

Maintenance Cycles on Critical Instruments Extended Through Wireless Monitoring at Top U.S. Petrochemical Plant

RESULTS

- 1,400 hours of instrument maintenance eliminated over three-year period
- \$125,000 saved by eliminating or reducing preventive maintenance



APPLICATION

Critical field instruments and control valves are monitored continuously for signs of degradation through a combination of wireless and asset management technologies.

CUSTOMER

LyondellBasell's Channelview, Texas Complex is one of the largest petrochemical facilities on the Gulf Coast, covering an area of almost 4,000 acres and employing a workforce of more than 1,900 people about 20 miles east of downtown Houston.

CHALLENGE

A recommendation by LyondellBasell's corporate Instrument and Analyzer Technology Team for plants to use Emerson's AMS Device Manager predictive maintenance technology wherever possible presented a challenge at the Channelview North facility where two olefin units are controlled by non-Emerson distributed control systems.

Integration of AMS Device Manager could have been difficult, according to Jerry Thompson, I&E Maintenance Specialist at Channelview North. The dissimilar systems can be integrated using multiplexers, but that solution is often time-consuming. Thompson was anxious to begin using AMS Device Manager to monitor the health of critical instruments and control valves in order to extend their preventive maintenance (PM) cycles.

SOLUTION

A small seed project was initiated at Channelview North to determine if Emerson's Smart Wireless technology could be a satisfactory alternative for obtaining diagnostic data from smart field devices

"If you have the latest instrument technology and AMS Device Manager to monitor them, you don't even need preventive maintenance – or you can push it out from four to seven years."

Jerry Thompson
I&E Specialist
LyondellBasell, Channelview North

and other equipment. The test project proved wireless communications to be very well suited for use in established plants where legacy control systems offer operators and maintenance reliability staff minimal information on the health of critical field devices.

Two mesh networks using the *WirelessHART™* communication standard were established in the BT Unit by attaching Smart Wireless THUM™ Adapters to 65 instruments and digital valve positioners. The THUM adapter can be retrofit on any existing two or four-wire HART device to provide continuous transmission of diagnostic information generated by the device. Each THUM Adapter not only transmits data wirelessly but also acts as a router for other THUM Adapters on the network, passing transmissions along until they reach a Smart Wireless Gateway. If there is an obstruction, the self-organizing network simply finds an alternate path.

Data received by the two gateways is passed via Ethernet to the AMS Device Manager predictive maintenance software located in the BT Unit I/O room. Device information is viewed on a client PC in the instrument shop where an instrument technician checks the AMS Device Manager Alert Monitor every day looking for signs of degradation or lagging performance. If a change of status is noticed, supervisory personnel have plenty of time to determine what type of maintenance or repair is necessary and when to do it.

A total of 75 critical transmitters and valves were retrofitted with THUM adapters and checked daily to ensure satisfactory performance. Monitoring for alerts on a daily basis means there is much less chance of something happening without warning. The resulting “comfort level” has enabled Lyondell to cut routine PMs on these devices from monthly to once every three years, eliminating multiple PM cycles. Since every scheduled PM takes a minimum of four hours to complete, the plant eliminated 1,400 man-hours of work. Thompson says great savings can be realized by extending PM schedules on hundreds of other instruments and control valves.

“Our next goal” Thompson said, “is to get the wireless diagnostic data onto our process control network so control room operators, plant engineers, and managers can see these points at any time.”



“We forged a new frontier by monitoring our installed instrument base using wireless, and we proved it to be a useful technology.”

Jerry Thompson
I&E Specialist
LyondellBasell, Channelview North

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