

# Das DeltaV System



# Inhalt



## 1 Introduction

Digital technology taps the intelligence of today's microprocessor-based instruments, speeding data to process, plant, and business applications—and back again.

## 2 The Digital Revolution

Everywhere you look, digital systems are replacing their analog counterparts, providing increased accuracy, better performance and a wealth of information previously unavailable.

## 4 PlantWeb Architecture

The industry's most exciting change in process automation technology since distributed control replaced panel-based control.

## 6 The Power of HART

Chances are you already have HART devices waiting to deliver their true potential. And now, more than ever before, you can take full advantage of your HART devices.

## 8 Unleashed Fieldbus

Built from the ground up for fieldbus, the DeltaV system delivers the results of a digital plant—easy.

## 10 Asset Management Solutions (AMS)

Get online access to the wealth of data inside your field devices with AMS and the DeltaV system.

## 12 The Intelligent Field

Rated by process manufacturers as the leader for quality, performance and service, Emerson's complete suite of intelligent devices offer you the full range of best-in-breed field devices.

## 14 Control Anywhere

The PlantWeb architecture lets you put control where it best suits your needs with an easy drag-and-drop exercise.

## 16 Reduced Capital and Engineering

Reduced time to production, faster startups and day-to-day benefits that reoccur through the life of your plant.

## 18 Reduced Operations and Maintenance

Key in on the field devices that really need your attention. There's no wasted valuable maintenance time and effort.

## 20 Reduce Variability—Increase Availability

Better operational efficiency through precision control is key to profitably meeting your customers' expectations.

## 22 Enhanced Safety and Compliance

The DeltaV system completely integrates change management into your process automation, helping you achieve regulatory compliance—easy.

## 24 Be Proactive

You get Information access at its best. Send the right information to the right people—anywhere, anytime.

## 26 Emerson Excellence

There's real value in having a complete suite of complimentary solutions that work best together. That's the PlantWeb architecture.

## 28 Emerson Experience

We can help you build your digital plant with our seasoned experts, available around the world.

# Realize your true potential from a digital plant.



*To develop and maintain a competitive advantage, it's time to take your plant digital—with the leading plant architecture—PlantWeb®.*

Digital technology taps the intelligence of today's microprocessor-based instruments, speeding data between process, plant, and business applications. It enables systems and software to transform 1's and 0's into useful information for better process control, better asset management, and better decision-making.

You'll benefit in many areas including:

- Reduced capital and engineering costs
- Reduced operations and maintenance costs
- Increased plant availability
- Reduced process variability
- Enhanced safety and environmental compliance.

Emerson customers are getting these bottom-line benefits today with the proven **PlantWeb architecture.**

Thousands of PlantWeb projects have proven there's no better way to unleash your plant's true potential.



## Introduction



It's easy to see why. Our intelligent field devices offer diagnostic and control capabilities as well as industry-leading measurement, analytical, and final-control performance. **AMS software** manages device information for faster, easier maintenance and detection of potential problems. And the **DeltaV™ digital automation system** provides regulatory and advanced control, batch process management, and integration with other plant and business systems. All are linked by information-rich digital communications.

Add the flexibility of an open, modular architecture that can grow with you, and you've found the key to gaining benefits of field intelligence in applications of any size, from unit upgrades and expansions, to new plants.

*The PlantWeb architecture unlocks the true potential of your plant and the DeltaV system makes it easy.*

# The Digital Revolution



*The digital revolution is upon us. From cameras to computers, telephones to televisions, music to video. Everywhere you look, digital systems are replacing their analog counterparts. The reason is increased plant availability and better performance—plus, a wealth of information previously unavailable.*

Distributed control systems—were no doubt a major breakthrough in the mid-1970s. But these systems are based on 4-20mA signals and proprietary communications.

Emerson Process Management began the industry's move toward the digital revolution by introducing the HART® protocol more than 15 years ago. HART is a hybrid communication protocol that enables a digital signal, primarily for increased information, to coexist with a 4-



20mA control signal. This digital bi-directional communication transforms field devices from single functional instruments to multi-functional devices that deliver multiple measured variables with single process intrusions, like:

- Device health
- Process health
- End of life predictions.

Now the devices in your installed facility can deliver—all on the same twisted pair of wires already installed. Today, over 80% of all field devices shipped are intelligent.

With more than a decade of HART experience, Emerson Process Management and other industry leaders fine-tuned the HART protocol to pioneer and introduce FOUNDATION™ fieldbus. FOUNDATION fieldbus, a fully bi-directional digital communications standard, delivers even greater levels of diagnostic, operating, and asset information to improve plant efficiency.

Emerson Process Management introduced the PlantWeb architecture to unleash the power of field devices to deliver a step change

in plant operating performance.



This digital PlantWeb architecture combines AMS (online device monitoring and diagnostic software), the DeltaV digital automation system, and a wide range of intelligent field devices to deliver the true potential of your plant.

*A wealth of asset information means improved performance.*

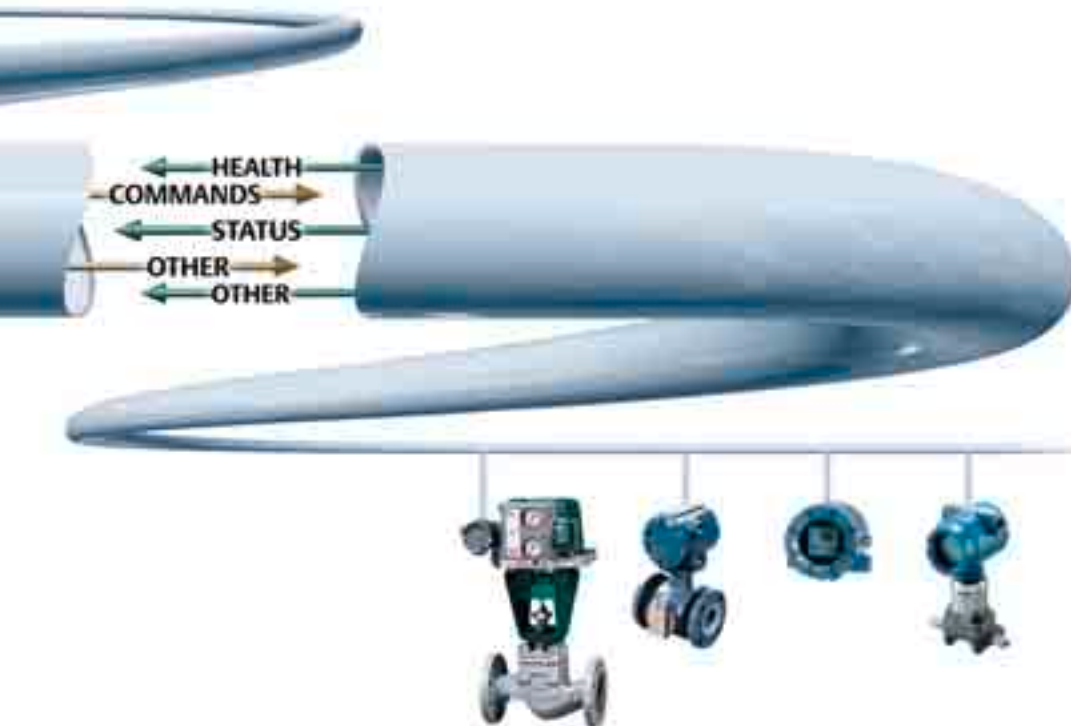
Today, leading manufacturing companies, in all industries and world areas, benefit from both HART and FOUNDATION fieldbus in the PlantWeb architecture.



Benefits include upfront engineering, installation, and commissioning savings.

But more significant are the ongoing savings in tightening process variability, improving quality, increasing throughput and avoiding upset conditions that can limit your production capability.

