

# HARTline

HART® Communication News • 2003, Number 3

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HART Named in Top Technologies

Welcome New Members

New 3rd Edition HART Guide - FREE!

## Discover New HART Asset Management Strategies at ISA 2003

THE HCF BRINGS A POWERFUL MESSAGE ON THE INDUSTRY'S HOTTEST TOPIC—ASSET MANAGEMENT—TO ISA 2003. THE HART BOOTH (#1331) DEMONSTRATES HOW HART TECHNOLOGY ENABLES ASSET MANAGEMENT—TO IMPROVE PLANT OPERATIONS, INCREASE PLANT AVAILABILITY, LOWER MAINTENANCE COSTS AND AID REGULATORY COMPLIANCE.

“Real-time connections deliver the HART of Asset Management,” says HCF Executive Director Ron Helson. “The powerful capabilities of installed HART devices are an untapped resource that is often overlooked. Our focus is educating users on how to avoid downtime and lower operating costs by communicating with their HART-smart devices full-time.”

The interactive HART exhibit features the latest HART-capable solutions from the world's leading process automation systems and device suppliers, showing practical ways to leverage the intelligence in HART-smart devices using both 4-20mA and digital communication channels to deliver continuous, real-time advanced device diagnostics and valuable process information.

HCF member companies are showing an extensive array of instruments, systems, and HART-smart solutions and presenting technical and educational mini-sessions to explain the value and benefits of HART in all phases of the plant life cycle.

Participating companies are: ABB, Emerson Process Management, Endress+Hauser,



Fisher Controls, Fluke, Harold Beck and Sons, Honeywell, Invensys, J-TEC, MACTek, Masoneilan, Meriam Process Technologies, Moore Industries, MTL, P+F/Elcon, Rosemount

Analytical, Siemens, SMAR, Spectrum Controls, Westlock Controls, Yamatake, Yokogawa and other leading suppliers.

Corporate magician Paul Gertner is delivering the HART message

with entertaining sleight-of-hand tricks designed to captivate even the most advanced engineering minds.

## 2003 HART PLANT OF THE YEAR

The Detroit Water and Sewerage Department (DWSD) in Detroit, Michigan has been selected as the **HART Plant of the Year for 2003**. The award is given annually to recognize success in the innovative use of HART Communication technology in real-time process applications.



DWSD uses the power of HART Communication in daily operations to eliminate metering disputes, improve system reliability, and streamline operations.

“We determined that HART would provide the best solution for several reasons. HART minimized the additional investment we had to make, since most of the existing instrumentation was HART-capable and could use existing wiring,” says DWSD Head Engineer Dennis Green.

“HART is a stable protocol posing a low compatibility risk for planned expansions. And, HART allowed us to digitally extract secondary variables and diagnostic information, while the intelli-

*Continued on back page*

Valuable Learning Tool Now Available

# Realizing the Potential of HART-Smart Instruments

THE ALL-NEW 2003 HART SUPPLEMENT IS A VALUABLE EDUCATIONAL RESOURCE FOR INDUSTRY USERS, MANUFACTURERS AND SUPPLIERS. THE INFORMATIVE 26-PAGE SUPPLEMENT PRESENTS IDEAS, INFORMATION, AND EXAMPLES OF HOW TO PUT THE POWER OF HART TO WORK MAXIMIZING AND OPTIMIZING ASSETS.

“Asset management is the hot topic these days and with the tight budgets I’m hearing about, the industry can’t afford to overlook the untapped value of HART-enabled devices,” says HCF Director Ron Helson. “HART Communication is a key enabler for asset management—so we urge users to get connected and realize the full potential of your installed HART devices.”

In the HART Supplement readers will discover how real-time connections deliver the **HART of Asset Management** to improve plant operations, increase plant availability, lower maintenance costs, and aid regulatory compliance.

The supplement, a joint effort of the HCF and Control Magazine, is fully funded by HCF member company advertising dollars. The supplement contains in-depth articles and a special chart that details HART capabilities and the benefits of HART asset management: *Platform for the Future*—how new capabilities make HART a fieldbus to be reckoned with; *Time to Tap into HART*—major asset management and process improvement gains to be realized with HART; and the *2003 HART Plant of the Year*—Detroit Water and Sewerage Dept. uses HART to eliminate metering disputes, improve reliability and streamline operations.

