

# **Applicability & Usability of Enhanced EDDL (IEC61804-3)**

*when applied to  
typical Use Cases in Processautomation*

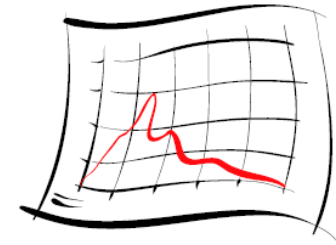
- EDDL is a standardized device integration technology for devices in process automation and was developed more than 15 years ago
- EDDL is a programming / descriptive language and is interpreted by a host system
- 2006 an enhanced EDDL standard was released with a couple of enhancements to improve usability of device operation, data monitoring and persistent data storage
- The EDDL standard is now being developed further in the EDDL Cooperation Team (ECT), a cooperative joint working group formed by FF, HCF, PNO and OPC

Sensor 1

Sensor 1 Type:	▬▬▬
Sensor 1 Range:	▬▬▬
Sensor 1 SN:	▬▬▬

Sensor 2

Sensor 2 Type:	▬▬▬
Sensor 2 Range:	▬▬▬
Sensor 2 SN:	▬▬▬

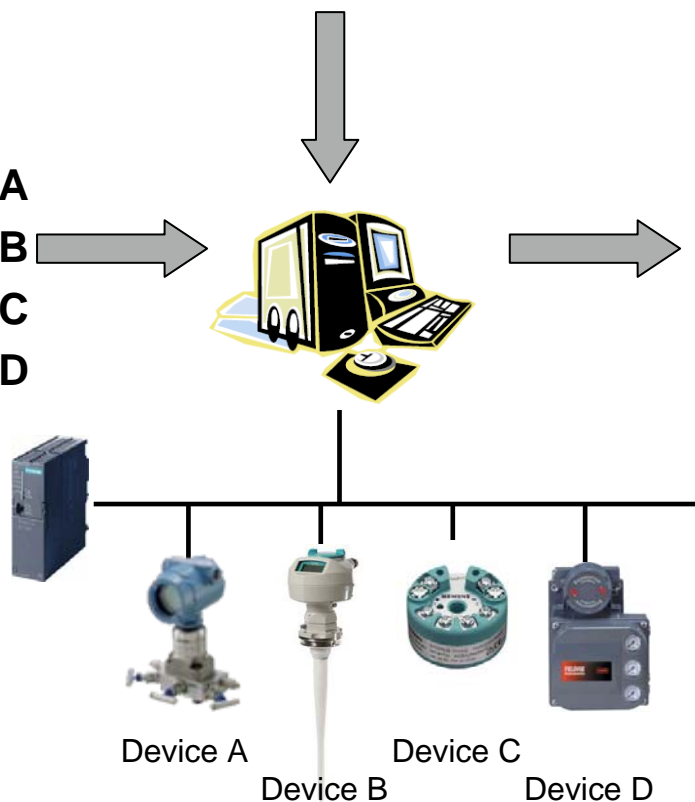


## EDD Host System

- Engineering
- Commissioning
- Operation & Maintenance

## EDD for

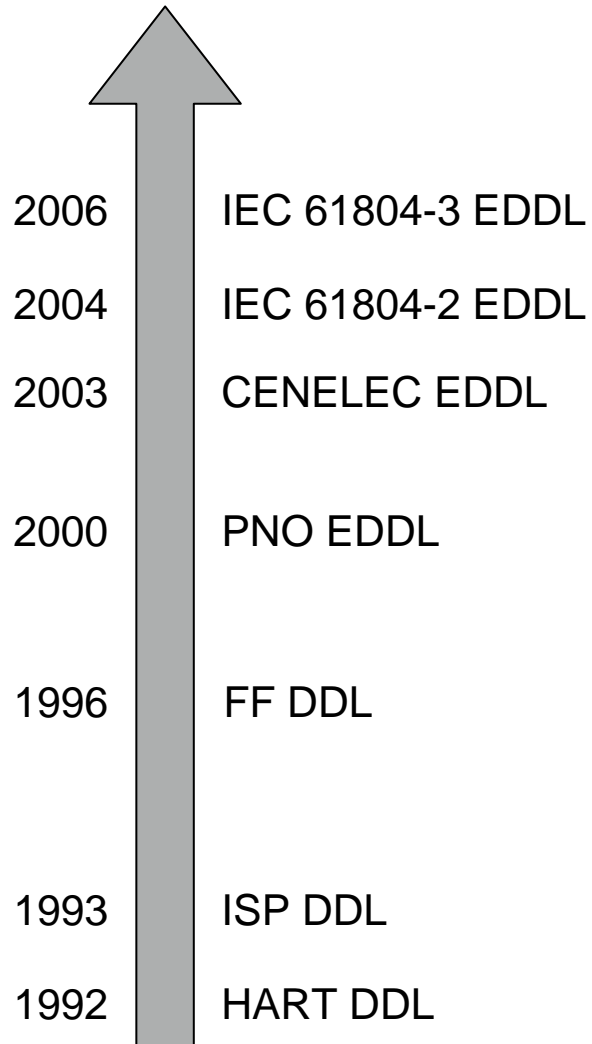
- Device A
- Device B
- Device C
- Device D