*The digital revolution that makes this all possible is yours to exploit.*



*The rich FOUNDATION fieldbus protocol facilitates bi-directional communication, delivering device health status to plant personnel and decision support systems.*

**Digital.  
Smart.  
Here to stay.**



*“In designing the BDO plant we wanted to avoid older analog communications or proprietary digital buses and instruments. These would reduce our design flexibility, inflate life-cycle costs, and complicate upgrades.”*

**—John Rezabek  
BP Chemicals**

# PlantWeb Architecture



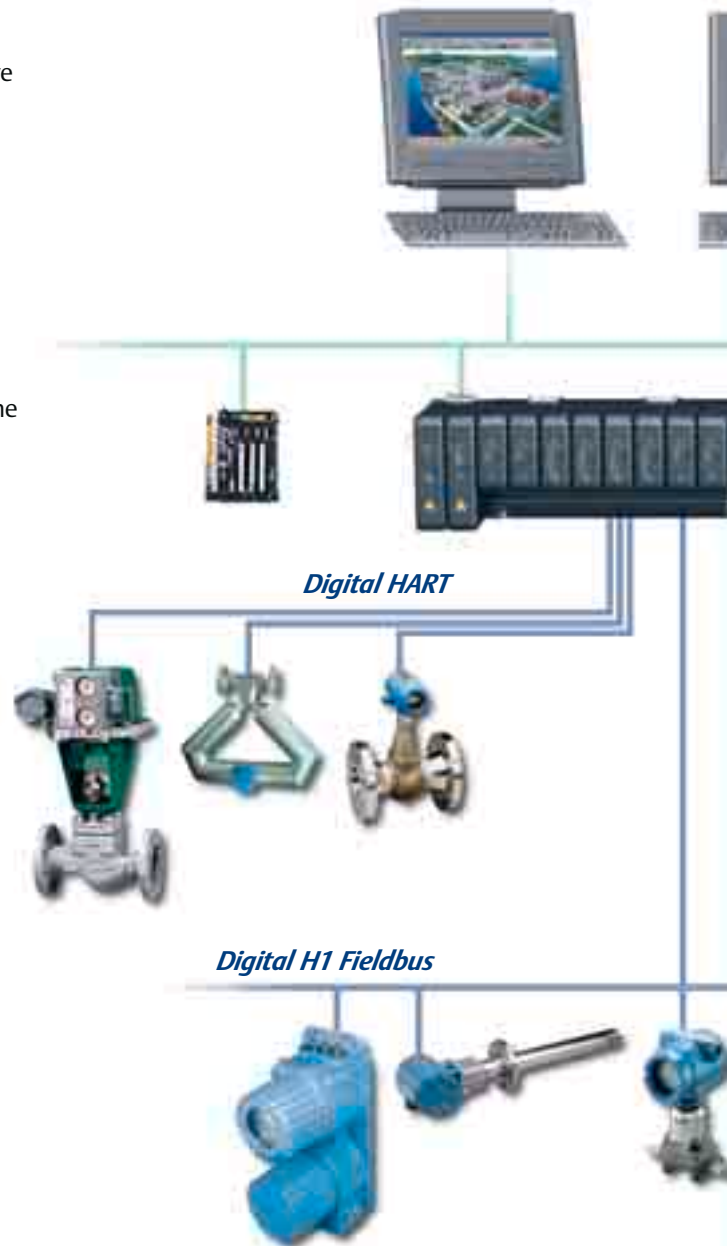
*Only the PlantWeb architecture delivers digital precision because it's built to turn the wealth of diagnostic data in intelligent field devices into actionable information. With the PlantWeb architecture, you can achieve the true potential of your assets.*

## **What is a smart plant?**

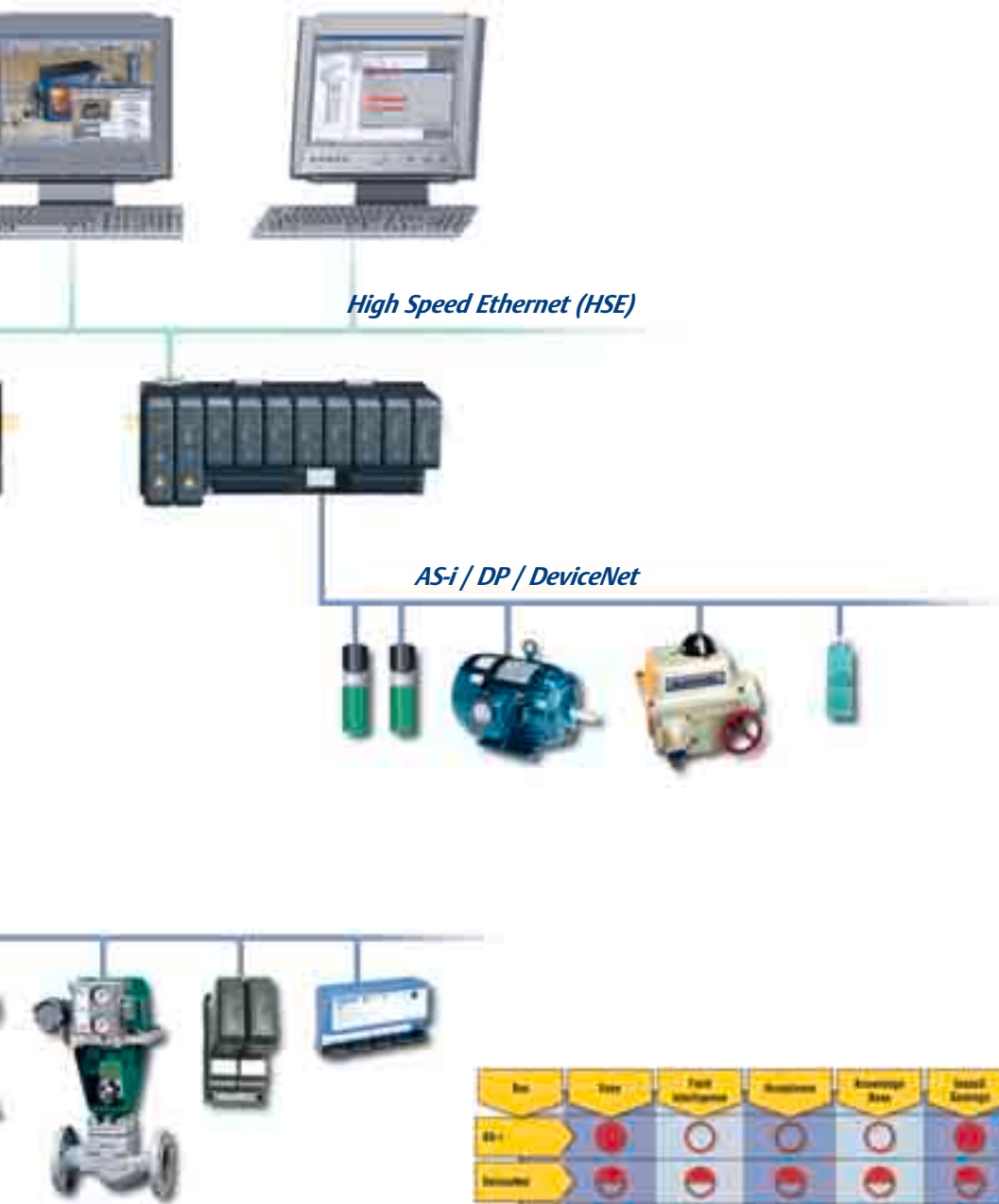
A smart plant is a plant constructed with intelligent pieces. That's the idea behind the PlantWeb architecture. Intelligent devices, the DeltaV digital automation system and AMS. They work together as an integrated solution to form the industry's most exciting change in process automation technology since distributed control replaced panel-based control.

The DeltaV system includes other popular digital communication busses such as AS-i for cost-sensitive installations, and Profibus DP and DeviceNet for integration of motor starters and drives.

Now you have a wide variety of digital buses to choose from with the DeltaV system, as well as the world's best implementation of HART to easily take advantage of the diagnostics that HART-based intelligent field devices provide.



*Digital precision  
throughout the architecture.*



*High Speed Ethernet (HSE)*

*AS-i / DP / DeviceNet*

*Only the DeltaV system delivers the full spectrum of digital communications.*

Bus	Speed	Field Applications	Automation	Knowledge Base	Install Savings
AS-i	High	Low	Low	Low	High
DeviceNet	High	High	High	High	High
Profibus DP	High	High	High	High	High
Profibus PA	Low	High	High	High	High
Foundation Fieldbus	High	High	High	High	High
HART	High	High	High	High	High
Modbus	High	Low	High	High	High

High  
  Medium  
  Low

HART or fieldbus  
–the PlantWeb  
architecture  
delivers.



*“The DeltaV system was easy in commissioning fieldbus instruments because the system was very user friendly, very intuitive and straightforward.”*

–Eric Tan  
Mobil Oil

# The Power of HART



*Manufacturers have been using HART devices for years without taking full advantage of their capabilities. Now AMS and the DeltaV system, key components of the PlantWeb architecture, make it easy to unleash the power of these installed HART devices—to deliver the true potential of these assets for the first time.*

## The HART highway

The DeltaV system includes HART AI and AO interface modules. These interface modules go far beyond what most existing automation systems deliver. AMS can directly access intelligent field devices without the need for external multiplexers as illustrated. As you connect the HART devices into the DeltaV system, you can immediately use AMS for calibration, configuration, and diagnostics. There's no additional wiring, no data mapping, and no time wasting! Easy.

