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Water is Money

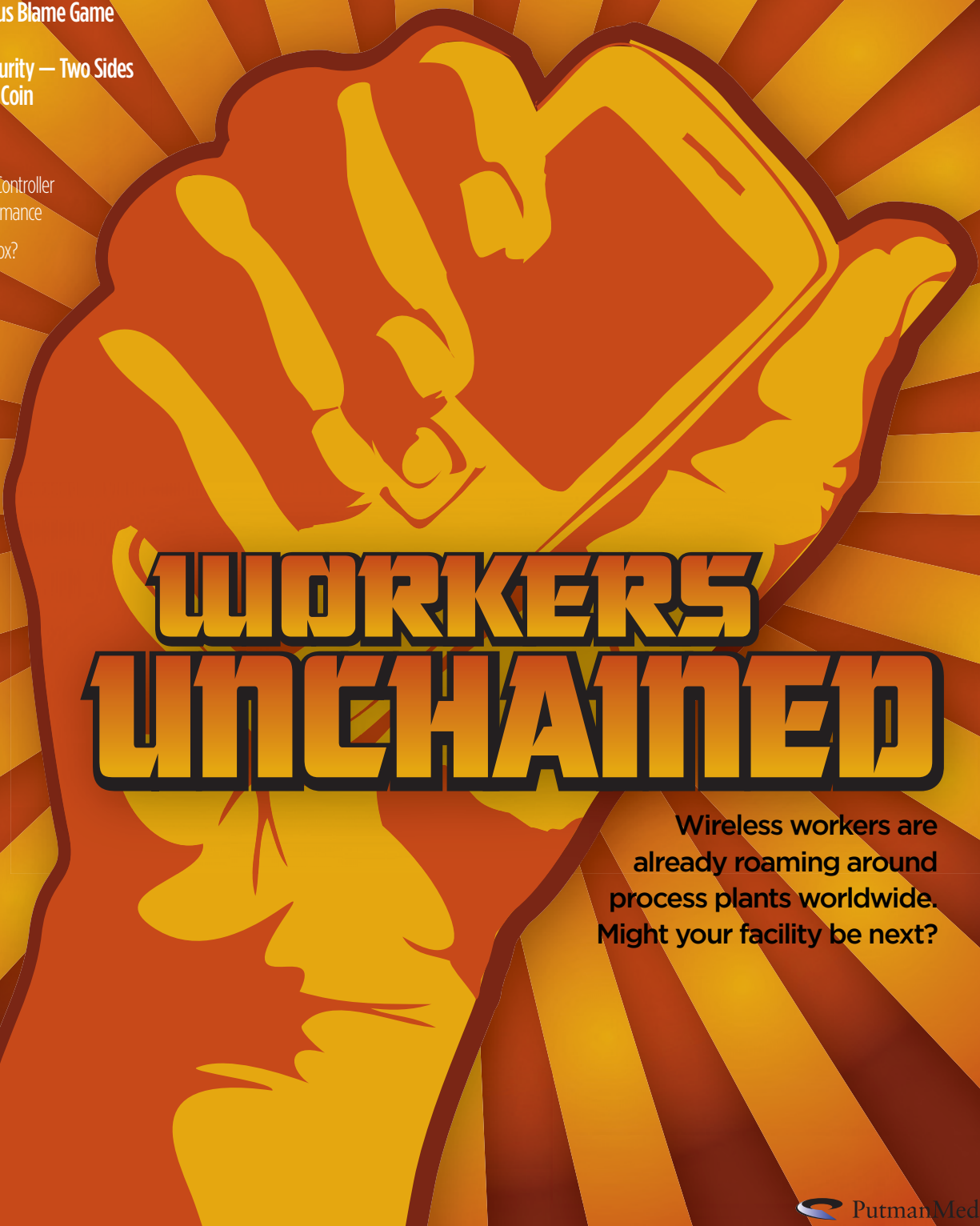
The Failed Bus Blame Game

**Safety & Security — Two Sides
of the Same Coin**

On the Web

Single Setting Controller
Yields PI Performance

Brewery in a Box?



WORKERS UNCHAINED

Wireless workers are
already roaming around
process plants worldwide.
Might your facility be next?

APRIL 2010

The phone rings in the middle of the night. It's the third shift operator, telling you that there's been a process upset. Do you get out of bed, dress and drive 25 miles to the plant? No, instead you use your Blackberry and check what's happening, make a few changes to process setpoints and watch the system recover. Far fetched? Not at all.

Mohawk Fine Papers (www.mohawkpaper.com) in Cohoes, N.Y., instituted such a system. On a Sunday afternoon at home with one click of a Blackberry, a Mohawk engineer can tell that a paper machine is up, running at a particular speed and consuming X amount of energy. This is part of the "Information Everywhere" project that Mohawk implemented in 2009.

