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The advantages of this alternative to costly hard-wired installations are hard to ignore.

Imagine a plant where it's possible to monitor tank levels, heat tracing, flow meters, conveyor belt alignment, pump performance and scores of other equipment without installing additional wiring. Twenty years ago, that suggestion would have met stiff resistance. But today's wireless technology has brought us productivity solutions with robust and proven alternatives that allow process monitoring without ever having to leave the control room or install additional raceways.

The future is now

Recent advancements in wireless technologies can address many of the difficult challenges inherent in traditional plant maintenance. One area that has seen real benefits from improved wireless technology is the monitoring of critical components throughout an industrial plant. In fact, with the growing list of wireless solutions that can effectively eliminate traditional methods of hard-wired monitoring installations, staying abreast of the most vital parts of an industrial operation has never been easier, even in harsh and hazardous environments.

Industrial wireless monitoring systems utilize comprehensive sets of transmitters, receivers, transceivers and interface gateways to provide flexible, reliable and secure monitoring capabilities for a host of industrial applications. Today's wireless systems can accommodate hundreds of inputs and outputs, as well as high data rates, over multiple industrial protocols. Using event-driven communication diagnostics and radio bands that are particularly advantageous for instrumentation applications, these wireless systems tie into PLCs and networks, even in harsh and hazardous environments.

By eliminating the increased cost and geographical challenges associated with more traditional

hard-wired monitoring installations, cutting-edge wireless technology offers a unique blend of convenient, economical features, and provides the same quality and dependability that is expected from traditional hard-wired systems. Simple to use and simple to install, wireless monitoring offers a vast selection of digital, analog and pulse inputs that minimize the amount of radios per system, while adding to overall cost savings. Plus, each device can usually be configured for exception reporting—*only transmitting when a signal value changes*—with messages delivered in blocks to compress signal information. This minimizes bandwidth usage and, if using battery power, preserves critical battery life.

A closer look

Picture a tank farm in a remote area of an industrial plant. An operator needs to confirm that a critical motor-operated valve (MOV) has indeed opened or closed so that a potentially hazardous situation can be avoided. With traditional methods of tank monitoring, an employee would make a 20-min. trip across the facility to inspect each tank and report the status back to the main control room. Alternatively, sensors could be hard-wired with cable or conduit from each tank to the control room. Considering the realities of today's business environment—*in which it's safe to assume no industrial facility is operating with unlimited manpower and budget*—this process can be quite pricey and inefficient.

Processes such as this can be enhanced within a facility by tying one or more instruments or pieces of equipment to wireless I/O. Operators can monitor and confirm MOV activities from the control room by installing a simple transmitter to the MOV that communicates with a receiver. Best of all, wireless solutions are designed to grow with you—*more than 100 units can be added at any time to communicate with the control room through the same transceiver*. If the information needs to be communicated to a PLC using an industrial protocol such as Modbus or Profibus, gateways are available to receive and interface with seven different protocols.

The result is direct cost savings (i.e. time savings for individual employees or avoiding the cost of the hard-wiring option, including significant savings on the cost of wire, conduit or cable, supporting structure and labor).

Where do you fit?

Wireless technology has already begun saving time and money for industrial facilities facing these types of challenges. Ideal applications for the deployment of one-way-wireless-monitoring technologies include general plant monitoring, wireless connection of flow meters or energy meters, monitoring of storage tanks, wireless alarms for power faults and monitoring of cathodic protection on pipelines. Applications for two-way wireless communication include the

interconnection of large numbers of signals in a process plant, the wireless connection of sensors/instrumentation/process signals (in pump stations, sub-stations, pipeline regulator stations, etc.) to a simple remote terminal unit and the possibility to immediately respond to process functions or remostely reset critical limits.

For applications where security is vital, most wireless-monitoring systems operate with high-security data encryption and frequency-encoding algorithms that protect against industrial espionage or malicious network hacking.

A variety of complementary customer-service offerings typically accompany any industrial wireless installation, ensuring complete satisfaction with the technology. In addition to a comprehensive program of application assistance and product training for operating staff, companies such as Cooper Crouse-Hinds will conduct custom site assessments for all qualified leads.

The goal is not to make users feel as though they have to choose *between* hard-wired or wireless technologies. Wireless simply represents a way to implement communications connections for monitoring or control in facilities where hard-wiring is geographically challenging, impractical or just too expensive. The issue here is really about solving yesterday's problems with today's technology and preparing industrial facilities for the challenges of tomorrow. **MT**

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