



*Setting the Standard for Automation™*

# **EDDL- IEC 61804 and ISA104**

Standards Advancing Interoperability of  
Control Systems Devices

Standards  
Certification  
Education & Training  
Publishing  
Conferences & Exhibits

# Agenda

- **ISA104 and the EDDL international standard**
- How EDDL Technology Works
- On going work by ISA104
- ISA104 Booth at ISA EXPO2008

# ISA104 Electronic Device Description - Scope

To create a standard that specifies a generic language to describe the properties of automation system components. The specified language shall be capable of describing:

- device parameters and their dependencies;
- device functions;
- graphical representations, for example charts;
- interactions with control devices.

The language is called the “Electronic Device Description Language (EDDL)” and is used to create an “Electronic Device Descriptions (EDD)” file. These files may be used with appropriate tools to generate interpretative code to support parameter handling, operation, and monitoring of automation system components. Tool implementation is outside the scope of this specification.

This Standard shall specify the semantical and lexical structure in a syntax independent manner. A specific syntax shall be defined, but it is possible to use the semantical model with a different syntax.

NOTE: The Electronic Device Description Language may also be used for the description of product properties in domains other than automation systems, but these other domains will not be specifically addressed.

# ISA104 Committee

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# What is EDDL?

## ***International Standard for Interoperability***

- Electronic Device Description Language (EDDL)
- EDDL is an international standard
  - Standardized by IEC (IEC 61804-3, IEC61804-4)
- EDDL is endorsed by four major foundations and their members
  - Fieldbus Foundation
  - HART Communication Foundation
  - Profibus Nutzerorganisation e.V (PNO)
  - The OPC Foundation

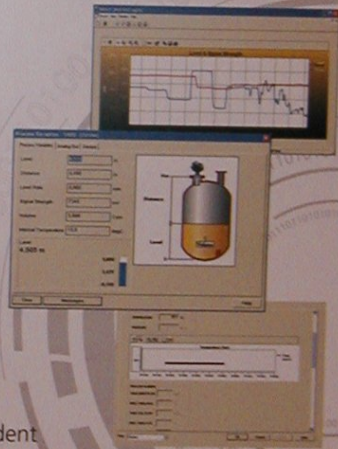
# EDDL and WirelessHART

## EDDL Benefits

EDDL is the only technology recognized by the **HART** Communication Foundation for the configuration of devices.

### User Benefits

- Universal tools for all devices
- Consistent look and feel
- Highly reliable and robust
- Compatible with existing devices
- Protect investments
- Lower training cost

