Freedom to Choose. Power to Integrate.
An Automation Infrastructure for Operational Excellence

www.fieldbus.org
Increasingly, end users want to remove the constraints of closed, proprietary automation systems, and in doing so, free their plant’s profit potential. They’re seeking a truly scalable control platform designed to integrate installed assets and co-exist with legacy systems — all while protecting valuable investments.

The Fieldbus Foundation answered this demand by developing a revolutionary technology that is “Changing the Playing Field” for industrial automation.

The FOUNDATION™ solution delivers open, scalable integration, process integrity, and business intelligence. It meets the market’s need for a tightly integrated automation infrastructure enabling plants and factories to realize CapEx and OpEx advantages. In other words, it is a technology with a business purpose.

End users should not forget the real objective of implementing fieldbus: reliable operations and improved profitability. At Shell, the technology improved asset utilisation, lowered fixed and variable costs, and reduced maintenance expenses.”

James Rhame
Asset Development Manager
Shell Chemical

FOUNDATION Technology – More Than a Fieldbus Protocol

Digital device networks provide communication capabilities, but stop there. FOUNDATION technology is about much more than just communication. It is a forward-looking system infrastructure for the future of industrial automation.

FOUNDATION technology provides end users with the “Freedom to Choose” best-in-class, interoperable control products from their suppliers of choice, and the “Power to Integrate” control systems, subsystems and devices across their enterprise. The result is improved plant and business performance.

An Industry Standard – Implemented Worldwide

Since its introduction in 1994, the Fieldbus Foundation’s open, non-proprietary technology has gained unprecedented industry support. Tens of thousands of fieldbus control systems, and over a million fieldbus devices, are now in service around the world. FOUNDATION fieldbus is recognised as the de-facto industry standard for process automation. It is fully compliant with all recognised international fieldbus standards, including ISA S50, IEC 61158 and CENELEC EN50170.

The Only Complete, Interoperable Fieldbus Solution

FOUNDATION fieldbus makes it possible to “mine” important information from the plant floor. When used correctly, this information empowers operators and makes plant operation easier. Only FOUNDATION fieldbus enables true distributed control, as well as device and subsystem interoperability — without the need for custom programming.

Power to Integrate Your Plant Enterprise

FOUNDATION fieldbus provides end users with the power to integrate their plant enterprise — and the freedom to choose how to integrate.

The H1/HSE fieldbus architecture not only integrates legacy systems and other bus protocols, but also unifies devices, hosts, control subsystems, data servers and large data generators across the enterprise. FOUNDATION fieldbus provides robust digital control based on a tightly integrated system architecture and a high-speed backbone for plant operations. This, in turn, removes the constraints on interoperability for field instruments, controllers and subsystems.

Fieldbus technology unifies today’s smart instrumentation and analytical highway to provide all-digital access to operational parameters and data at the point of measurement.

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James Rhame
Asset Development Manager
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Our move towards adopting FOUNDATION fieldbus was a natural consequence of improved process stability, better knowledge of asset status, and decreased downtime provided by this technology. Interoperability, and the means to implement control at the field level, were also key factors during our evaluation phase.”

Carlos Henrique Wildhagen Moura
Technical Consultant
Petrobras
Improved Business Results - Wherever You Operate

From the petrochemical refineries of the Middle East, to Oil & Gas Operations in Nigeria, FOUNDATION fieldbus is improving the business results of industrial end users throughout Europe – and around the world.

**Solutions Designed for Demanding Applications**

FOUNDATION technology is designed for mission-critical control applications, and is the only fieldbus solution meeting all critical end user requirements: high-speed communications; intrinsic safety, including the Fieldbus Intrinsic Safety Concept (FISCO); support for bus-powered devices; and utilisation of existing plant wiring.

Typical applications include:

- Closed-loop continuous control
- Batch sequencing
- High-speed process automation
- Information integration
- Recipe management
- Data gathering
- Legacy system integration

“As well as the advantages regarding installation costs, fieldbus technology also offers considerable added value, e.g. with diagnostics and device parameterisation. Furthermore the savings potential in maintenance costs should not be forgotten.”

Michael Schwibach, BASF AG

**Faster Start-ups and Lower Costs**

FOUNDATION fieldbus takes advantage of today’s intelligent instrumentation to provide reliable, deterministic control. Plus, it reduces wiring requirements, reduces engineering and commissioning time and costs. Furthermore it lowers installation and equipments costs – your critical capital expenditures.