## Device specific

- Operation
- Monitoring
- Maintenance
- ...

The image shows two screenshots of the EDD software interface. The top screenshot is a configuration window for a 'SITRANS TH300' device. It displays various parameters and settings, including 'DC-Version', 'Identifikation', 'Beschreibung', 'Manufacturer / Hersteller', 'Device Type / Gerätetyp', 'HART Geräte-Identifikations-Nr.', 'Vertreiber', 'Geräte-Bestellnr.', 'Universal-Revision', 'Device Revision / Firmware-Revision', 'Hardware-Revision', 'Fabrikationsnummer', 'Werknummer', and 'Installationsdatum'. A 'Prozessvariablen' dialog box is overlaid on this window, showing 'MW' set to 111,50 °C and '% MB' set to 29,66 %. Other variables like 'Offsett' (0,000 °C) and 'AAusg' (8,746 mA) are also visible. The bottom screenshot shows a monitoring screen with a table of process variables. The table has columns for 'Block Tag', 'Unit', 'Status', and 'Value'. The status column includes indicators for 'No Change Detected', 'High Variable Detected', and 'Low Variable Detected'. The values column shows numerical data for various process variables.



**Support of complex & enhanced operation**

**Harmonization of specifications**

**Protocol specific specifications**

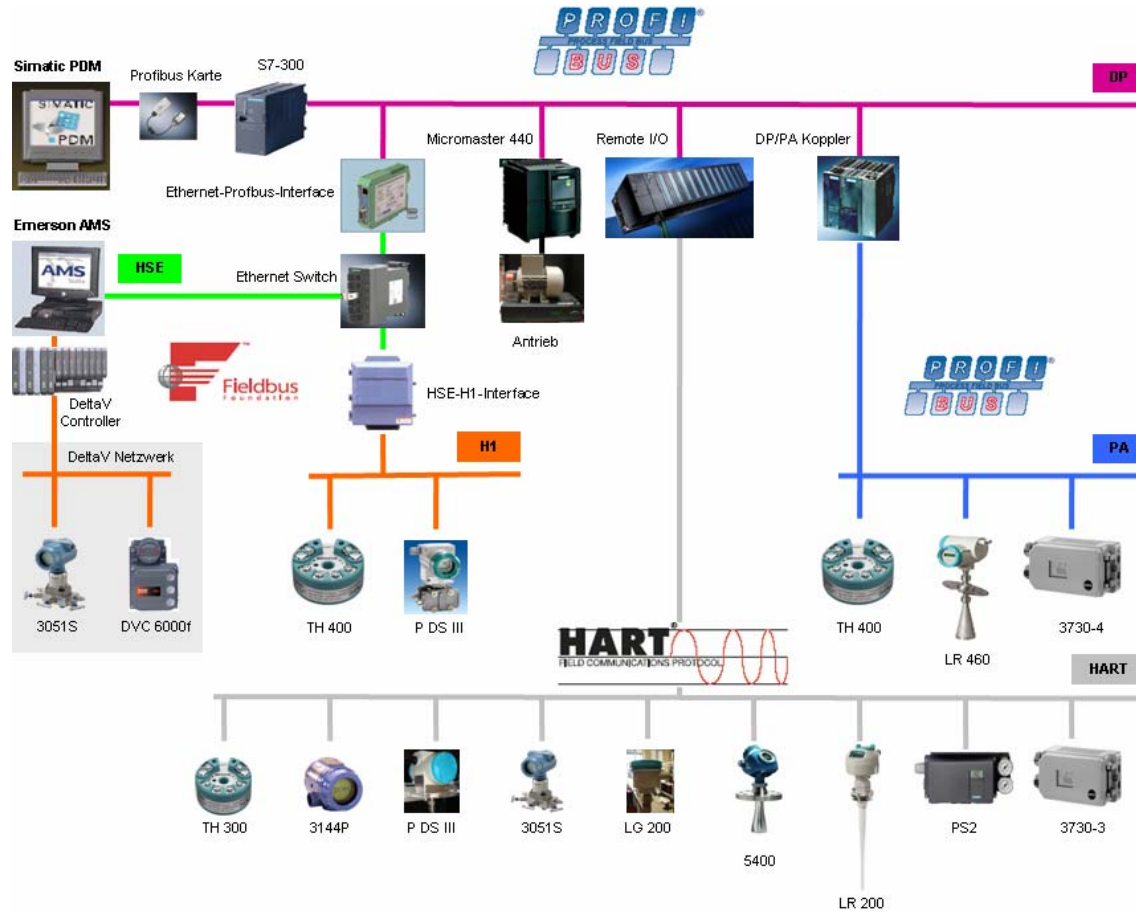
**Textual and list oriented data presentation**