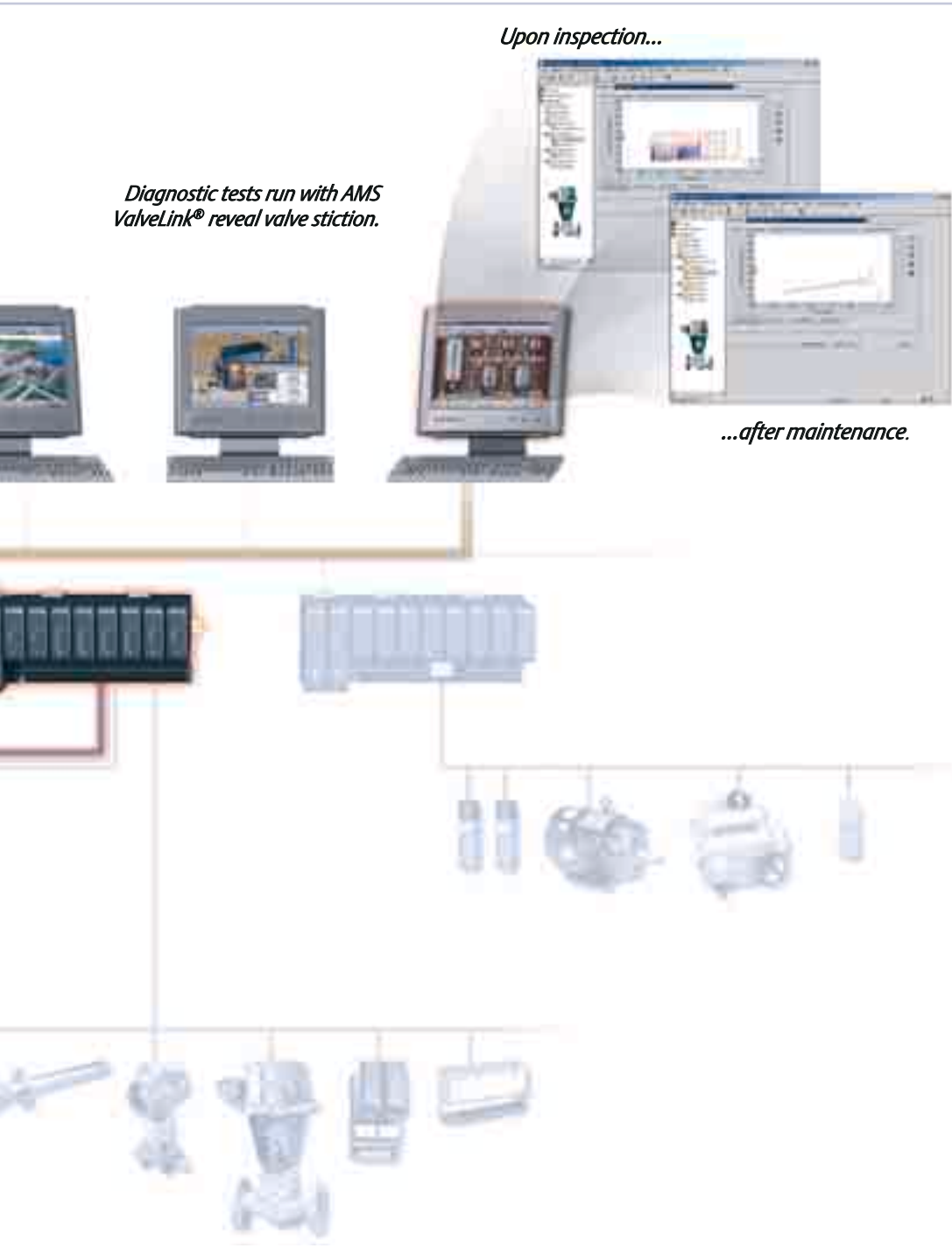
Some manufacturers find themselves in a climate where replacement of their automation system is not an option and they are seeking cost avoidance, increased uptime and reduced variability at an affordable cost. These

manufacturers are deploying AMS on legacy systems using HART multiplexers to peel off the digital HART protocol. Other manufacturers are taking more significant steps to upgrade their installations. By using the DeltaV plug-and-play upgrade program, manufacturers are upgrading their automation systems to the DeltaV system without lifting a wire or replacing a field device. Simply plug and play. After the transition, these users are able to take advantage of the rich digital communications of their installed HART field devices for the first time.



*For better operations, AMS can be installed with your legacy automation system to access HART device configuration.*

# *Realize the true potential of your HART devices with AMS and DeltaV.*



*Upon inspection...*

*Diagnostic tests run with AMS ValveLink® reveal valve stiction.*

*...after maintenance.*

Changing the way you run your plant.



*“Remote repair, diagnostics and maintenance offer a way to reduce massive maintenance costs ... US process industries such as chemical plants and oil refineries could save as much as \$60 billion a year.”*  
 –Fortune Magazine

# Fieldbus Unleashed



*The DeltaV digital automation system is the only system built from the ground up to unleash the advantages of FOUNDATION fieldbus. Not an add-on, not an afterthought, it's built to deliver the project and operational savings of a digital plant—easy!*



## Unique architecture delivers

Emerson's unique PlantWeb architecture was designed to deliver the true potential of intelligent field devices. AMS for device diagnostics and commissioning is blended with the DeltaV system for precision control into an integrated database for quick and easy deployment. The DeltaV software's function block library is based on the globally recognized standards IEC 1131-3 (control language specifications) and IEC 61158 (function block and protocol specifications).

Since the DeltaV software's function blocks are built to the fieldbus standards, there is no mapping into legacy data structures. Device health passes natively from the field to operators and maintenance staff for decision support and data validation.

From the DeltaV Explorer you can see your intelligent field devices with their associated control strategies. A simple right mouse click on a device launches AMS, which lets you commission devices faster and diagnose device problems faster than ever before.

## Redundant, reliable and flexible

FOUNDATION fieldbus delivers a simple and economic way to wire your plant. For those deploying intrinsically safe solutions, the FISCO (Fieldbus Intrinsic Safe Concept) model has been adopted by Emerson for further flexibility.

For your most demanding applications, Emerson provides redundant fieldbus segment communications via the Backup Link Active Scheduler, as well as redundant power and redundant H1 interfaces in the DeltaV system.

For more details on the functional advantages of the PlantWeb architecture, refer to the document "DeltaV, Designed for Fieldbus" available at: [www.EasyDeltaV.com](http://www.EasyDeltaV.com).

*Health = Good*

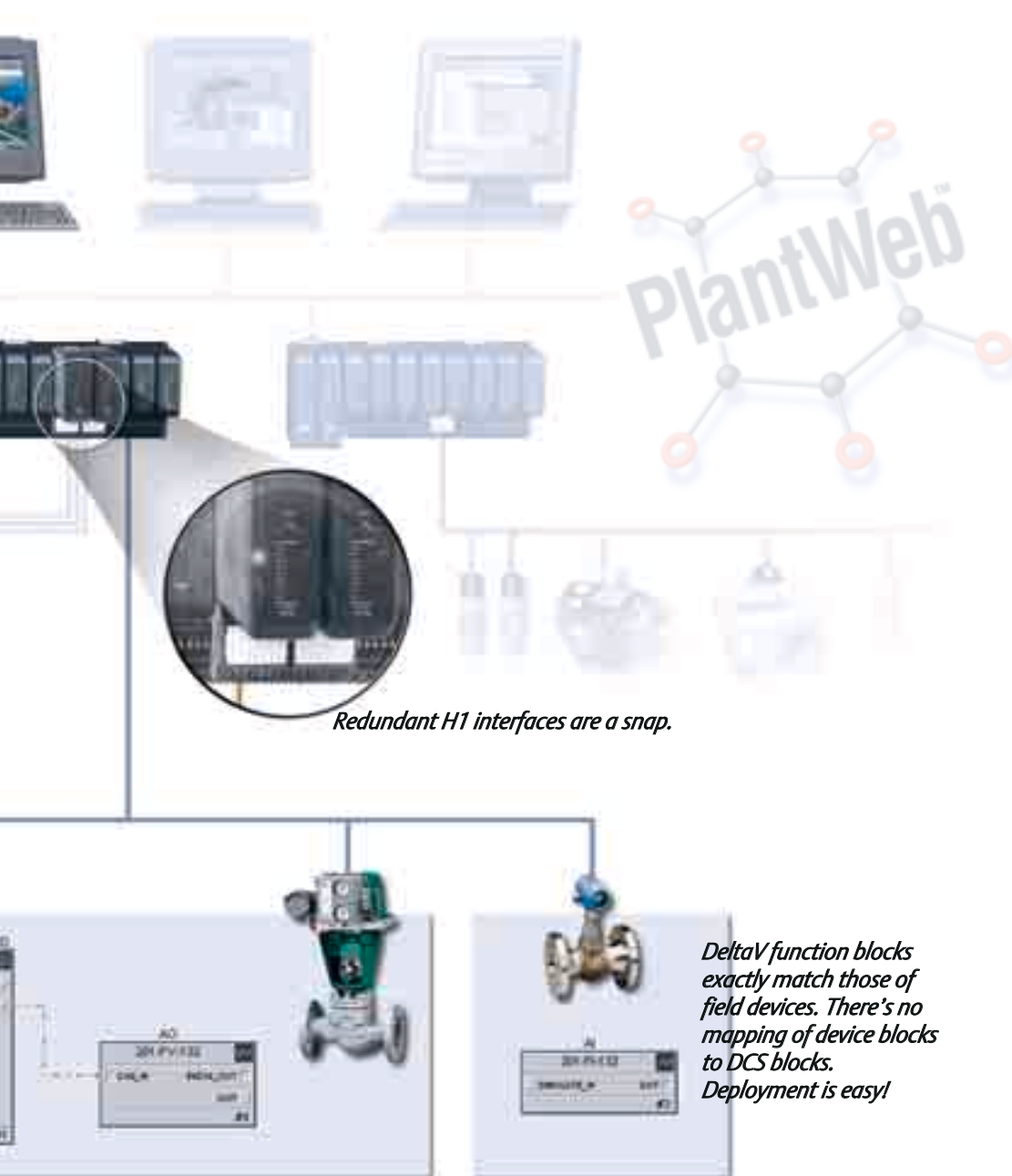


*The DeltaV system is the only host that propagates device health throughout the system.*

*Health = Good*



# *Fieldbus delivers project and operational savings.*



*Redundant H1 interfaces are a snap.*

*DeltaV function blocks exactly match those of field devices. There's no mapping of device blocks to DCS blocks. Deployment is easy!*

*The DeltaV system has passed the FOUNDATION fieldbus host interoperability system test. Visit [www.fieldbus.org](http://www.fieldbus.org) for details.*

Fieldbus in the PlantWeb architecture delivers results.



