



Axel Haller, Symposium 25-26 März 2010

Engineering Workflow: Potential und Praxis bei der Integration von Verfahrenstechnik und Automation

Agenda

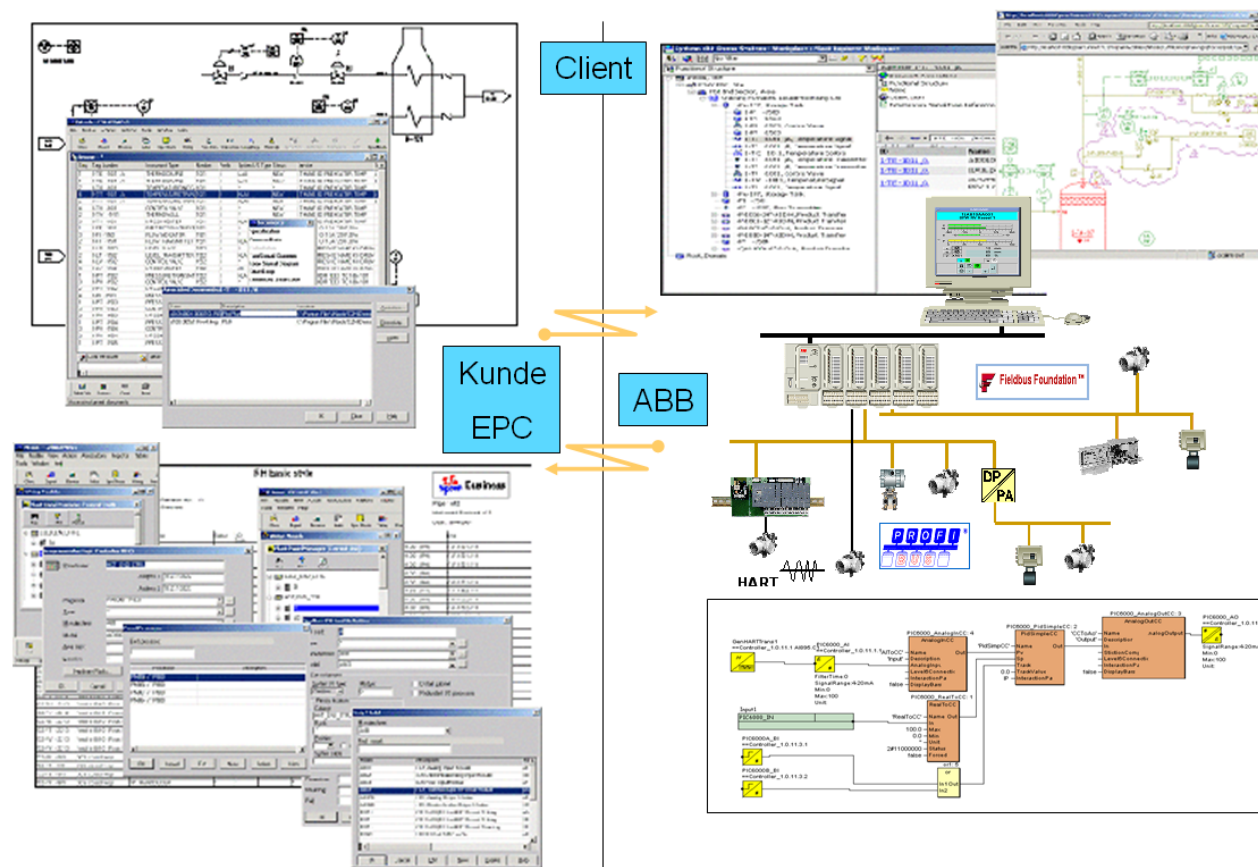
- Die Problematik
- Das Lösungsmittel
- Ein praktische Beispiel
- Mögliche Ausblicke