The HART supplement is available in the September issue of Control Magazine, at [www.hartcomm.org](http://www.hartcomm.org), and at [www.controlmag.com](http://www.controlmag.com). Contact the HCF offices for information on purchasing printed copies.



## HART WEBCAST IS MUST-SEE VIEWING

A recording of the HCF webcast, *HART Device and Control System Integration Requirements* presented by Joe Serafin of Honeywell, is now available online. This powerful presentation is must-see viewing for all industry professionals who support HART-enabled products.

“I think it is vital that device and system suppliers and other process automation professionals who support HART-capable products see this presentation and understand its message,” says HCF Director Ron Helson.

Serafin explains the reasons why it is important to integrate HART devices with control systems and the value real-time integration delivers to end users. He discusses customer requirements and provides specific recommendations for device suppliers to insure good integration of their HART device with control systems.

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# HART Provides Asset Management Solution to Canadian Paper Mill

By Sandro Esposito, Masoneilan, Avon, MA

Many end users have realized the benefits of installing HART®-based control valve positioners and using HART Communication technology to integrate the positioners with their central computer system. The Fraser Papers division of Thurso in Quebec, Canada, standardized its paper mill on Masoneilan’s SVI positioners four years ago as the first step in a proactive maintenance program.

In June of 2000, the mill wanted to connect all of its HART-based SVI’s to one central computer. Masoneilan responded with their digital products and software solutions. This integration package allowed the mill to realize the full benefit of their HART-based digital positioner investment.

The solution was to have all of the HART-based SVI positioners linked to a multiplexer (MUX) using a HART interface module and other hardware and software components supplied by Masoneilan, Control Valve Equipment and MTL. The MUX allows the facility to use computer software to oversee all of its digital positioners in the mill and link the information in an effective device management system.

Fraser Papers began to realize significant benefits soon after implementing the HART-enabled device management system, including increased efficiency, easier retrieval of information and continuous remote diagnostics.

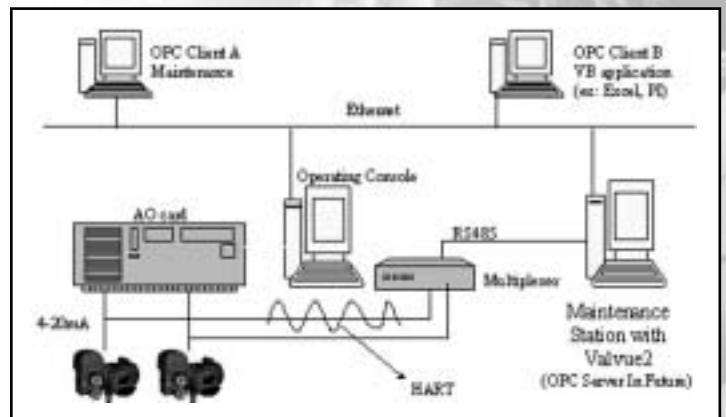
“With this system in place, our

maintenance technicians can quickly access the device to calibrate and create electronic maintenance records,” says Mario Leclerc, Fraser Papers instrumentation engineer. “This reduces the risk of creating an upset to the process by avoiding a PC or handheld calibra-

tor connection to the loop terminals. It also helps us manage man/hours more efficiently.”

Archiving information (such as valve signatures and continuous operational diagnostics) in

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## HART DDL Enhancements Increase Value to Users

“FOR MORE THAN A DECADE DEVICE DESCRIPTION LANGUAGE (DDL, THE STANDARD OF HART)

HAS PROVEN ITS VALUE TO BOTH USERS AND MANUFACTURERS FOR ACCESSING UNIQUE FEATURES OF HART-ENABLED DEVICES,” SAYS HCF DIRECTOR RON HELSON. “WE ARE COMMITTED TO DDL FOR THE LONG TERM AND ARE ACTIVELY INVESTING IN NEW CAPABILITIES AND TOOLS TO SUPPORT INDUSTRY NEEDS FOR INCREASINGLY MORE SOPHISTICATED INTELLIGENT DEVICES.”