*"During the configuration and the setup process, since we use several FOUNDATION fieldbus transmitters and valves, the commission process was painless, absolutely painless"*

**–Rafael de la Torre  
Atlas Paper Mills**

# Asset Management Solutions (AMS)



*AMS uses the intelligence in your field devices to deliver maintenance savings, enhanced operational safety, less downtime, and faster time to production in new installations.*

## Device status

With AMS, your maintenance staff can call up the status of an individual device and investigate the device from the inside. Based



on this information, you can proactively plan maintenance and eliminate problems before they occur. This device information is also available via industry-standard OPC communications for fast access by the plant staff in other applications.

## Device configuration

With AMS, you can configure your field devices and re-range a transmitter. Since the DeltaV system and AMS are tightly

coupled, the DeltaV system automatically senses the activity and adjusts control strategies accordingly—all transparent.

## Device calibration

Some field devices may be calibrated insitu using AMS. This significantly reduces your maintenance expenses.

## Fast commissioning

Field device commissioning is easy with the DeltaV system and AMS. Manufacturers across the globe have reduced installation and commissioning time in many cases by more than 30%.

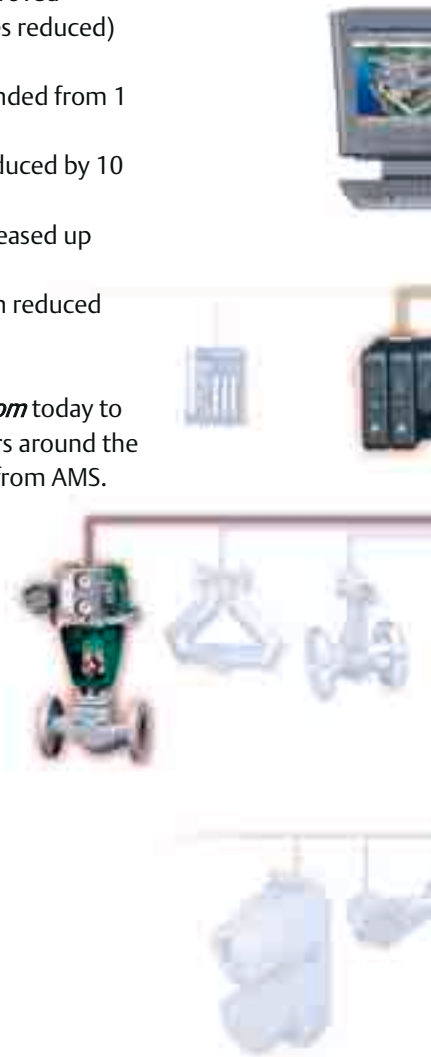
## AMS snap-ons

AMS is extensible by the addition of snap-on software. These snap-ons deliver device-specific AMS extensions like ValveLink, which can perform extended diagnostics like valve signatures. The savings from diagnosing these devices in-line instead of pulling them out of service on a preventive schedule is significant.

Benefits documented by our customers include:

- Productivity Increased from 2 to 40%
- Maintenance expense reduced from 7 to 60%
- Product quality improved (rework & scrap rates reduced) by 5 to 90%
- Equipment life extended from 1 to 10 times
- Spares inventory reduced by 10 to 60%
- Inventory turns increased up to 75%
- Energy consumption reduced by 5 to 15%.

Visit [www.AssetWeb.com](http://www.AssetWeb.com) today to see how manufacturers around the globe have benefited from AMS.



*AMS—the foundation for maintenance savings.*



*With AMS, a technician can diagnose field devices from control room or maintenance shop, eliminating field excursions.*

**Faster time to production and higher availability —delivered.**



*“In the past our technicians had to service all 100 control valves annually. However, AMS helped them avoid 90 percent of that work over the last two years by showing that only 10 valves actually required maintenance.”*

**—Jean Luc Le Gall  
Total Solvants' Oudalle**

# The Intelligent Field



*Emerson offers a strong foundation to your digital plant with a suite of intelligent field devices consistently rated by process manufacturers as the leader for quality, performance, advanced diagnostics, and service. With leading brands like Micro Motion, Fisher, and Rosemount, Emerson can offer you the full range of best in breed field devices.*

The PlantWeb architecture begins with a strong foundation of intelligent field devices—devices that can anticipate problems, report current device health, control variability, perform multiple measurements to reduce the number of devices required—even take local control when necessary.

These devices contain a wealth of diagnostic information, available remotely to allow you to streamline your maintenance efforts. No longer is a transmitter or valve a one-way communication device.

Emerson's intelligent field devices are built to global industry standards, so you have the freedom to choose the best devices from the best suppliers, without being limited by proprietary technologies.

Some predictive maintenance alerts Emerson intelligent field devices deliver include:

- Plugged impulse line
- Reverse flow
- Calibration error
- Empty pipe
- Device health
- Sensor probe suspect
- RTD drift
- Travel pressure high
- Travel accumulation
- Cycle counter
- Valve signature
- Drive signal
- Signal saturation
- PV out of range
- Stem position
- ...and more!



*Advanced diagnostic information from the field.*



PlantWeb starts with intelligent devices, the foundation of digital plants.



*“The more impressive feature of the fieldbus integration in DeltaV is that it is really integrated. Very frequently it has been heard of integration concepts where, well, in spite of everything, it is necessary to go through a series of steps and tools that don't make it so integrated. In this case it is practically one system, when the operator is at the control panel you can't tell if you are in the field or at the controls. There is real integration.”*

—Matias Morales  
PDVSA

# Control Anywhere



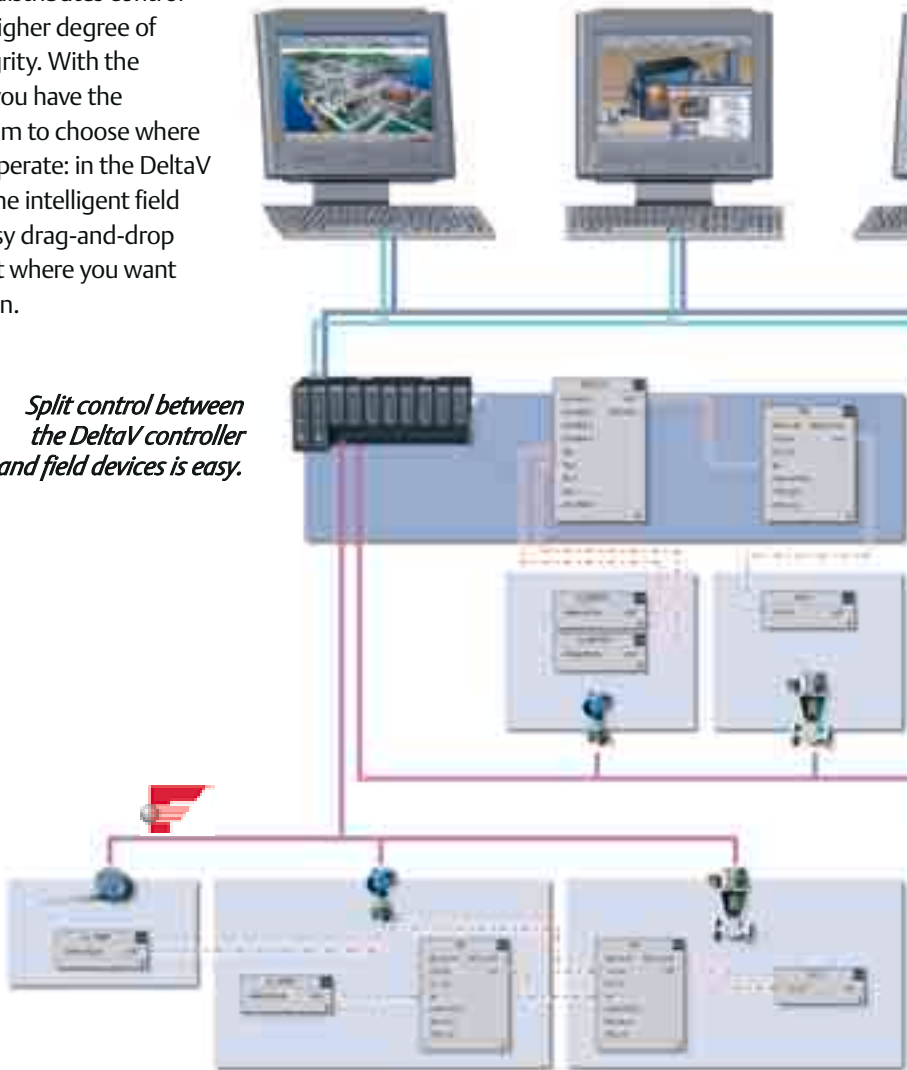
*Emerson's PlantWeb architecture lets you put control anywhere—where it best suits the application and level of performance you require.*

The DeltaV function blocks were built with fieldbus in mind. The function blocks are exactly implemented per the IEC 61158 specification. The parameters on the function block are those defined by the Fieldbus Foundation and are consistent throughout. Unlike existing DCSs or PLCs where complicated mapping for field function blocks to legacy data structures are required, the DeltaV function blocks are exactly the same as field device function blocks. So the system is easy to engineer and easy to maintain.

