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As we approach the end of another year, I’d like to take a moment to reflect on the progress made by the Fieldbus Foundation during 2010, which marks our organization’s 16th anniversary. When the foundation was established in 1994, the automation sector — and the global industrial market in general — looked very different. Favorable economic conditions in the mid-1990s gave way to a severe economic downturn in the new century. Manufacturers are now under increasing pressure to cut costs, improve efficiencies, and squeeze every last dollar out of technology investments.

For plant owners, advanced control strategies and other automation advancements have pushed process performance to ever-greater levels. But what about the health of assets in the field, such as control valves, pneumatic positioners and drives? Industrial operations spend millions of dollars annually on outdated, reactive maintenance programs. The Fieldbus Foundation and its members, in cooperation with key industry organizations such as NAMUR, are seeking ways to reduce process variable uncertainty and enhance device functionality and diagnostics while providing more integrated solutions around the desired process measurement. The goal of this effort is to unify the integration of fieldbus self-monitoring data to ensure the availability of valuable device diagnostic information to process plant personnel. Advancements in field diagnostics support a structured approach to Asset Management, which simplifies operators’ tasks and increases their confidence in utilizing equipment diagnostics and asset software.

Using the power of FOUNDATION technology, and considering the NAMUR NE107 recommendations, the Fieldbus Foundation developed a profiles specification enhancing the organization and integration of device diagnostics within fieldbus systems. This advanced technology enables “role-based” diagnostics, meaning the right information is sent to the appropriate personnel — when they need it — without flooding others in alarms.

In addition to increasing plant availability, diagnostics-driven maintenance strategies reduce fixed and variable maintenance costs and extend useful asset life by reducing the interval between maintenance events, reducing the cost of failures, and making it easier to plan maintenance and service work.

In addition to significant progress in the area of field diagnostics, the Fieldbus Foundation is moving ahead on other important developments, such as FOUNDATION fieldbus for SIF (FF-SIF) technology and Wireless I/O. As described in this issue of Fieldbus Report, two of the world’s leading energy companies — Shell and Saudi Aramco — are preparing to specify FF-SIF for commercial safety instrumented system (SIS) applications. Plus, the WIO project is finalizing specifications for a gateway between conventional I/O, wired HART and wireless sensor networks and our High Speed Ethernet (HSE) network.

And as evidenced by strong turnout for recent FOUNDATION technology seminars in China and India, the world’s developing industrial regions are enthusiastically adopting fieldbus-based control strategies for a wide range of Greenfield and Brownfield projects.

Thank you, as always, for your continued support of the Fieldbus Foundation.

Best Regards,

Richard J. Timoney
President & CEO
Fieldbus Foundation
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Fieldbus Foundation Celebrates 16th Anniversary

**FOUNDATION technology community marks continuing path of growth**

As the world’s leading not-for-profit trade organization dedicated to fieldbus technology, the Fieldbus Foundation led the effort to develop an open, interoperable, international fieldbus protocol. The resulting solution, **FOUNDATION™ fieldbus**, changed the face of industrial automation.

Established in 1994, the Fieldbus Foundation marks its 16th anniversary this year. In this article, prominent foundation members and supporters — past and present — reflect on a decade-and-a-half of growth in the **FOUNDATION** technology community.
**Foundation** fieldbus is an all-digital, two-way communications system that interconnects field equipment on a single network. An enabling technology, it supports a true distributed automation architecture and is intended for use in mission-critical environments where the proper transfer and handling of data, and control loop integrity, are essential.

With **Foundation** fieldbus, users realize significant operational improvements and business benefits. These include: reduced downtime, greater manufacturing flexibility, reduced process variability, improved asset utilization, lower maintenance costs, higher quality products, improved safety and enhanced regulatory compliance.

The Fieldbus Foundation represents over 200 companies, their subsidiaries and affiliates worldwide. Members include almost all major suppliers of control systems and instrumentation, and many of the largest end users of plant automation technology.

Fieldbus Foundation President and CEO Richard Timoney said his organization has achieved many significant milestones in its 16-year history. “The foundation, our members, and users of the technology have made remarkable progress,” said Timoney. “Each year, **Foundation** fieldbus experiences an accelerating rate of global adoption, with major installations throughout the oil & gas, petrochemical, power, paper, pharmaceutical and consumer goods industries.”

Fieldbus Foundation Chairman John Berra praised the hard work and commitment of the foundation staff and volunteers over the years. “I consider my association with the Fieldbus Foundation to be one of the best and most rewarding experiences of my career,” said Berra. “I was there from the beginning, and have had the privilege of working with some of the finest and most dedicated people in the industry. Together, we pioneered a technology, which is now delivering meaningful benefits to the process automation industry. We changed the industry for the better, and I’m proud to have been a part of it.”

**History of development**

The path to fieldbus technology began in the 1970s with the first attempts to distribute control functionality to the field level. With the introduction of the Distributed Control System (DCS), processing plants were able to distribute intelligent control throughout the facility. However, field devices had little, if any, communication with each other and sent minimal data to the DCS. Typically, field devices communicated to controllers using pneumatic or 4-20 mA analog signals.

In the 1980s, considerable effort went into developing a digital communication standard for field devices. Several process control suppliers had also started work on their own proprietary digital communication standard. These multiple efforts resulted in a handful of competing protocols, none of which could work together.

In late 1994, the path of fieldbus took a new direction. Two parallel supplier consortia — the InterOperable Systems Project (ISP) and WorldFIP North America — merged to form the not-for-profit Fieldbus Foundation. The new organization, representing nearly all of the major instrumentation and control suppliers worldwide, as well as many prominent end users, immediately brought critical mass to the effort to establish an internationally acceptable fieldbus protocol. The Fieldbus Foundation organized development programs, conducted field trials, and established the...
industry’s most rigorous program for testing and registration of fieldbus devices.

Under the foundation’s leadership, controls manufacturers, end users, academic institutions and other interested parties worked hand-in-hand to develop an open, non-proprietary fieldbus protocol enabling unprecedented levels of device and subsystem interoperability. The new organization completed its H1 draft preliminary specifications in May 1995, and registered the first H1 fieldbus devices in September 1998. It completed High Speed Ethernet (HSE) draft preliminary specifications in September 1999, and registered the first HSE linking devices in May 2001. The initial host systems were registered in April 2009.

John Pittman, who served as foundation president and CEO from 1994 to 2001, recalled the camaraderie of technical team participants. “We must acknowledge the monumental achievement of the automation companies and their dedicated engineers who developed the most comprehensive and effective fieldbus technology in the world — and did it in a vendor-neutral environment,” he said. “Many key engineers from the end user community also shared their knowledge with the development teams and actively participated in the End User Councils.”

Paul Griem, retired from Honeywell, served as secretary of the foundation during its early years. He was impressed by how competitors cooperated to help the consortium grow. “We worked together on so many tasks: specifications, application guides, field trials, testing tools, training courses, and more,” he said. “In a way, with all that’s been accomplished, the years have passed very quickly!”

Following completion of its specifications, the Fieldbus Foundation marketed FOUNDATION fieldbus to both automation suppliers and end users. Chuck Micallef, formerly of Yokogawa and now president of CJM Consulting, served as the foundation’s director, technical promotions. He remembers the marketing and communication challenges involved with educating the marketplace on this exciting and promising technology.

“Although it seemed that fieldbus was always just a few years away, the dedication and commitment of all parties involved made it a reality,” said Micallef. “The foundation’s marketing committee was comprised of members from competing companies who were able to come together and diligently work toward the introduction of an open, digital communication protocol. Their dedication provided an array of marketing programs and media attention that propelled fieldbus technology into the limelight.”

