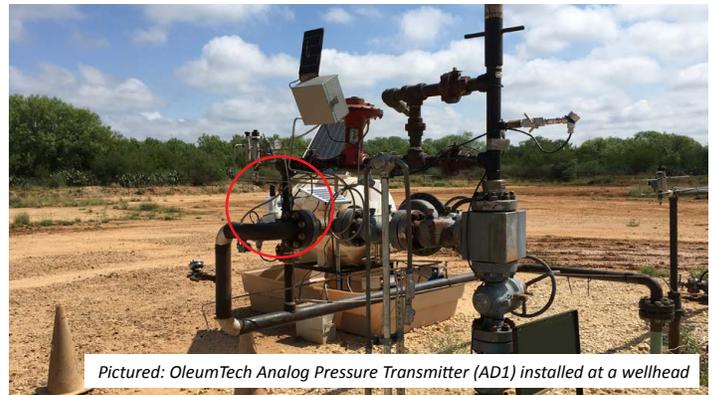


Increased Visibility and Data Quality

With 24/7 access to critical data from OleumTech wireless transmitters and gateways, the operator was able to optimize well pad performance by using the data to identify trends, mitigate risks/errors, remotely confirm the state of assets, moderate production schedules, and much more.

Improved Safety

By leveraging powerful wireless instrumentation, ongoing manual data collection tasks by field personnel were eliminated.



LEARN MORE

For more information or for help solving automation challenges, please contact an OleumTech representative today! 1.949.305.9009 | sales@oleumtech.com