Device Description Language (DDL) has been a key element of HART technology since 1990 (HART was the first protocol to implement DDL as its standard). Today it remains the most important and widely used digital communication descriptive language in the manufacturing and process industries, providing a stable platform for suppliers to define and document the capabilities of HART-enabled products in a single, open and consistent format.

New initiatives and technology enhancements underway at HCF will solidify the future of DDL and increase its value to industry users around the globe.

The HCF has created a new Device Description Integrated Development Environment (DD-IDE). Preliminary “Beta” versions are currently being tested by HCF members with final release expected in December. The HCF is also working with the Fieldbus Foundation (FF) and Profibus (PNO) in a collaborative project to extend the specification for Device Description Language.

DDL is the object-oriented, text-based language for modeling the characteristics and real-time capabilities of intelligent field devices. Instrumentation suppliers use DDL to create Device Description (DD) files describing the capabilities of their smart field device products.

The comprehensive new HART DD-IDE is an integrated set of tools that supports develop-

ment, testing and maintenance of device descriptions (DDs) for HART devices. It is designed to increase DD development productivity while reducing costs.

HCF Chief Engineer Wally Pratt refers to the new HART DD-IDE as a *framework for innovation*. “The DD-IDE supports the iterative DD development style. Each step in the edit-build-test cycle is supported in a DD-aware editing environment; and the language-specific support long available for other programming languages is now available for DDL.”

The faster DD-aware toolset replaces the DD Developer Tool Kit and provides significant benefits to DD developers, including support for the entire DD development cycle, automation of routine DD development tasks, and simplified maintenance and “re-learning” of existing DDs.

Licensing of the HCF DD-IDE technology will be available to HCF member companies in 2004.

“There is a tremendous investment in HART DDL throughout the industry,” Wally says. “Our goal is to protect and enhance that investment by providing a better, more comprehensive toolset for developing DDs than ever before.”

The goal of the DDL enhancement joint project between the HCF, FF, and PNO is to create an industry-standard solution for advanced visualization that maintains the proven integrity of a technology that is used in millions

of devices around the world while retaining its greatest advantage: operating system and protocol independence.

Enhancements will provide additional DDL constructs and functions to support the data visualization needs of sophisticated devices for full-screen graphical displays and data captures for performance assessment. The enhancements will allow device manufacturers to describe display layouts and persistent data storage needs entirely within the device DD file—including graphical display elements such as photos, two-dimensional plots/charts, and data groupings by window, dialog, tabbed-dialog, table, and/or menu.

“Once the DDL enhancement specifications are complete, we will integrate them into the HART DD integrated development environment for implementation,” Helson says.

In addition to being the strong and stable standard of the HCF, DDL will soon become an international standard of the International Electrotechnical Commission (IEC) to be known as IEC 61804-2, EDDL.

“The importance of DD technology in tomorrow’s process automation world is already established,” says Helson. “The DDL programs we are working on today provide a platform for future enhancements to DD technology as a whole and enables wider spread global access to DD technology.”

## PRODUCT SPOTLIGHT

### SMAR INTRODUCES NEW FAMILY OF HART CONTROLLERS

The new SMAR HT20C15 controller offers all the functionality of the field-proven HT2012 family of HART Communication Controllers plus an added array of analog amplifiers and comparators necessary to implement the filters and wave-shaping suggested by the HART Protocol.

Designed using CMOS mixed signal technology, the HT20C15 combines a digital core and analog components into 2 available packages. The HT2015-PL is packaged in the popular PLCC28, while the HT2015-TQ is offered in the small LQFP/TQFP32, enabling a tremendous reduction in space.

Samples of the HT2015-PL and the HT2015-TQ for testing and evaluation can be obtained by placing an order in the SMAR web-store located at [www.SmarResearch.com](http://www.SmarResearch.com).

## HART WEBCAST

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Designed for group training as well as individual study, the interactive webcast allows viewers to stop and restart, select sections to review, or review sections as time allows.