Peer-to-peer control among field devices broadly distributes control and provides a higher degree of single-loop integrity. With the DeltaV system, you have the complete freedom to choose where control should operate: in the DeltaV controller or in the intelligent field device. It's an easy drag-and-drop exercise to select where you want control to happen.

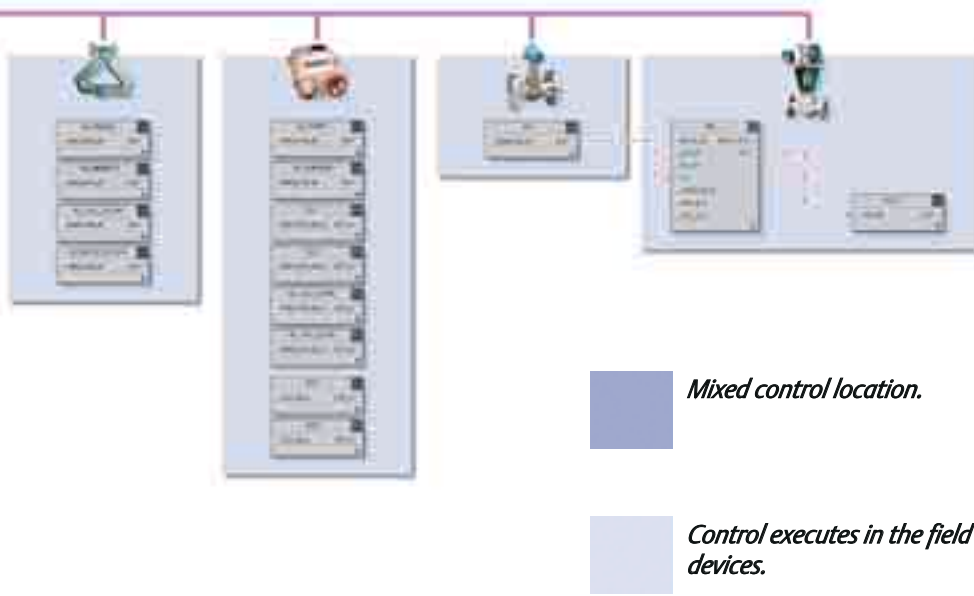
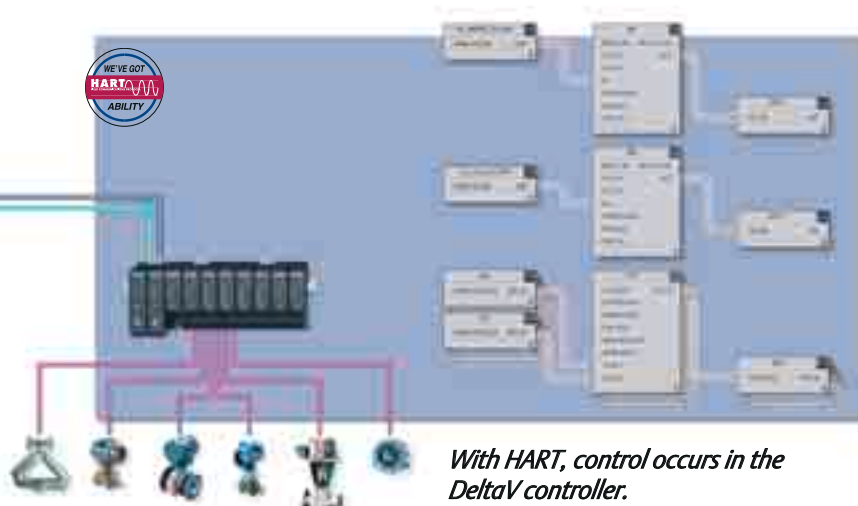
*Split control between the DeltaV controller and field devices is easy.*

*Any capable device may be configured to be a backup bus scheduler, to assure bus operation if the DeltaV communications are interrupted.*



*With fieldbus, control may be by peer-to-peer communications in the field devices.*

## *Drag and drop to deploy control in the field.*



Secure  
peer-to-peer  
communications  
in the field—easy.



*“Reliability can be maximized by taking the PID logic out of the process controller and distributing it to the fieldbus valve controller. If the transmitter is on the same segment, the entire loop is solved in the field—the transmitter’s AI (PV) and signal select blocks, plus the valve controller’s PID and AO blocks.”*

**—John Rezabek  
BP Chemicals**

# Reduced Capital and Engineering



*The PlantWeb payoff comes in two ways. The first is realized through faster plant commissioning, and the second and more interesting payoff is in increased plant productivity and reduced operating costs throughout the life of the plant.*

## Reduced capital and engineering costs

AMS's calibration, configuration and diagnostics with both HART and FOUNDATION fieldbus, coupled with the easy of use of DeltaV configuration, provide compelling results. Some of the savings estimated by our customers include:

- 90% reduction in configuration time
- 75% reduction in loop checkout time
- 85% reduction in commissioning time
- 28% reduction in transmitter count when multivariable transmitters are installed.

Further benefits realized by customers by the use of FOUNDATION fieldbus include:

- 93% reduction in I/O cards
- 74% reduction in wiring
- 84% reduction in terminations.

## Commissioning is easy

Engineering and commissioning costs are dramatically reduced as the DeltaV system auto-recognizes intelligent field devices and control hardware. The DeltaV system automatically sets up the bus, making deployment of the devices



Before



After

trouble free.

*Cable tray changes after replacing classic I/O wiring with bus wiring.*



Before



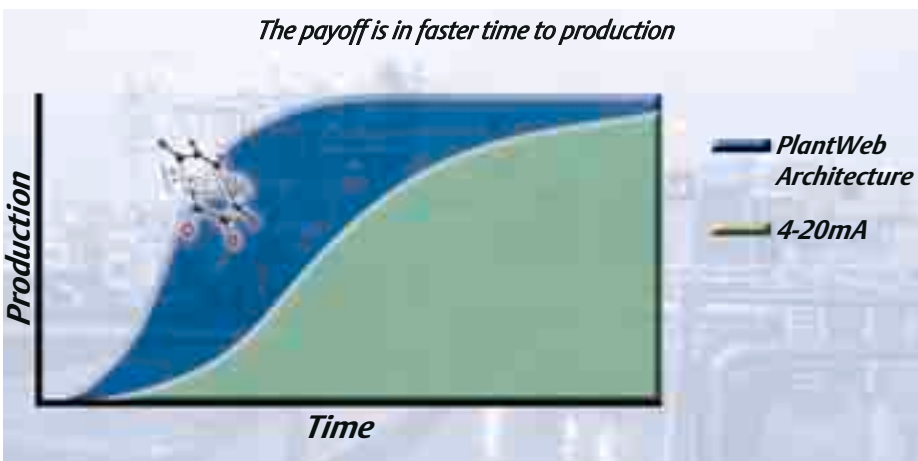
After

*Reduce wiring, footprint, and commissioning—easy.*

And, when these benefits are measured in product cost, the increased revenues amount to millions in some cases!



*The DeltaV I/O and fieldbus terminators mounted in a remote junction box.*



The initial payoff is in faster time to first production.

*“The unique design of the DeltaV digital automation system simplifies the installation and commissioning process, enabling us to complete the project five months ahead of schedule....The quality of the gas is better than the standard of the Grade A specification.”*

—Mr. Liu Yi  
Changqing Oil Field Company

# Reduced Operations and Maintenance Costs



*After commissioning the process, plant efficiency comes from making more with less—more product, on-spec—with less staff, less variability, and less downtime. The PlantWeb architecture delivers results in operations and maintenance to improve your efficiency and your profitability.*

A large portion of maintenance budgets—9% in this global chemical manufacturer's case—is spent to maintain instruments. Of this time and expense, 50-70% could have been avoided with the use of AMS software and intelligent field devices with embedded diagnostics, and 60-70% of maintenance on valves could have been avoided.

With the DeltaV system's ability to send predictive alerts to maintenance staff, unplanned shutdowns can be minimized or even avoided.

