

# Kuwait Oil Company Improves Well Performance and Reduces Field Visits with *WirelessHART* monitoring

## RESULTS

- Significantly reduced manual monitoring costs
- Install time reduced from one week per wellhead to two wells per day
- \$1 million saved by cutting installation costs cut in half, \$3000 per each of 357 wells



## APPLICATION

*WirelessHART* remote monitoring systems on 357 wellhead to improve upon existing data gathering procedures.

## CUSTOMER

Kuwait Oil Company (KOC)

## CHALLENGE

For the first few decades of oil production, Kuwait Oil Company relied on the pressure in underground formations to extract oil. But by late 2010, KOC started depending on artificial lift stations to produce the required pressure, with the number of lift units increasing to 357.

KOC needed to add remote monitoring systems on these wellheads. Existing data gathering procedures required frequent trips to each wellhead to record data, and manual data entry to get this information into production optimization systems.

Manual operation and monitoring of such a high number of wells began to be very tedious, time-consuming, and hazardous to field personnel. Optimizing production was almost impossible due to insufficient instrumentation at many sites, and lags in data collection and subsequent data entry. Both of these delayed real-time surveillance and monitoring.

Real-time automation was first introduced as a solution in early 2012. KOC started with a few wells and used the information from these wells in basic optimization applications to demonstrate value.

Although these measurements provided tremendous value, early implementations indicated the average time needed to install the necessary wired instrumentation was one to two weeks per well, much too long given the hundreds of wells requiring upgrades.

## SOLUTION

KOC decided to adapt wireless technologies and preconfigured software because they felt it would increase standardization and get production online faster. *WirelessHART* instruments and related

***New, online WirelessHART data enabled Kuwait Oil to optimize wellheads, improve production planning, and reduce operating costs. Health and safety were also improved because of reduced required field trips.***

## OIL & GAS

components from Emerson™ were selected because of KOC's prior positive experience with other Emerson products and services, and because of the investments Emerson made to work as a partner on projects.

All the instruments at each wellhead are connected to an Emerson wireless Gateway, and the Gateway is connected back to the central control and monitoring room via Wi-Fi® and WiMAX networks. An Emerson RTU is installed at each site to provide the required local monitoring and control, and this unit is also networked back to the central control room via the Gateway.

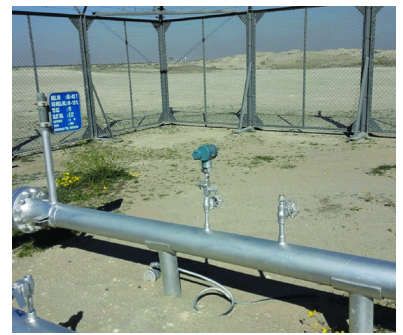
With wireless technology, instrument installation requires no signal wiring, and only some of the wireless instruments require power wiring. Each wireless instrument is connected back to the Gateway through the *WirelessHART* mesh network. This is in contrast to a traditional wired installation, where each instrument requires power wiring, and signal wiring must be run from each instrument to an RTU Gateway.

By eliminating most of the required wiring and corresponding infrastructure, installation time was reduced from one week per wellhead to two wells per day. Installation costs were cut in half, saving \$3000 per well. HSE risks were also reduced as much less excavation and wiring work is required in hazardous areas. Data accuracy is in the range of 99.9 percent, more than sufficient for the application, and data availability is also high.

The existing SCADA system has been expanded to accommodate all of these new wireless points of measurement. SCADA data management software tools provide easy visualization, trending, and analysis—turning raw data from wireless instruments into actionable information—which KOC uses to improve production planning. Now that the surveillance foundation is in place, consideration is being given to utilizing diagnostic tools to confirm instrument health and data validation.

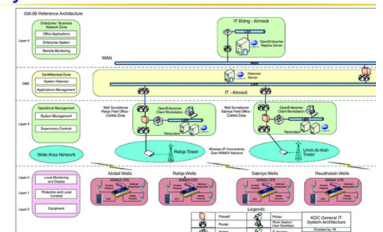
One benefit quickly realized is a reduction in troubleshooting time as technicians have remote access to a wealth of data regarding the operation of each well. This allows them to diagnose problems quickly, and to arrive at the site with all the tools needed to address any issues.

A wireless mesh network infrastructure is now in place at each wellhead, making installation of additional *WirelessHART* instruments a quick and inexpensive proposition should the need arise to install additional points of measurement.



*Wireless transmitters provide remote access to a wealth of data regarding the operation of each well.*

### System Architecture



*Data gathered by WirelessHART instruments at each of the 357 wellheads is used by the SCADA and other systems to optimize production, reduce downtime and improve safety.*

## RESOURCES

### Emerson Industrial Wireless Technology

[emerson.com/wireless-technology](http://emerson.com/wireless-technology)

### System Engineering Guidelines IEC 62591 WirelessHART

[emerson.com/system-engineering-guidelines](http://emerson.com/system-engineering-guidelines)

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