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put intelligence
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INSIDE

DEVICE PACKAGE REPOSITORY EASES
ACCESS TO DRIVERS

HOW FDI ENABLES DIGITAL TRANSFORMATION

PLANT OF THE YEAR SURVIVES HURRICANE HARVEY



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WirelessHART



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FieldComm Group is a global organization with a mission to develop, manage and promote process automation standards. Learn more at fieldcommgroup.org

Making it easy



IT'S BEEN AN exciting year at FieldComm Group where our members are working on a wide range of new technologies to help users get data at their fingertips! We are developing solutions to deliver data to the cloud, on-premise systems and mobile devices utilizing all types of physical layers. Now more than ever, users have many paths available to access that valuable data in their field devices.

New connectivity and integration technologies are finally unlocking the value of stranded data to better leverage the 48 million HART devices installed in the field. The “low hanging fruit” of digitalization are solutions that provide simple and easy ways to access this data in context and bring device information (DeviceInfo) to the cloud. As the market transitions to a new and more robust integration technology for field device integration (FDI), suppliers will be able to use common industry standard information models for defining key parameters of process automation devices (PA-DIM). Furthermore, with the ability to use Ethernet and wireless networks, there are many ways to connect to higher-level systems within a facility or enterprise at data rates previously unavailable. These technologies have made HART “cool again” and the article “Hip HART” will help you understand the many ways in which HART data can enable *Connect + Integrate = Value*.

The enabling technology for simplified digitalization is the FDI Device Package. Simply put, this is the industry’s standard container for all information needed from a field device. Standards development organizations are collaborating around the FDI Device Package and the article “Beyond Interoperability” discusses the capability and the industry’s cloud-based repository to place device descriptions in easy reach of users and suppliers.

We are working hard to make sure the industry is ready for this transition and delivering new tools to suppliers capable of building FDI Device Packages for any device. We are expanding our training and Plugfest events to build expertise and design around interoperability between hosts and devices. We are now over 370 members of the top suppliers of process automation products to the industry and ready to bridge the transition and assure users that FieldComm Group registered products will meet their performance and interoperability needs.

Digitalization certainly helps operations run smoother, however, sometimes we cannot foresee all events. No plant understands that better than our Plant of the Year winner Chevron Phillips Cedar Bayou. At a critical time in the commissioning process, they were struck with Hurricane Harvey and intense flooding of the facility. Read their amazing story to understand how they used technology and data to gain intelligence about the status of the plant and what needed to be done to keep commissioning on track.

We have much to do and are thankful for the support of our member companies who make it all happen by aligning together for the benefit of the industry and ways to help the users turn data into intelligence. Happy reading! ●



Ted Masters

President and CEO
FieldComm Group

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Device drivers in easy reach

Cloud-based FDI Device Package Repository distributes EDDs and device files to quickly integrate smart devices



IT'S HARD TO keep your ducks in a row if you can't find them. That's why technicians have toolboxes and everyone has a tool drawer at home.

On the software side? Historically, not so much. While code and programs must be carefully organized, support software such as device descriptions (DD) are often scattered among many developers and suppliers, making it difficult for users to setup, configure, network and operate equipment.

"This is similar to when users get a new office printer, and they

have to find and install driver, so it will work with their PCs," says Hendrik Deckert, technical product manager for measurement and analytics in the Industrial Automation division at ABB.

"This is how it's been for process industry users when their devices need drivers, so they're asking why they need to search for drivers, and why they can't have one place to plug in?"

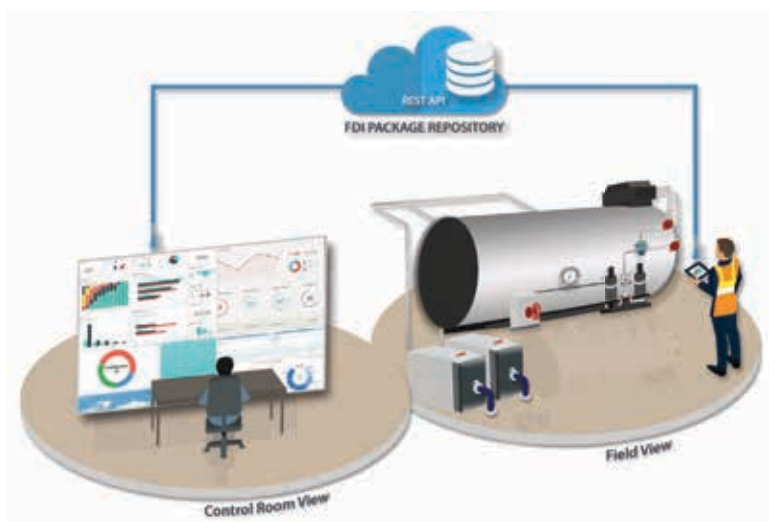
Because there's typically no one source for drivers, one of the most difficult challenges for end users

is obtaining the correct electronic device descriptions (EDD) files for HART and FOUNDATION Fieldbus instruments that will let these devices and other components integrate with their asset management systems, DCSs, SCADA systems, HMIs, tablets, smart phones and other devices.

"Managing EDDs and Field Device Integration (FDI) packages is monotonous and painful, but it's important," says Hiroyuki Tsugane, advanced automation system solutions marketing manager at Azbil Corp. "Many users complain about managing EDDs, so having a repository with an API that can store and manage EDDs and FDI Device Packages could solve their headaches."

Most drivers can be found on supplier websites, but searches for updates can be complicated and time-consuming. And sometimes device revisions aren't officially registered, so they aren't available.

"Just as FieldComm Group addresses user issues with the FDI standard, users want to get rid of constraints with Field Device Tools (FDT) and Device Type Managers (DTM) that had interoperability issues and devices that wouldn't cooperate," adds Deckert. "This is why they want



How does the FDI Repository work?

