

# Look no wires!

## Automated monitoring solutions

Automated monitoring solutions, are increasingly being used to gather business critical data in process plants, to help cost-effectively meet legislative requirements and ensure plant safety as well as to increase productivity.

**A** wireless automated monitoring system has enabled BP to meet the latest regulations for storage and handling of flammable liquids – and at a much lower cost than with traditional wired technology.

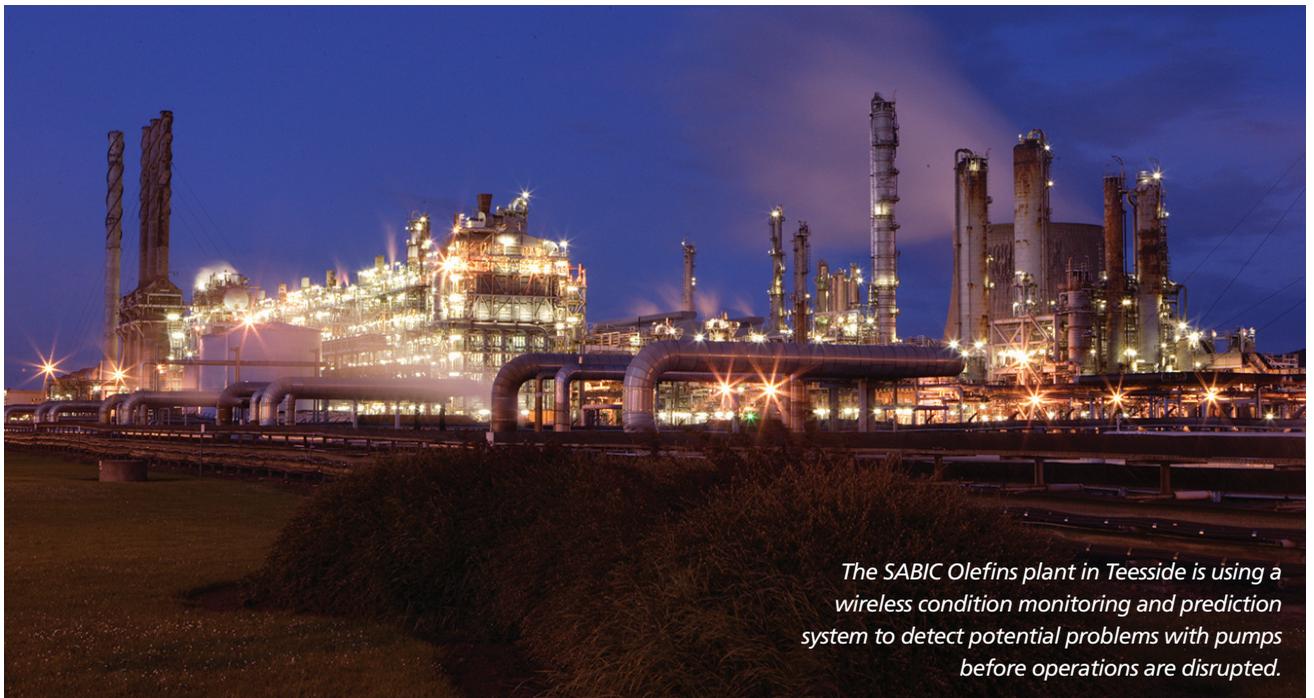
The company is using Smart Wireless technology from Emerson Process Management as part of a leak detection system that helps enhance safety at its chemical production centre in Geel, Belgium. The wireless technology provides an affordable way to gather information from hydrocarbon

sensors that continuously monitor storage tanks, valves and pipelines throughout the plant, and to deliver that information to the control system to notify operators of any leaks.

“BP is committed to reducing waste, emissions and discharges and ensuring that its production facilities, such as BP Geel, meet the highest standards of health, safety and environmental performance,” said Bob Karschnia, vice president, wireless at Emerson Process Management. “By combining wireless technology with hydrocarbon sensors, BP has been able to expand the view the operators have and enhance its existing leak detection practices, helping

to improve site safety.”

Leak detection on large sites can be difficult and expensive. BP operators were making twice-daily inspection rounds using portable leak detectors. However, stricter government regulations required continuous monitoring. A traditional online monitoring solution would require extensive cabling, together with the associated I/O, signal converters, and installation costs. The wireless system has solved these problems by integrating sensors that detect liquid hydrocarbons with Emerson’s Smart Wireless technology to enable cost-effective liquid hydrocarbon leak



*The SABIC Olefins plant in Teesside is using a wireless condition monitoring and prediction system to detect potential problems with pumps before operations are disrupted.*

detection even from remote locations on the site.

Based on IEC 62591 WirelessHART communications, Emerson's Smart Wireless technology eliminated the need for new instrumentation cabling and associated trenches and ducting, saving an estimated 50% of the cost and 90% of the time required to install a conventional wired system.

The leak detection system uses Emerson's Rosemount 702 wireless discrete transmitters in combination with Pentair Fast fuel sensors and TraceTek sensor cables. When one of the sensors detects xylene or benzene, the associated transmitter wirelessly transmits an alarm signal to a Smart Wireless gateway that relays it to the control room, where operators monitor and record the status for accurate incident reporting and time stamping in the host control system.

The TraceTek sensor cables are attached to the concrete base surrounding tanks so that leaks from the tank wall can be detected. They are also laid underneath connecting piping and draped around the tank flanges and manholes. The Fast Fuel sensors have been installed to detect hydrocarbons in sump wells and pump skids.

### Detecting pump problems

The SABIC Olefins plant in Teesside in the UK is using a wireless condition monitoring and prediction system to detect potential problems with pumps before they disrupt normal operations. This is helping to reduce the risk of unexpected failures that can result in lost production as well as safety and environmental incidents.

The pumps are installed on the plant's Olefins Cracker, which is used to produce ethylene, propylene, butadiene and gasoline products. SABIC Teesside previously collected and analysed vibration data for these pumps manually, but potential problems could occur between readings, leading to higher maintenance costs and reduced plant availability.

"We wanted to improve the



monitoring of critical pumps at the Olefins plant in Teesside," said David Hambling, instrument electrical technical engineer at SABIC UK Petrochemicals. "By installing wireless vibration transmitters we can now continuously monitor vibration levels and detect faults before a failure occurs."

Emerson's online vibration monitoring system has detected a number of problems that could have resulted in equipment failure, including a chipped tooth on a gearbox gear and an impending bearing failure. Identifying and rectifying potential problems earlier helps minimise pump failures and maintenance costs.

In addition to measuring overall vibration and temperature, the CSI 9420 wireless vibration transmitter includes PeakVue technology, which detects faults that cause impacting, friction, and fatigue, particularly in gearbox and rolling element bearings. The

monitoring system takes basic readings every 30 seconds and an in-depth, full spectrum analysis once every day. By tracking rising vibration levels, SABIC Teesside can detect developing faults and improve maintenance scheduling.

The plant's existing Emerson Smart Wireless network made installation of the wireless vibration transmitters simple, enabling vibration data to be sent to the process control system. The established mesh network also makes it easy to add or relocate wireless-enabled devices for additional process information from remote or difficult-to-access locations.

"Wireless monitoring has shown itself to be a valuable tool in our condition monitoring armoury," concluded Hambling. "Predicting failures in gearboxes of this type can make considerable savings on any subsequent turnaround and help to keep equipment available."