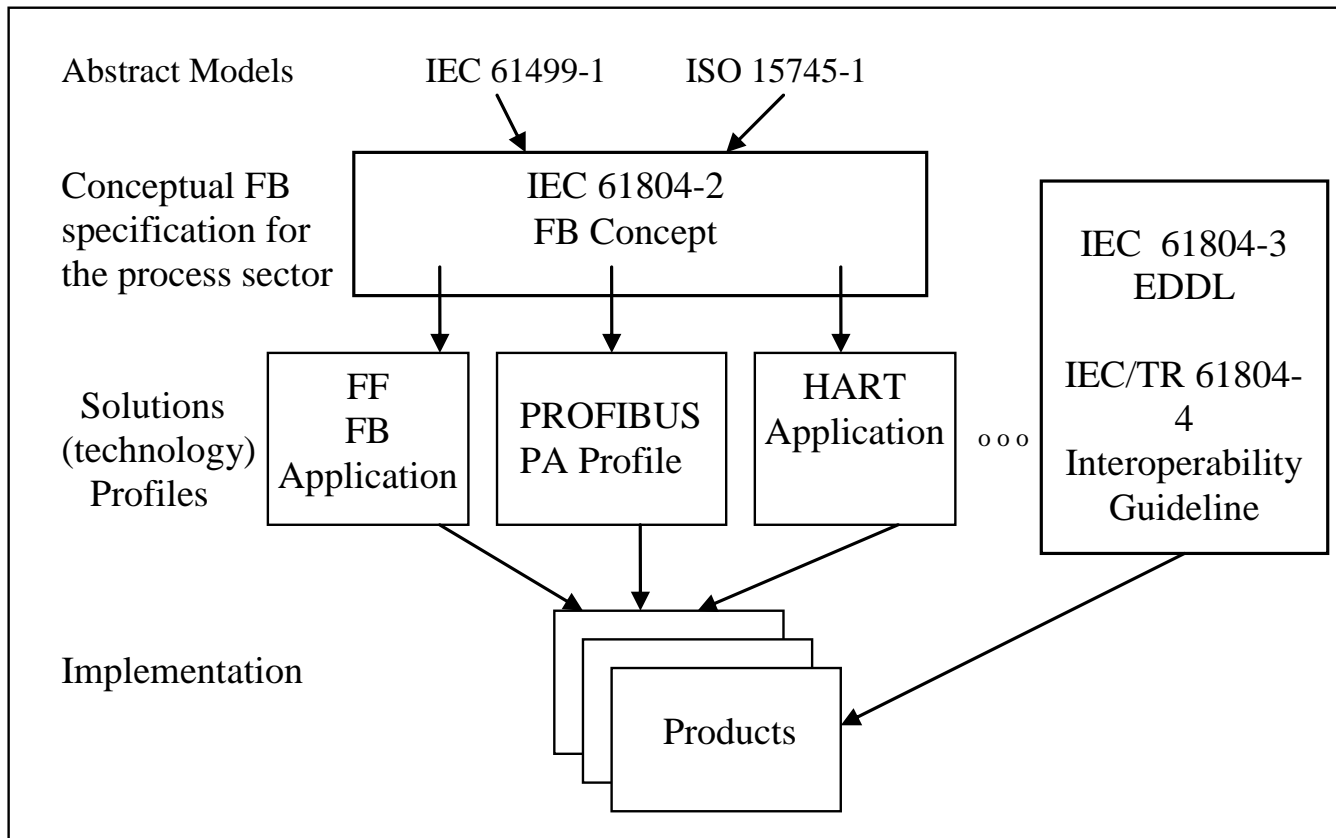


### Supplier Benefits

- Stable EDDL standard
- Efficient development of DD's
- Host and Operating System independent
- Lower development and support costs
- Supports all devices – from simple to complex

- The setup and diagnostics of WirelessHART devices may be done using EDDL.
- EDDL is the only technology recognized by the HART Communication Foundation for the configuration of devices.
- The ISA104 booth includes demonstrations of WirelessHART device setup and diagnostics using EDDL.

# IEC61804 Standard for Electronic Device Description



- Complies with IEC61499
- Profile are defined for Fieldbus Foundation, Profibus, and HART

# EDDL Consistent with NAMUR NE105

- ✓ 3.1 Investment Safety
- ✓ 3.2 Version Conflicts
- ✓ 4.1 Device Integration with Tools
- ✓ 4.2 User Guidance
- ✓ 4.3 Display of Devices
- ✓ 4.4 Standard Profiles
- ✓ 5.1 Device Descriptions
- ✓ 5.2 Licensing of Device Descriptions
- ✓ 5.3 Cross-Platform Compatibility
- ✓ 5.4 Full Support of Device Functionality
- ✓ 5.5 Standardized Data filing
- ✓ 6.0 Certification



EDDL technology  
meets NE105  
requirements

# IEC 61804-3 Standard

- This standard specifies EDDL as a generic language for describing:
  - device parameters and their dependencies;
  - device functions, for example, simulation mode, calibration;
  - graphical representations, for example, menus;
  - interactions with control devices
  - graphical representations
  - persistent data store.
- EDDL is to be used to create Electronic Device Description (EDD). This EDD is used with appropriate tools to support parameter handling, operation, and monitoring of automation systems.
- **ISA 104 has adopted of IEC 61804-3 and IEC 61804-4 as ISA/ANSI standards.**

# ANSI/ISA-61804-3 Standard



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## ANSI/ISA-61804-3 (104.00.01)-2007 Function Blocks (FB) for Process Control - Part 3: Electronic Device Description Language (EDDL)

Non-Member Price: \$314.00

ISA Member Price: \$15.00

### Look Inside

- [Table of Contents](#)
- [Preview](#)

Product ISBN/ID:

DOWN4175

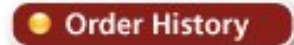
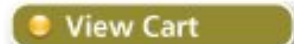
Stock Status: In Stock

### About

This standard specifies the Electronic Device Description Language (EDDL) technology, which enables the integration of real product details using the tools of the engineering life cycle.