- **Fulfills the EDDL standard the requirements for field device integration in engineering tools concerning the NAMUR recommendation 105?**
- **In which way is the standard used by device and host manufactures?**
- **Which advantages has the new EDDL (IEC61804-3) for the customer?**

**... to clarify these questions:**

**BIS Prozesstechnik (subsidiary of Bilfinger Berger Industrial Services) conducts a detailed study with devices using enhanced EDDs in different engineering systems**

- **Wide range of device types and field buses (HART, FF, PROFIBUS DP / PA)**
  - Temperature
  - Pressure
  - Level
  - Positioner
  - Frequency Converter
  
- **from three manufacturers**
  - Emerson Process
  - SAMSON AG
  - SIEMENS AG
  
- **EDD host systems**
  - Emerson Asset Management Service (AMS)
  - SIMATIC Process Device Manager (PDM)



## ■ **Planning and Commissioning**

- 1. Existence of incompatibilities between EDD host systems and device EDDs?**
- 2. How many SW tools are needed during startup of the device?**
- 3. Which protocols are supported by EDDL?**
- 4. Are SW updates of the host system necessary to use all features?**

## ■ **Operation and Maintenance**

- 1. Is a trouble-free installation of an EDD possible during runtime?**
- 2. Is the device intuitively and easily operated?**
- 3. What is the state of a common look and feel?**
- 4. Are all necessary functions addressable by EDDL or are additional SW tools necessary?**

## ■ Example level radar

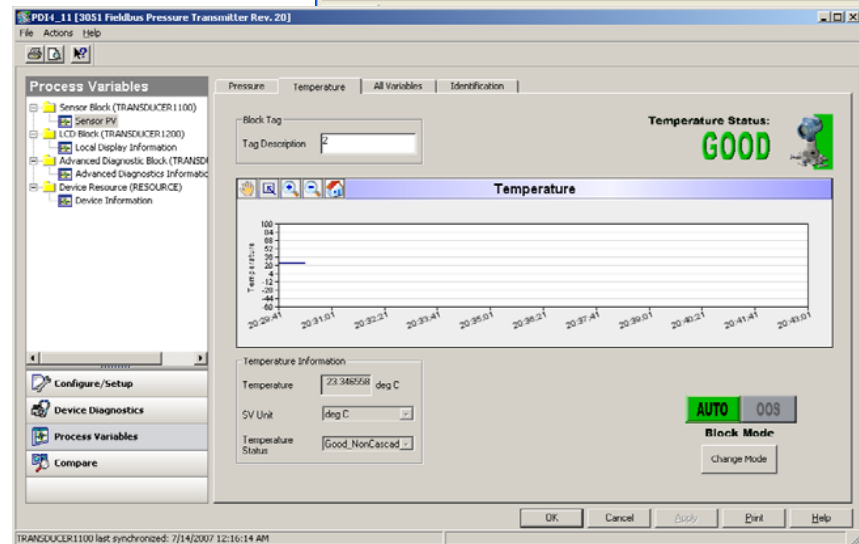
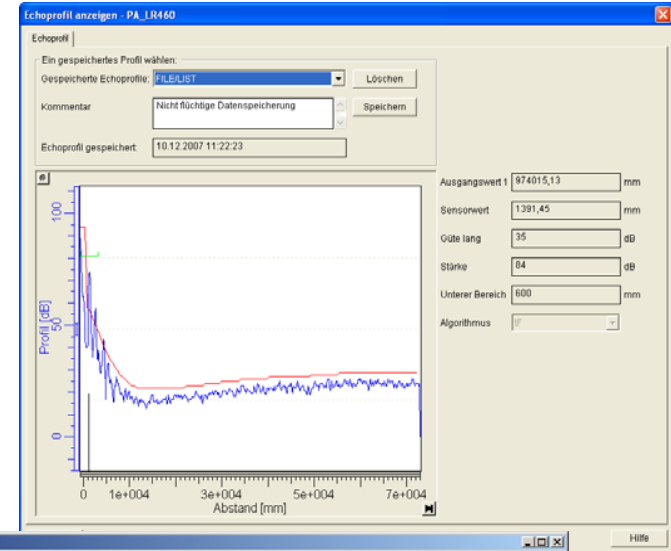
- Guided operations, e.g. Quick Start for most important parameters
- Visualization of application specific information (tank shapes) clarifies parameterization