The Fieldbus Foundation’s success has been driven by the dedicated support of its members, including the world’s major automation suppliers. Companies like Yokogawa, Smar, Pepperl+Fuchs and MTL (Relcom), have continuously contributed to the dissemination of fieldbus technology in all stages. One of these early efforts was Yokogawa’s development of...
The Fieldbus Foundation organized development programs, conducted field trials, and established the industry’s most rigorous program for testing and registration of fieldbus devices.

an IC chip dedicated to the FOUNDATION protocol. Yokogawa has also consistently carried out the original philosophy that “FOUNDATION fieldbus is our first recommendation.” This has resulted in the technology being introduced into many large projects, including the mega CSPC Nanhai petrochemicals complex in China.

Softing has been a member of the Fieldbus Foundation since its formation and was heavily involved in the specification of the H1 and HSE standards. Today, Softing is a member of the Technical Steering Committee and a member of the American, European, and Chinese Marketing Committees. As a major technology provider, Softing was among the first companies to implement the actual FOUNDATION fieldbus technology and to provide the necessary hardware components used in the initial interoperability tests. At present, more than 50% of all registered FOUNDATION devices rely on Softing’s conformant and industry-hardened protocol stacks and hardware components.

R. STAHL is another inaugural member of the Fieldbus Foundation. As a leading supplier of explosion-protected equipment, the company was involved in the development of the foundation’s Application Guide AG-163: 31.25 kbit/s Intrinsically Safe Systems in 1996, and was one of the first suppliers of an IEC power supply for intrinsically safe fieldbus in 1997. Today, R. STAHL participates in FOUNDATION technical and marketing working groups all over the world to further support and enhance the technology according to its customers’ requirements.

Similarly, Microcyber has demonstrated strong support for the Fieldbus Foundation’s technology. The company conducted its first fieldbus application engineering project in December 2000, and has since developed a complete line of registered FOUNDATION products. And most recently, Microcyber took part in the creation of a national industrial wireless communication standard and also participated in establishing an international standard.

MooreHawke (formerly Hawke Fieldbus), the fieldbus division of Moore Industries-International, Inc., introduced physical layer interconnect solutions and power supplies for FOUNDATION fieldbus networks in 1999. The first revolutionary product offered to fieldbus users was the ROUTEMASTER™ Intrinsically-Safe Fieldbus System. This system provided an unprecedented 350 mA to fieldbus segments located in IIB (Gas Groups CD) and IIC (Gas Groups AB) hazardous areas. Until then, users were restricted by the requirement to use fieldbus barriers that typically limited them to a maximum of four to five devices per segment.

MooreHawke subsequently introduced the TRUNKGUARD series device couplers with unique and time-saving features, including a 4 to 5 milliamp fold-back technique for short circuit protection and the patented Auto Segment Termination feature; as well as the industry’s first fault-tolerant, redundant fieldbus physical layer, TRUNKSAFE, which revolutionized
The installed base of FOUNDATION technology has reached record levels with hundreds of thousands of systems, and millions of devices, currently in service around the globe.

the way engineers could design in “no single point of failure” segments to maximize segment availability.

Path of standardization

A critical step in the industry’s acceptance of FOUNDATION fieldbus was its approval by global standards organizations. In December 1999, the International Electrotechnical Commission (IEC) voted to approve the IEC 61158 international fieldbus standard. The FOUNDATION fieldbus H1 and HSE specifications are included in this standard. The CENELEC Technical Bureau voted in March 2000 to add the FOUNDATION fieldbus H1 specifications to EN 50170, the fieldbus Euronorm.

“Emerson Process Management was one of the original companies that helped organize the Fieldbus Foundation,” said Martin Zielinski, Emerson’s director of fieldbus technology. “Today, FOUNDATION fieldbus technology is well established worldwide. It is accepted in all market segments and in all geographical areas. Its organizational model has been copied several times over for other non-product differentiating technologies. Not only has the Fieldbus Foundation been successful, but it also continues to expand its technological influence, particularly in the area of safety. Emerson is proud to be one of the key contributing companies to the Fieldbus Foundation.”

Jim Bolin, chief operating officer, Pepperl+Fuchs, commented, “The success of FOUNDATION fieldbus in the industrial marketplace can be attributed directly to the efforts and dedication of the Fieldbus Foundation. We have witnessed a rapid growth of the technology and the foundation has successfully managed the global expansion by focusing on education and customer benefits. We look forward to the future and the critical role of the foundation as the marketplace continues to grow, mature and change.”

Ian Verhappen, a fieldbus technology instructor for SAIT Polytechnic in Calgary, Alberta, Canada, was one of the earliest commercial users of FOUNDATION fieldbus when he worked for Syncrude Canada, and took part in several important field trials. Verhappen believes that fieldbus technology has changed the future of industrial automation, including the way control systems are designed. He said, “Digital networking and integration have made true predictive maintenance possible because of the richness of information available across the network.”

Advantages of the technology

Since its development in the 1980s, fieldbus has been regarded as a step change in plant automation. Fieldbus technology superseded earlier network protocols due to its ability to move large amounts of data throughout the plant, and integrate that data within the control system. Unlike proprietary systems, fieldbus also offered users the potential of true interoperability (i.e., devices from different suppliers could “plug and play” on the same digital control network).

The Fieldbus Foundation’s non-proprietary technology, FOUNDATION fieldbus, was designed from the ground up to support mission-critical applications where the proper transfer and handling of data is essential. It replaced incompatible networks and systems with an open, fully integrated architecture for information integration across the enterprise. This complete, complementary fieldbus solution includes H1 fieldbus for continuous control, and COTS-based, 100 Mbit/s HSE for advanced process and discrete automation applications. By supporting both device and subsystem interoperability, H1+HSE allows integration of critical data from the plant floor to higher-level MIS and ERP applications. The technology extends global connectivity to critical manufacturing data, and in doing so, redefines the standard for business performance.

Among the major control system and instrumentation suppliers, ABB is fully implementing HSE as part of the FOUNDATION automation infrastructure. A recent, independent test by a global EPC firm, published in the Spring 2010 issue of Fieldbus Report, described the robustness of HSE technology. ABB has understood the importance of utilizing HSE to provide the most robust FOUNDATION fieldbus solutions to its clients and contribute to their competitive advantage.
FOUNDATION fieldbus incorporating H1 and HSE offers significant benefits to end users, including reduced wiring, communication of multiple variables from a single field instrument, interoperability of devices, enhanced field-level control, simpler integration, and easier maintenance. Ultimately, the technology is the key to greater manufacturing flexibility and productivity, improved asset utilization, higher quality products, and improved regulatory compliance.

Recent Fieldbus Foundation technology developments, including FOUNDATION fieldbus for Safety Instrumented Functions (FF-SIF) and Wireless I/O (WIO), promise to advance fieldbus solutions for an even wider range of industrial plant applications.

Growing industry adoption

Today, the growth of the Fieldbus Foundation continues at a rapid pace. The installed base of FOUNDATION technology has reached record levels with hundreds of thousands of systems, and millions of devices, currently in service around the globe. Successful installations can be found in industries such as petrochemical, refining, chemical, oil & gas, metals & mining, water & waste, pulp & paper, utilities, food & beverage, and others.

According to a survey by the ARC Advisory Group, a respected control industry research organization, FOUNDATION fieldbus is now “mainstream,” holding a 68 percent market share of the fieldbus networks in the process industries. ARC has predicted a continued double-digit growth rate for the technology. FOUNDATION fieldbus is being utilized on automation projects of all sizes, including both new and retrofit installations. The ARC study found that end users are installing small, medium and even very large fieldbus systems consisting of over 2,000 I/O points.

The global complexion of the Fieldbus Foundation is clearly evident in the membership of its board of directors. Current members include: John Berra, Chairman, Emerson Process Management; Ken Deken, Rockwell Automation; David Eisner, Honeywell, Inc.; John Eva, Invensys/Foxboro; Kimikazu Takahashi, Yokogawa; Tadashi Hirooka, Yamatake; Farshad Amir, DuPont; Fred Cohn, Schneider Electric; Timm Madden, ExxonMobil; Masatsugu Tomotaka, Fuji Electric Systems, Co. Ltd.; Mark Taft, ABB Inc.; Hans Georg Kumpfmueller, Siemens AG; and Gunther Kegel, Pepperl+Fuchs GmbH.