Length: 457 pages

Shipping Weight: .00 lb(s)  
Publisher: ISA



# ANSI/ISA – TR61804-4 Technical Report



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### ANSI/ISA-TR61804-4 (104.00.02)-2007 Function Blocks (FB) for Process Control - Part 4: EDD Interoperability Guideline

Non-Member Price: \$204.00

ISA Member Price: \$204.00

#### Look Inside

- [Table of Contents](#)
- [Preview](#)

Product ISBN/ID:

978193439-4380


Stock Status: In Stock

### About

This part of IEC 61804 is a guideline to support EDD interoperability. This Technical Report is intended to ensure that field device developers use the EDDL constructs consistently and that the EDD applications have the same interpretations of the EDD. It supplements the EDDL specification to promote EDDL application interoperability and improve EDD portability between EDDL applications.

Shipping Weight: 1.00 lb(s)

Publisher: ANSI/ISA

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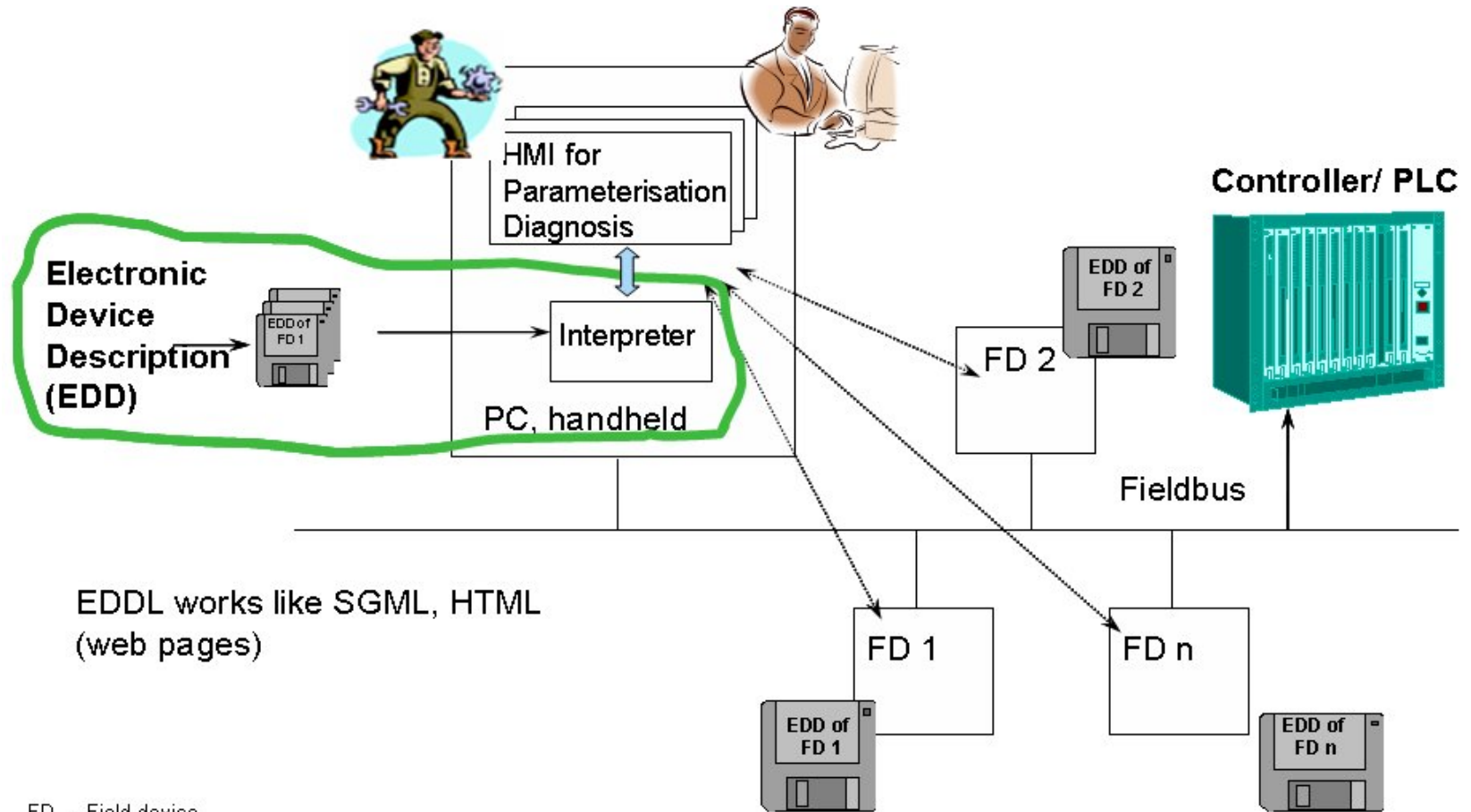
# Agenda

- ISA104 and EDDL the EDDL international standard
- **How EDDL Technology Works**
- On going work byISA104
- ISA104 Booth at ISA EXPO2008

## EDDL – What is It?

- The Electronic Device Description Language (EDDL) is a ***text-based language*** that may be used to describe the characteristics of field devices.
- Device suppliers use EDDL to create Electronic Device Description (EDD) files.
- The EDD file provides a standardized form and structure for host systems and handheld communicators to access and display information in field instruments independent of the communication protocol or device operating system.