## Predictive maintenance is key.

Whether in the control room or the maintenance shop, AMS's advanced diagnostic information lets you key in on the field devices that really need your attention. Beyond the advanced warning of faltering equipment, AMS suggests corrective action and streamlines every facet of maintenance work, including troubleshooting, diagnosing and calibration work. This means that with predictive maintenance, plant field trips could be reduced by as much as 63%.

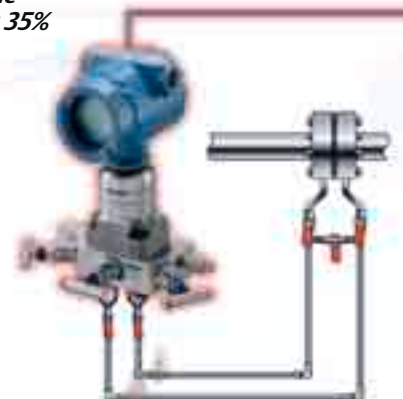


**No Problem 28%**

**Plant Field Trips**

Calibration Shift 21%  
Zero Off 6%  
Plugged Lines 6%  
Failed Instrument 4%

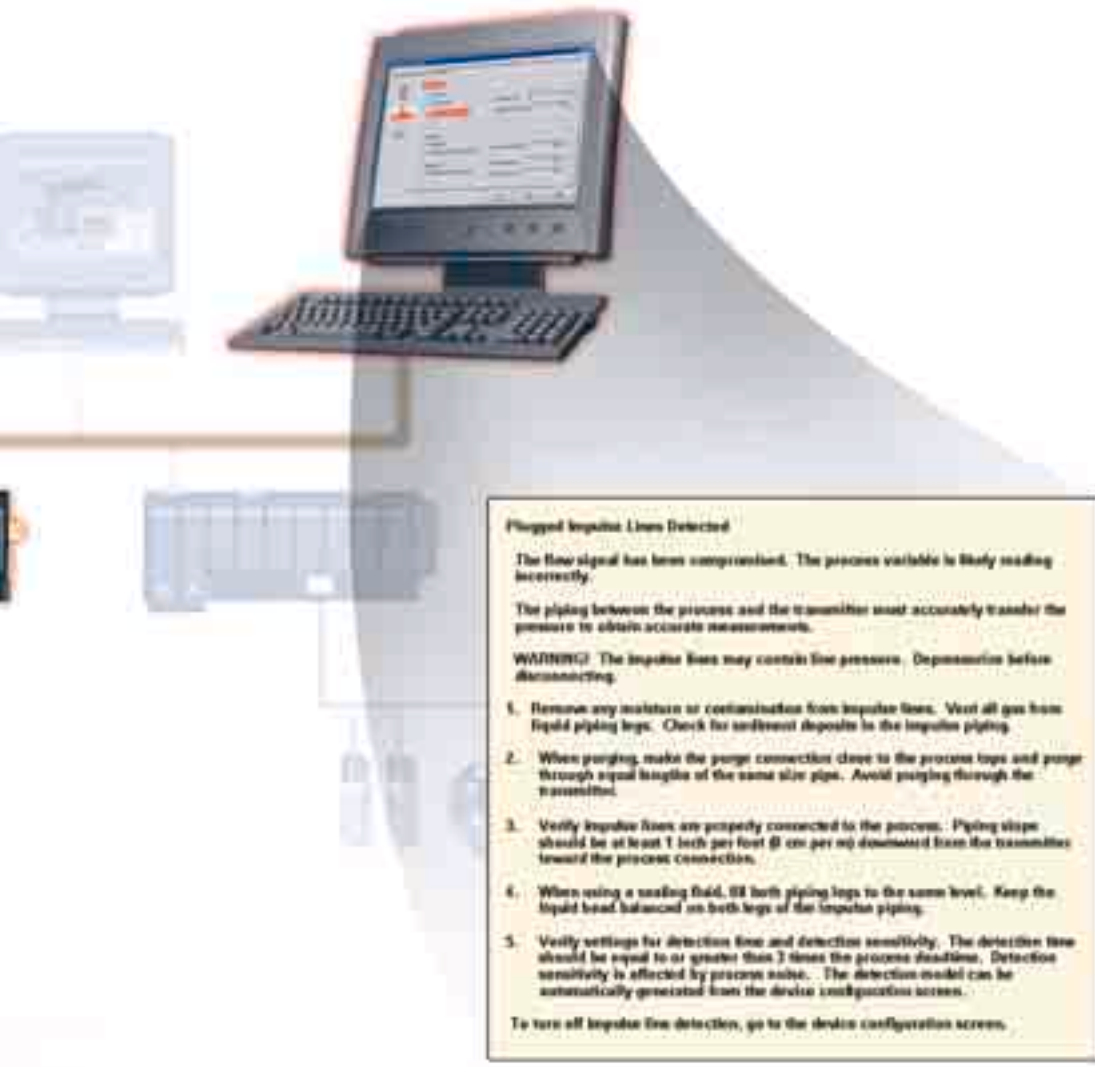
**Routine Check 35%**



*Beyond warnings to corrective action—easy.*



The PlantWeb architecture delivers predictive maintenance.



**Plugged Impulse Lines Detected**

The flow signal has been compromised. The process variable is likely reading incorrectly.

The piping between the process and the transmitter must accurately transfer the pressure to obtain accurate measurements.

**WARNING:** The impulse lines may contain live pressure. Depressure before disconnecting.

1. Remove any moisture or contamination from impulse lines. Vent all gas from liquid piping legs. Check for sediment deposits in the impulse piping.
2. When purging, make the purge connection close to the process taps and purge through equal lengths of the same size pipe. Avoid purging through the transmitter.
3. Verify impulse lines are properly connected to the process. Piping slope should be at least 1 inch per foot @ 45° or steeper downstream from the transmitter toward the process connection.
4. When using a sealing fluid, fill both piping legs to the same level. Keep the liquid head balanced on both legs of the impulse piping.
5. Verify settings for detection time and detection sensitivity. The detection time should be equal to or greater than 3 times the process deadtime. Detection sensitivity is affected by process noise. The detection model can be automatically generated from the device configuration screen.

To turn off impulse line detection, go to the device configuration screen.



*“Device alerts provided by online AMS systems identify potential operating problems in advance, so corrective measures can be taken in time to prevent costly shutdowns.”*

—David Wright  
Alabama Power Company

*With PlantWeb devices, instructions on how to fix device problems are provided with the predictive maintenance device alert. Guesswork is a thing of the past!*

*Timely detection of process health (example: plugged impulse lines) can avoid catastrophic failure. In many cases, preventing unplanned shutdowns that could cost millions of dollars not to mention the avoidance of a safety hazard.*

# Reduce Variability— Increase Availability



*The key to minimizing product variability to produce on-spec product is the health and precision of your field equipment.*

## Decreased plant variability

Performance of control is best measured as close to the field as possible. With Emerson field devices, this performance is calculated in the device. Using FOUNDATION fieldbus standard protocols, the DeltaV system collects the variability data to

With this precise data available you can tackle those problems that have the most impact on the economics of your process.

Some customers have opted to place alarms on variability index trips for those loops with the most significant impact. For the plant manager, this is all rolled up into a convenient summary display that lets one look at key performance metrics for the plant as a whole.

## Increased plant availability

Not only does DeltaV Inspect

Typically a quick control configuration exercise will fix this but often these areas are left undetected because its not always that easy to detect. DeltaV Inspect highlights these troubled loops for attention. Better control means safer and more optimized control.

In the DeltaV system, the desired *mode of operation* is tracked against the actual mode. Have you ever noticed how many loops are running in manual? Inspect reports the amount of time that the control is in manual control pinpointing those trouble spots where operators are struggling for control.

Finally, Inspect summarized the *health of equipment* attached to the DeltaV system. Devices may have advisory alerts yet be healthy (examples are: a valve that has traveled beyond its recommended cumulative stroke distance or a transmitter that is deployed outside of its recommended operating range). Other devices could have suspect readings that are flagged as uncertain and then of course the final option is devices that have failed. All are summarized in Inspect for fast viewing.

With DeltaV and and a foundation of intelligent field devices, you have a handle on the state of you plant for the first time. Paying attention to the predicative maintenance diagnostics clearly summarized in DeltaV Inspect will provide you with a means to achieve your availability targets.



*Your plant's performance at a glance with DeltaV Inspect.*

provide your process engineers with a snapshot of the variability in your plant—by current measurement, by shift or by month. Instantaneously with no configuration. Tackling control variability results in better product variability and increased production.

monitor variability, it also monitors plant health, mode of operation and control constraints.

*Constrained control* means that your plant algorithms are struggling to keep the process tuned to best operating conditions. Simply stated—a valve is at its limit .