The FDI Device Package Repository is a cloud-based distribution source for registered EDD files and FDI Packages that's accessible via a web-based, RESTful application programming interface (API). Third parties can use the API to develop applications that access files in the Repository.

one place, hosted by FieldComm Group, where members can access and get drivers.”

ONE-STOP FOR EDDS

To address requests to simplify its user experience, FieldComm Group launched the FDI Device Package Repository, including:

- Cloud-based platform that uses representational state transfer (RESTful) APIs to let users access latest, updated drivers;
- One source for registered EDDs and FDI Device Packages regardless of protocol or vendor;
- Ability to let DCSs and other smart devices connect

directly—on an autonomous, machine-to-machine basis—and download the latest files

- Streamlined device revision management to make sure driver and user systems are always up to date; and
- Push notifications for updates.
- Protocol independence

However, even a cloud-based repository with interfaces is basically a filing cabinet, so accessing it requires applications. One of these is FieldComm Group's registered products online catalog (www.fieldcommgroup.org/registered-products). Launched in November 2018 it provides filter-

ing, search and driver downloads for more than 1,300 registered HART and FOUNDATION Fieldbus devices.

“A big part of the FDI standard's value proposition is it would address EDDs spread in different places, making it hard for users to figure out what they needed,” says Dan Ryan, engineering program manager in PlantWeb division at Emerson Automation Solutions. “The FDI Repository extends this effort by collecting integration files in one place, which simplifies the user's experience because they no longer have to search for the right, updated files.”

Ryan reports the Repository's

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REPOSITORY

other leading-edge advantage is it runs on a cloud-computing platform that can be accessed via a web interface. "This is also an interface that allows authorized software to access to the Repository, which lets outside devices log in and get drivers. This sets the stage for future devices performing automated checking for EDDs and FDI Device Packages, and downloading what they need. In the future, FDI Device Packages will ship data to the cloud, and devices will decide what data and parameters they want to send. FDI and the Repository are all about simplifying the lives of end users."

Azbil's Tsugane adds, "The Repository can already take commands and return results, but it can also check for any changes in EDD and FDI packages in it, and update not only manually, but also automatically."

ASSIST FROM OUTSIDE

ABB has also developed an application that uses the Repository's drivers and files. Deckert reports ABB's

Field Information Manager (FIM) software accesses the same, single-source FDI Device Package Repository. It's a device management tool that embraces the FDI standard's common host components to make configuration, commissioning, diagnostics and maintenance of fieldbus instruments faster and easier. FIM also uses FDI and a GUI to let users work more effectively with their instruments.

"Other suppliers can connect to the Repository via the FDI host system, but this is generic field device management. FIM lets users access the Repository, and see all their applicable drivers more easily," explains Deckert. "For example, when ABB releases a new device package, FieldComm Group will check, test, certify and register it. To be registered, device packages must prove they conform with the FDI standard. Once the package is certified, FieldComm Group will load it to the Repository's server, where FIM can connect, and show users everything that's there, so they no longer have to search." ●



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Hip HART

Applications highlight the potential of our industries' most popular protocol



MANY YEARS AGO, HART became and now remains the most pervasive digital communications protocol in process control—if you have analog 4-20 mA, you probably have HART. But it's also axiomatic that HART capabilities often go underutilized, and many end users aren't aware of the latest developments. Here's a rundown on what you can do with today's HART, guided by best practices and inspired by creative examples.

Today's HART actually encompasses four physical layers: FSK and PSK modems, WirelessHART, and HART-IP. The fundamentals are explained in detail in HART Technology: A Technical Overview (<https://amzn.to/348wheE>). Plus, every major control and asset management system in the world supports HART.

WirelessHART brings the benefits of wired HART to applications where it's too expensive or impractical to run communication wiring. Once a WirelessHART network is established, instrumentation can be added inexpensively and flexibly virtually anywhere.

HART-IP puts HART on internet-protocol (IP) networks, allowing high-speed configuration and applications that use Ethernet. The expected future adoption of two-wire Ethernet-APL technology will vastly simplify the critical

infrastructure requirements to deploy HART-IP devices en masse.

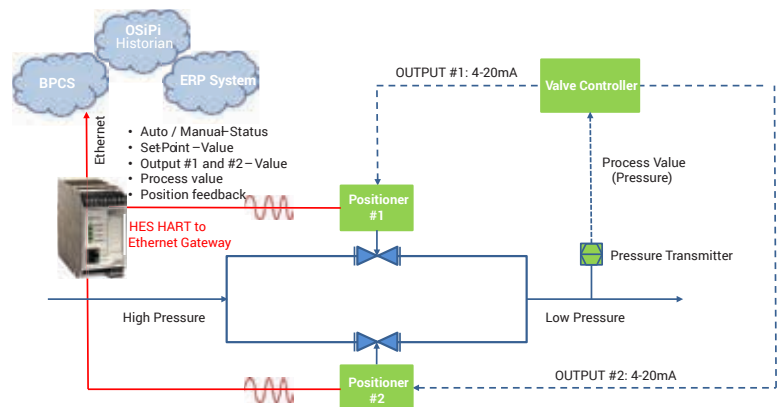
HART's unique position as a protocol that's already in a huge installed base of process control devices, with up-to-date capabilities provided by wireless, IP and myriad developments to enhance deployment, configuration and the usefulness of HART data, have led to many interesting applications.