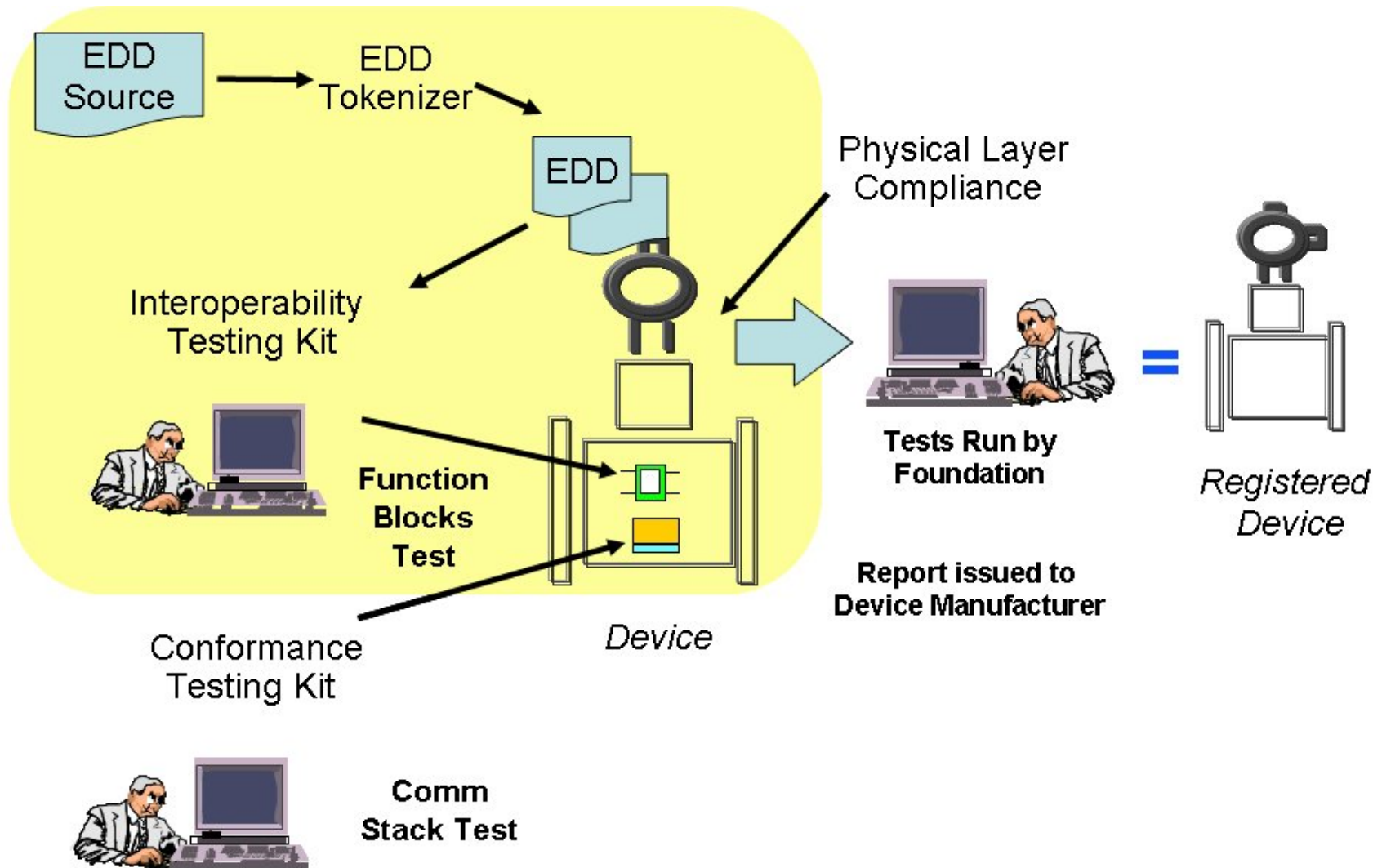
# Interactions with individual field devices



