

What the Future Holds for Wireless

There are claims from certain quarters that wireless is one of the most under-utilized technologies in plants. The advocates of wireless technology are dead certain that wireless offers countless benefits that are not being exploited by the downstream sector. This article attempts to vindicate these claims by reviewing the developments in the technology and the obstacles to adoption, as well as drawing on the experiences of plants that have employed wireless technology.

Less than a decade ago wireless technology was performing routine and mundane chores as opening garage doors, unlocking cars, changing TV channels, and letting us communicate with a variety of awesome gadgets. While an increasing number of applications were trying to subscribe to wireless technology the automation and control industry was shying away from it. Advancements in technology, especially from wireless proponents such as Honeywell, Emerson and Invensys, encouraged wireless use in the sector, although even they advised using the technology not for critical control but for monitoring and non-critical control in places where it was difficult to run wires or where you'd rather not send people if you didn't have to. The niche for wireless was in areas that would help eliminate the cost of wiring but not be ultra-critical to the process, such as emissions monitoring, coal and ash handling and water treatment.

How much has that changed over the decade? Has the technology evolved to the point where they can be used in situations which require critical control? Has the technology developed to the point where the difference transcends the mere presence of wires? That is what this article aims to determine.

The Possible Gains

At present industrial automation is one segment of the global economy that has yet to adopt wireless technology. In the oil and gas downstream sector owners continue to operate their plants mostly with older, hard-wired control systems. A typical process facility will have well over 1,000 measurement points,

none of which currently uses wireless technology, and many additional points that go unmeasured because of the cost of running wires to each one.

Many of the devices and instruments in a plant actually collect and maintain intelligent digital data about their own performance, individual processes, or the overall operation of a plant. That data can be extremely valuable. For example, it can help managers predict when a problem might occur that would force a plant shutdown. Unfortunately, most of this data is trapped in devices. There is no easy way for plant operators to access the treasure trove of data and put it to good use.

How Wireless Standards Are Changing the Landscape

The rapid adoption of wireless technology is being driven by the emergence of new wireless standards such as ISA100 and WirelessHART. These two standards currently under development are aimed at industrial wireless sensing solutions.

The HART Communication Foundation (HCF) is working on the WirelessHART standard, which is aimed at leveraging the information collected by the nearly 25 million installed HART devices. HART is a very popular industrial protocol, and WirelessHART will be geared specifically to the process industry, with a goal of enabling reliable, robust, and secure wireless communication in real-world industrial plant applications.

The second standard is ISA100, which will support multiple protocols, including HART, as well as process and factory automation applications.

The two groups are cooperating, to ensure continuity and uniformity with wireless standardization.

Today's typical wireless deployment in an industrial setting usually requires the purchase of proprietary wireless instrumentation and systems from a single vendor. The headaches accompanying this strategy include dependence on that vendor, added complexity for plant staff, and escalated project and maintenance costs. A goal of both standards is to alleviate these headaches by allowing vendors to build infrastructure products that work with products from other vendors and with what is already installed in the plant. When wireless retrofit products are based on open standards, they will work with installed systems and devices and enable a lower-cost, lower-risk way to encourage more widespread use of wireless sensing.

It is widely understood in the industrial world that relying on degrading, failing, or poorly configured systems leads to higher operating and maintenance costs. Well-designed wireless retrofits that comply with the emerging wireless standards will bring new levels of productivity, uptime, and overall superior performance to the generation industry. Wireless applications that transcend any specific industry segment are already being deployed.

For example, operator mobility is enhanced with handhelds and tablet personal computers that are wirelessly connected to plant control systems, allowing operators and maintenance personnel to roam their control room; wireless video adds process and plant security; and a host of new real-time location services for plant assets and people are just around the corner.

To take advantage of these emerging applications requires a secure and robust industrial wireless infrastructure. The latest technologies and emerging standards are enabling implementations in a highly secure and robust fashion across the enterprise. It is critical that wireless communications, like any wired networking, be properly en-

gineered, constructed, and maintained in order to perform reliably. This is a point that cannot be stressed enough. Every single expert on wireless technology has gone to great lengths to impress the importance of this factor as it was due to this one single factor that the wireless network has failed in most instances.