ETHERNET CONNECTS TO HIGHER-LEVEL SYSTEMS

The ability to use existing industrial Ethernet and wireless networks in process manufacturing plants and automation systems has made data exchange within a facility, and even throughout global corporate net-

works, easier than ever. Process and diagnostics data from smart HART digital field instruments is being shared with mid- and higher-level control, asset management and data information systems without having to upgrade expensive process control systems. "At Moore Industries, we are seeing numerous customers using the HES HART to Ethernet Gateway System to collect and transmit valuable, smart HART device data to these higher-level systems over Ethernet via MODBUS/TCP or HART-IP for predictive analysis and control decision-making," says Charlie Fetty, regional sales manager, Moore Industries.

In a recent application (Figure 1), a Moore Industries customer needed



HART to Ethernet

Figure 1: The stem position HART data is collected from the smart positioners and sent to higher-level systems, no longer requiring the valve controller to communicate the controlled variable (CV), or desired stem position, output. Source: Moore Industries

HART APPLICATIONS

to control two valves that had Siemens smart HART positioners installed, and had a further requirement to communicate actual valve position over Ethernet using MODBUS/TCP to their higher-level systems.

“Originally, the customer wanted to use the Moore Industries PID controllers to control the two valves in order to balance and/or limit each valve’s travel, but the controller’s communication capability did not support MODBUS/TCP as their DCS and historian required,” Fetty says. “Moreover, the higher-level monitoring systems wanted to monitor and record where actual stem positions currently were. This could only be obtained by reading the HART data from the smart positioners.”

The HES four-channel model was used to pick up the stem position HART data from the smart positioners and send it to the higher-level systems, no longer requiring the valve controller to communicate the controlled variable (CV), or desired stem position, output. “The HES was an effective and economical solution that enabled the customer to take advantage

of existing HART data from the positioners and share that critical data with their higher-level systems on their existing Ethernet infrastructure.,” Fetty says.

FLOWMETERS REPLY IN REAL TIME

“FCI’s latest design approach to new flow, level, temperature and pressure instruments recognizes that we are all quickly moving away from single-parameter to multi-parameter process measurement, which also must include diagnostics, event logging and asset management over standard digital communication networks—HART and FOUNDATION Fieldbus,” says Randy Brown, director of marketing, Fluid Components International (FCI).

To get the full benefit of HART, FCI’s six families of thermal mass flowmeters are designed to include communication ports with full, two-way I/O. Brown says, “It is simply inadequate in today’s industrial process environment to be limited to only be able to read HART output. You need to be able to write HART commands as well.

“Building in full two-way I/O is or will soon

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become a de facto industry best practice. This design approach ensures seamless integration, setup and troubleshooting of instruments over the bus.” A validated and FieldComm Group-certified Device Description (DD) file or FDI Device Package provides additional insurance of instrument compatibility.

FCI’s newest ST80 Series Thermal Flow Meter comes standard with HART (Version 7) protocol. “It’s also currently in the final phases of certification in Austin, Texas, for FOUNDATION Fieldbus,” Brown says.

WIRELESS SAVES WATER IN A POWER PLANT

WirelessHART allows instruments to be added and moved as needed to monitor and diagnose utility usage as well as process parameters. For example, as part of an energy efficiency program, a power plant sought to better understand water flows throughout its widely dispersed waterhead, industrial pump and circulating cooling tower water supply system, but was limited by a shortage of instrumentation.

To realize automatic measurement of water balance in the whole plant, more flowmeters would be required. However, the installation locations of those flowmeter would be scattered, and the distances relatively far. It would be difficult to add cables, so it would not be feasible to add traditional wired instruments to all the locations.

“Considering the actual situation of power plant, Microcyber Corporation proposes to use intelligent WirelessHART technology to solve the problem,” says Jinchao Wang, WirelessHART engineer, Microcyber. In the solution, “The intelligent WirelessHART network is composed of WirelessHART Gateway G1100 and WirelessHART Adapter A1110 with flowmeter for data collection from a short-distance local area network (LAN). Then, radio solves the problem of long-distance communication between control center and field network. Finally, the data are unified and collected to data center, which perfectly meets the requirement of the intelligent water-saving project.” ●

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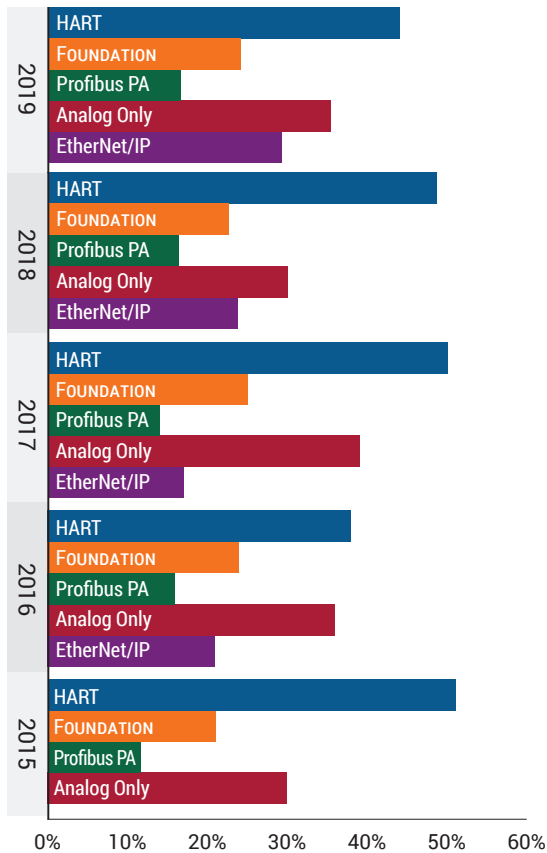
Looking Forward **VEGA**