EDDL works like SGML, HTML (web pages)

FD - Field device  
 ↔ Point-to-Point-Connection

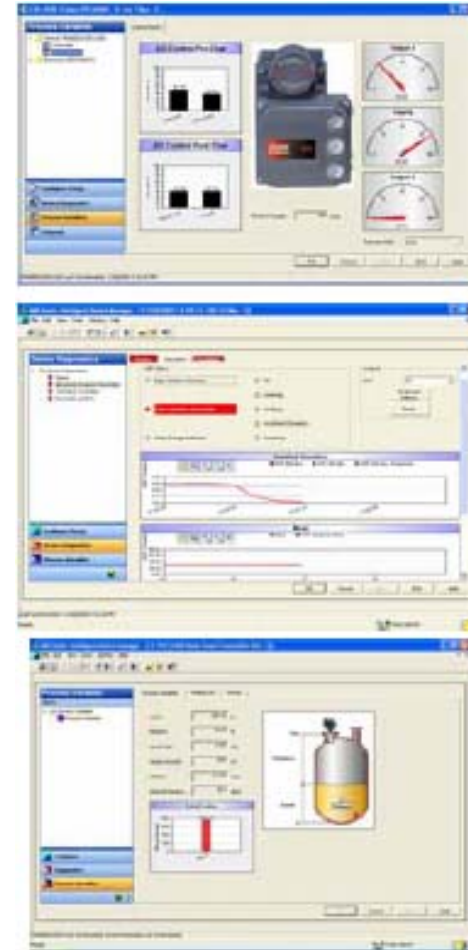
# Example – Device Testing and Registration





# Intuitive graphics layout

- According to functionality
  - Parameters, Status indicators
  - Menus logically, Human readable labels and
- Engineering units
  - Unused factory parameters are hidden.
- Help and Descriptions
  - Parameters, Multiple choice options
- Charts
  - Strip chart historical trend
  - Vertical or horizontal bar-graphs
  - Needle gauge.
- Images
  - Photos, Illustrations → tank geometries.
- Grids
  - Large data sets table
  - Tank strapping tables
  - List of false echoes for radar level transmitters



# EDDL's Unique Characteristics

- Provides a well-defined structure
- Support the most simple to the very complex field device.
- Since EDD's are text-based, these files are ***independent of operating systems and control platforms.***
- The same EDD has common look and feel across applications which reduces the learning curve.
- A field device can be incorporated without affecting the runtime stability of the control system.