Free online access to the 1.5 hour HART webcast is available to all HCF members. Registration is required. To receive URL information, contact the HCF offices.

## HART PLANT OF THE YEAR

Continued from page 1

gence built into the HART instruments enabled them to perform calculations, freeing computing power in higher-level platforms for other tasks." Green says.

Other networking technologies have matured considerably since 1996, when DWSD began piloting its system. Nevertheless, Green says that he would still use HART, even if the project were beginning today.

"I know these newer fieldbus technologies are the hot thing right now, but it could have cost us twice as much money," Green says. "HART does the job for us, and it's done on our standard equipment that was already installed - you don't pay extra for it. It certainly was ideal for what we wanted to do."

DWSD developed and implemented an extensive Automatic Meter Reading / Supervisory Control and Data Acquisition (AMR/SCADA) system, a \$10 million piece of a

major infrastructure upgrade project that relies on the power of HART Communication to deliver consistent, reliable data on system performance. DWSD integrated a vast array of diverse field devices and technologies onto a single networked system to take full advantage of HART's digital communication capabilities.

"We congratulate Detroit Water and Sewerage for unleashing the power of their HART-enabled devices to achieve real-time operational improvements," says HCF Director Ron Helson. "Their innovative use of HART-enabled plant instrumentation serves as a powerful model for industry users worldwide...a working illustration of how to realize far greater benefits from HART than ever before."

Cebrace Cristal Plano Ltda, a plate and specialty glass manufacturer in Sao Paulo, Brazil, was selected as a 2003 HART Plant of the Year finalist.

## HART PROVIDES ASSET MANAGEMENT

Continued from page 2

maintenance records allows technicians and maintenance engineers to implement a program of preventive maintenance on control valves in various sectors of the mill during outages.

Using the dial-up modem or through the Ethernet, the customer can remotely troubleshoot valves or request remote assistance from Masoneilan. This helps determine whether to pull the valve out or simply do minor corrections. The Masoneilan's ValVue® software can generate step tests of various amplitude, making it easy to validate valve responsiveness online.

Using the online diagnostic capabilities of the SVI, the multiplexer is able to acquire information seamlessly. This, in turn, simplifies the implementation of a preventive maintenance program, based on recorded mean-time-between-failures. These continuous diagnostic values allow the user to determine if the valve selected is adequate for the service. They can also determine premature trim wear, using the time near closed counter.

The next step in the mill's device management program will be the addition of HART Server software to archive useful data automatically.

HART-based technology has opened new doors to help run plants with less downtime while providing a mechanism to transport critical information from field devices over existing field wiring. The implementation of a HART system similar to that installed at Fraser Papers is the key element in implementing a predictive and preventive maintenance program.

Written in collaboration with Sebastien Ouellette, ControValve Equipment, Quebec, Canada. Special thanks to Mario Leclerc, Fraser Papers.

## HART IN TOP 50 TECHNOLOGIES

In a special "We're 50" issue published in August, *InTech* magazine included HART Communication in the "top technologies and events that have influenced the world of measurement and control." Selections were made by *InTech's* editors plus 80 instrumentation and control experts throughout the industry.

WELCOME NEW MEMBERS  
ASA S.p.A.  
CNPC Lanlian Instruments  
GP: 50 New York Ltd.  
Hengesbach Prozessmesstechnik  
Tecfluid S.A.

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9390 Research Blvd. Suite I-350  
Austin, TX 78759-6540 U.S.A.  
512-794-0369, FAX 512-794-3904  
HCF Europe +41(0)61-333-2275  
[www.hartcomm.org](http://www.hartcomm.org)

Ron Helson, *Executive Director*

Wally Pratt, *Chief Engineer*

Paul Baker, *Support Engineer*

Keith Kleinschmidt, *Support Administrator*

Irina Kadukova, *Training/Web Support*

Jean-Luc Griessmann, *HCF Europe*

Liz Patranella, *Media Relations*

HARTLine is published quarterly by HART Communication Foundation.

Subscriptions can be obtained by FAX or by mailing a request to HCF.