"Information everywhere is an important part of our continual improvement efforts," says Ben Whitaker, manager of enterprise process re-engineering at Mohawk. "This project played an important role in Mohawk's overall 2009 improvement in machine output, customer satisfaction and energy consumption."

Working with Wireless

While it may not work from home, a different kind of mobile workstation is used at Novartis (www.novartis.com), a biotech manufacturer in Huningue, France, to provide the flexibility needed to control its manufacturing processes.

Novartis has used wireless since 2000. In 2008, when migrating to Version 9 of Emerson Process Management's (www.emersonprocess.com) DeltaV system, the firm added integrated Wi-Fi and wireless security. In 2009, it expanded the wireless architecture with additional Wi-Fi access points, implementing a complete mobile wireless solution. "The most recent developments to Emerson's DeltaV system have enabled us to implement a plant-wide wireless solution," says Philippe Heitz, head of engineering at Novartis.

The wireless 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, while the second controls the downstream phase of purification and freezing. Both systems will soon be interconnected using DeltaV Zone, a software and hardware solution for connecting two automation platforms.

To meet the standards required for sterile zones, the mobile operator stations each have a stainless steel enclosure that houses the central processing unit. The devices are equipped with a USB connection to a keyboard, monitor and mouse. Each station connects to the network via 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 has also reduced the number of required workstations by 50%. A further benefit is that the mobile



Biotech manufacturer Novartis uses 17 mobile wireless operator workstations to control and monitor its processes. Using wireless cuts down on the total number of required workstations.

stations can be moved throughout the plant when a new product is launched or a recipe is changed, obviating the need to install new operator stations.

"Because of the wireless network, we don't need to systematically invest in new control stations, even if production requires a change to the plant equipment or layout," explains Patrick Boschert, automation expert at Novartis.

Another type of wireless solution doesn't mobilize the worker, but instead frees the asset that's being monitored. Yokogawa (www.yokogawa.com) reports it has implemented a wireless mobility solution for a life-sciences client using 900-MHz meshing I/O radios. The client has thousands of identical refrigeration units on a large campus. Two or three analog inputs plus a digital input are monitored on each unit.

Unlike the old hardwired system, where units needed to be rewired every time a refrigeration unit was moved in the new system, a radio is mounted with each process unit, terminating analog and digital inputs directly on the process unit. Using the wireless network, inputs are transmitted to centrally located wireless gateways and data concentrators. They are then collected via Modbus TCP by the existing SCADA system.

Refrigeration units can now be moved anywhere on campus without making changes to the wireless network or the SCADA system database. The 900-MHz mesh network is self-organizing and self-healing, for more efficient network management.

AVOIDING RATTLESNAKES

Huntsman Corp.'s (www.huntsman.com) chemical plant in Port Neches, Texas, is plagued with “rattlesnakes—unseen, unnoticed problems that can really bite you,” says John Prows, Huntsman's VP of manufacturing excellence.

To eliminate such “rattlesnakes,” Prows and his team recently undertook an aggressive manufacturing excellence program called Project Zero. Huntsman set high objectives—zero product defects, safety incidents and injuries, environmental releases and unscheduled downtime.

To help deliver on the objectives of Project Zero, Huntsman partnered with Industrial Mobility (www.IndustrialMobility.com), Aprpron (www.appron.com) and Motorola (www.Motorola.com). They use Industrial Mobility MobilOps field mobility software to enable field operators to execute electronic smart rounds and checklists. Field operators can enter real-time defect-elimination work requests, monitor and control standard operating conditions (SOCs) for equipment, and access up-to-date standard operating procedures (SOPs).

Prows believes it's crucial to centralize and manage safety critical information in one place. 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. All handheld field executable procedures, rounds and checklists pull their safety critical data from this same central source. Legacy information, such as process

and instrumentation diagrams, process flow diagrams, drawings, procedures and incident reports are immediately available on demand in the field.

Using Motorola's MC9090 mobile computers, Huntsman personnel connect anywhere throughout the four-square-

mile plant via the Aprpron ION System—a Class 1, Div 2-rated wireless application network. Applications include video, voice communications, energy efficiency and condition monitoring. A centralized dashboard brings together application data, regional maps, equipment status and maintenance views, and reports.

“Initial results show significant improvements and indicate the goals of Project Zero will be met,” says Prows. “With real-time wireless tracking of technician rounds activity, the number of pumps requiring daily inspection has been reduced by 50%, allowing more time for other, more crucial inspections.” Real-time monitoring of SOC's has also led to significant

process improvements and cost savings due to increased uptime and longer equipment lifetime.

Safety incidents have been reduced by over 75% and are expected to fall to 0%. The mobile system has also reduced maintenance costs and increased uptime due to improvement in overall equipment effectiveness, ultimately increasing production quality and quantity.



A Huntsman Corp. chemical plant operator uses a wireless handheld device to expedite his rounds, increasing his productivity and freeing time for other tasks.

Tablet PCs are the Writing on the Wall

Honeywell Automation and Control Solutions (<http://acscorp.honeywell.com>) has two installations where tablet PCs are being used as HMIs.

