Interoperability, Interchangeability Keys to HART Communication

Achieving interoperability and interchangeability in HART 7 is the goal of the HART device registration process.

There are now about 30 million HART smart devices in service in process plants worldwide. This is nearly double the next largest smart device ecosystem in industrial process automation.

How did this come about? Certainly, the HART Protocol was the first for digital data specifically designed for process automation. Certainly, the fact that the HART Protocol was encoded on top of the standard 4-20 mADC signal and that no wiring changes needed to be made helped. But that was not the real reason for the continuing growth of HART technology. The HART Protocol is simple, easy to understand and use, yet powerful and reliable. "HART devices always work, and always have," says Ron Helson, Executive Director of the HART Communication Foundation (www.hartcomm.org).

THE HART ECOSYSTEM: MANY VENDORS, ONE STANDARD

"Customers want plug-and-play solutions," says ABB vice president Pat Cashwell (www.abb.com). "They don't have the staff or the time to troubleshoot field problems. Additionally, customers do not want to be locked into a single vendor."

With over 280 vendors committed to manufacturing devices that meet the HART Communication standard, Cashwell says, "Interoperability is a must."

"It is very important to us as a vendor of HART devices that interchangeability and interoperability requirements are a fundamental part of the technology," says Endress+Hauser's Robert Bensberg (www.us.endress.com).

Bob Karschnia, Emerson Process Management's (www.emersonprocess.com) vice president for wireless, echoes Bensberg. "As a vendor, what interchangeability and interoperability give is a level playing field...no proprietary connection to a host system. Some might argue that this also commoditizes the products, which is true, but only on one dimension: connectivity. We will add value in different ways to differentiate our products."

HART 7 IS MORE THAN *WIRELESS*HART™

There are many new features in HART 7, in addition to the *Wireless*HART™ capability. "I believe

that all the features of HART 7 are important, including *Wireless*HART™," says Tom Holmes, CEO of MacTek Corp (www.mactekcorp.com). "We typically include all the features of a major revision that are applicable to our product line, in order to produce the most flexible product possible. For example, with our Bullet *Wireless*HART™ adapter, we provide the option to use either loop power or direct power, and the option to multi-drop up to six devices in accordance with the HART Standard."

"We are looking to implement two new features that are part of the HART 7 standard," says Scott Saunders, vice president at Moore Industries International (www.miint.com), "even before implementing any wireless capabilities in our transmitters. The first is exception-based reporting, and the second is multiple-message support. Exception-based reporting is critical to diagnostic monitoring systems that our customers have been asking us for, especially since all plants are running with fewer and fewer personnel. Multiple-message support will help eliminate one of the obstacles to multi-dropping HART devices at the relatively slow 1200 bps data rate that many hosts and asset systems still support."

THE HART COMMUNICATION FOUNDATION HOLDS IT ALL TOGETHER

Founded in 1993, the Foundation is the technology owner, standards-setting body and central authority on the HART Protocol and provides global support for application of the HART technology. The Foundation establishes and controls the HART Communication standards, including new developments and technology enhancements that benefit and support the needs of the industry. "At Moore Industries," says Saunders, "we don't sell or manufacture a full-blown control system. Open communication standards like HART are the best solution for us and our customers."

"Unfettered interoperability is our goal for all devices implementing the HART Protocol," says Ed Ladd, Director of Technology Programs for the HART Communication Foundation. "Therefore, the Protocol specifications and Quality Assurance and Device Registration Procedures are all written to ensure the interoperability of HART-enabled products."

Since 1993, vendors have been permitted to develop testing procedures on their own and submit the test results to the Foundation. In 2008, the Foundation's board of directors mandated independent verification testing be required to register HART devices, whether wired or wireless.

Possible Wireless Applications in Process Automation.
Image courtesy of Emerson Process Management.