Written by Ron Martin, VP & GM, Asset Optimization and Life Cycle Care, Emerson Process Management
Friday, 19 August 2011 14:02

Achieving peak performance and high reliability has always been tough, but with the added—*and now escalating*—difficulty of trying to keep, find and train top-notch technical personnel, it's even tougher. That's where we are today: In developed countries, baby-boomer employees are reaching retirement age and taking with them a wealth of knowledge and experience. In developing countries, it's hard to find workers with the educational background and expertise necessary to maintain and run today's complex manufacturing facilities.

Fortunately, automation companies can help manufacturers deal with widening gaps in knowledge and skills by making it easier to access process and equipment information and leverage available expertise. In other words, technology and expert services can help fill the void. Users don't have to deal with the cost, time and complexity of finding and bringing new workers on board and up to speed.

For example, wireless technologies can bring more information to central locations so trained personnel no longer need to wander the facility to troubleshoot problems. The ease and affordability of adding wireless instrumentation also permits sensors to be placed in more areas than before, expanding the effective reach of limited maintenance and operations personnel.

The emergence of industrial wireless tablet computers allows senior operators to leave their control rooms without losing the ability to monitor, control and keep the facility running even during some upset conditions. Providing a complete operator interface on such devices can shorten reaction times and ease communications between field and control-room personnel—*or even eliminate that distinction*. Today, technology has advanced to the point where a lightweight portable PC can give operators insight into the operation wherever they are.

The best workers understand how to keep equipment and processes running at their best, but they often lack the means or opportunity to share what they know with others. Now though, it's possible to capture that valuable expertise and distribute it broadly throughout a facility—*and beyond*
—by using wiki-like features built into operator interfaces and maintenance tools. Comments by a senior operator about the cause and remedy for a problem can guide others facing the same situation in the future.

Affordable high-speed communications also enable companies to share expertise globally. These days, for example, an expert in North America can monitor the startup of a turbine in South America, thus helping protect expensive capital equipment from failure. Using online real-time diagnostics this way not only saves travel time and costs, but also lets more facilities benefit from one individual's expertise.

Automation providers need to ensure that their maintenance and diagnostic tools enhance productivity by making employees' work easier, not more complex. Given the possible proliferation of features and capabilities of today's modern automation system, that's not necessarily an easy task. The human-centered design discipline, however, can guide the way—*i.e., by shaping a software interface to feature the most-often-used elements first and then allowing users to "drill down" into the depths of the tool only as needed; or by streamlining work processes to eliminate unnecessary tasks.*

Growing gaps in experience and expertise is a problem that will be with industry for some time. Technologies like those mentioned here, however, can be powerful tools in meeting the challenge. **MT**

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