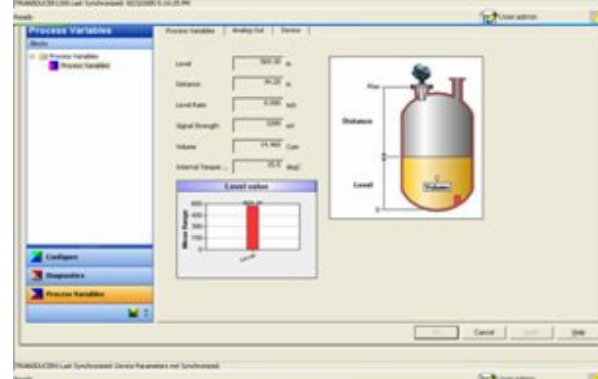
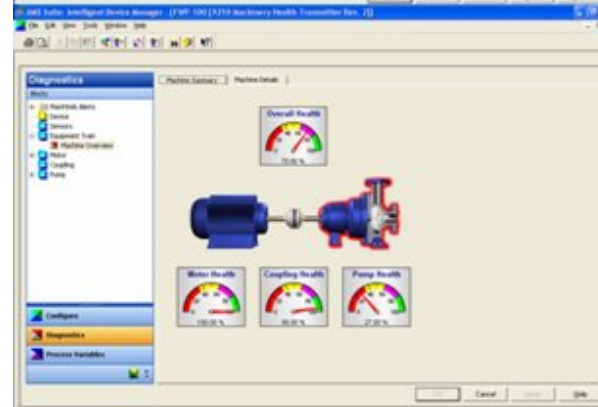
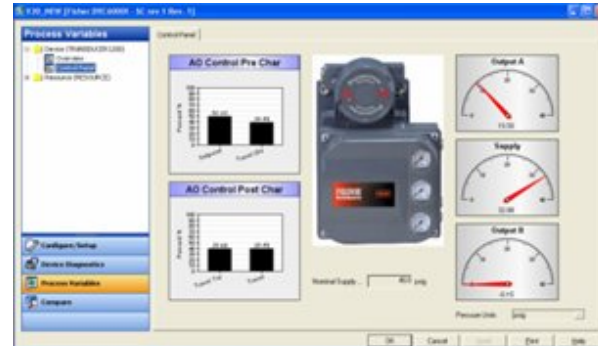
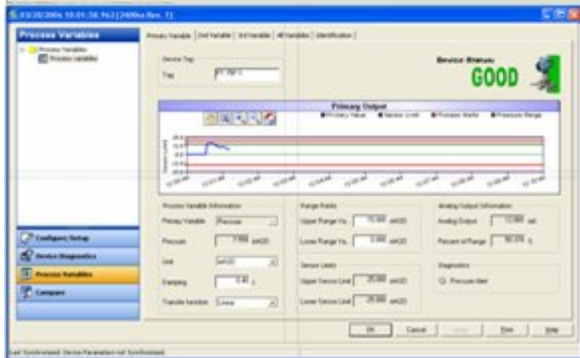
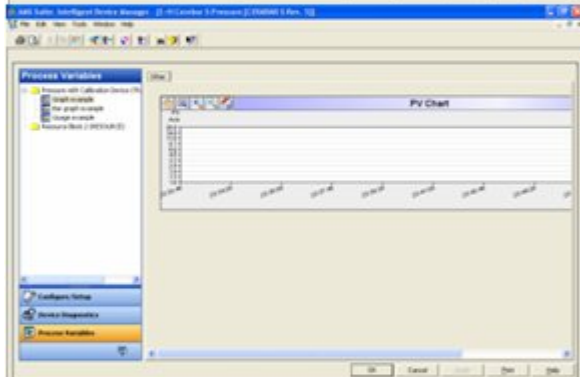
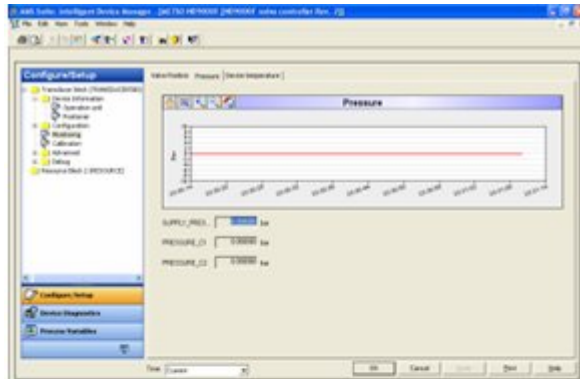
# Benefits for End users and Vendors -Summary

<p><input checked="" type="checkbox"/> <b>Interoperability</b></p> <ul style="list-style-type: none"> <li>Independent of operating system</li> <li>Work with All Platforms/Version</li> <li>All communication protocol</li> </ul>	<p><input checked="" type="checkbox"/> <b>Full Featured</b></p> <ul style="list-style-type: none"> <li>Describes Complete UI</li> <li>Automate procedures</li> <li>Supports diagnostic</li> </ul>
<p><input checked="" type="checkbox"/> <b>Ease of Use</b></p> <ul style="list-style-type: none"> <li>Unified user interface</li> <li>One tool for all devices</li> <li>State of the art graphics</li> </ul>	<p><input checked="" type="checkbox"/> <b>Minimizes Risk</b></p> <ul style="list-style-type: none"> <li>No additional cost</li> <li>Special skill not needed</li> <li>Quick to install</li> </ul>
<p><input checked="" type="checkbox"/> <b>Quick Installation</b></p> <ul style="list-style-type: none"> <li>No influence on the runtime stability</li> <li>Easy update and device addition during operation</li> </ul>	<p><input checked="" type="checkbox"/> <b>Scalable</b></p> <ul style="list-style-type: none"> <li>From handheld to MES</li> <li>From simplex to complex devices</li> </ul>

# Presentation of Device Information

- The *look and feel* of the User Interface is determined by the Host System
  - All devices on a given Host system will have the same look and feel.
  - Necessary for efficient utilization by operator and maintenance personnel.
  - The same field device will have a different look and feel on each Host system.
- The *detailed information* of the Device is still determined by the Device Manufacturer in the EDD

# EDDL - Consistent Look & Feel for a given Host



# Agenda

- ISA104 and EDDL the EDDL international standard
- How EDDL Technology Works
- **On going work byISA104**
- ISA104 Booth at ISA EXPO2008