Users weigh in

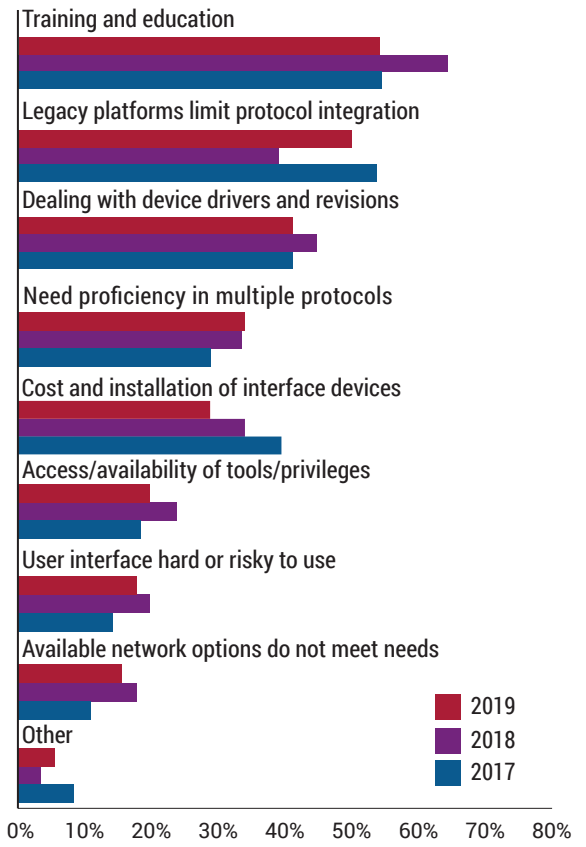
This year's annual survey was completed by 117 members of Control's primarily North American subscriber list representing the process industries including Food, Chemicals, Pharmaceuticals, Primary Metals, Petroleum, Utilities, etc.



Percent of installed wired devices by protocol



Major challenges to device integration



How connected are your digital protocols?

"Which of these statements describes your usage. (Please check all that apply.)"	HART			FOUNDATION		
	2017	2018	2019	2017	2018	2019
Permanently for real-time process systems	44%	48%	34%	66%	52%	41%
Occasional via handheld	61%	57%	56%	37%	38%	29%
Occasional via PC	34%	34%	33%	23%	31%	22%
Permanently for off-line activity	17%	20%	21%	14%	20%	22%
Permanently for real-time enterprise systems	12%	9%	7%	9%	10%	10%

Beyond interoperability

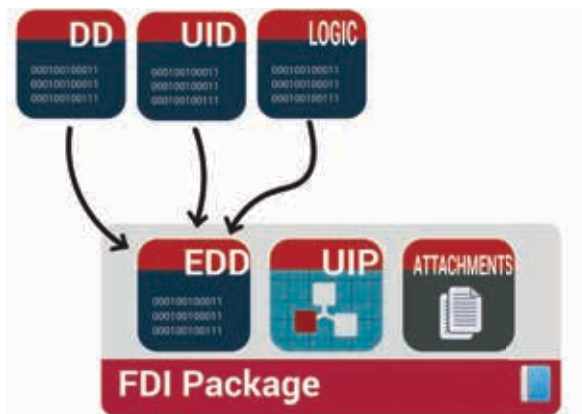
How FDI reaches the cloud and enables digital transformation



THE FIELD DEVICE INTEGRATION (FDI, www.Ask4FDI.com) standard was developed through a collaboration between major industry foundations and suppliers to bring standardization to the packaging and distribution of all software and tools necessary to integrate a device with a host system.

In recent years, field devices and the systems they connect to have become more powerful, as has the software required to maximize value creation from their use. Staying current with changing operating systems, asset management system versions, user interfaces, and device description (DD) releases is time-consuming and error-prone. To get around this, FDI standardizes their interfaces so host systems need only one FDI Device Package per device type per protocol to successfully integrate each device.

To do this, a physical device is virtualized in software as an FDI Device Package—a single file (*.fdix) that contains all the device information including device definitions, user interface plug-ins, certificates, device manuals and other components that are essential for managing the field device in the plant.



“If you want to measure temperature in your process application or plant, you want to use a great device, but you need the right tools to configure it, such as ABB’s Field Information Manager (FIM) software,” says Hendrik Deckert, technical product manager for measurement and analytics, Industrial Automation division, ABB. “However, there’s usually equipment from other vendors in the same facility, and you don’t want to install new software for each product. This is why the FieldComm Group

CONNECTS ANY PROTOCOL

The Field Device Integration (FDI) standard is not another protocol. It’s an integration technology that brings standardization to device installation and configuration. The FDI Device Package is a single file that contains all drivers, documentation and user interfaces to manage a field device.

Provides cybersecurity: FDI technology deploys state-of-the-art security measures include secure FDI Device Packages, sandbox environ-

ments for user interface plug-ins (UIPs), and OPC UA security capabilities.

Standardizes device management: FDI Device Package repository streamlines the process of device revision management. As the authoritative source for registered FDI Device Packages, it simplifies maintenance by providing a simple way to obtain the correct device files for your installation.

FDI STANDARD

created standard Field Device Integration (FDI) drivers for configuring HART, PROFIBUS and FOUNDATION Fieldbus.”

Softing Industrial Automation provides communication hardware, including “mobiLink”

Bluetooth interface, gateways, and network hardware and software for HART, FOUNDATION Fieldbus and PROFIBUS PA.

“One specialized interface allows you to convert communication of different protocols,” says Thomas

Rummel, senior vice president, engineering and product management, industrial data networks, at Softing. “Until now, we’ve had to talk to the vendors of different tools and do integration on the API level, which we can’t re-use. With FDI, we can use the same server for multiple tools.

FDT is similar, using common Device Type Managers (DTM), but FDI offers continuation of the DD approach.

