

Application Profile: Satellite Communications for Remote Oil & Gas Flow Monitoring

Customer Situation

One of the world's largest publicly traded petroleum companies based in Latin America was operating its remote gas wells at less than peak capacity. In part, operational inefficiency was evident in the daily operations where technicians drove to gas well sites multiple times a day to read pressure, volume of gas being extracted and check the general health of the equipment.

This workflow coupled with the lack of cellular coverage in remote areas where gas wells are located prevented technicians from transmitting data to appropriate analysts in real time. Instead, the data would be transmitted upon arrival back to headquarters, 6 or more hours later. This delay inhibited the ability to maximize gas production. The company needed a cost effective solution that would:

- Automate gas well reading
- Transmit data in real time

- Improve production with real time remote monitoring and control of valves
- Use human resources more efficiently
- Minimize the required number of trips to gas wells located in remote and dangerous areas

SkyWave Solution

Evaluating the company's goals and processes, the recommended plan identified maximizing the efficiency of data collection, optimizing the gas production process and improving worker conditions and workflow. The plan included a standardized platform using SkyWave products to enable real-time monitoring for all sites, regardless of communication coverage. The solution also interconnected with flow computers to optimize gas production.

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The SkyWave-based communication solution includes a compact satellite C1D2 terminal certified for operation and resistance to chemicals found in hazardous environments. The SkyWave satellite terminal connects to the RS-485 port on flow computers and uses the Modbus protocol to read/ write data and control operations.

Results

The features of the SkyWave-based solution offer multiple benefits, meeting and surpassing the original requirements of the client.

Operational Efficiencies

The SkyWave satellite terminal increased production by more than 30 percent.

- Vital data is constantly transmitted: instantaneous high and low pressure and flow; average high and low pressure and last hour volume
- Information is sent over satellite once an hour or immediately in case of variation out of the range pre-defined by the customer
- Pressure, temperature and flow information from gas wells can be read regardless of where they are located
- With real-time data and control, the flow computer can use short range wireless communication to open and close wireless valves at the most favorable operating times

About SkyWave

SkyWave Mobile Communications is a global provider of wireless data communications for the Machine-to-Machine (M2M) market. SkyWave's products provide dependable communication, tracking, monitoring and remote management of fixed and mobile assets. Over the past 15 years, SkyWave has designed, manufactured and shipped more than 550,000 Inmarsat-based satellite terminals to customers globally in the transportation, maritime, oil and gas, utilities and government sectors. For more information, please visit www.skywave.com.

- The SkyWave terminal provides redundancy and emergency shut off in the event that the flow computer fails to manipulate the valves

Workflow Improvements

Site visits decreased from two times a day to only two times per month

- Regular diagnostic information communicated via satellite eliminates the need for manual data collection and immediately draws attention to degrading equipment and necessary maintenance and performance visits
- Maintenance visits are more productive and most often result in a first time fix when diagnostics can be performed prior to dispatching a technician and appropriate equipment and or parts can be sourced
- The company now reduces risks and increases employee safety by minimizing the number of visits to remote areas

Another very important feature of the solution is the user interface. Analysts and technicians are now able to upload their proprietary maps of gas well locations. Then, using simplified or detailed views (including color coding), they can view which gas wells are operating at peak efficiency and when readings are incomplete or not transmitting properly enabling quick intervention and fix.

Benefits of SkyWave-based Satellite Monitoring:

- Receive production information from gas wells anywhere in real-time
- Poll production registers in flow computer for specific information
- Trigger flow computer to open/close valves
- Use satellite terminals as a backup to open/close valve if flow computer fails
- Move portable system anywhere wellhead goes

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