Unlike traditional control technology, FOUNDATION fieldbus delivers system self-diagnostics supporting proactive device maintenance. Fieldbus diagnostics are also the key to implementing advanced asset management solutions. The result: lower operating expenditures and improved profitability.

FOUNDATION fieldbus, combined with asset management software, eliminates the high cost of preventive and unnecessary maintenance such as periodic valve rebuilds. Resources are spent on equipment requiring repair or service – not wasted on devices that don’t need it. Maintenance time is also reduced.

**Greater Efficiency Impacting Your Bottom-line**

By installing FOUNDATION technology, you can create a knowledge-based system empowering your workforce to implement continuous improvements in plant operations. Accessing information from the plant floor, channelled through modern fieldbus control systems, makes it possible to run your plant more efficiently. Indeed, the true benefits of fieldbus occur after start-up and commissioning. These include:

- Increased availability
- Reduced downtime
- Greater manufacturing flexibility
- Reduced process variability
- Increased productivity
- Improved asset utilisation
- Reduced maintenance costs
- Higher quality products
- Improved safety and regulatory compliance

“We expect the same functionalities as with conventional technology, with higher expectations in respect to commissioning, validation and maintenance. Proven solutions are now installed at Novartis.”

Dr. Joachim Zobel
Senior Automation Engineer
Novartis Pharma
Carbowil Spolka, Poland

Carbowil Spolka has chosen Fieldbus Non-Incentive Concept (FNICO) power supplies and wiring components for a new fieldbus instrumentation project at the company’s carbon dioxide production plant in Wloclawek. Part of the plant is classified as a Zone 2 hazardous area, and to maintain a uniform approach across the entire installation, an explosion protection method suitable for Zone 2 was required. The chosen solution with FOUNDATION fieldbus technology achieved all requirements perfectly.

Tatneft-NK-Oil, Russia

The plant in Nizhnekamsk is the first petrochemical plant in Russia that produces synthetic motor oil. It was constructed during 2002-2003 and started up in September 2003. The FOUNDATION fieldbus technology provides an open, decentralised digital control architecture with intrinsic safety that delivers rich diagnostic information about equipment health and status.

Shell, Nigeria

Fieldbus Intrinsically Safe Concept (FISCO) power supplies have been chosen for the Bonny Island Terminal Project, a new development of 24 oil storage tanks for Shell Petroleum Development Corporation in Nigeria. The control system includes a 6000 device FOUNDATION fieldbus network. 1600 of the devices are located in hazardous areas.

Shin-Etsu, Netherlands

Shin-Etsu is the largest PVC manufacturer in the world. The Vinyl Chloride Monomer is piped from the manufacturing plant at Rotterdam to the plant at Pernis where PVC is produced. The initial installation consists of 35 fieldbus segments in a Zone 2 hazardous area, using “control in the field”. Thanks to the use of FOUNDATION fieldbus technology it has been possible to eliminate wiring and termination failures, which had been identified as the main cause of maintenance problems.

Degussa, Germany

Degussa Herne upgraded the continuous production plant with FOUNDATION fieldbus. The investment is comparable to conventional solutions but offers the operator a lot of additional benefits like reduced process downtime and extended asset management.

LUKOIL, Russia

LUKOIL modernised its refinery in 2002 by installing FOUNDATION fieldbus. The plant produces 12 million tons petroleum per year. The refinery has installed fieldbus at lube oil blending facility, at water treatment plant and at hydrogen rectification plant with over 3000 devices. The use of fieldbus enabled LUKOIL to lower its maintenance costs and manage assets in response to market demand.

HOW YOU CAN GET STARTED

Participate in Regional End User Activities

End users receive valuable assistance in implementing FOUNDATION fieldbus by participating in a regional Fieldbus Foundation End User Councils (EUC). EUCs are established in many regions such as:

- France
- Germany
- Russia / CIS
- United Kingdom
- ... and many more

For more information, e-mail: info@fieldbus.org

Global Certified Training Centers

In Europe, certified training centers offer training courses in convenient locations – helping you prepare your plant personnel to make full use of this revolutionary technology. Regional training centers include:

BIS Prozesstechnik GmbH
Frankfurt, Germany
www.bb-industrialservices.com

STC Brielle
Rotterdam, The Netherlands
www.stc-r.nl
The Fieldbus Foundation is a global organisation supporting the adoption of new digital control technology for over a decade. The foundation helped establish a single, interoperable fieldbus standard, and our technology experts developed the modern fieldbus architecture reshaping the future of industrial automation.