Once a secure and robust wireless infrastructure is constructed, it must be maintained and managed to keep it functioning correctly. Wireless networks, although offering huge savings versus their wired counterparts, by their very nature require more management. Maintaining security keys, responding to incidental or malicious interference, and managing rapidly changing technology and standards are just a few of the functions that require an expertise not necessarily available within the local IT organization of the typical power plant.

Many organizations are finding that it's more cost effective and more secure to contract out the real-time management and optimization of their wireless infrastructure. Unfortunately, many organizations simply allow their wireless networks, which contain multiple technologies, protocols, and frequencies, to grow in an ad hoc fashion. That is a sure way to have an unsuccessful wireless experience.

As the demand and cost of energy rises, energy companies are investing billions in exploration and production to meet the world's energy needs. Automation technologies play a key role in making oil and gas extraction economical. Wireless also plays a key role as more remote locations are explored.

Oil and gas production, refinery and distribution systems benefit greatly from spread spectrum technologies as part of PLC, DCS and SCADA communication systems. Wireless applications include communications to very remote sites devoid of phone/cellular service, cost-effective reliable alternative to leasing phone lines, significant cable installation cost savings at tank farms and refineries, faster installation and dismantling of drilling rigs and quicker data collection and monitoring tools for mobile workers. In addition to solutions for SCADA and PLC/DCS automation, wireless may also be used for remote video surveillance for security and process control monitoring as well as voice-over IP (VOIP).

Demand for wireless technology is growing in this typically conservative industry due to needs for plant efficiency and competitiveness. Given the WirelessHART and ISA100 standards coming closer to fruition, end-user concerns over security, reliability, and interoperability will abate, and adoption rates are expected to increase. In a recent analyst briefing, Venture Development Corp. took the position that wireless growth is being driven by monitoring and measuring applications, as well as the prospect of seamless integration with existing devices and networks.

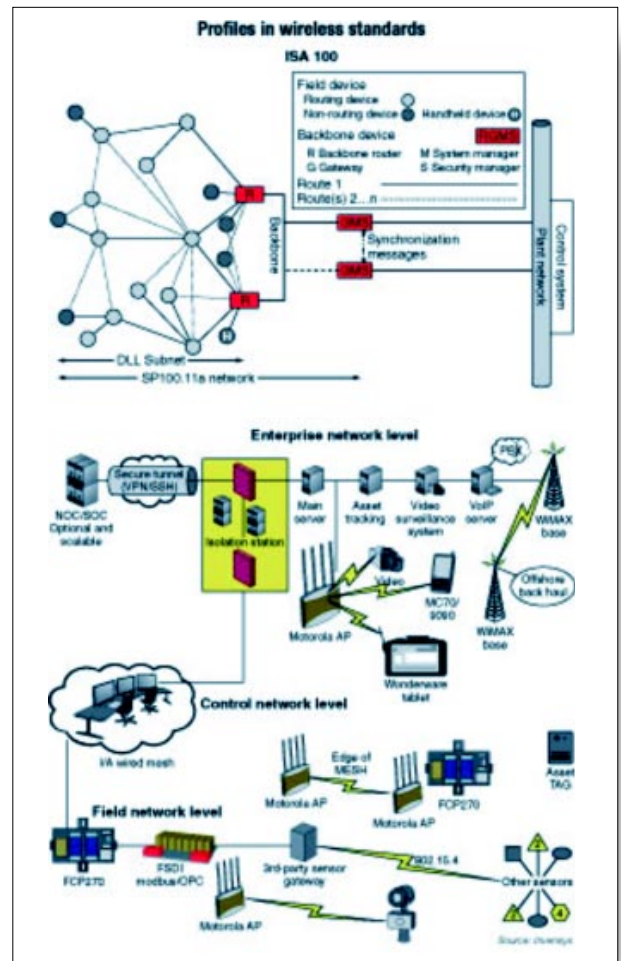
What's Stopping Wireless?

It is important to determine issues which are hindering more widespread adoption of wireless technology. At a recent roundtable wireless experts discussed this topic at length. Going by the flow of the discussion, it seems that although technical and attitudinal obstacles to this emerging technology remain, many are being systematically addressed and overcome.