Looking to the future

The long-term outlook for the Fieldbus Foundation and its members is no doubt promising. Developments such as HSE and Flexible Function Blocks (FFBs) are expanding applications for FOUNDATION fieldbus in continuous process, batch and discrete automation applications, and driving increased adoption of the technology throughout the worldwide end user community.

FOUNDATION fieldbus, with its industry-proven distributed function blocks and open communications protocol, is also an ideal platform for advancing standards-based safety instrumented functions (SIFs). FF-SIF technology enables process end users to realize significant CAPEX and OPEX benefits by extending fieldbus benefits into plant safety systems.

The Fieldbus Foundation is also assisting educational institutions in providing valuable fieldbus training to industry worldwide. The new Foundation Certified Training Program (FCTP) establishes uniform standards for fieldbus educational curriculum and defines acceptable levels of learning for students of FOUNDATION technology. The FCTP ensures instructors delivering FOUNDATION fieldbus educational courses are skilled, knowledgeable and technically competent. Through certification, the program demonstrates to prospective end user students that fieldbus training centers, and their instructors, have been thoroughly evaluated based on strict criteria, and have the necessary qualifications to provide the very best training available.

And, as the only independent, member-driven, vendor-neutral protocol organization, the Fieldbus Foundation will remain committed to an open, international, interoperable fieldbus technology.
Detector Electronics Corporation (Det-Tronics), a worldwide supplier of industrial hazard safety solutions, including flame detection, gas detection and hazard mitigation systems, is the newest member of the Fieldbus Foundation. The company’s Safety Integrity Level (SIL)-2 flame and gas safety systems range from conventional panels to fault-tolerant, addressable systems.

Founded in 1973, Det-Tronics is a division of United Technology Corporation with headquarters in Minneapolis, Minnesota. The company designs and manufactures one of the industry’s largest selections of flame detectors, gas sensors and safety systems. It also maintains a complete fire and gas test facility, one of the largest in the world. Det-Tronics has more than 280 employees, 76 representatives, and 18 sales offices around the globe serving the oil and gas, refining, automotive, aerospace, munitions, and chemical markets.

Fieldbus Foundation Marketing Manager Bill Tatum welcomed Det-Tronics in joining the foundation, which corresponds to the growing market demand for fieldbus-based safety solutions. “Our FOUNDATION fieldbus for Safety Instrumented Functions (FF-SIF) development provides new opportunities to leverage the powerful capabilities of fieldbus instrumentation and advanced diagnostics to optimize plant safety systems,” said Tatum. “Det-Tronics is a major supplier to industrial safety users, and we welcome their contributions to our organization and its technology.”

By joining the Fieldbus Foundation, Det-Tronics hopes to achieve recognition and access to new markets for its product line. It also expects to enhance its visibility within the fieldbus community and contribute to the growth of the market.

“Our customers requested a fieldbus interface to safety products, and we would like to support them by offering a strong, industry-accepted communications protocol,” said Det-Tronics Director of Marketing, Cliff Anderson. “Our over-arching goal is to help our customers achieve improved personnel safety and plant performance.”

Det-Tronics’ advanced fire and gas safety systems support addressable-loop and point-to-point architectures, and all of its solutions are highly fault-tolerant configurable detection and releasing systems. The company’s optical flame detectors incorporate the latest technologies in ultraviolet (UV), infrared (IR), UV/IR, dual IR, and multispectrum IR to maximize detection while minimizing false alarms.

In addition, Det-Tronics’ gas detectors accurately detect the presence of combustible and toxic gases. The full line includes nanotechnology metal oxide semiconductor (NTMOS), catalytic, electrochemical and IR absorption technologies.

For more information about Det-Tronics, please visit their website at www.det-tronics.com.
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Certified Training: Essential To Fieldbus Project Success

Understanding the technology is key during construction, installation and startup.

For many industrial manufacturers, FOUNDATION fieldbus, with all the power and capability it provides, is a new concept that requires increased training and education for plant personnel. Fieldbus offers many benefits and advantages to the user. However, it requires not only an understanding of the technology but some differences in thinking about how to implement projects in order to ensure long-term success.
Some specific aspects of Foundation technology that bear close attention include wiring topology, power distribution, and general wiring practices such as grounding and shielding. Other considerations that are unique to fieldbus include function block residency, network bandwidth and scheduling, device address limitations, and overall system capacity. All of these areas have impact on project implementation, most notably on project scheduling itself. Tasks such as configuration and testing must be thought of differently from conventional control system projects.

Not enough can be said about the value of expert involvement and training in planning and implementation of projects using fieldbus. Plant and engineering personnel need to understand the technology during project construction, installation and startup. For example, checking fieldbus links for grounding problems and signal integrity during installation can result in considerable savings over finding these problems later during startup. Instrumentation and maintenance personnel all need to understand how to install, troubleshoot, replace and configure fieldbus devices. Even operations personnel need to understand ways in which fieldbus devices differ from conventional devices.

‘Train, train, and train again’

When it comes to implementing Foundation fieldbus for industrial control projects, few engineers have more first-hand experience than Dave Brown, a control & automation engineering specialist with Bechtel Corporation. Brown regards technology training as a prerequisite for any fieldbus project plan. He said, “Over the past four or five years, the most notable issue that always came up was the lack of training on how to install and operate Foundation fieldbus. The projects with the fewest issues were the ones that spent the time right up front training the individuals who install and do loop check.”

Brown continued, “For example, one large company invested several hours on training for onsite personnel as well as contractors. They started up a major plant with only three fieldbus segments out of 3,600 showing any installation issues. The same principle applies to operators, area engineers and, of course, maintenance engineers. Without proper training, the understanding of system operation can be difficult — there is a lot of information, and you must understand how to read it and understand what it is telling you. This affects startups and normal operation. A well-trained engineer can identify an issue and determine the correct solution very quickly.

“My approach is train them, and train them again, or as one of my colleagues keeps saying, ‘training, training and training,’” concluded Brown. “We have seen the results of this approach, and they are positive. We have also seen what happens without the proper training.”

Ensuring ‘certainty of outcome’

B.R. Mehta, senior vice president, Reliance Industries Ltd., is also a veteran of fieldbus project planning and implementation. He played a pivotal role in adopting Foundation technology as part of the Jamnagar Export Refinery Project (JERP) in India. “In any large Foundation fieldbus project, training
is the key to success at each stage of the project and the entire lifecycle of the plant,” said Mehta, “It is important to provide very detailed training at the beginning of engineering to all EPC contractors and application engineers to cover areas such as segment design, device assignment, physical layer verifications, and calculations of macrocycle and free time requirements.”

He added, “With this lifecycle approach for training on mega projects, coupled with extra efforts to ensure ‘certainty of outcome,’ we have achieved smoother and faster implementation of projects, as well as successful startup, pre-commissioning and operation of all units in our refining complex.”

**Value of certified training**

Recognizing the critical nature of fieldbus technology instruction, the Fieldbus Foundation recently established the Foundation Certified Training Program (FCTP). This program defines uniform standards for Foundation fieldbus educational curricula around the world, as well as acceptable levels of learning for students of the technology. It is intended to ensure the availability of thorough, comprehensive and accredited training to the process automation marketplace.

According to Fieldbus Foundation Marketing Manager Bill Tatum, the FCTP was developed to ensure instructors delivering Foundation fieldbus educational courses are skilled, knowledgeable and technically competent. Through certification, the program demonstrates to prospective end user students that fieldbus training centers, and their instructors, have been thoroughly evaluated based on strict criteria, and have the necessary qualifications to provide the very best training available.