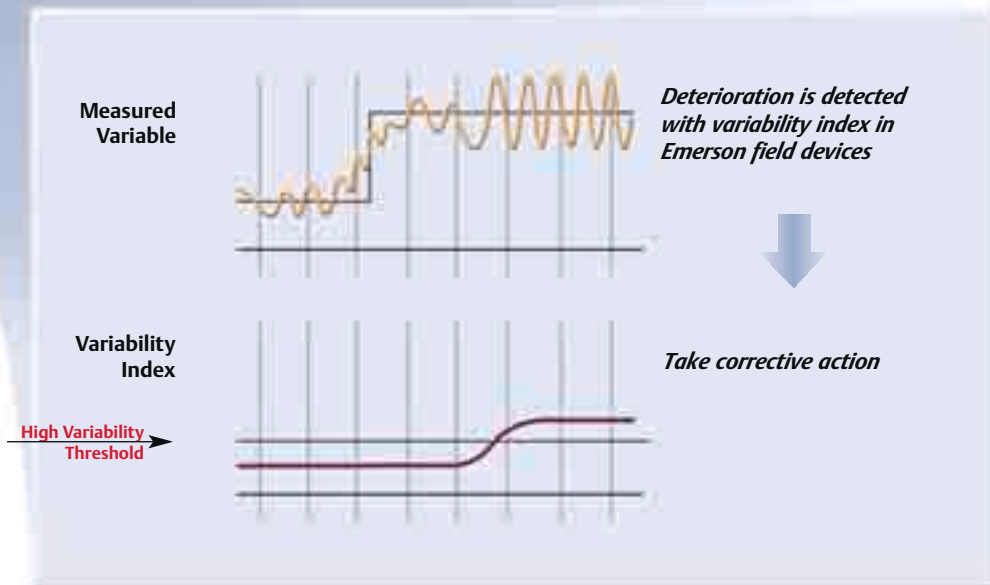


## *Precision control—easy.*

*DeltaV Inspect's intuitive user interface provides you with a summary of the performance of your plant.*



*The intelligent field device automatically performs variability calculations and transmits these to DeltaV for display to control engineers.*



Optimize  
your process  
—easy.



*“Operations have achieved a reduction in process variability due to tighter controls on the process. This has resulted in a more consistent product with respect to quality, yields, and cycle time.”*

—Dean Hale

DSM Catalytica Pharmaceuticals

# Enhanced Safety and Compliance



*To help you meet your regulatory compliance requirements, such as the U.S. FDA's 21 CFR Part 11, as well as ISO 9000 and OSHA, the DeltaV system and AMS completely integrate change management into your process automation.*

## Streamlined regulatory compliance

Besides avoiding safety and environmental problems, you are required to keep clear records to meet regulatory requirements. New regulations have been introduced including the FDA 21 CFR Part 11, which requires that records be kept under strict security. You often spend as much time documenting your work as doing it.

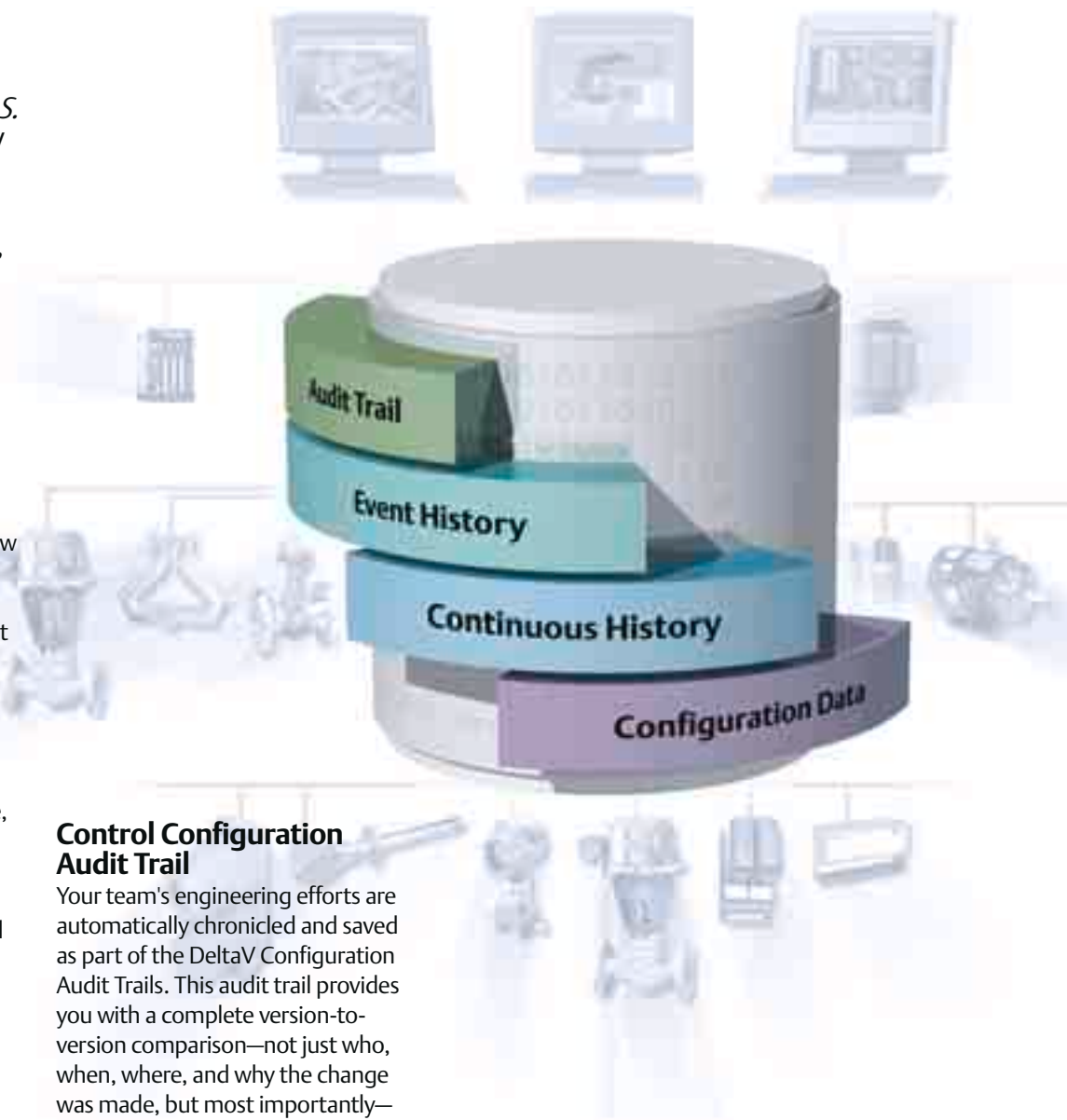
With AMS and the DeltaV system, detailed information is kept secure, including:

- Device Audit Trail
- Device calibration history
- Control Configuration Audit Trail
- Process history
- Event history.

## Control Configuration Audit Trail

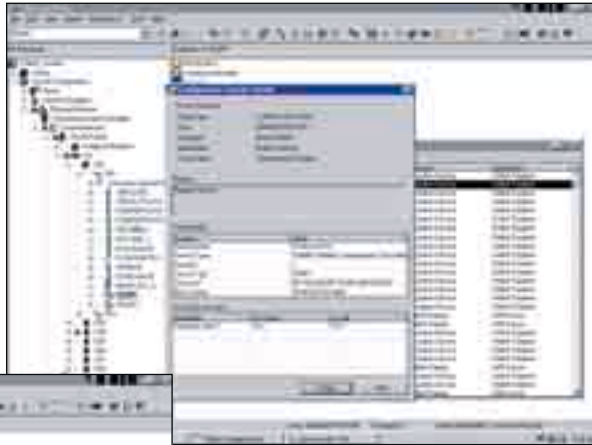
Your team's engineering efforts are automatically chronicled and saved as part of the DeltaV Configuration Audit Trails. This audit trail provides you with a complete version-to-version comparison—not just who, when, where, and why the change was made, but most importantly—what was changed.

*Any and all actions or changes captured automatically.*

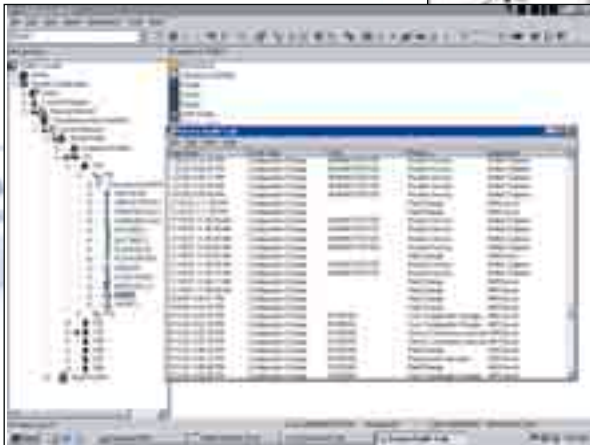




Tracking is easy—helps meet regulatory compliance.



*AMS Device Audit Trail tracks configuration and calibration changes and facilitates roll back.*



*“Our quality has improved, customer satisfaction has increased, our machine breaks have been significantly reduced, and startup time was reduced 25%.”*

**—Rich Hatton  
Abitibi Consolidated**

*DeltaV Audit Trail tracks control configuration changes. Not just the who, when, where, and why of the change, but most importantly—the what!*



# Be Proactive



*A digital plant creates proactive people. Maintenance personnel who are alerted directly by ailing field devices. Operators who are simultaneously notified to take corrective actions to avoid process upsets and increased variability. The right information narrowcasted to the right person to solve the problem—it's easy with DeltaV XML Messenger.*

The roadblocks to achieving these logical connections include: legacy automation systems, lack of communication standards, and costly resources.