One obstacle suggested by said experts was a sense of risk related to communication failures. Some users are still sceptical of the reliability of the signals. Another thought was that the discussion has largely moved from technical and reliability issues to disagreements over system ownership, meaning that, from the perspective of plant managers, IT groups tend to latch onto wireless more than other plant level technologies, and then want to exercise control or at least have influence over deployments. IT people know what wireless is, as opposed to something like a fieldbus, and they're concerned that unmanaged experiments in the plant could interfere with their systems.

While security is still an important concern, the consensus among current and potential users was that technical solutions are possible and are already being implemented. While wireless Ethernet (Wi-Fi) may present an attack surface that hackers understand, instrumentation-level communication would be difficult to penetrate, although the possibility remains. There were questions about use of wireless technology with safety systems and specific safety devices, such as gas detectors. The panel recoiled somewhat at the thought of using wireless with ESD (emergency shutdown) related

equipment, but was willing to consider things like gas detectors. One expert made a critical point about safety equipment: You have to ask yourself how you would know if it stops working. If a device isn't supposed to do anything until there is a problem, you have to be able to verify that it is actually functioning all the time, so it can do its job when there is an emergency.



Wireless networks

Users are also concerned about multiple systems interfering with each other, since there is a limited amount of air space. The group did caution against unmanaged deployments of multiple systems in a plant environment, since these can cause problems if not well thought out. There have been cases of deployment interference in discrete manufacturing facilities, but those usually involve older equipment that uses higher-power radios and less effective

tive bandwidth use. Carefully planned systems can support a huge amount of equipment if applied well, particularly given the efficiency of current wireless process instrumentation.

Wireless standards were the most contentious area discussed. The group was roughly split between those favouring WirelessHART and those favouring ISA-100.11a for process field devices. There were parallels drawn to IEC-61158, which has reduced its value as a standard by allowing a whole group of incompatible fieldbus technologies to exist in parallel. Users wanted to know if vendors would offer multiple platforms, in the same way that many devices are available with multiple wired communication protocols.

The responses from the two vendors represented were unequivocal: Emerson says it will only use WirelessHART, and Honeywell says it will stay with ISA 100. Less aligned individuals suggested that market realities will prevail in time, and that other vendors may not be so doctrinaire. Companies may not want to offer both, but the technologies are similar enough that it certainly is possible. Within the ISA100 committees, there is a group to create a convergence of the two competitors, and hopefully this will bear fruit. However, in the near term, companies will have to make choices as it will not be practical for an end-user to try them all.

The Latest Developments

Wireless technology will give plants functionalities they lack. For instance, a new category of low-cost field devices likely will emerge over the next year or so — to gather additional indication-only data that will help operators run units more smoothly. These

devices won't aim to replace wired instruments in controlling the process but rather will provide extra data points to improve optimization as well as safety and regulatory compliance. In the old wired world, these types of devices didn't make much sense because they required expensive wiring. In the new wireless world, though, being able to implement a device such as an incremental temperature transmitter for a couple hundred dollars can make a significant difference and truly help the facility manager change the way the plant is operated.

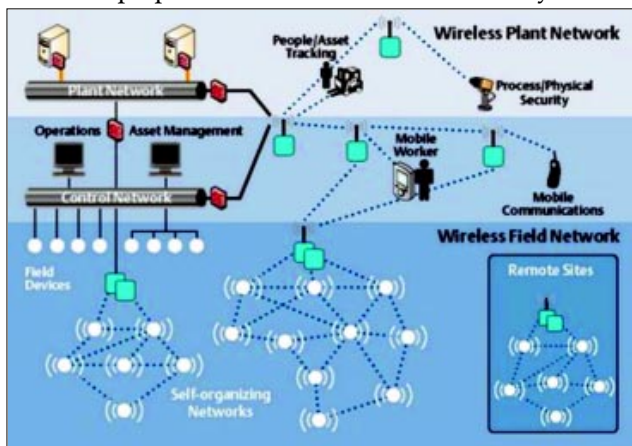
Emerson's wireless network

With self-organizing technology, each wireless device can act as a router for other nearby devices, passing messages along until they reach their destination. If there is an obstruction, transmissions are simply re-routed along the network until a clear path to the gateway is found. As conditions change or new obstacles are encountered in a plant, such as temporary scaffolding, new equipment, or a parked lorry, these wireless networks simply reorganize and find a way to get their signals through. All of this happens automatically, without any involvement by the user. This self-organizing technology optimizes data reliability while minimizing power consumption. It also reduces the effort and infrastructure necessary to set up a successful wireless network.