“Effective and standardized training of plant personnel is the key to successful implementation of an advanced technology such as Foundation fieldbus,” said Tatum. “Process end users want to maximize the benefits of their fieldbus instrumentation and control system investments, and experience has shown that training of operators, engineers and technicians is essential to getting the most out of the technology.”

The procedures that educational institutions must follow in order to gain certified Foundation training site status, together with certified course instructors and certified curricula, are rigorous. For example, certified training centers are required to maintain multiple Foundation fieldbus hosts and devices onsite in order to display competence with fieldbus technology. They must also demonstrate to auditors that their course material adheres to set instructional standards covering fieldbus segment limits; device replacements; commands, icons, menus and screen designs of different software packages; and communication, scheduling and function block assignments enabling configuration.

In addition, certified instructors are audited to see if they have achieved specified Fieldbus Foundation training goals. Instructors must demonstrate expertise in
The Foundation Certified Training Program (FCTP) defines uniform standards for Foundation fieldbus educational curricula around the world, as well as acceptable levels of learning for students of the technology.

Types of instruction available

The Foundation Certified Training Program currently offers three levels of certification, and others may be added in the future. The current certifications include Foundation Certified Professional, Foundation Certified Support Specialist, and Foundation Certified Technical Specialist.

Educational facilities completing the multi-stage FCTP certification process can issue certificates showing the Fieldbus Foundation accredits their courses. They also gain recognition from the foundation on its website at www.fieldbus.org.

Around the world, institutions currently certified under the FCTP program include: Fieldbus Center at Lee College, United States; Trine University, United States; SAIT Polytechnic, Canada; and STC Brielle, The Netherlands. Other training centers participating in the program include: University of Miskolc, Hungary; Waseda University, Japan; and King Mongkut’s Institute of Technology, Thailand.

FOUNDRY CERTIFIED TRAINING CENTERS

The following technology instructional facilities have met the rigorous requirements involved in attaining certified training center status from the Fieldbus Foundation.

Fieldbus Center at Lee College

The Fieldbus Center at Lee College, located in Baytown, Texas, USA, is a leading educational center for emerging technologies in the field of industrial automation. The facilities of Lee College include a multi-million dollar pilot plant and several state-of-the-art MicroPlants that allow students to build Foundation fieldbus segments, configure devices and develop control strategies.

SAIT Polytechnic

SAIT Polytechnic maintains a state-of-the-art Foundation fieldbus training facility on its campus in Calgary, Alberta, Canada. SAIT offers Foundation fieldbus Certified Professional — a comprehensive, five-day training program. Upon successful completion of this course, participants receive Foundation Certified Professional certification. SAIT recently upgraded its Foundation fieldbus lab to incorporate High Speed Ethernet (HSE) technology.

STC Brielle

Located in Brielle, the Netherlands, close to the Rotterdam-Europoort industrial area, STC Brielle has established a unique training center for process control and automation. The combination of complex simulation facilities and hands-on training gives students a chance to enhance their theoretical knowledge and gain user experience by working on real Foundation fieldbus equipment and configurations.

Trine University

Trine University, located in Angola, Indiana, USA, is a private co-educational institution granting associate, bachelor’s and master’s degrees in more than 30 different programs. In March 2005, the Trine University Technology Center established the Great Lakes Regional Foundation fieldbus training center. This facility offers fieldbus training that is not only standardized, but also focused on the needs of industry throughout the Midwest/Great Lakes region of the U.S.

VENDOR-SPECIFIC TRAINING OPPORTUNITIES

While Foundation Certified Training is the best overall solution for suppliers and end users seeking comprehensive, vendor-neutral instruction on Foundation technology, many leading automation vendors also offer training courses focused on their own fieldbus products.

Emerson Process Management offers a number of Foundation fieldbus courses enabling the skills and knowledge to achieve the operational benefits of the fieldbus digital architecture.

Yokogawa’s training courses allow project engineers and field technicians to gain a basic understanding on how Foundation fieldbus projects are different from conventional projects.

Since Foundation technology in process automation is closely connected to engineering, installation and operation in hazardous locations, R. STAHL conducts various training courses for customers seeking to learn about the very special and sensitive Ex-requirements.

Softing offers a wide range of practice-oriented fieldbus training classes. The training program covers a multitude of topics in the field of industrial automation.
Pilot Projects Reflect Demand for FF-SIF Solutions

Shell and Saudi Aramco look to fieldbus for improved SIF performance

The FOUNDATION for Safety Instrumented Functions (FF-SIF) technology enables automation equipment suppliers to develop SIF devices incorporating powerful fieldbus diagnostics. Plant safety systems can now employ the same rich diagnostic capabilities traditionally offered by FOUNDATION fieldbus, which are the key to improved process reliability and robustness as well as increased uptime and fewer spurious alarms.

In this issue of Fieldbus Report, two leading adopters of FOUNDATION technology — Shell Project & Technology (formerly Shell Global Solutions) and Saudi Aramco — describe their plans for the implementation of FF-SIF technology.

CONTINUED ON PAGE 20
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**FOUNDATION fieldbus**, with its industry-proven distributed function blocks and open communications protocol, is an ideal platform for advancing standards-based safety instrumented functions (SIFs). **FOUNDATION technology** enables process end users to realize significant CAPEX and OPEX benefits by extending the value propositions of extensive diagnostics, high reliability and secure communications into plant safety systems. The SIF protocol was approved by TÜV Anlagentechnik GmbH to meet the requirements of IEC 61508 up to, and including, Safety Integrity Level (SIL) 3.

Leading automation equipment suppliers are taking the lead in designing devices to meet the growing market demand for fieldbus-based SIFs. Certifying agencies such as TÜV will provide certification for use of the equipment in an Instrumented System (SIS) SIF environment.

**Integrated asset management**

In May 2008, the Fieldbus Foundation conducted a successful demonstration of its **FOUNDATION for SIF solution** at Shell’s technology center in Amsterdam, the Netherlands. The purpose of this live technology demonstration, which attracted process automation end users and equipment suppliers from around the world, was to evaluate **FOUNDATION fieldbus-enabled safety valves with Partial Stroke Testing (PST) capability**, as well as various pressure, level, temperature and diagnostic devices. The demo also evaluated system integration capabilities with asset management and Basic Process Control System (BPCS) platforms.

Audun Gjerde of Shell Project & Technology conducted the SIF pilot demo at the Amsterdam event. He commented, “By implementing **FOUNDATION for SIF**,Shell expects enhanced diagnostics through a fully integrated asset management system. We also anticipate less testing of final elements thanks to smart testing and diagnostics, as well as online testing and partial stroke testing. This will result in early detection of dangerous device failures and fewer spurious trips.”

According to Gjerde, Shell Project & Technology recently determined that **FF-SIF would be specified for use** on a Nederlandse Aardolie Maatschappij (NAM) project in the Netherlands. This is the first of a number of identical projects expected to utilize the technology. “We are in discussions with several leading automation suppliers for commitments on the logic solver side,” said Gjerde. “When the instrument scope is complete, we will be talking to various device vendors about providing us with safety-approved products for the initial installations. The Shell Project & Technology Group Process Automation Control and Optimization (PACO)

One of the key automation companies participating in the Shell demonstration, Yokogawa, provided an FF-SIF prototype of its EJX pressure transmitter, as well as the CENTUM VP system for the Human-Machine Interface (HMI) and PRM solution for the asset management system. Yokogawa also supplied ProSafe-RS as a prototype FF-SIF logic solver along with the EJX transmitter, and cooperated with other FF-SIF device manufacturers, including Metso, Fisher, Biffi, Smar and Magnetrol, in support of a successful FF-SIF technology demonstration at the Saudi Aramco technical center.