## ■ Operation of complex devices

- e.g. online operation of frequency converters

The screenshot displays the Siemens commissioning software interface. The top window, titled 'Schnellstart - Schritt 4 - LR 200', shows a five-step process: 1. Identifikation, 2. Betriebsart, 3. Behälterform, 4. Messwert-Skalierung (highlighted), and 5. Zusammenfassung. Below this, the 'Einstellungen für die Messbereiche wählen' section includes parameters for P001-Betriebsart (Füllstand), P005-Max. Volumen (100), P006-Maßeinheiten (m), P006-Messbereich (2 m), P007-Mess-Spanne (1,8 m), and P003-Reaktionszeit (Langsam 0.1 m/min). A diagram of a tank with a level radar sensor is shown, with P006 and P007 indicating measurement points. The bottom window shows a 'Control panel - MICROMASTER 440' with various control options like 'Freigabe', 'Tip-Operation', 'Motor Emergency Stop', and 'Manual Input'. A 'Bar graph' displays real-time data for r0021 CO: Act. filtered frequency (0,000 Hz), r0031 CO: Act. filtered torque (0,000 Nm), r0018 CO: Inverter overload utilization (0,000 %), and r0027 CO: Act. filtered output current (0,000 A). A 'Control word 1' section shows various status indicators like ON/OFF1, OFF2, OFF3, Pulse enable, RFG enable, RFG start, and Setpoint enable.

- Persistent data storage is supported by EDDL and can be used for storing echo profiles or partial stroke test shapes during commissioning
- Device status can be displayed using images



- 1. Although the device specific EDDs for different host systems are very similar there are still differences.**

**Due to the fact that all user groups agreed on the EDDL standard, the host systems will converge. This will lead to real interoperability within the near future**

- **Recommendation:**  
Device manufacturer should offer a clear versioning and a unique assignment for device EDD, device revision and host system