Another area expected to grow over the next few years is streaming audio and video over the wireless network. Traditionally, these tools have served for checking physical security on fence-line perimeters. New opportunities exist, though, to use video to monitor assets and temporary work. For instance, maintenance personnel may wish to observe a specific pump. If it begins to fail, staff can view the video to see if anything is physically wrong with the unit without having to drive to the location. Likewise, wireless video can ensure contractors are performing work in a safe and acceptable manner.

Additionally, wireless video will bolster collaboration within the plant gates and beyond. For example, reliability technicians carrying wireless video cameras on rounds will be able show a remote expert what they see, dramatically speeding up the troubleshooting or repair process.

A final area of emerging wireless technology relates to employee safety and physical asset tracking.



Wearable RFID tags will become more common, enabling plants to readily locate workers — an especially valuable capability during plant emergencies. RFID tags also will allow easily keeping track of high-value assets vulnerable to theft or misplacement.

Through the Eyes of the User

• The Reliability Technician

Today's reliability technician must make daily rounds to check the performance of the bulk of the assets, spending much time taking measurements such as pump vibration readings and then manually entering results into databases, and not enough time actually conducting analyses and proposing solutions that improve asset reliability. In addition, because monitoring is so time-consuming, some assets get checked infrequently, often only once a month.

In the wireless plant of the future, rounds will become less frequent because wireless instrumentation will capture and immediately send relevant data back to the control system and no manual entry is needed. It will be possible to get high-quality data several times a day from assets.

This will result in more efficient time allocation - a richer pool of information and much greater time for analysis will result in more productive use of valuable technician time, and thus in more-reliable equipment, which means less downtime, decreased maintenance costs and increased production.

For example, many lower-cost bearings on pumps tend to fail before larger secondary damage to shafts or couplings occurs. Identifying a bearing problem early can avoid significant expenses. It might cost around \$10,000 to replace the bearings, while a plant might spend \$30,000–\$50,000 to repair and balance a damaged shaft. Research shows that using wireless instrumentation to monitor assets more frequently sometimes can cut maintenance costs in half. In addition, knowing a certain pump is soon going to fail allows appropriate planning (e.g., making changes to the process, not running the pump as hard to prolong life, ordering replacement parts to minimize downtime or even switching over to a backup pump). The reliability technician can be prepared to service the pump when it eventually fails with minimal impact to plant operation.

Wireless networks also will speed troubleshooting, repairing and maintaining equipment by providing real-time access to crucial information. Today work on equipment often gets delayed because the proper routines and procedures documentation are in the office, not in the field. With a wireless connection to the plant's systems, the technician can save considerable time by downloading the appropriate procedures or process data to a mobile device such as a personal digital assistant.

• The Process Engineer

Grappling with process problems often requires installing devices to provide necessary data. This now can take weeks and incur high costs. Wireless will enable a process engineer to quickly and very inexpensively deploy new measurement points, troubleshoot problems and tune system efficiency. It already permits getting data cost effectively from standard dial gauges without physically being at their locations, by using clamp-on wireless gauge readers. The speed in getting data can make the difference between continuing production and a plant incident.

• The Operator

A console operator will gain freedom to venture out of the control room without losing control over the processes being managed. A mobile device will provide access to all necessary data such as control system alarms and set points to provide better visibility into what's happening inside the plant.

One major refiner recently employed wireless to help a facility better comply with safety requirements that direct personnel to respond to process alarms within 10 minutes. The facility was so vast that an operator making rounds on the opposite end of the plant wouldn't likely be able to get back to the control room in time if an alarm tripped. This had meant that half of the operators had to remain in the control room waiting to respond to alarms while the rest worked in the field.

The refiner mounted mobile devices in vehicles. The devices provide a view of the control system — a mobile control room for all practical purposes — that enabled operators to quickly

respond to alarms no matter where they were. The company estimates it gains \$1.2 million/year in efficiency improvements, which is a significant return for a system that cost approximately \$200,000 to deploy.