Another FF-SIF demonstration participant, MooreHawke, provided its TRUNKSAFE system, the industry’s first fault-tolerant fieldbus solution. Before the release of this system, users had the ability to design in redundancy with fieldbus power supplies, devices and H1 cards. However, even with this strategy, the fact remained that multiple transmitters and critical valves were still dependent on one cable that carried all of the segment’s communications back to the host system. With FF-SIF, availability calculations revolve around raw MTTF data from each component that performs the SIF. TRUNKSAFE’s redundant trunks eliminate concerns about the one unaccounted for, “real world” incident that happens in every plant around the world: an accidental broken or disconnected twisted pair.
Honeywell solutions make your people, assets and processes more efficient.

The open standards of FOUNDATION Fieldbus are integrated transparently with the Experion® Process Knowledge System (PKS), offering a high performance, advanced fieldbus solution. Whether your project requires commissioning fewer than 20 devices or thousands of devices, Honeywell offers unsurpassed experience and expertise in defining the Experion fieldbus solution that best suits your needs, while reducing installation costs, decreasing commissioning time and lowering maintenance expenses.

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will monitor the development and QA together with our NAM project organization.”

Gjerde indicated that Shell Project & Technology is anxious to see industry progress in the area of FF-SIF implementation. “By launching these projects where we are seeking approved and certified products — not prototypes — we hope to kick-start FF-SIF development in companies that have committed to work with us. In September, we will have a meeting with NAM to agree on scope, and maybe we will have a timeline for the first projects as well.”

Gjerde concluded: “Our message to the vendors is that we want to employ the technology, and by launching this project based on FF-SIF, we are proving that we are willing to do so.”

New architecture emerging

Patrick Flanders, an engineering consultant with the Saudi Arabian Oil Company (Saudi Aramco), has been actively involved in comprehensive FF-SIF pilot projects, which are intended to show how the increased information delivered by Foundation fieldbus communications enables significant benefits in the deployment of plant safety systems.

Flanders said, “At Saudi Aramco, we have demonstrated how a new control architecture is emerging that will allow both conventional safety system I/O and fieldbus communications to be utilized to monitor valve diagnostic information within the asset management system while meeting safety critical application risk reduction targets.”

To date, Saudi Aramco has successfully launched two FF-SIF pilot projects. The company staged the pilot systems in 2005 for “proof of concept” at its Research & Development Center in Dhahran, Saudi Arabia. The systems were subsequently advanced to an exhibition-style demonstration at the Saudi Aramco Process Automation Technical Exchange Meeting in Dhahran in November 2008. This demonstration was so successful that plans were initiated to install working FF-SIF systems within operating oil and gas facilities. An initial project is planned for the Juaymah gas plant in Saudi Arabia in late 2010. A second installation is still in the planning stages.

According to Flanders, Saudi Aramco’s target SIF application (known as “Smart ZV”) involves emergency isolation valves with automated functional testing and diagnostics. The system combines a safety logic solver and two valve controllers with local control panels, along with a pressure transmitter to measure differential pressure across each valve. The Smart ZV installation will replace existing emergency isolation valves with new valve bodies and pneumatic valve actuators fitted with Foundation-compliant smart valve controllers. FF-SIF technology will provide both safety “critical” and safety “related” communications between the safety logic solver, valve controller and local control panel using proven H1 (31.25 kbit/s) equipment.

“The first operating, plant-level FF-SIF installation at the Juaymah gas plant will show how the use of fieldbus communications results in lower costs due to reduced hard-wired I/O to the safety logic solver, as well as enhanced local testing and diagnostic capabilities,” said Flanders. “Once the advantages of FF-SIF are demonstrated on a small scale, Saudi Aramco will seek expanded deployment of this technology in order to exploit its benefits on larger, mega scale projects.”

Flanders indicated Saudi Aramco has demonstrated opportunities to use a combination of conventional safety system I/O and Foundation fieldbus communications in plant safety applications. This includes the study of FF-SIF communications over common H1 segments and the way information (both safety critical and safety related) is managed within the field-mounted valve controllers, safety logic solver and asset management system.

He commented, “We are evaluating how FF-SIF Smart ZV technology compares with existing solutions offered by HART communications for improving integration of the plantwide asset management system, safety logic solver, valve controller, local control panel and other peripheral instrumentation.”

Commercial products needed

According to Flanders, limited-scale deployments will allow Saudi Aramco to work closely with automation suppliers to finalize its Smart ZV design template. Once commercial FF-SIF products are available from both safety logic solver and valve controller suppliers, the company will update its standards and specifications to allow “mega” projects to specify the technology and capture significant
Saudi Aramco has demonstrated opportunities to use a combination of conventional safety system I/O and FOUNDATION fieldbus communications in plant safety applications.

performance and economic benefits.

“As a major end user of FOUNDATION fieldbus, Saudi Aramco looks forward to expanding the deployment of this proven technology to include safety instrumented systems,” said Flanders. “We are ready to work closely with our suppliers to introduce new Smart ZV solutions offering improved functional testing and diagnostics made possible through the use of fieldbus communications.”

The ARC Advisory Group (Dedham, Mass.) recently issued a white paper, *FOUNDATION Fieldbus Safety Instrumented Functions Forge the Future of Process Safety*, describing FF-SIF technology. Please visit the Fieldbus Foundation website at [www.fieldbus.org](http://www.fieldbus.org) to download the paper.
Technology Director Dave Glanzer Discusses Wireless I/O

WIO promises to advance open, interoperable automation infrastructure

The Fieldbus Foundation is supporting the development of advanced wireless technology for the industrial measurement and control environment. Wireless devices can reduce user installation costs while facilitating connection to process areas physically or economically difficult to access. Wireless networks also allow easy access to additional measuring and actuation points for process supervision and control, process optimization, plant and personnel safety, and maintenance.

Dave Glanzer, Fieldbus Foundation Director of Technology Development, believes Wireless I/O (WIO) promises to advance utilization of an open, interoperable fieldbus automation infrastructure incorporating both High Speed Ethernet (HSE) and industrial wireless applications.
**Fieldbus Report:** When was the Fieldbus Foundation's Wireless I/O project launched?

**Dave Glanzer:** Wireless marketing requirements and technical concepts were completed in early 2007, and the foundation’s board authorized development of technical specifications in June 2007.

**FR:** What is the scope/objective of this project?

**Glanzer:** The project goal is to provide specifications for a gateway between conventional I/O, wired HART® and wireless sensor networks and the foundation’s High Speed Ethernet (HSE) network. The HSE network can be wired for in-plant use, or serve as a wireless backhaul for remote applications. The wireless sensor networks can either be WirelessHART™ or ISA100.11a.

**FR:** What are the recent achievements in the WIO effort?

**Glanzer:** The first HSE wireless backhaul network was connected to the WIO gateway prototypes in August, and is working well in the Fieldbus Foundation laboratory in Austin, Texas.

**FR:** How does the WIO development fit into the current market, which is characterized by WirelessHART and ISA 100.11a technologies?

**Glanzer:** The position of the Fieldbus Foundation is one of neutrality. We are currently engaged in supporting our global strategy of providing an infrastructure-based architecture that supports both WirelessHART and ISA100.11a. We are enthusiastically in support of the user market’s request to suppliers for a single standard and support the ongoing work on convergence. In the meantime, however, we will continue our efforts to develop and deploy an infrastructure that will accommodate the evolving wireless standards inclusive of WirelessHART and ISA100.11a. The foundation’s WIO gateway provides an interface to both technologies and uses Electronic Device Description Language (EDDL) and Function Blocks to provide interoperability with the other WIO gateways.

**FR:** What are the advantages of the WIO solution?

**Glanzer:** The WIO development continues to broaden the automation infrastructure capabilities of FOUNDATION technology by providing interoperable gateways for wired and wireless HSE devices.

**FR:** What are the next steps going forward?

**Glanzer:** The next steps are to complete the HSE RIO validation and begin the wireless validation by the end of this year.