Deckert reports HART originally used electronic device description (EDD) text files that covered all the properties and variables for each particular device. “This method was sufficient for

FDI’s most significant improvement is that all the documentation users need is in one device package.

basic temperature, pressure and other components, but as instruments grew more complex and took on multiple roles thanks to more powerful microprocessors, EDDs just couldn’t keep up,” explains Deckert. The initial solution was the Field Device Tool (FDT) standard and the FDT Group’s DTM that performs program calculations aided by an EDD-based user interface description (UID), while it’s still located inside an



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EDD. This allowed simple temperature devices to keep using EDDs, while more complicated device like flowmeters could use DTMs.

“With scalable FDI Device Packages, users can employ descriptive UIDs or use UIDs with active code for complex instruments. These two scalable parts are what FDI is all about—not more double configuration work for users,” explains Deckert. “For example, our FIM software for FDI has been adapted to accept UIDs in legacy field devices, which means users can add their installed base to a FIM system, and don’t have to rip and replace. Plus, while old devices don’t have to be replaced, they can be exchanged if the user decides to. In addition, even though most vendors follow FDI, ABB’s FIM also works with UIDs, so users aren’t dependent if a vendor hasn’t followed it.

“This is really FDI’s most significant improvement—all the documentation users need is in one device package, so users aren’t limited if internet coverage is lacking. Also, only the vendor’s team can create the attached files for their device.”

As an emerging technology, FDI is gradually becoming readily available in the market. “It’s in release now, and there are tools out there, Siemens, Emerson, Honeywell, ABB and others are strongly committed to FDI,” says Rummel. “The benefit is, you have one concept of serving HART, FOUNDATION Fieldbus, PROFIBUS PA and even other protocols—one for all protocols, instead of something similar, but not the same. In the future, it will allow you to do a single network across the enterprise. We’ll have better network architectures with common servers running on it. The integration improves the system architecture, and a gateway with a server can communicate with the devices.” ●



Microcyber's NCS-TT106x temperature module is a high performance fieldbus temperature transmitter with independent R&D communication controller. It supports multiple thermal resistances and thermocouples. Thermal resistance supports 2/3/4-wire connection mode, thermocouple can use cold end compensation function.

Multiple protocols

- ⊙ NCS-TT106H: HART Protocol
- ⊙ NCS-TT106P: Profibus PA Protocol
- ⊙ NCS-TT106F: FF H1 Protocol

High Accuracy (for common thermal resistance and thermocouple)

- ⊙ $\pm 0.04\Omega$ for 0~500 Ω
- ⊙ $\pm 0.35\Omega$ for 0~4000 Ω
- ⊙ $\pm 0.15^\circ\text{C}$ for PT100(-200 $^\circ\text{C}$ ~850 $^\circ\text{C}$)
- ⊙ $\pm 0.15^\circ\text{C}$ for PT1000(-200 $^\circ\text{C}$ ~850 $^\circ\text{C}$)
- ⊙ $\pm 0.025\text{mV}$ for -100mV~+100mV
- ⊙ $\pm 0.4^\circ\text{C}$ for K-Thermocouple(-200 $^\circ\text{C}$ ~1372 $^\circ\text{C}$)
- ⊙ $\pm 0.7^\circ\text{C}$ for S-Thermocouple(0 $^\circ\text{C}$ ~1768 $^\circ\text{C}$)

Easy Integration

Provide multiple electrical integration files, such as DD, EDD, CFF, GSD.



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Chevron Phillips Chemical Comp

Cedar Bayou Greenfield Ethylene project survives Hurricane Harvey with

Photo: Cedar Bayou facility in Baytown. Image courtesy of Chevron Phillips Chemical Company LP. and may not be reproduced without permission

DESIGNING, BUILDING, INTEGRATING, commissioning and starting up a new process plant is difficult enough, but dealing with a hurricane and flooding at the same time is just plain unreasonable. Nevertheless, that's exactly what Chevron Phillips Chemical Company LP achieved when it undertook its U.S. Gulf Coast (USGC) petrochemicals project and built a new unit at the plant for Ethylene production. Located at its Cedar Bayou facility in Baytown, Texas, the plant has a design capacity of 1.725 million metric tons/year (3.8 billion pounds/year).

“I knew that their capabilities would bring the value of digitalization and improved diagnostics to our new unit.”

The USGC Ethylene project at Cedar Bayou started in 2012, mechanical completion was done at the end of year 2017, commissioning was finished, and startup began in March, 2018. Near the end of construction, the Cedar Bayou facility also weathered Hurricane Harvey, and used its smart HART

and FOUNDATION Fieldbus devices to help hasten the plant's recovery, for which it has been named the FieldComm Group 2019 Plant of the Year.

SMART CONTROL IN THE FIELD

As part of the USGC Ethylene project at Cedar Bayou, the plant's automation architecture consists of a well-known distributed control system (DCS) with Field Control Station (FCS) controllers and safety instrumented systems (SIS).

“When FOUNDATION Fieldbus and HART technology were chosen for this project, the DCS was selected because it offered an integrated asset management software platform to use with the digital information from the field instrumentation,” says Amit Ajmeri, DCS specialist for the USGC project at Chevron Phillips Chemical Company.

In addition, the ethylene production unit's control system incorporates about 4,150 FOUNDATION Fieldbus field devices from multiple vendors for process measurement and control, and about 2,250 HART field instrumentation devices from different suppliers for its programmable logic controller (PLC) packages and safety applications. These intelligent devices were employed to help shorten start-up time with help of advanced



any LP named Plant of the Year

With help from FOUNDATION Fieldbus, smart HART devices and its DCS

diagnostic capabilities, while PRM streamlines and unifies integration of devices and networks, providing one centralized access point for the entire application of project.