- **The Plant Manager**

Wireless offers bottom-line benefits to the plant manager. It typically will reduce the capital cost of an automation project by 50%–80%. In many cases in today's economic climate, going with wireless technology can mean the difference between continuing with an upgrade or placing the entire project on hold for the foreseeable future. While the lower investment is compelling, it's only one of several business benefits of moving to wireless technology.

For a greenfield project, cutting construction by a few days or weeks potentially could mean millions of dollars in increased revenue from earlier start of production. Wireless, because it's faster to deploy and inherently allows teams to work in parallel, can dramatically reduce wiring and commissioning time for the automation system. The same holds true for plant expansions or other projects that promise increased capacity or efficiency. If wireless technology can reduce project time, then project benefits can accrue that much sooner.

The plant manager also must ensure continuing compliance with safety and environmental regulations. A wireless network enables quick and inexpensive response to changing regulatory conditions. For instance, one facility used wireless to comply with U. S. regulations requiring control rooms to be notified within 10 seconds when a safety shower is activated. Rather than rewire dozens of safety showers to meet this mandate, it deployed wireless sensors; wireless video cameras triggered by these sensors allow safety managers to assess the situation and take appropriate steps.

Case Study 1

An aggressive manufacturing excellence program at Huntsman, manufacturer and marketer of differentiated chemicals, required "one of the largest and most ambitious industrial wireless application networks to date," according to those involved. Wire-

less technologies are helping Huntsman in its goal of zero product defects, zero safety incidents and injuries, zero environmental releases, and zero unscheduled downtime.

Located in Southeast Texas, Huntsman's plant sought to design and implement a system there that would improve safety, environmental performance, and processes at their four-square-mile chemical facility. Huntsman wanted a system to give personnel real-time access to information that they need to operate the plant as safely and efficiently as possible regardless of their location, to ensure that hazards could be detected and dealt with immediately.

Besides safety the plant operator expected the increased consistency and reliability to result in enhanced profitability. The ultimate goal was the elimination of safety and environmental incidents. To help deliver on the objectives of Project Zero, Huntsman partnered with Industrial Mobility, Apprion, and Motorola. Industrial Mobility contributed its MobilOps field mobility software that enables field operators to execute electronic "smart" rounds and checklists, enter real-time defect elimination work requests in the field, monitor and control standard operating conditions (SOCs) for each piece of equipment, and access the most up to date standard operating procedures (SOPs) for execution in the field including consequences of deviation (CODs) and corrective actions (CAs).

Managing safety critical information in one place is more effective than building nested safety data into each round, checklist, or procedure, Huntsman suggested. The MobileOps solution contains an SOC database engine that provides safety critical data to operators and mechanics at the point of decision making in the field. Handheld field executable procedures, rounds and checklists pull safety critical data from the same source. Streams of legacy information (process and instrumentation diagrams, process flow diagrams, drawings, procedures, incident reports, etc.) also are available on demand in the field.

For the mobile platform to run MobilOps, as part of its Ion System, Apprion selected Motorola's MC9090 rugged mobile computer. Using these, Huntsman personnel connect within the four-square mile plant via the Apprion Ion System—a Class 1, Div 2 rated wireless application network. Apprion's Ion System provides wireless application deployment (applications include video, voice communications, energy

efficiency and condition monitoring) and a central dashboard that integrates application data, wireless regional maps, and equipment status and maintenance views and reports.

As of October 2009, Huntsman's Mobility Solution was in three units at the four square mile Port Neches site. Initial results show significant improvements and indicate the goals of Project Zero will be achieved. With real-time wireless tracking of the rounds activity, the number of pumps requiring daily inspection has been reduced by 50%, allowing more time for other, more crucial inspection areas. Tracking work requests initiated in the field automatically identifies redundancies, makes work planning more effective and will lead to significant reduction in the average "time to closure" for each request. Real-time monitoring of SOCs has led to significant process improvements and cost savings due to increased uptime and longer equipment lifetime. As all data points are captured electronically, new workers who replace retiring veterans have ample and accurate data for training.

Results include:

- Greater equipment reliability and process improvements by putting accurate and reliable SOCs into the hands of operational personnel;
- 75% decrease in safety incidents, with additional reduction expected. Driving safe operating data to the operators in the field ensures that the safest approach to each task is followed. Access to operating data will also ensure that steps are taken according to safe choices;
- Increased effectiveness in defect capture and providing accountability at all levels of the organization, including operations and maintenance personnel, managers, and executives responsible for providing a safe and efficient work environment;
- Reduced maintenance costs; and
- Increased uptime from the improvement in overall equipment effectiveness that increases production quality and quantity.