**FR:** How many foundation members are involved in the WIO effort, and who are they?

**Glanzer:** The WIO project consists of three teams. The HSE Remote I/O (HSE RIO) team is developing the specification for the gateway from wired HSE to conventional I/O and wired HART. The Fieldbus Foundation/ISA Cooperation (FIC) team is developing specifications for the wireless HSE backhaul to the gateway. The Wireless Sensor Interface Team (WSIT) is developing specifications for interface of wireless sensor networks to the gateway.

There are over 50 end users, engineers and technical managers working on the project. The companies involved include ABB, APAT, Apprion, Belden, Boeing, BP, Chevron, Cisco, EF Johnson, Emerson Process Management, ExxonMobil, GE, Geode Network Technologies, Herman Storey Consulting, Hodson Consulting, Honeywell, Maximum Control Technologies, MTL, National Instruments, Nivis, OPUS Consulting, Pepperl+Fuchs, R. STAHL, RuggedCom, Saudi Aramco, Shell Global Solutions, Smar, Softing, Tofino, Turck, Wi-Fi Sensors, Yamatake and Yokogawa.

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Enhanced EMEA Seminar Program
Benefits End Users

Addition of live fieldbus demos provides expanded learning opportunity

One of the primary tools utilized by the Fieldbus Foundation’s national marketing committees around the globe to promote the adoption of FOUNDATION technology by end users, engineering contractors and system integrators, is the delivery of training and educational seminars in local venues and in the local language.

Supported by the Fieldbus Foundation EMEA Executive Advisory Council and its EMEA Steering Committee, the national marketing committees across the Europe, Middle East and Africa (EMEA) region have actively organized educational seminars within their areas for several years — adapting the level of training to suit the audience as required, but always supporting the fundamental message that the FOUNDATION solution delivers open, scalable integration, process integrity and business intelligence across the plant enterprise.

Since January 2010, end user seminars or presentations in the EMEA region have been held in Germany, South Africa, Italy, Poland and Bulgaria. More events are scheduled for the remainder of the year in Turkey, France, Hungary, Czech Republic, the Netherlands, UK, Saudi Arabia, Kuwait and United Arab Emirates.

Depending on the region and target audience, delegates at an end user event would typically learn about FOUNDATION technology and fieldbus project economics (CAPEX and OPEX savings), segment design, system startup, commissioning and maintenance, asset management, diagnostics, FOUNDATION for Safety Instrumented Functions (FF-SIF), FOUNDATION in hazardous areas, and Control in the Field (CIF). Wherever possible, end users are invited to share their own project implementation experiences followed by a discussion forum or Q&A session. Some events also offer delegates the opportunity to meet sponsoring member companies at tabletop displays.

Acknowledging that practical, hands-on learning is such a successful method of demonstrating the technology and its ease of use, marketing committees have routinely made good use of demonstration units comprising a host system with field devices and components from multiple vendors. This, however, can be a time-consuming exercise for the organizers with risks of inconsistencies, incompatibilities and local device availability issues.

As part of its 2010 marketing strategy, the foundation’s EMEA Steering Committee committed to the design and development of three new FOUNDATION fieldbus demonstration units to ensure a consistent, standardized, vendor-neutral presentation of the full range of FOUNDATION technology features. The units have been engineered in the Netherlands by Electromach BV, a member of the R. STAHL technology group, and STC Brielle, a Fieldbus Foundation certified training center based in Rotterdam. The units will be stored and maintained by STC Brielle, but will be freely available to all EMEA national marketing committees to use at exhibitions, end user seminars and conference sessions.

Each of the new FOUNDATION demonstration units will feature one of three host systems from Emerson Process Management, Endress+Hauser and Honeywell, with a minimum of two segments on each to allow the demonstration of all physical layer combinations. Power supplies, diagnostics, wiring components and junction...
boxes have been supplied by MooreHawke, MTL, Pepperl+Fuchs and R. STAHL, with field devices and displays provided by ABB, Emerson Process Management, Endress+Hauser, Honeywell, Moore Industries, MTL, Pepperl+Fuchs, R. STAHL and Yokogawa.

The demonstration units are designed to be fully transportable and can be assembled in a matter of minutes. The field devices, junction boxes and barriers are mounted onto a steel cactus frame with a shelf unit to support the control room components, including the host, power conditioner, power supply and network components. Each unit will be capable of demonstrating most or all of the following project and technology features:

- Start-up/commissioning
- Device exchange procedure
- Control in the Field (CIF)
- High Speed Ethernet (HSE)
- Flexible Function Blocks (FFBs)
- Diagnostic & alarming
- Parallel host access
- Bridging
- Reliability & redundancy
- Loop performance
- Safety Instrumented Functions (SIFs)
- Fault propagation
- Link Active Scheduler (LAS) switching
- Cascade PID control

Marc Van Pelt, Vice President – Fieldbus Foundation EMEA Operations, is delighted with the launch of the new units. “Having these demonstration units with the accompanying presentations and scripts will make it much easier for the national marketing committees to offer hands-on demonstrations at their end user training events,” said Van Pelt. “I’m sure that the units will be in constant demand across the EMEA region and I’m pleased that STC Brielle will be managing the ongoing maintenance and administration of the units.”

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**Key to the success of the Fieldbus Foundation’s EMEA seminar program is the strong support of control system, instrumentation and component suppliers doing business in the region.**

For example, **Yokogawa** provided two EJX910 MV transmitters for use in the demo systems and has delegates in the local marketing committees who participate in seminars with presentations and tabletop exhibitions. **Pepperl+Fuchs**, a member of all EMEA committees and chairing several of the groups, supported the demo project with complete FieldConnex fieldbus infrastructure including the new High-Density Power Hub. **Endress+Hauser**, which is also very active in the EMEA committees, provided a DCS system and several field devices for the demos, and played a central role in layout and design of the demo units.

In addition, **MooreHawke** is actively involved with the EMEA programs and has donated demo unit equipment that will help demonstrate in real-time the power and capabilities of FOUNDATION technology. **R. STAHL**, a member of the EMEA SteCom and nearly all EMEA marketing groups, has been involved in the seminar program with presentations and product displays.

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Avoid the number one pitfall of FOUNDATION fieldbus™ networks: All power and communications are vulnerable to a single broken twisted wire pair.

Designed for plant-critical fieldbus segments, **TRUNKSAFE®** maintains all process communications without interruption, even if the network cable is broken or shunted.

With TRUNKSAFE, now you can take full advantage of fieldbus technology without worrying about simple cable failures.
Gaz de France Installs FOUNDATION Fieldbus Offshore

Predictive diagnostics help increase platform uptime and performance

With FOUNDATION fieldbus technology, Gaz de France has greater manufacturing flexibility and productivity through better access to process information enabled by fieldbus diagnostics and performance analysis data. The ability to use different diagnostic indicators also helps increase platform uptime and performance by detecting or predicting deteriorating performance and failure conditions before they cause any problems.
Gaz de France is a major European energy company with a workforce of more than 53,000. The company produces, transports, distributes and sells gas and services to 13.8 million customers, including individuals, companies and local authorities. With 28 offshore platforms in the English Channel and North Sea, Gaz de France is Europe’s number one distributor of natural gas, and one of the world’s top five providers of liquefied natural gas (LNG).

Monitoring and maintenance challenges

Gaz de France faced the challenge of improving process control on its offshore platforms. A major part of the challenge required upgrading technology from traditional pneumatic controls and discrete wiring. The company turned to Honeywell for its FOUNDATION fieldbus solution, an all-digital, serial two-way communications system that serves as the base-level network for the offshore platform production environment.

Gaz de France undertook its fieldbus project in hopes of achieving:

• Savings in total installation costs
• Decreased maintenance costs
• Enhanced remote monitoring and maintenance
• Reduced operating costs through a reduction in the number of unexpected helicopter trips to platforms
• Better asset reliability and management
• Improved analysis of field data
• Faster platform startup

Gaz de France wanted to enable easier maintenance of field instruments and early detection and notification of potential problems. By doing so, it would eliminate unplanned downtime, and reduce maintenance time and labor costs at its offshore operations. The company made the decision to move from conventional controls to fieldbus devices on a number of its platforms.