“I had used HART and FOUNDATION Fieldbus technology before, and I knew that their capabilities would bring the value of digitalization and improved diagnostics to our new unit,” says Ajmeri. “Estimated capital cost savings associated with using these technologies at our USGC Ethylene project made it a no-brainer for us to convince management to use them.”

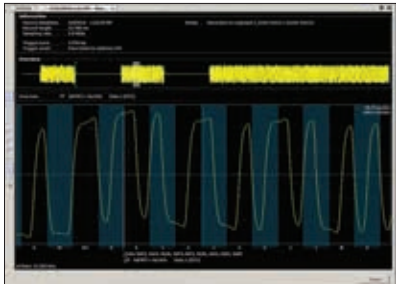
Ajmeri reports that designing the new ethylene plant to gain the advantages of the FieldComm Group’s technologies was his team’s biggest challenge. “Writing proper design specifications and change-in-project execution strategies to maximize the benefits offered by HART and FOUNDATION Fieldbus was crucial,” adds Ajmeri. “Turnaround time for the new ethylene unit was five years, but to make it happen, we also needed to design the process unit with safety and reliability in mind because they were the criteria for the project.

“In addition, we needed to change the work procedures for instrument technicians to gain the benefits from FOUNDATION Fieldbus and HART.

FieldComm Group technology at Cedar Bayou

Primary advantages enabled by instruments and controls using FOUNDATION Fieldbus and HART protocols at the greenfield 1594 Unit ethane plant at the Cedar Bayou facility in Baytown, Texas, include:

- Ease of HART-based, partial-stroke testing (PST) deployed from a central asset management platform for all safety instrumented system (SIS) valves has extended the turnaround time for the unit to five years, which means more total production.
- Device diagnostics and improved asset availability, which reduced time for on-specification and on-design product to less than five weeks after mechanical installation was completed.
- Correctly installed and maintained asset management system aids troubleshooting, which speeds up problem resolution and quickly returns devices to normal working states. Less device downtime means improved production and reduced maintenance costs.
- Documenting actions taken to resolve problems, which helps technicians know the best correction procedure in the future.



Above the flood

Figure 1: After Hurricane Harvey flooded the Cedar Bayou plant, personnel were able to run physical layer diagnostics on their smart FieldComm instruments and loop segments, view Yokogawa PRM reports, and quickly determine that they were healthy and weren't water damaged.


Remote device diagnostics, partial-stroke testing (PST), FOUNDATION Fieldbus physical layer testing, echo curves from radar gauges, online instruction manual access and specification sheets are some of the key benefits for maintenance staff.”


For example, Ajmeri adds that PST allowed his team to perform online testing of safety valves, so they could prolong full-stroke testing (FST) and achieve a five-year turnaround time for their process unit.

INTELLIGENCE AIDS RECOVERY

Near the end of construction phase, Hurricane Harvey and its record-breaking downpours arrived in August, 2017, and put the brakes on the entire project. Similar to large parts of Baytown and Texas in general, the plant experienced some flooding. Fortunately, most of the plant’s instruments, I/O, controls and field junction boxes were located above the flooding, and weren’t water damaged. The project team had verified data for their healthy-

Supporting the Plants of Tomorrow With Intelligence and Durability

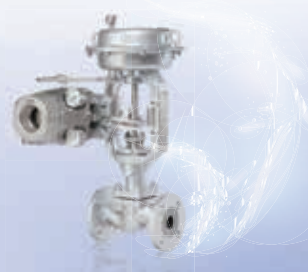





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Human-centered automation

Azbil Corporation

<http://www.azbil.com/>

Yamatake Corporation changed its name to Azbil Corporation on April 1, 2012.

device list before Harvey arrived, and confirmed that most devices were still in the same healthy condition after the storm, so they didn't have to perform any diagnostic checks for them.

"Fortunately, we didn't have to recommission the checked loops because we looked at the physical layer of FOUNDATION Fieldbus instruments and segments after the flood and could quickly tell if they'd been affected by the water/moisture because their communication signals would have had more noise. Because we used FOUNDATION Fieldbus for process and HART for safety, we were able to tell from the asset management system reports that they weren't water damaged, and that was very good news."

COMMISSION AND STARTUP

During the Ethylene Unit's commissioning phase, Ajmeri reports project participants sought to capture available diagnostic information during loop-check procedures. Their objectives were to confirm that asset management was fully utilized for device connectivity, as well as device description (DD) and device type manager (DTM) handling for all instruments; and create baseline data for all field assets for future diagnostics.

"For instance, they checked to make sure control valve signatures were captured during loop checking," says Ajmeri. "Ease of parameter setting was another key benefit of the FDT-based PRM. Control room access to parameters in all devices provided a big time sav-

ing, especially with project delays caused by the hurricane."

During the plant's startup phase, Ajmeri adds that asset diagnostic data from earlier project phases proved to be invaluable for troubleshooting to eliminate communication problems and other

issues. In addition, plant engineers were able to streamline tasks such as fine-tuning device configurations, calibrating valves and transmitters, and optimizing functional test procedure support. Plus, they also took advantage of detailed reports on bad instrumentation.

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“Reducing the time for site acceptance testing (SAT), faster commissioning and loop-check, and record time for production startup were key savings generated by using HART and FOUNDATION Fieldbus,” explains Ajmeri. “Easy access to all device diagnostics from the asset management system in the centralized control room and early indication of device performance was also essential.