According to a senior spokesperson, "The operator scans the RFID tag with the handheld, pulls down a defect pick list, and punches the enter button. It is that quick." The implementation was successful to the point that similar initiatives were being planned for other Huntsman facilities.

One moment in the discussion put things in per-

spective when Herman Storey observed that users have to approach the whole question with the larger picture in mind. Having something like mobile operators is strategic. Adding one more pressure or temperature reading is tactical. Few technologies have provided so many possibilities to implement plant improvements, from a single process variable to walk-around HMIs. Users need to be more creative and consider what wireless can accomplish in the broader sense, rather than simply doing the same things without wires.

Case Study 2

At the Novartis biotech production centre at Huningue, in the north east of France, Emerson Process Management's plant-wide wireless network is helping to improve maintenance and operator efficiency, and increase plant flexibility within. Emerson's DeltaV™ digital automation system with a fully integrated Wi-Fi® network and mobile operator stations are providing process and plant information to operators and maintenance staff throughout the facility. The new wireless network is also improving the flexibility of the control system when there is a need to adjust a product recipe.

At the plant localised control is essential to the efficient management of the plant process which is spread over three production levels, as well as being geographically dispersed. Novartis implemented a distributed architecture, based on Emerson's DeltaV system. This has enabled operator stations to be located near the main areas of the process such as the bioreactors and tanks. To further maximise operator efficiency, Novartis recognised that they needed a control architecture that enabled their operators to be fully mobile.

Novartis has been using wireless since the year 2000. In 2008, when migrating to version 9 of Emerson's DeltaV system, the company benefited from developments including integrated Wi-Fi and wireless security. In 2009, Novartis expanded the wireless architecture with additional Wi-Fi access points, implementing a complete mobile wireless solution with the DeltaV system. The upgrade was a result of the success of the wireless implementation in 2000.

Novartis has installed a wireless network with coverage obtained on all three production levels using 10 Wi-Fi access points. The network includes

17 mobile operator stations and 100 DeltaV controllers, spread over two systems. The first system controls the upstream process of cell cultivation and harvesting. The second controls the downstream phase of purification and freezing. Both systems will soon be interconnected using Emerson's DeltaV ZONE, a software and hardware solution for connecting two systems.

The mobile operator stations provide Novartis with complete flexibility to control its manufacturing processes. To meet the standards required for sterile zones C & D, the mobile operator stations have a stainless steel enclosure that houses the central processing unit (CPU). The devices are equipped with a USB connection to the usual keyboard, monitor and trackball for this type of environment and connect to the network of Wi-Fi access points.

Operators can move from one level to another with their mobile station and still maintain an overview of the process. This has not only significantly improved operator efficiency but it has also made it possible to reduce the number of workstations required by 50%. There have also been efficiency improvements in the area of plant maintenance. For example, by using a mobile workstation, it is now possible for just one person to calibrate the instruments when previously it would have required two. Should any workstation have a fault there is no longer a need to shut down a process whilst the station is fixed or replaced. The flexibility offered by the wireless network and mobile workstations provides a perfect back-up system. A further benefit is that when a new product is being launched or a recipe changed, the mobile stations can be moved throughout the plant as required, removing the need to install new operator stations. Due the wireless network, there is no need to systematically invest in new control stations, even if the production of new products requires a change to the plant equipment or layout.

The benefits of the DeltaV system coupled with the wireless architecture has helped Novartis to diversify production, changing from a single-chain product to being able to produce multi-chain products, which is sure to influence the profitability of Novartis favourably.

What the Crystal Ball Shows

Predictions made only a few years ago about the

"wireless plant of the future" already are outdated. The rapid evolution and adoption of wireless technology by the process industries mean it's very realistic to expect such plants to emerge soon, incorporating not only greenfield plants but brownfield plants as well.

Longer term wireless technology promises to have an even more profound impact. Plants a few decades from now will include things such as three times as many sensing points, increased global collaboration via remote management, and won't include central control rooms, input/out (I/O) racks or battery replacement.