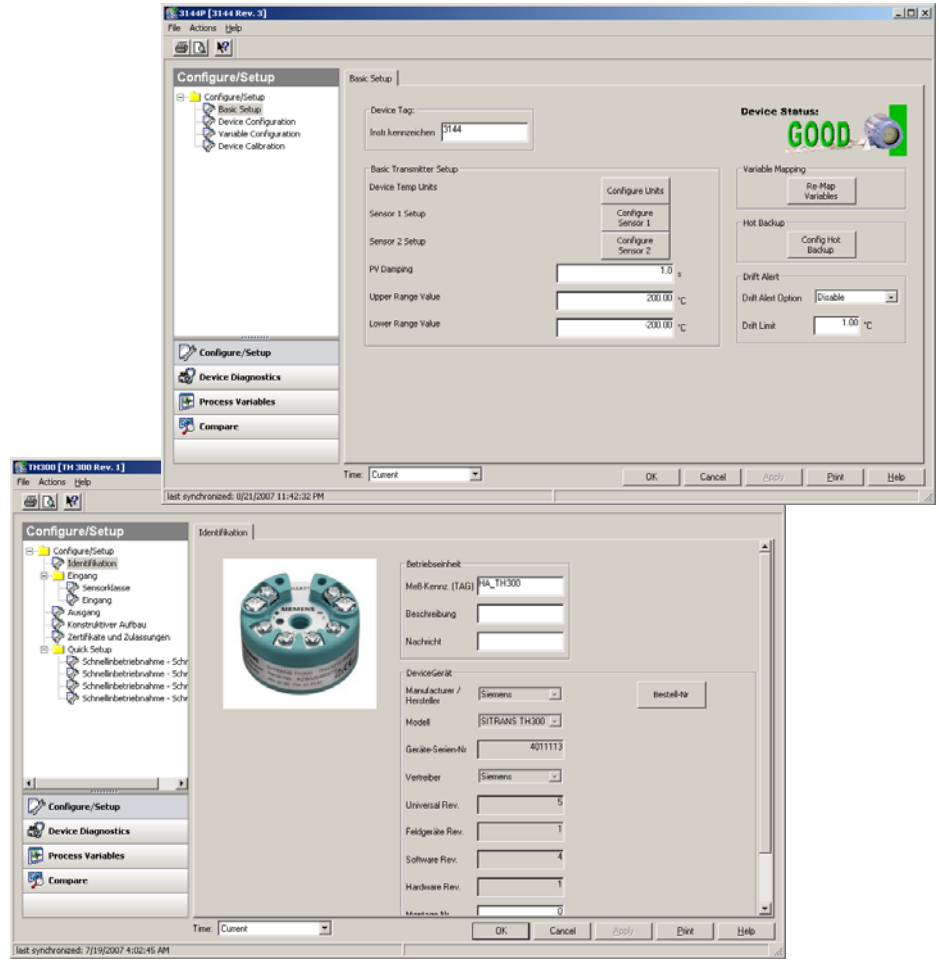
- 2. Only the EDDL host system has to be installed. Further SW tools for startup are not required**

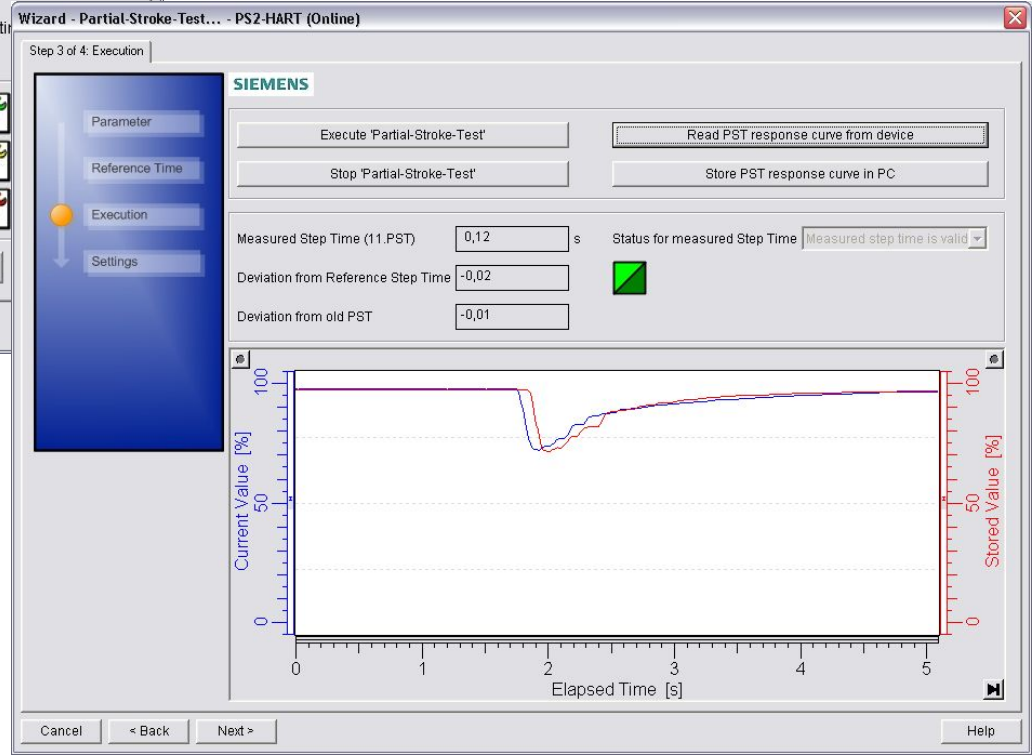
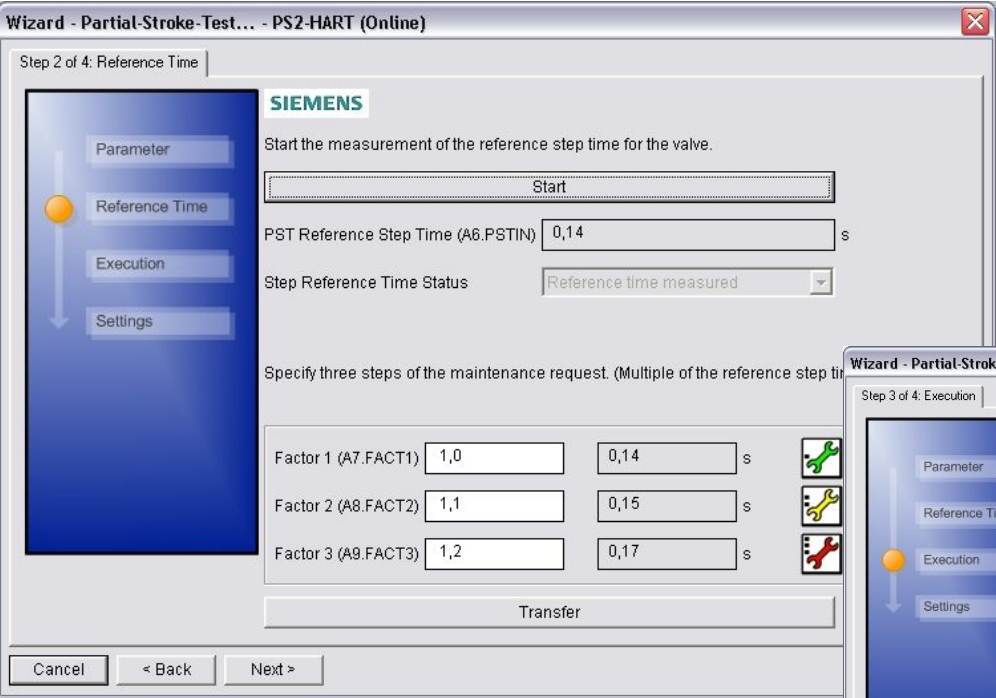
- 3. Enhanced EDDs are available for FF-, HART and PROFIBUS devices**