“After successfully starting up the Ethylene Unit in record-time—just 35 days to reach 100% on-design and on-spec products—we realized we could also use FieldComm Group technologies to achieve tighter control and increased production. For instance, FOUNDATION Fieldbus showed us how far instrument measurements went above 100%, so we could re-range instruments for higher range for more production capacity. Within one month, we were able to run the unit over design capacity, which can generate extra production every year. Management was very happy with the Unit’s faster startup time and over-design production capacity.”

OPERATIONS HEALTH AND WEALTH

Now that the new Ethylene Unit has been up and running for more than a year, Ajmeri reports plant personnel are using asset management and diagnostics from a central location to help manage day-to-day as-

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The Logix 3800 from Flowserve is the digital positioner choice for applications that require a balance between technological sophistication and long-lasting reliability in tough environments.

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ABB
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Azbil Corporation's Smart ESD Device 700 series (700SIS) is now available. Devices in this series act as the interface for an emergency shutdown valve in a safety instrumented system. They're compliant with the IEC61508 international standard for functional safety. The 700SIS has been certified for applications that require SIL (Safety Integrity Level) 3 according to IEC 61508. *ESD: Emergency Shut Down



Azbil
www.azbil.com/products/bi/iap/products/hfbs/index.html



WIRELESS PRESSURE RELIEF VALVE MONITORING APP

Emerson's Plantweb Insight Pressure Relief Valve application helps automate and eliminate the guess work for pressure relief valve (PRV) monitoring, making it easier to monitor valves and reduce preventable losses. The real-time app data enables users to proactively take corrective action and improve asset management, while ensuring regulatory compliance.



Emerson Automation Solutions
Emerson.com/Plantweb-Insight

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FCI- Fluid Components International
www.FluidComponents.com

ENABLE YOUR DEVICE WIRELESS

Microcyber's A110 adapter connects 4-20mA, HART and Modbus device to WirelessHART, supporting loop, external power and battery. Using Microcyber WirelessHART technology to transmit additional HART information such as process and diagnostics data to host system is Reliable, Secure, Flexible and Smart.



Microcyber Corp.
www.microcyber.cn/industrialwires1/

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VEGA Americas, Inc.
(800) FOR-LEVEL, www.vega.com

PLANT OF THE YEAR

set monitoring and alarms, manage software upgrades, and create reports that ultimately reduce the cost and downtime associated with repairs.

“We’re using predictive diagnostics from HART and FOUNDATION Fieldbus to drive a field instrumentation preventive maintenance program,” says Ajmeri. “Key examples are temperature monitoring of pressure transmitters to make sure that heat tracing for impulse lines is working, historical reports for all FOUNDATION Fieldbus segment physical layer diagnostics, valve stroke counts and total travel counts for valve maintenance.”

“For example, we can track accumulated cycle counts for valves, see which valves have high total counts and are candidates for maintenance, and do it without going out. This also means we can schedule maintenance better, and technicians will know what to expect when they get there.” ●

FIELDCOMM GROUP CURRENT COURSE OFFERINGS

Introduction to HART Protocol

Newly available in 2019, this self-paced, e-learning workshop covers the basics of HART communication protocol, as well as an overview of the HART market and technology.

HART Fundamentals and QA Testing Workshop

This workshop is an intensive two-day course covering all aspects of HART communication protocol. You will gain the information needed to develop new HART-enabled products, support existing products and design systems that utilize HART technology.

Device Integration - Writing EDD and FDI Package Workshop

An intensive three-day course where developers learn the step-by-step process for building a Device Description for a HART- or FOUNDATION Fieldbus-enabled device based on Electronic Device Description Language (IEC 61804-3, EDDL) for use across all DD-enabled host platforms.

Introduction to FOUNDATION Fieldbus

This self-paced, e-learning course for developers, end users, marketing professionals and applications engineers assumes little or no prior knowledge of FOUNDATION Fieldbus, but students should be familiar with process control. Students will learn the basic concepts and terminology related to the FOUNDATION Fieldbus integrated architecture and gain a working knowledge of the technical foundation upon which the technology is built.

Advanced Principles of FOUNDATION Fieldbus

This workshop is an intensive three-day course covering all aspects of the FOUNDATION Fieldbus protocol. Students will learn the skills required to develop new FOUNDATION Fieldbus products, support existing products and design systems utilizing FOUNDATION Fieldbus technology.



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Calendar

For up-to-date information, see “Events” at www.fieldcommgroup.org

HART Fundamentals

Düsseldorf, Germany
November 11-12, 2019

Device Integration (EDD and FDI)

Düsseldorf, Germany
November 13-15, 2019

Rockwell Automation Process Solutions User Group (PSUG)

Chicago, IL, USA
November 18-19, 2019

SPS IPC Drives Exhibition

Düsseldorf, Germany
November 26-28, 2019

FieldComm Group General Assembly

Berlin, Germany
December 9-12, 2019

ARC Industry Forum

Orlando, FL, USA
February 3-6, 2020

HART Fundamentals

Düsseldorf, Germany
March 16-17, 2020

Device Integration (EDD and FDI)

Düsseldorf, Germany
March 18-20, 2020

Hannover Messe Exhibition

Hannover, Germany
April 20-24, 2020

HART Fundamentals

Austin, TX, USA
May 11-12, 2020

Device Integration (EDD and FDI)

Austin, TX, USA
May 13-15, 2020

Mumbai Automation Expo

Mumbai, India
September 9-12, 2020

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Recently registered technology

These products were registered between August 30, 2018 and July 16, 2019. For a complete list of all registered hosts and devices, visit the Product Testing and Registration section at www.fieldcommgroup.org.