**Freedom to Choose Best-in-Class Devices**

With FOUNDATION technology, end users have the freedom to choose best-in-class control products meeting their specific application needs – and the power to integrate those tools into their enterprise model.

The Fieldbus Foundation’s rigorous device testing and registration program allows you to choose from a growing selection of interoperable fieldbus products offered by the world’s leading automation equipment suppliers.

Instruments bearing the official foundation registration seal will work on the same digital control network without loss of integration or functionality. This means you can select the best device for the job, regardless of the manufacturer.

### An Open, Platform-independent Automation Environment

**FOUNDATION** Electronic Device Description Language (EDDL) is a text-based language for describing the digital communication characteristics of intelligent devices and equipment parameters in an Operating System (OS) and Human Machine Interface (HMI)-neutral environment. EDDL enables a host system manufacturer to create a single engineering environment that eliminates the need for custom software drivers for each device type.

The Fieldbus Foundation recently signed an addendum to its agreement with HART Communication Foundation, PROFIBUS User Organisation and OPC Foundation to further develop EDDL. This cooperation project will protect industry investments in EDDL by enabling additional enhancements to the IEC 61804 standard.

With EDDL, device developers do not need to deal with the burden of designing and programming a graphic user interface to run under a variety of platforms and environments, from large HMIs to small handhelds. Instead, they can utilise common graphic display capabilities provided by commands in the EDDL.

### New Initiatives Look to The Future

The Fieldbus Foundation’s technology continues to advance based on changing market requirements. For example, our Safety Instrumented Systems (SIS) program was launched to meet the growing worldwide demand for commercial, standards-based, safety instrumented system products incorporating FOUNDATION technology.

We have also undertaken an initiative to standardise the interface of remote I/O into the FOUNDATION architecture. The addition of remote I/O further tightens the integration of process instrumentation within the FOUNDATION system solution.

“What FOUNDATION fieldbus has given us is a vendor-neutral DCS. When control resides in the field devices, the user is tied to his ‘system’ vendor only by the extent to which they support the functions available.”

John D. Rezabek
Lead Control Engineer
ISP Lima BDO Manufacturing

“Truly distributed field control, an open and modular architecture, and extensive diagnostic capabilities allowed us to implement significant process improvements.”

Hamilton Roberto Baldo
Asset Management
Rhodia
The new era of digital control is here. Don’t delay – leading companies in your industry are already realising the significant performance improvements, and business benefits, made possible by Foundation fieldbus.

Certified Training: Take the Fast Track to Fieldbus

Getting started with Foundation fieldbus is easy – the Fieldbus Foundation offers a wide range of technology instruction at its facility in Austin, Texas, and at STC Brielle, The Netherlands, as part of its expanding global training program.

For more information, visit www.fieldbus.org.

In addition, Fieldbus Foundation-certified training centers around the world provide comprehensive courses for end users of all skill levels. Certified training is available at the following sites:

- Lee College
  Baytown, Texas, USA

- BIS Prozesstechnik GmbH
  Frankfurt, Germany

- SAIT
  Calgary, Alberta, Canada

- STC Brielle
  The Netherlands

- Singapore Polytechnic
  Singapore

- Sinopec Yanshan
  Beijing, China

- Tri-State University
  Angola, Indiana, USA

- Waseda University
  Tokyo, Japan

End User Councils: Let Your Voice Be Heard

You can have a voice in the future of Foundation fieldbus by participating in a Fieldbus Foundation End User Council (EUC). Regional EUCs, established worldwide, provide an open forum for the exchange of information about the application and development of fieldbus technology in a wide range of industries.

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Current EUC locations include:

- Americas
  South America
  United States
  Western Canada
  (Contact: americas_euc@fieldbus.org)

- Europe/Middle East/Africa
  Europe
  Middle East
  Africa
  (Contact: emea_euc@fieldbus.org)

- Asia/Pacific
  China
  Japan
  Singapore
  (Contact: asia_euc@fieldbus.org)

- Oceania
  Australia
  New Zealand
  (Contact: oceania_euc@fieldbus.org)

Foundation Membership: Gain a Competitive Edge

Regardless of your company size or industry, Fieldbus Foundation membership provides significant benefits for end users. Gain a competitive edge – join the foundation today!

www.fieldbus.org

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