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## 3rd Edition Now Available!

The Complete HART Guide  
Newly updated!

Easy-to-use multimedia  
CD-ROM includes:

- NEW! Application Guide with HART success stories and strategies
- The Power of HART
- How HART works
- HART products and suppliers

A must reference for instrument and control engineers and technicians

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# What's Hot HART!

DISCOVER THE FULL VALUE AND BENEFITS OF HART COMMUNICATION IN ALL PHASES OF THE PLANT LIFE CYCLE. THE HCF OFFERS VALUABLE TECHNOLOGY SUPPORT, TRAINING TOOLS AND EDUCATIONAL PROGRAMS TO HELP YOU GET CONNECTED!

## HART 6...Latest Version of HART Protocol

HART 6 enhancements provide additional diagnostics and new capabilities to improve integration with plant control and safety systems—all while protecting users' investments through backward/forward compatibility with existing networks and devices. New features and capabilities support multivariable and valve/actuator devices, enhance status and diagnostics, increase interoperability, and extend commissioning and troubleshooting capabilities.

## DDL Enhancements

Device Description Language (DDL) has been a key element of HART since 1990. It remains the most important and widely used digital communication descriptive language in the industry. New DD technology enhancements and programs provide strong base for future growth and increase value to industry users around the globe.

The HCF has created a new Device Description Integrated Development Environment (DD-IDE). The comprehensive HART DD-IDE is an integrated set of tools that supports development, testing and maintenance of device descriptions (DDs) for HART devices. This new tool increases DD development productivity and reduces costs.

The HCF is working in collaboration with Fieldbus Foundation and Profibus to enhance DDL specification to support the advanced data visualization needs of sophisticated devices for full-screen graphical displays and data captures for performance assessment. The DDL enhancements will allow device manufacturers to describe display layouts and persistent data storage needs entirely within the device DD file—including graphical display elements such as photos, two-dimensional plots/charts, and data groupings by window, dialog, tabbed-dialog, table, and/or menu.

## HART Mini-Magazine in CONTROL

Get connected and realize the full potential of your installed HART devices! All-new HART supplement presents ideas, information, and examples of how to put the Power of HART to work. Learn how real-time connections deliver the HART of Asset

Management to improve plant operations, increase plant availability, lower maintenance costs, and aid regulatory compliance. Includes in-depth articles and a chart that details HART capabilities and the benefits of HART Asset Management.

## Webcast Online 24/7

Understand the value of real-time HART integration. The HCF-sponsored webcast, *HART Device and Control System Integration Requirements* presented by Joe Serafin of Honeywell, is available for online Internet viewing. Serafin explains the reasons why it is important to integrate HART devices with control systems and the value real-time integration delivers to end users. "It is vital that all device and system suppliers with HART-capable products see this presentation."

## New HART Product Catalog

An easy-search catalog of HART products and suppliers is available online via the new 3<sup>rd</sup> Edition *Complete HART Guide* CD. This easy-to-use, multimedia CD-ROM is a valuable resource on the HART technology. Includes recent HART application success stories and strategies from process control companies around the world...plus an overview of how HART works, ways to fully utilize *The Power of HART*, and an application guide for getting the most from HART systems.

## Power of HART Audio Training CD

Sales and marketing personnel...this one's for you! Learn the value of real-time integration with plant control, safety and asset management systems. Jim Cobb (Emerson), Joe Serafin (Honeywell), HCF Director Ron Helson and industry consultant Chuck Micallef discuss the value and benefits of HART in all phases of the Plant Life Cycle. Provides an update on current market trends with respect to field communication technology, educates the listener on the benefits of HART Communication, and prepares salespeople for HART discussions with their customers.

## HART Applications Training

Special workshop held at your site provides a basic overview of HART Communication and the capabilities of HART-enabled devices. Discussion includes the benefits and options for real-time integration with plant automation and asset management systems. Developer-oriented *HART Protocol Fundamentals* and *Writing Device Descriptions* workshops held quarterly in Austin, Texas, and Basel, Switzerland.