Type	Protocol	Manufacturer	Model / Device Name / Model ID	FDI Device Package	Newly Registered Device	Updated Device Registration	Updated EDD	New Physical Layer	
Actuator	FOUNDATION Fieldbus	Emerson Automation Solutions	CAM228/CAM28			●			
		Flowserve Corporation	Logix 3800				●		
			Limatorque MX QX				●		
		Rotork YTC Limited	YT-3300 Pro		●				
	Yangzhou Electric Power Equipment Manufacture Factory Co., Ltd.	2SA FF		●					
	HART	Azbil Corporation	AVP307		●				
		DVG Automation SPA	SDCU-20		●				
		Rotork YTC Limited	YT-3700		●				
		Samson Aktiengesellschaft	TROVIS 3730-3				●		
	SMC Corporation	IN-777		●					
Analytical	FOUNDATION Fieldbus	ABB Automation GmbH	AWT210		●				
	HART	ABB Automation GmbH	AWT210	●	●				
			AWT420		●				
Flow	FOUNDATION Fieldbus	Emerson Automation Solutions	8732E			●			
		General Electric	XMT1000				●		
		KROHNE Messtechnik GmbH	OPTISWIRL 4200				●		
		Siemens AG	SITRANS FX330		●				
		Walsn Enterprises Ltd.	CMF FF Series		●				
		Yokogawa Electric Corporation	ROTAMASS TI R0				●		
	HART	Emerson Automation Solutions	4200		●	●			
			5700 Configurable I/O		●		●		
			Promag / 300, 500				●		
		Endress+Hauser (International) Holding AG	Promass / 300, 500		●	●			
		Fluid Components	ST80/ST100A Series			●			
		KROHNE Messtechnik GmbH	ESK3x		●	●			
		SICK Engineering GmbH	FLAWSIC Interface Unit			●			
		Tokyo Keiso Co., Ltd.	MMC400			●			
		ULC 400				●			
Yokogawa Electric Corporation	AXG1A			●					
Gas	HART	Draeger Safety AG & Co. KGaA	Pulsar 7x00			●			
		Honeywell International	RAEGuard 3		●				
			Searchzone Sonik		●				
		Riken Keiki Co., Ltd.	SD-1		●				
Yokogawa Electric Corporation	TDLS8000				●				
Level	FOUNDATION Fieldbus	Emerson Automation Solutions	Rosemount 5408		●				
		VEGA Grieshaber KG	Vegaflex 80 Series				●		
	HART	ABB Automation GmbH	LMT Magnetostrictive Level Transmitter		●	●			
		AMETEK	Radar DRx400/DRx500			●			
Flowline, Inc.	ECHOPRO LRxx				●				

NEW REGISTRATIONS

Type	Protocol	Manufacturer	Model / Device Name / Model ID	FDI Device Package	Newly Registered Device	Updated Device Registration	Updated EDD	New Physical Layer	
Level (continued)	HART (continued)	Hawk Measurement Systems Pty. Ltd.	Senator 24 / 80 Radar		●				
		Honeywell International	954 SmartServo FlexLine		●				
			RMx40/x50		●				
		KROHNE Messtechnik GmbH		OPTIFLEX / 3200/6200/7200/8200		●			
		Magnetrol International, Incorporated	Digital E3 Modulevel® Liquid Level Displacer				●		
			Eclipse Model 706 Level Transmitter					●	
			Model R86 Pulsar® Pulse Burst Radar Level					●	
Siemens AG	SIPART PS2					●			
	SITRANS Probe LU240				●				
Tokyo Keiso Co., Ltd.		TLRx400x500			●				
Pressure	FOUNDATION Fieldbus	SMAR	LD302			●			
		VEGA Grieshaber KG	Vegabar 80 Series				●		
			VEGADIF 85					●	
	HART	ABB Automation Products GmbH		2600T - 266 P-dP				●	
		Coto Measurement System (Shanghai) Co. Ltd.		CT-PMS6030		●			
		ELEMER Research and Production Company		AIR-30M		●			
		Emerson Automation Solutions		Metran-75			●		
		Honeywell International		ST / 700, 800	●		●		
		KROHNE Messtechnik GmbH		OPTIBAR 5060 SIL		●			
		Siemens AG		SITRANS / P320, P420		●			
		WIKA Alexander Wiegand SE & Co. KG		IPT-2x, CPT-2x, IPT-2x SIL, CPT-2x SIL		●			
		WISE CONTROL INC		SMT 200X		●			
		Yokogawa Electric Corporation	EJA-NEXT					●	
EJX						●			
FLXA402					●				
Temperature	FOUNDATION Fieldbus	SMAR	TT302			●			
	HART	Baumer A/S		FlexTop 2222		●			
		Delta Controls Corporation		HIR		●			
		Emerson Automation Solutions		248 Temperature			●		
		Endress+Hauser (International) Holding AG		iTEMP / TMT72, TMT82			●		
		Honeywell International		STT 700 Smartline Temperature Transmitter	●	●			
		Microcyber Corporation		NCS-TT106		●			
		NOVUS Produtos Eletronicos Ltda	TxIsoBlock-HRT				●		
TxIsoRail-HRT					●				
Other	FOUNDATION Fieldbus	ABB Automation Products GmbH	JDF300		●				
			LD810 HSE EX			●			
		BEKA Associates Ltd.		BA414DF & BA488CF Series			●		
	Cords Cable Industries Ltd.		CC-FF-01XX16				●		
	The Okonite Company		567-30-37xx / 16AWG, 18AWG				●		
	HART	Metso Flow Control Oy		VG9000H				●	
Smart Embedded Systems Inc.			C8PSK Ref Transmitter		●				



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FieldComm Group’s Plant of the Year award is presented annually to end user companies to recognize exceptional or innovative use of FOUNDATION Fieldbus and HART technologies in real-time applications that improve operations, lower costs or increase availability. Details and nomination form are at go.fieldcommgroup.org/award.

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