It's very realistic to expect that plants built 20 to 30 years from now will be almost entirely wireless. Gone will be the racks of I/O and, with them, central control rooms. By removing the limitations of wiring and taking advantage of advances in virtualization technology, massively redundant control clusters will replace today's monolithic control systems. Small central monitoring stations,



Flexware®
Turbomachinery Engineers

Compressor Training

**Bearings & Seals, Performance Analysis, Vibration,
Rotordynamics, Troubleshooting, & Problem Resolution**

- Maximize Plant Production & Reliability
- Optimize Your Condition Based Equipment Reliability Program
- Confirm OEM Performance Guarantee
- Optimize Equipment Utilization

FREE PERFORMANCE ANALYSIS SOFTWARE

Doha St Croix Bangkok Kuala Lumpur

www.flexwareinc.com
sales@flexwareinc.com
1-724-527-3911

augmented with centralized multi-site control, smart systems and distributed control to individual workers, will supplant the “fishbowl” control room itself. Cutting-edge research exploring these types of architectures already is underway, e.g., for extensive water-distribution networks.

Better power sources and significantly lower overall costs. For years one of the main criticisms of wireless has been battery replacement cost. Likely improvements in battery performance, coupled with use of fuel cells and energy harvesting, essentially will eliminate that cost, and make wireless the choice for more than 90% of plant I/O. We’re already witnessing a transition from proprietary batteries to standard form-factors, cutting replacement cost to a quarter of previous levels. Clearly, it’s advisable to buy systems that use standard battery types. In addition, sensors themselves will provide higher levels of wireless communications reliability through meshing technology improvements, better radio performance and system-level redundancy.

Improved battery performance will bring more-flexible sensing capabilities and spur far greater information gathering. The number of sensing points should triple from today’s level. Plants therefore should be prepared to handle the crush of new data that will be generated. They also, before buying a wireless system, should assess whether its architecture supports this level of scalability without a dramatic increase in total cost of ownership. Improved control and other algorithms and expert systems potentially could serve to sift through the data to pinpoint opportunities for increasing operating efficiencies, safety and flexibility while reducing emissions, operating costs and surprises.

Workers in the plant will spend their days quite differently. With live data at their fingertips anywhere in the plant, they’ll be able to operate much more effectively than they do today. Seeing something suspicious, such as unusual machine vibration or a gauge reading higher than normal, they’ll use “lick and stick” sensors they’ll carry to quickly capture new measurements. In many plants, wireless devices will completely replace manual dial gauges. Additionally, high-speed wireless links will enable plants to call upon experts throughout the world to help solve problems. Such links also could allow robots to handle particularly remote, tedious or dangerous jobs.

These developments promise to dramatically improve safety by enhancing ability to detect upsets and hazardous events (such as gas emissions) and minimizing dangerous jobs through superior automation.

At many companies the question isn’t whether they’re interested in wireless but how to get started with the technology.

For greenfield projects, many chemical makers simply will compare wired versus wireless quotes to determine their future directions. In almost every case wireless saves significant capital. In facilities being designed today wireless sensors suit 40%–60% of I/O points.

Many brownfield installations begin with a small pilot project. An application that offers substantial costs savings and relatively low risk, such as equipment health monitoring or tank farm automation, will let the plant learn about the wireless technology and determine how else to apply it. A common approach for piloting equipment health monitoring is to pick eight to 10 “troublemaker” assets that incur high repair costs. For process engineers, a good place to start is identifying data that would be valuable but historically have been hard to get. Another ripe area is pinpointing opportunities to improve worker productivity via mobile devices.

Forward-thinking chemical makers are formulating their wireless strategies today. By carefully choosing wireless projects, working with experienced vendors and selecting wireless equipment that can handle today’s needs and provide the scalability to support future requirements, some sites already are well on their way to becoming “the plant of the future.”

The key to the success of wireless technology lies not in the hands of the developers but in the hands of the end-users. As one of the experts at the aforementioned roundtable observed, users have to approach the whole question with the larger picture in mind. Having something like mobile operators is strategic. Adding one more pressure or temperature reading is tactical. Few technologies have provided so many possibilities to implement plant improvements, from a single process variable to walk-around HMIs. Users need to be more creative and consider what wireless can accomplish in the broader sense, rather than simply doing the same things without wires.

HA Enquiry Number 10/12-03