# The HART<sup>®</sup> of ASSET MANAGEMENT

*Real-time connections deliver...*

- Improve process operations
- Lower maintenance costs
- Increase system availability
- Aid regulatory compliance

**Unleash the POWER!**

It is already in your plant. It is waiting in your devices.

## A HISTORY OF THE HCF

In **September 1990** a group of industry professionals gathered in Bloomington, Minnesota, for the first official meeting of what was then called the HART Users Group. The meeting marks the beginning of HART as an "open" communication technology.

26 companies are there: ABB Kent-Taylor, Applied System Technologies, Eckardt, Endress+Hauser, Engineering Measurements, Exxon Chemicals, Fischer & Porter, Fisher Controls, Hartmann & Braun, Hitachi, Honeywell, ITT Barton, Kay-Ray/Sensall, Moore Products, M-System, MTL, NCR, NovaTech, Proctor & Gamble, Rosemount, Sherex Chemical, Siemens, SMAR, Southwest Research Institute, Valtek and Yokogawa.

They discuss the HART technology—Application Layer, the Data Link Layer, the Physical

Layer—and the organization of a group to manage the protocol standards and provide worldwide support for the technology.

At a second meeting in December of 1990, member companies pass bylaws and establish four working groups. Three meetings are held in 1991. In Springville, Utah, in June, the HART logo is approved and plans for the first multi-company HART exhibit booth (ISA 1991) are presented with 35 members participating. In Reinach, Switzerland in November, two more working groups are added.

In **March 1993**, the HART User Group votes to create an independent, not-for-profit organization to manage and support the HART Protocol. On June 24, the *HART Communication Foundation* (HCF) is established. The Foundation owns the HART



THE HART FIELD COMMUNICATIONS PROTOCOL HAS SERVED AS THE WORLD'S LEADING PROCESS COMMUNICATION TECHNOLOGY FOR SMART INSTRUMENTS SINCE 1990. THIS YEAR, THE HART COMMUNICATION FOUNDATION CELEBRATES 10 YEARS OF PROVIDING WORLDWIDE SUPPORT FOR THE HART PROTOCOL.

technology, manages the Protocol Standards, and ensures that the technology is openly available for the benefit of the industry.

Over the next 10 years, the HCF staff will work in tandem

with member companies and industry supporters of the HART Protocol worldwide to establish this powerful technology as the field-proven global industry standard.

**1994** 1st DD Developer workshops held.

DD Library & DD Registration process established.

**1995** New Slave Data Link Layer Test Specification and new Physical Layer Test Procedure approved and distributed to members.

HART goes "online" with a forum section on CompuServe and a "home page" on the Worldwide Web.

**1996** Launch of HART 6 Program to create a major enhancement to the HART Protocol technology to address industry needs for enhanced device communication and additional development tools.

**1997** **Quality Assurance Program** released providing specifications, procedures and tools needed for testing HART Protocol implementations.

**HART Reference Library** CD released providing all HART Protocol Specifications and implementation support documents available.

**1999** **HART Server** OPC-compliant software application introduced. Provides a gateway for accessing HART device data anywhere on a plant network.

**The Complete HART Guide** interactive, multimedia CD-ROM released containing information on every aspect of the HART Protocol.

**2000** HCF Europe office opens in Switzerland.

Preliminary HART 6 Specifications approved by voting members.

**HART Server Partner Program** established.

**2001** HCF **End User Communication Program** launched.

First HART web conference held.

**2002** **HART Plant of the Year** program established and first winner selected  
**HART 6 Test Program** released.

**2003** First HART educational webcast held.

First HART Audio Training CD produced.

HCF celebrates 10th Anniversary.

- The HCF**
- provides technical support for the HART Protocol Standards and Test Tools and manages the DD Library.
  - educates users through *The Complete HART Guide* CD-ROM, a quarterly newsletter, educational webcasts, training workshops, trade show exhibits, and an interactive website.
  - provides speakers for end user meetings and conferences... HART experts who can explain the facts and benefits of this powerful communication technology.

**10 Years** after its creation, the HART Communication Foundation is supported by the world's leading process automation suppliers and has offices in Austin, Texas, USA, and Basel, Switzerland.