“We knew that fieldbus could offer distinct advantages over traditional analog and discrete wiring or even other digital buses at lower total installed cost and lower ongoing costs,” said Hans Katers, mining installation head, Gaz de France. “The key challenge was establishing the FOUNDATION fieldbus technology on offshore platforms so they could all be controlled remotely.”

Fieldbus control solution

After careful consideration and evaluation, Gaz de France selected Honeywell for its expertise in fieldbus. It also considered Honeywell’s value as a vendor for control systems. Gaz de France had recently implemented Honeywell’s Experion® Process Knowledge System (PKS) with success. The Experion PKS solution helps manage everything from optimized yield to reduced maintenance costs. It is built upon a standard distributed control architecture utilizing technology from the Abnormal Situation Management (ASM®) Consortium and integrates enterprise-wide physical plant and computer systems security features. The Experion system employing FOUNDATION technology offers:

• Robust, chassis-based design with optional fieldbus module redundancy
• Instant device integration through direct use of Device Description (DD) files by Control Builder
• Efficient integration to other applications and control systems with Open Data Access
• Timesaving firmware download feature
• Unique Chart Visualization to provide the right information to operators
• Full, optimized support of the Link Active Schedule (LAS) and multiple back-up LAS devices

To date, six of Gaz de France’s 28 platforms have fieldbus technology installed for two-way communication and remote control. Gaz de France has also employed a variety of FOUNDATION fieldbus-compliant transmitters.

In addition to the remote platforms, Gaz de France’s on-site gas plant also operates with FOUNDATION technology integrated with Experion.

“The integration of our Experion PKS system with FOUNDATION fieldbus has gone well, and we are very pleased with the bi-directional communications among field devices to the control system.”

Gaz de France uses FOUNDATION fieldbus technology for remote offshore platform control.
said Hans Kwee, instrumentation engineer, Gaz de France.

With traditional analog and discrete devices, operations staff had no way to tell if these instruments were operating correctly or if the process information they sent was valid. So, technicians would spend more time verifying device operation. With FOUNDATION fieldbus, users can tell if devices are operating correctly and if the information they’re sending is good, bad or uncertain. This eliminates the need for most routine checks and helps detect failure conditions before they cause process problems.

Kwee concluded, “The ability to perform predictive maintenance scheduling enabled by better process diagnostics, performance analysis data and operational statistics will provide a huge advantage. The bottom line is significant savings in the number of unexpected helicopter rides out to the platforms when something goes wrong.”

Because of the success of FOUNDATION fieldbus, Gaz de France plans to install the technology on additional platforms in the future. In addition, the Experion solution has been used to commission approximately 75,000 FOUNDATION devices for projects throughout industries such as HPI, oil & gas, pulp & paper, chemicals, mining, metals & minerals, and food & beverage, and among educational institutions worldwide. Leading companies like ConocoPhillips, Gaz de France, Pride-Chem, Wintershall, Shell, and Sasol Deutschland GmbH Werk Moers are among the many customers around the world who have opted for this solution, including the largest FOUNDATION fieldbus installation ever — with approximately 25,000 devices — just completed in the Middle East.

Honeywell’s Field Device Manager Adds Key Capabilities

Now, for the first time, Honeywell’s award-winning Field Device Manager (FDM) has added support for FOUNDATION fieldbus advanced diagnostics. FDM R410 has been enhanced to access devices connected to Experion R400 Fieldbus Interface Modules (FIMs) and to provide support for those devices through DTM. FDM features the ability to detect devices and automatically add them to its database. It uses information accessed from the actual, connected device to automatically assign the proper device template. This saves time by eliminating the need to build templates and assign them to devices.

FDM also reduces system maintenance costs in plant-wide implementations through a unique distributed Client/Server architecture and the ability for any FDM Client to connect to any FDM Server. FDM automatically updates the device health status indication in the network view against each device, quickly alerting the user to devices of concern. Additionally, FDM provides live device updates through auto discovery, virtually eliminating engineering costs associated with system setup.

MTL’s new range of Fieldbus Barrier wiring hubs establish a new benchmark for FOUNDATION™ fieldbus networks.

The 9370-FB Series Fieldbus Barrier retains the major benefits of the “High Energy Trunk” technique whilst removing the drawbacks associated with existing implementations. Gone are inflexible, custom-built field enclosures and complex wiring looms. The result is lower cost, safer operation and higher reliability throughout the life-cycle of the fieldbus network, with benefits not only for the plant operator but for all parties involved in the design and installation process.

- Live pluggable modules for safer maintenance
- Optional surge protection - even as a retro-fit
- Standard enclosures eliminate “customised” wiring
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To find out how MTL can help you with your next Fieldbus project, visit our website at www.mtl-fieldbus.com or email enquiry@mtl-inst.com

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PHOENIX CONTACT PHYSICAL LAYER OFFERS NUMEROUS BENEFITS
A modular approach to fieldbus physical layer components from Phoenix Contact provides infrastructure connection between the process fieldbus controller and field devices. The new concept, says the company, combines industrial electronic packaging and data communications competencies to deliver a high-value fieldbus infrastructure solution. It provides a number of benefits:
• The fieldbus is expanded without disrupting communication;
• Modular segment protection enables flexibility within the fieldbus network;
• Valuable enclosure space is saved because only the needed number of device couplers are installed;
• Scalability for fieldbus segment protection boosts control; and
• Fieldbus integrity equals a hot swappable modular design.

Get more details by visiting the Phoenix Contact website.

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THE digitalYEWFLO VORTEX FLOWMETER WITH FieldMate™ FlowNavigator™
The digitalYEWFLO vortex flowmeter with Yokogawa original SSP (Spectral Signal Processing) technology provides high accuracy and stability to the flow measurement of gas, steam and liquid. The FOUNDATION fieldbus communication type has Analog input, Discrete Input, PID, Integrator and enhanced Arithmetic function block. This Arithmetic function block expands the mass flow calculation function for the saturated steam, superheated steam by using external pressure and internal/external temperature input with a high accuracy. Additionally, in combination with FSA120 Flow Configuration Software “FieldMate FlowNavigator,” it provides the high accurate mass flow calculation output for general gas, natural gas and liquid. The features of FSA120 are as follows:
• Configures Arithmetic function block with Natural gas standard “AGAB”/“ISO12213” for the natural gas measurement and physical properties Database “DIPPR” for the general gas and liquid measurement
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• Configures EJX multivariable transmitter as well

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SOFTING’S SMART Foundation FIELDBUS KIT
Softing’s Fieldbus Kit 2 (FBK-2) is an industry-hardened, yet economical off-the-shelf communication board for the rapid development of FOUNDATION fieldbus H1 and PROFIBUS PA field devices for Intrinsically Safe (IS) and non-Intrinsically Safe environments.

• On-board HART and serial Modbus/RTU interface to bridge existing devices into the H1 or PA world
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• No additional costs for fieldbus physical-layer testing are incurred
• Software maintenance is included to ensure continual compliance to the ever evolving specifications
• Small foot-print (40x40mm) to fit into most existing device housings
• Mature and smart solution that connects thousands of field devices

On request, Softing’s FOUNDATION fieldbus development team is ready to customize this device to fit specific requirements.

SOFTING

RID14 AND RID16 Foundation FIELDBUS FIELD INDICATORS
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EMERSON ANNOUNCES NEW OPTIONS FOR ROSEMOUNT® SINGLE LEAD GUIDED WAVE RADAR (GWR) LEVEL TRANSMITTERS FOR CHALLENGING APPLICATIONS

Emerson Process Management has enhanced the single probe offering of the Rosemount® 5300 Series Guided Wave Radar (GWR). The new options include a thicker rod for longer measurement lengths and a Hastelloy C-276 probe and wetted parts for applications in corrosive, hot and high pressure environments. The new, thicker 13mm probe is designed for an extended measurement range and is available in stainless steel for standard operating temperatures and pressures. The new Hastelloy C-276 probe and wetted parts option make the transmitter ideal for use in corrosive, hot and high pressure environments.