At a refinery in Big Spring, Texas, operators access their operating console directly from the field via a tablet PC. Wireless also allows the plant's mobile workforce to send data collected during rounds to the automation system via handheld devices.

“The front-end design work and site assessment by Honeywell helped us ensure 100% coverage for our Wi-Fi applications and proper transfer rates to support mobile stations and hand-

helds throughout the refinery,” says a spokesman. “We were able to provide field operators with key solutions at their disposal to fully control, monitor and review alarms from a tablet PC.”

At a refinery in Houston, wireless also enhanced user effectiveness. The operators needed to view real-time alarms from anywhere and access operating procedures, graphical displays of tank levels, pumps and other devices. The solution also had to maintain the same reliability as the control system.

Honeywell's OneWireless helped the refinery meet its safety and mitigation plan that requires response to any incident as quickly as possible. It also al-

lowed employees to be more efficient by enabling one person to perform the tasks of many. “We looked at different options to support 15-minute response time to alarms with one operator in each of two tank farms, and found it would have taken \$1.25 million to make the existing approach more robust,” reports a control systems engineer. “Instead, we put mobile process knowledge system tablets in the operators' trucks.”

Getting With the Program

The technology to support mobile workstations works just fine and has been in use for several years. Some companies—vendors and users alike—just haven't

INFORMATION EVERYWHERE ON A BLACKBERRY

Mohawk Fine Papers, a premium paper manufacturer in Cohoes, N.Y., was faced with several problems due to changes in operations—an explosion of product offerings and customer demands for more flexibility and faster service times.

“Meeting these demands requires that the entire enterprise is constantly aligned and focused on key orders, key requirements, last-minute changes and what’s happening on the mill floor. To coordinate these efforts, managers need a real-time view across the enterprise,” says Ben Whitaker, manager of enterprise process reengineering at Mohawk.

To accomplish this goal, Mohawk launched its “Information Everywhere” initiative to bring information from across the enterprise to users via web pages, on mobile devices and within applications.

Mohawk implemented Transpara’s (www.Transpara.com) Visual KPI as part of the initiative. Visual KPI delivers key performance indicators (KPIs), scorecards and trends on any mobile device or PC. “Since Mohawk was al-

ready a Blackberry environment, it was a natural fit to put Visual KPI on Blackberries,” notes Whitaker.

Other technologies used are OSI-soft’s (www.Osisoft.com) PI data historian; Microsoft SQL Server for data extraction, transformation and loading; and Microsoft Sharepoint as the information portal.

“Most of the data from the production systems are interfaced through OSI PI,” explains Whitaker. “However, we also integrated Transpara KPIs with our ERP system and various Microsoft SQL databases.”

Everyone in the plant has access to the data via their Blackberries including technicians, managers, supervisors, engineers and even the COO. Senior managers now have real-time access to machine, production and order status, allowing more responsiveness to customer demands and to manufacturing issues. In the maintenance area, supervisors and senior engineers have real-time access to energy consumption for better response to machine performance issues.

The only problem so far is that the information only goes one way. “With Transpara Visual KPI, Mohawk can effectively delivery virtually any type of information from enterprise systems to Blackberry devices. However, this communication is unidirectional and, once consumed by the wireless user, may require action and response. Increasingly, Mohawk has a need for bi-directional communications and the ability to respond,” notes Whitaker.

Transpara has recently enabled “write back” capability for the most common interfaces to data sources.



Workers at Mohawk Fine Papers can view key performance indicators on their Blackberries.

gotten with the program. An engineer who declined to be named says, “Our company has wireless solutions, but not for the automation professionals. IT handles the phones and computers, therefore they all have Blackberries. Most managers have them. Our boss is trying to get Blackberries for us, but he has been told we don’t need them and they can’t be justified.

“They are seen as a perk for managers. Since these decision-makers have no clue what automation professionals do, they see no need for us to have mobile access.”

On the other hand, companies like Constellation Energy in Baltimore

use mobile systems that acquire data from Transpara’s Visual KPI system. “The most critical business activities in the utilities industry, such as decreasing environmental emissions or reducing outages, depend on having immediate access to pertinent operations data,” says Steve Noel, director of IT at Constellation. “When plant personnel check Visual KPI before doing anything else in the morning, you know it’s a must-have tool.”

Barriers to Adoption

Some technical barriers are holding back mobile wireless solutions. “Most plants have very limited wireless

network coverage,” observes Harry Forbes, senior analyst at the ARC Advisory Group (www.arcweb.com). “Many have only private networks for push-to-talk voice, and wireless LAN coverage is the exception. Lack of coverage makes the applications more difficult to use and develop. Ideally, process manufacturers would like to equip their field operators with a single device certified for use in hazardous areas that combines private push-to-talk voice communications, mobile computing and carrier data services. They can’t buy something like this now, but it will not be much longer before they can.” ■