# EDDL Cooperation Project

- The EDDL Cooperation Team (ECT) was founded at the Hannover Fair in April 2004 by Fieldbus Foundation, HCF and PNO and the OPC Foundation to promote and enhance EDDL technology.
- Agreement to collectively maintain EDDL



# ISA 104 Committee Organization

Chair -Terry Blevins, Vice Chair- Ludwig Winkel

- WG1 Marketing – Ed Ladd
  - Fairs, shows
  - Publications
  - User requirement
- WG 4 Certification – Christian Diedrich
  - Consortia certification (process, certificate, labeling)
- WG5 Liaison- Ludwig Winkel
  - IEC SC65E WG7
  - ISA TC 184/SC5/WG5
  - Report to EDDL Cooperation (OPCF, HCF, FF, PI)
  - Consortia Training
- WG7 Training – Jonas Berge
  - ISA Webinars
  - ISA Books
  - ISA Training

# EDDL.org Web Site

**EDDL** - Windows Internet Explorer

http://www.eddl.org/

**EDDL**  
Electronic Device Description Language

The Electronic Device Description Language (EDDL) standard advances interoperability of devices in control systems. Integration of simple sensors through complex drives is facilitated. Device diagnostics, asset management, and user interface displays enhance reliability and performance.

**About EDDL**

- Basics
- Supporting Organizations
- News Archive
- FDI - Future
- Contacts

**Technical Resources**

- The Standard
- Developer Corner
- Training
- Articles
- Videos
- Technical White Papers
- Presentations
- Email List

**Standards Groups**

- ISA-SP104 Committee
- IEC 65E WG7
- NAMUR NE 105

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**Click to Learn More**

Electronic Device Description Language (EDDL) technology is used by major manufacturers to describe the information that is accessible in digital devices. Electronic device descriptions are available for over 15 million devices that are currently installed in the process industry. The technology is used by the major process control systems and maintenance tool suppliers to support device diagnostics and calibration.

**Latest News**

- Learn how EDDL and FDI fit in the OPC Unified Architecture at the OPC-UA Developers Conference
- EDDL rocks in Pattaya

**OPC Unified Architecture Developers' Conference and Workshop 2008**

**EDDL THE KEY TO INTEROPERABILITY 31 JULY 2008**

**A Visual Difference**

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**Fieldbus OEM modules**  
Build-in modules and gateways for field devices for process control  
www.fint.no

**Fieldbus Design Tool**  
Help for fieldbus segment design from the Emerson Fieldbus Experts  
www.emersonprocess.cc

- A variety of information is provided on the EDDL standard, we provide answers to frequently asked questions and provide updates on the ISA 104 committee and its work to promote EDDL

# Example – Articles on EDDL

EDDL - Articles - Windows Internet Explorer

http://www.eddl.org/articles.htm

File Edit View Favorites Tools Help

EDDL EDDL - Articles

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**Articles**

- [Pressure made easy](#)
- [EDDL brings buses together](#)
- [EDDL unleashes promise of bus technologies](#)
- [Electronic Device Description Language \(EDDL\) for efficiency](#)
- [EDDL allows interoperability for devices to constantly gather information](#)
- [EDDL: Unlocking Device Information](#) - Control Engineering Asia - September 2007
- [Open Industry Standards Improve Bottom Line](#) - InTech - March 2007
- [Device Descriptors Prove Merit](#) - Automation World - February 2007
- [Getting the Most From Plant Assets](#) - Automation World - January 2007
- [Intelligent Devices Unleashed](#) - IAA - December 2006/January 2007
- [ISA EXPO 2006: New Wireless Capability Will Bring Smart Sensors to Legacy Environments](#) - Control Engineering - November 2006
- [Leading Process Automation Companies Support Development of Wireless HART Standard](#) - Industrial Ethernet Book - October 2006
- [Fieldbus Wars Continue: EDDL vs. FDT/DTM](#) - ControlGlobal.com - September 2005
- [HART to the Future!](#) - ControlGlobal.com - August 2005
- [EDDL: The Fieldbus War That Won't Go Away](#) - ControlGlobal.com - August 2005
- [EDDL Enhancements Gain Momentum](#) - Chemical Processing - August 2005
- [Open Field Device Management: Comparing FDT with EDD](#) - Control Engineering - December 2004
- [Siemens Favors EDDL Over DTM/FTD for Automation](#) - Control Engineering - November 2004
- [Digital Fieldbus Installations use EDDL Technology for Simplicity](#) - Chemical Processing - 2004
- [Demystifying a Protocol. Part 2: Fieldbus Device Descriptions Provide Interoperability](#) - InTech - May 2004

