

# CHEMICAL PROCESSING

LEADERSHIP | EXPERTISE | INNOVATION

## SYSTEM SIMPLIFIES THE MOVE TO WIRELESS

### THREE DEVELOPMENTS EARN RECOGNITION FOR THEIR VALUE TO THE CHEMICAL INDUSTRY



Keeping plants running smoothly and efficiently never has been easy — and it's gotten a lot tougher in recent years. Indeed, it's undoubtedly fair to say that the U.S. chemical industry faces unprecedented challenges to remain competitive.

Taking advantage of new products and services certainly can help. But which are the most noteworthy of the countless offerings that have come onto the market? This year's Vaaler Awards winners surely are at the forefront.

Every other year since 1964, *Chemical Processing* has bestowed Vaaler Awards on products and services that have dramatically improved the operations and economics of plants in the chemical industry. The awards are named after John C. Vaaler, editor in chief of *Chemical Processing* from 1946 to 1961 and chairman of the magazine's Editorial Board until his death in 1963.

To be considered for the award, a product or service must have been commercialized in the United States between May 2005 and June 2007. This year, we received 33 entries.

*Chemical Processing's* Editorial Board, which consists of technical professionals with diverse re-

sponsibilities and from a variety of industry sectors (see below), judged the entries. This impartial panel evaluated all nominees for technological significance, novelty or uniqueness, and breadth of application. It wasn't obliged to bestow any awards but did pick three winners:

- Control Station for Loop-Pro Product Suite;
- Emerson Process Management Rosemount Measurement Division for Smart Wireless; and
- Pepperl+Fuchs for CorrTran MV Corrosion Detection Transmitters.

Details on the developments appear on the following pages.

#### THE JUDGES

**Vic Edwards**, senior director of process safety, Aker Kvaerner, Houston

**Tim Frank**, research scientist and senior technical leader, Dow Chemical, Midland, Mich.

**Ben Paterson**, engineering advisor, Eli Lilly, Indianapolis, Ind.

**Roy Sanders**, compliance team leader, PPG Industries, Lake Charles, La.

**Ellen Turner**, senior tech service representative, Eastman Chemical, Kingsport, Tenn.

**Ben Weinstein**, section head modeling & simulation, Procter & Gamble, West Chester, Ohio

**Jon Worstell**, senior staff chemist, Shell Chemical, Houston

**Sheila Yang**, senior process/specialty engineer, Fluor, South San Francisco

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Smart Wireless from Emerson Process Management's Rosemount Measurement Division, Chanhassen, Minn., makes it easy for plants to install and integrate wireless technology. Plus, it addresses the concerns over reliability, security, standards, system architecture, and availability of sensors and transmitters that have restricted the deployment of wireless.

Wireless technology has been used for decades for point-to-point telemetry applications and certainly is attracting growing interest nowadays. After all, wireless opens up the prospect of getting data impossible or uneconomic to get via traditional wired approaches. This goes beyond monitoring equipment currently not instrumented. It also promises to allow plants to take advantage of wired HART-based field devices' embedded diagnostics now stranded because legacy control systems don't support HART.

Wireless can lead to more extensive and effective predictive maintenance and better asset management, as well as enhanced speed of response to safety and environmental incidents.

Many plants are eager to try wireless. However, there's been a sticking point — sites want to be sure that whatever wireless they put in will provide reliability and high performance and won't become technologically obsolete. Smart Wireless offers that assurance.

Its wireless instruments communicate via a self-organizing field network based on the Time Synchronized Mesh Protocol (Figure 3); new devices connect automatically. Installation doesn't require elaborate site surveys or special tools. The network achieves greater than 99% reliability by automatically switching to clear nodes should a blockage occur,

### >> Starter kit



Figure 4. This includes wireless devices, predictive maintenance software, and the services of an onsite technician.

### >> Self-organizing network



Figure 3. Signals are automatically routed around any blockages, and new devices automatically connect up.

and is scalable to thousands of devices. The protocol employs channel hopping and has been shown to tolerate almost all types of interference and to be able to co-exist with other established wireless networks. The network can run as a stand-alone system, delivering significant value without the need for a plant-wide wireless infrastructure, or can be integrated within such an infrastructure.

Installation offers significant savings in engineering, materials and labor compared to wired systems — this can translate to a reduction in the cost per point of as much as 90%.

Smart Wireless also boasts robust security (validated by experts, including those at the U.S. Department of Homeland Security), greater-than-five-year battery life, and, importantly, a guaranteed upgrade path to the wireless standard under development.

Current products in the Smart Wireless portfolio consist of level, pressure, flow and temperature measurement units, on/off indication, and a gateway to transmit wireless data to the host; many more devices, including a HART upgrade module and a vibration monitor will be out shortly. A SmartPack starter kit (Figure 4) contains a wireless gateway and the customer's choice of from five to 100 pre-configured wireless transmitters for pressure, level, temperature and flow that can be deployed right out of the box without additional user input or setup, as well as AMS Device Manager predictive maintenance software. It also comes with SmartStart Services, which include provision of a technician onsite for the first start-up, verification of device and gateway functionality, and a network health check to ensure optimal connectivity.

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