The industrial automation & control sector is a vast field that, for our purposes, includes **electronic components; process controls; sensors, transducers and transmitters; recording instruments; motion control and support components**
.* These sectors contribute to a U.S. market valued in the billions of dollars. The estimated size of the industrial controls market alone is more than $15 billion and growing steadily.

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Research organizations identify **30 leading companies in the automation & control field** that offer solutions to wide-ranging operational needs on a global scale. These include Siemens, Honeywell International, Rockwell Automation, Eaton, Emerson, General Electric and others. The leaders are joined by hundreds of other specialized players in the U.S. and abroad. Right now, all of the leading companies in automation & control are strongly emphasizing their abilities to help industrial (and other) customers
achieve more sustainable operations with integrated power-management solutions that optimize energy usage and reduce waste.

For maintenance and reliability professionals, the implementation and long-term care of sustainable solutions is rapidly becoming a key add-on to their responsibilities, especially in large operations. In the broadest sense, these solutions tackle everything in a plant that

consumes energy—*from machinery and building controls right down to employee behavior*—with monitors, controls and equipment designed to reduce energy consumption without sacrificing productivity.
They've helped usher in an age where energy now joins other key maintenance metrics in industry's pursuit of sustainable capacity assurance.

Another aspect of this category of great interest to maintenance professionals is wireless technology. The increasingly simple ability of wireless networks to monitor equipment remotely, 24/7 and in real time greatly enhances maintenance capability, efficiency and accuracy. Now virtually indispensable in process operations for remote monitoring of valves, motors, pumps, pipes and tanks, wireless is migrating into discrete manufacturing for its ability to make better use of limited human resources and provide more accurate PdM data—*not to mention the space- and time-saving benefit it offers by not requiring miles of cable to transmit this type of information*. Predictions that factories of the near future will be virtually wire-free are probably not far off as OEMs integrate wireless capabilities into their products and manufacturers continue to capitalize on its benefits.

Wireless technology, however, does raise security issues, as its use can expose proprietary data to an unintended audience. To address the problem, two standards—*SP100 from the International Society of Automation (ISA) and 802.11i from the Institute of Electrical and Electronic Engineers (IEEE)*
—are used to, respectively, define the network security needed to protect against deliberate attack (including corporate espionage and eavesdropping) as well as human error, and recommend encryption and authentication strategies that bolster the U.S. government's official Advanced Encryption Standard. As wireless networks inevitably become more sophisticated and farther-reaching, measures like these will become increasingly important.
MT

Rick Carter, Executive Editor

**Definition determined by Maintenance Technology editorial staff.*

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