**FREE Technical Papers**

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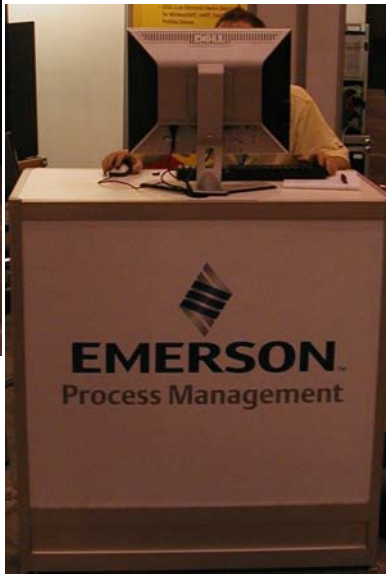
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Build-in modules and gateways for field devices for process control  
[www.fint.no](http://www.fint.no)

**Profibus or FF?**  
Look closer at cost comparisons.  
[EmersonProcessXperts.com](http://EmersonProcessXperts.com)

# ISA104 Booth at ISA EXPO2008

Hosts from ABB, Invensys, Siemens and Emerson demonstrate EDDL support. The ifak workbench is an example of EDDL development tools that are available to device manufactures that support EDDL.



# EDDL demonstration includes a variety of field devices

HART transmitters



HART valves



WirelessHART Transmitters and adaptors



Profibus Transmitters, valve and motor drive



Foundation Fieldbus transmitters and valves



# A host can use EDDL to provide a consistent user interface to field devices

The image illustrates a host PC interface for field devices using EDDL. It shows a network diagram, a host PC interface, and several device configuration windows.

**Network Diagram:** A host PC is connected to a Plant Database, Wireless Network 1, and Network 1. Wireless Network 1 includes WG1 and myNet. Network 1 includes a Controller - NODE1 with I/O cards (I/O HART Card - C01, I/O HART Card - C02, I/O Fieldbus Card - C03) and various field devices (TIC444, PIC222, TIC333, LIC111, VIC111, P5111, PIC555).

**Host PC Interface (TI-333 [30315 WirelessHART Rev. 1]):** Shows an overview of the device with a pressure gauge (807.63 Pa) and status indicators (Maintenance, Connected). The device is in a "Good" state.

**Device Configuration Windows:**

- LIC111 [5400 Radar Level Transmitter Rev. 2]:** Shows configuration settings for the radar level transmitter, including Tank type (Vertical-cylinder), Tank bottom type (Flat), Tank height (0.400 m), and Min level offset (0.000 m). It also displays an Echo Curve graph.
- VIC111 [SR0991 Rev. 1]:** Shows advanced start-up functions for the positioner, including Autostart and Set Setpoint.

# Summary

- The International standard for Device Description Language is EDDL
- EDDL is robust, secure, cross-platform compatibility, provides full support of device functionality
- ISA 104 works with ECT and IEC to enhance and promote EDDL
- The EDDL.org web site is a great resource for more information on EDDL.
- The ISA104 booth at ISA EXPO2008 demonstrates four host using EDDL to address setup and diagnostics of HART, FF, Profibus and WirelessHART devices.

# Finding More Information

- "Fieldbuses for Process Control - Engineering, Operation and Maintenance", Jonas Berge, ISBN 1-55617- 760-7, <http://www.isa.org/fieldbuses>
- IEC 61804-3, Edition 1.0 (2006-09), Function blocks (FB) for process control - Part 3: Electronic Device Description Language (EDDL)
- NAMUR Recommendation, Version: 24.08.2004, NE 105, Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices
- SP104 EDDL web site – <http://www.eddl.org/>
- IEC61804 Web site <http://www.iec.ch/cgi-bin/procgi.pl/www/iecwww.p?wwwlang=e&wwwprog=dirwg.p&progdb=db1&ctnum=519>
- SP104 Committee web site <http://www.isa.org/MSTemplate.cfm?MicrositeID=1170&CommitteeID=6927>
- Fieldbus Foundation <http://www.fieldbus.org/index.html>
- HART Communications Foundation <http://www.hartcomm2.org/>
- Profibus Nutzerorganisation e.V (PNO) <http://www.profibus.com/>