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HONEYWELL’S FIELD DEVICE MANAGER ADDS KEY CAPABILITIES

Now, for the first time, Honeywell’s award-winning Field Device Manager (FDM) has added support for FOUNDATION fieldbus advanced diagnostics through FDT/DTM technology. FDM R410 has been enhanced to access devices connected to Experion R400 FIMs and to provide support for those devices through DMTs. This comes in addition to existing FDT/DTM support for HART, Profibus, and HART over Profibus. FDM features the ability to detect smart devices and automatically add them to its database. It uses information accessed from the actual, connected device to automatically assign the proper device template. This saves time by eliminating the need to build templates and assign them to devices. Users can now take full advantage of maintenance and advanced diagnostic features available only through DMTs for FOUNDATION fieldbus devices.

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UPDATED “INSTALLING FIELD BUS” WHITE PAPER

Many automation engineers are coming face-to-face with fieldbus applications for the first time. Learn the fundamentals you need to look out for when installing fieldbus in your plant. This white paper provides practical advice on fieldbus segments, fieldbus power supplies and device couplers, short circuit protection, segment termination, creating redundant fieldbus segments, hazardous area installations, and much more. Get this updated white paper now!

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THE NEW MTL9370-FB — FIELD BUS BARRIERS, ONLY BETTER

MTL’s new range of Fieldbus Barrier wiring hubs establish a new benchmark for FOUNDATION fieldbus networks. The 9370-FB Series Fieldbus Barrier retains the major benefits of the “High Energy Trunk” technique whilst removing the drawbacks associated with existing implementations. Gone are the inflexible, custom-built field enclosures and complex wiring looms. The result is lower cost, safer operation and higher reliability throughout the lifecycle of the fieldbus network, with benefits not only for the plant operator but for all parties involved in the design and installation process.

• Live pluggable modules for safer maintenance
• Optional surge protection — even as a retro-fit
• Standard enclosures eliminate “customized” wiring
• Smaller footprint gives up to 70% space savings

To find out how MTL can help you with your next fieldbus project, visit our website at www.mtl-fieldbus.com or email: fieldbus.info@mtl-inst.com.

MTL
www.mtl-fieldbus.com
DATACELL® FOUNDATION FIELDBUS M-EZ CABLES — SUPERIOR GROUND INTEGRITY

FF-844 certified DataCELL Foundation fieldbus M-EZ Cables have up to 24 foil-shielded pairs with an extruded binder over each pair — in a single cable. Performance guaranteed and custom-configured to your requirements, cables are easier to strip and install and eliminate potential cross-continuity. Options include: single-/multi-pair, individually/overall foil-shielded pairs w/drain, 16/18AWG, colors and ground wire. Free design and prototyping services, no minimums and fast delivery. Complimentary samples! Northwire, Inc. +1-715-294-2121.

NORTHWIRE
www.northwire.com/buscable

PEPPERL+FUCHS INTRODUCES NEWEST VERSION OF ITS ADVANCED DIAGNOSTIC MODULE DTM SOFTWARE

Advanced Diagnostic Modules (ADM) monitor the quality of fieldbus communication for Foundation fieldbus H1 and PROFIBUS PA networks, and Diagnostic Manager software includes a number of updates that dramatically speeds fieldbus commissioning and takes the guesswork out of troubleshooting for ADM users. The most significant improvement to the new Diagnostic Manager is a built-in expert system that automatically learns the communications behavior of a segment during commissioning, and over time and is able to intelligently diagnose any situation on the basis of past experience. Additional updates of significance include: Automated tag reading to enable reading and documenting tags and device IDs in combination with any FOUNDATION fieldbus host and an improved oscilloscope which offers more trigger events and automatically captures up to 10 shots in a row; each bit and telegram is identified with type and value, as well as source and destination address.

PEPPERL+FUCHS www.fieldconnex.info

INSTRUMENT TECHNICIANS AND AUTOMATION ENGINEERS CAN BRING ASSET MANAGEMENT TO THE FIELD

Intelligent devices provide the foundation for performance-enhancing asset management programs. The latest version of FactoryTalk AssetCentre enables instrument technicians and automation engineers to centrally-store configuration of isolated networks and/or smart process devices to improve diagnostic and troubleshooting capabilities. This field-enabled process device solution allows users to check out device files, edit the configuration data remotely while connected to the device, and check the file back in to create a new master device configuration file. This gives users the ability to customize their FOUNDATION fieldbus device settings, perform realtime calibration and monitoring, and archive diagnostic and configuration information within the PlantPAx architecture. This asset management tool can be used to improve compliance to change management and product quality initiatives, improves technician productivity and process throughput while reducing risk. The solution is ideal for project commissioning when the automation system is not fully functional, OEM applications or projects that engage multiple control architectures.

ROCKWELL AUTOMATION www.rockwellautomation.com

DIAGNOSIS FOR EVERYBODY — NOW ALL R. STAHL FIELDBUS POWER SUPPLIES FEATURE INTEGRATED PHYSICAL LAYER DIAGNOSIS!

No more separate tools or diagnostic modules required, all the ISbus Fieldbus Power Supplies do have the physical layer diagnosis inside — at no extra cost. Depending on the user requirements, the Fieldbus Power Supplies offer three levels of diagnosis access:

- During installation or troubleshooting: via a front interface to display the actual physical layer values on any standard PC without the need to install special drivers or DTMs
- During operation for pro-active alarming: the Advanced Fieldbus Power Supply has adjustable warning levels, a relay contact and LED indicators to issue warning messages if there is any deterioration of the fieldbus quality
- Online diagnosis access: with the additional Diagnosis Communication Module all the physical layer information of up to 8 segments is sent via H1 and enhanced EDD to an Asset Management System for further analysis

Increase your network availability without much additional cost or hardware — the smart ISbus Fieldbus Power Supplies can do it!

R. STAHL www.stahl.de

azbil DIGITAL FIELD SOLUTION — ASSISTING YOU IN MANAGING YOUR ASSETS!

azbil Yamatake is providing sophisticated asset management solutions with Harmonas-DEO registered DCS Host system and “Valstaff” Control Valve lifecycle management and service solution. azbil Digital Field Solution responds to strong user demand to prevent unnecessary plant shutdown and keep high level plant safety by monitoring control valve “Stick Slip” and other model-based predictive diagnostic indications. Visualization of plant-process information generated by diagnostic capabilities in digital field devices and integration of such device information to the Control Room and Board Room will improve OPEX in daily plant operation and guarantee safety plant operation.

azbil YAMATAKE CORPORATION www.azbil.com
Yokogawa’s InsightSuiteAE service solutions show you how to operate your plant assets at optimum efficiency while keeping maintenance costs to a minimum.

One such solution is field digital baseline tuning. With this service, we can help you maximize the effectiveness of your FOUNDATION™ fieldbus devices by making all asset conditions clearly identifiable at a glance, improving asset availability, and enabling a planned, predictive, and condition-based maintenance (CBM) approach.
Automation Infrastructure For Operational Excellence.

The Fieldbus Foundation is "Changing the Playing Field" in industrial automation. The scope of FOUNDATION™ technology makes it a process automation infrastructure—one of the most advanced and scalable solutions available.

This infrastructure is supplier-neutral and standards-based, providing end users with a common framework to implement and manage strategies for operational excellence and continuous improvement in process manufacturing.

Today, FOUNDATION fieldbus dominates the worldwide process automation market—and is a growing solution for the hybrid industries. It’s the "technology of choice" for both early adopters and new end users around the globe, especially in developing markets such as Asia-Pacific, Latin America and Eastern Europe.


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