- 4. If the customer uses the current versions of the EDD host systems no further SW updates are necessary when installing enhanced EDDs**

- Due to previous language restrictions and specifications, same device types from different manufactures appears in nearly same look and feel

- The enhanced EDDL standard is much more flexible in presenting device functions and data. Same device types have different look and feel





- **Wizards, images, trend charts enables good usability and intuitive operation also for complex use cases (e.g. Partial Stroke Tests)**



1. The installation method of an EDD is part of the host system and works in all cases properly. Positive: the EDD installation has no influence on the stability of the operating system and is therefore independent from OS
2. Due to graphical support an intuitive device operation is granted if the device specific EDD uses all EDDL features
3. Basic functions (e.g. upload/download, value comparison) are provided by the host system and have a common look and feel for all devices. Device specific functions or cooperate identity are provided by the EDD and can differ from manufacturer to manufacturer
  - Recommendation:  
Device manufacturers should find a common look and feel for same device types
4. The functionality of enhanced EDDs based in the IEC standard is sufficient also for complex devices (e.g. frequency converters, positioners). No additional SW tools are needed

- **Fulfills the EDDL standard the requirements for field device integration in engineering tools concerning the NE105?**
  - The device EDD is completely independent from any operating system
  - Device type specific operation is provided by the EDD and differ from manufacturer to manufacturer. Common look and feel have to be ensured
  - If a host system is installed, commissioning of a device with its according EDD worked trouble free also during runtime (plug and play)
  - FF, HCF and PI provides processes and tools for EDD certification
  
- **In which way is the standard used by device and host manufactures?**
  - All devices used in this test offer enhanced EDDs. The manufacturer are currently working to complete their range of products
  - Manufacturers of host systems used in this test are currently working to cover complete language set of IEC61804-3
  
- **Which advantages has the new EDDL (IEC61804-3) for the customer?**
  - EDDL standard provides the possibility to support all device functions. Device operation can be realized in good usability and intuitive device operation
  - No additional SW tools are needed to use all device functionalities

**Thank you very much  
for your attention**