## Real-time communication

In 1995 an effort led by Emerson Process Management and Microsoft resulted in the development of OLE for Process Control (OPC) resulting in a standard for high speed communications among real-time systems. Today this standard is managed by the OPC Foundation, located at [www.opcfoundation.org](http://www.opcfoundation.org).

## Event collection

The OPC Foundation increased its standards scope, delivering the OPC Alarm and Event specification for the integration of time-stamped, event information. Following its commitment to open, interoperable standards, Emerson has delivered DeltaV OPC Alarms and Events software for easy, standards-based integration with the enterprise.

## Transaction integration

Over the past few years, there has been an explosion of Internet-based data standards such as HTTP and HTML. Widely adopted for viewing data, these standards have found their way into automation products such as the DeltaV and AMS web servers for viewing maintenance, historical and process data.

The introduction of web services by the World Wide Web consortium added a data-type standard, XML (eXtensible Markup Language). We have provided an XML interface to the automation layer. With DeltaV XML Messenger, connecting the automation system to the CMMS (Computer Maintenance Management Systems) is a breeze. But there is more to it than just connectivity. It's about providing the right information to the right staff at the right time. Advanced control

optimization alerts are directed via the DeltaV XML Messenger to control engineers; predictive maintenance alerts to maintenance staff; reactive maintenance alerts to operators and critical plant events to plant management. Easy integration, filtering and redirection—*narrowcasting* information to the right staff.



Third-party applications can now easily connect automation system transactions with enterprise systems via a drag-and-drop configuration as opposed to complex C/C++ programming. Now you can integrate your production and automation systems readily with your maintenance systems.



# *Integration has never been easier.*

With these connections in place, intelligent field devices can now proactively generate work orders when servicing is required.

OPC for real time. XML integration for B2A (business to automation), A2B (Automation to business) transactions—this is what we call EasyIT. And the DeltaV system delivers.



*For critical devices, alerts may be sent to instant messaging systems. Easy to set up with XML transaction tools.*

Recurring benefits that really pay off.



*“We’ve gone beyond systematic maintenance toward a 100% predictive maintenance environment.”*

**—Pierre Piquenot  
Total Solvents, Oudalle Plant**



*From transmitter to maintenance systems, predictive alerts to work orders. Made easy with XML integration.*

# Emerson Excellence



*The PlantWeb architecture isn't just about best-in-class, standalone field devices. Or the digital automation system. Or even the integration of busses. It's about the value of a suite of best-in-class products brought to you by a best-in-class company. Emerson.*

Thirty two awards — more than twice that of any other automation supplier. The DeltaV digital automation system was voted #1 by the readers of *CONTROL* in the following categories:

- Control Systems, Hybrid
- Control Systems, Process
- Process Control Software
- Batch Control/Management Software



Our technology know how and application experience enable us to develop measurement and analytical instruments, final-control devices, and systems and software that deliver the proven performance and reliability our customers expect. And our open, standards-based PlantWeb architecture unleashes the power of intelligent field devices, systems, and software to deliver better process, plant, and business results.



In *CONTROL* magazine's 2002 Readers' Choice awards, automation users honored Emerson Process Management with more number-one ratings for products and services than any other company.



*Products from the leaders  
in measurement and control.*



Solid reputation for quality and performance.

Feature	Emerson Process Management Devices	Others
<b>Standardized Operations/ Commercial Considerations</b>		
Single source provider	•	?
Single source spares inventory	•	?
Complete suite of HART and FOUNDATION fieldbus products	•	?
Single terms and conditions	•	?
Financial stability	•	?
Global coverage	•	?
Creative financing	•	?
Worldwide consulting	•	?
Thousands of successful HART and FOUNDATION fieldbus installations	•	?
<b>Technology Considerations</b>		
Proven communications software	•	?
Common control software (devices and host)	•	?
Common advanced diagnostics in device family	•	?
Predictive maintenance device alerts	•	?
Devices are insensitive to bus polarity	•	?
Firmware upgrade of device	•	?
Sustained R&D investment	•	?
PlantWeb Corrective Action	•	?

*“Let's give credit where credit's due: Emerson Process Management or subsidiaries won in the most categories this year, 21, including the coveted process control system category.”*

—Dave Fusaro  
Executive Editor  
CONTROL, Jan. 2002

# Emerson Experience



*Emerson can help you build your digital plant with our seasoned experts, available around the globe.*

Our digital bus consultants have been applying bus technologies in real-world projects longer than any other automation supplier, since 1997. Our consultants have planned and executed projects in mission critical applications in a wide range of industries.

Emerson can assist you in meeting technical and safety requirements, minimizing project costs and time, reducing the impact of applying the latest technologies, facilitating future expansion and migration planning, and capitalizing on the range of benefits of taking your plant digital.

## Answers to questions

As you look to deploy the latest technologies to improve your operational efficiency, reduce your project capital costs, and gain competitive advantages, Emerson can help you rapidly progress

through the learning curve. We can provide answers to your questions, even ones you may not have considered.

## Experience in all phases

Emerson can help you in all phases of the lifecycle of your automation projects.

In the basis of design or front-end engineering design phases of projects, it's important to get your project execution staff upfront training, so that the benefits of the fieldbus technologies can be incorporated. Our fieldbus consultants can help with:

- Training
- Benefits analysis and project justification
- Conceptual design
- Failure modes and effects analysis (FMEA)
- Best practices
- Bid specifications
- Project drawings and documentation.

Our consultants can deliver project execution services including:

- Detailed design/review
- Multi-vendor integration/connectivity issues
- Startup support.



*Experience, when it counts.*

Once startup, training, and documentation have been completed, we can help you get the most out of your plant capital assets with our asset optimization services.

### Experience with the industry leaders

Since 1997, Emerson has worked with some of the leading companies in many industries to help them achieve the operational efficiencies of fully digital plants.

A partial list of these companies include:

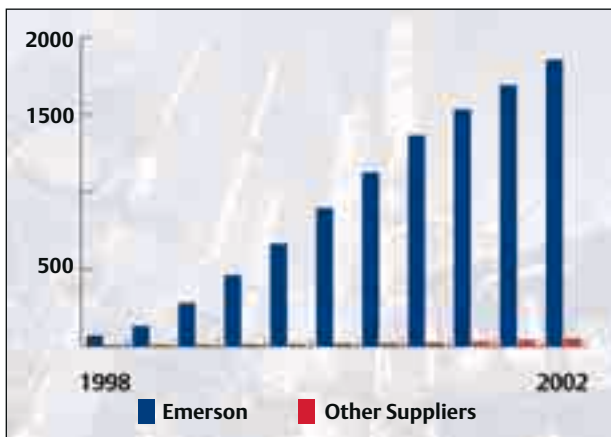
- ARCO   ■ Bechtel
- BP   ■ Eli Lilly
- ExxonMobil   ■ Fluor Daniel
- International Paper   ■ Merck
- Shell   ■ Technip



Emerson not only delivers the most advanced technology to increase operational efficiency, we can assist you every step of the way.

We can customize training, develop new work processes and procedures—all designed to help you get the most out of your new automation system. *We can help you do more with less.*

### Global Fieldbus Installations



Experience in delivering PlantWeb results.



*“The Performance Solutions alliance agreement is the most successful of the twelve to fifteen key supplier agreements currently in place.”*

—Michael Freytag  
Bayer

***Customers requesting this brochure have also requested the following:***

- **DeltaV System Overview** (brochure)
- **DeltaV System—Built for Batch** (brochure)
- **DeltaV Precision Control** (brochure)
- **Asset Management Solutions** (brochure)
- **Comprehensive set of product data sheets**
- **Interactive demo CD**
- **Product information CD**
- **Customer Case Studies video CDs and DVD**



To locate an Emerson Process Management representative or sales office near you, or to receive any of the aforementioned brochures, CDs and DVD, visit our website at:

[www.EasyDeltaV.com](http://www.EasyDeltaV.com)

**Fisher-Rosemount GmbH & Co.**

Rheinische Straße 2  
42781 Haan  
Germany  
Tel. +49 (0) 2129 553-0  
Fax +49 (0) 2129 553-100

**Emerson Process Management AG**

Blegistraße 21  
63416 Baar  
Schweiz  
Tel. +41 (41) 7686111  
Fax +41 (41) 7618740

**Emerson Process Management AG**

Industriezentrum NÖ Süd  
Straße 2a, Obj. M29  
2351 Wr. Neudorf  
Österreich  
Tel. +43 (2236) 607-0  
Fax +43 (2236) 607-44 /-55

*PlantWeb, HART, DeltaV, the DeltaV design, Emerson Process Management and the Emerson Process Management design are marks of one of the Emerson Process Management group of companies. All other marks are the property of their respective owners. The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. We reserve the right to modify or improve the designs or specifications of such products at any time without notice.*

*© Fisher-Rosemount Systems, Inc. 2002 All rights reserved.*