Schnittstelle Verfahrenstechnik und Automatisierung

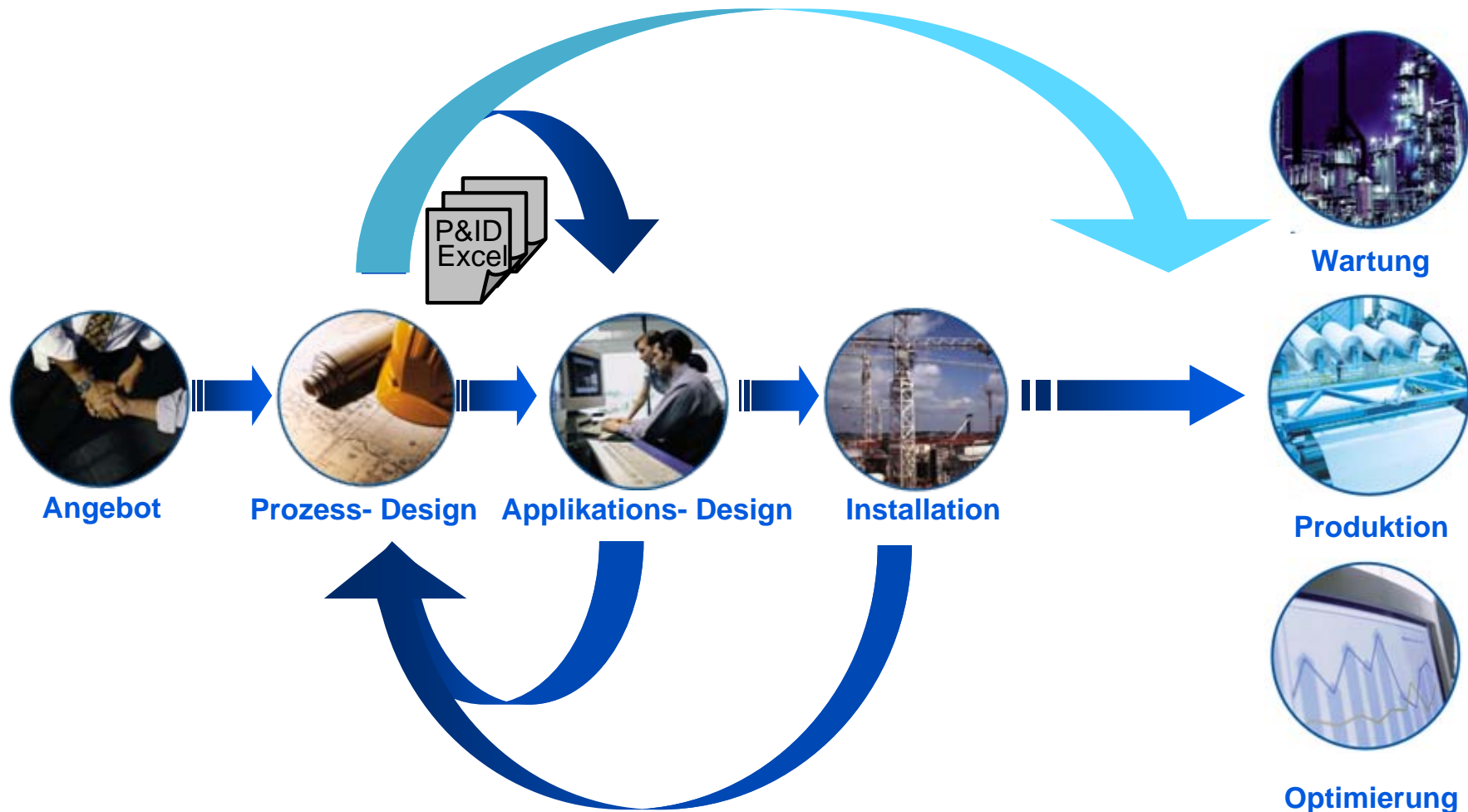
Datenkonsistenz nicht leicht gemacht

- Unterschiedliche Tool mit Proprietären Schnittstellen
- Datenaustausch basierend auf: Listen, Spezifikationen, Manuell, Experten Wissen,...



Schnittstelle Verfahrenstechnik und Automatisierung

Datenaustausch oder Datenverlust ?



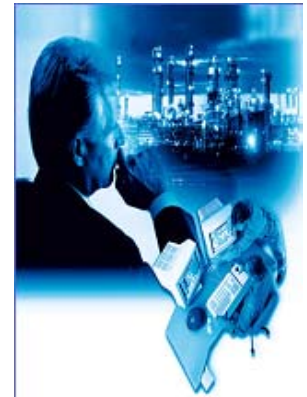
Die Herausforderung an Anlagenbauer und Automatisierungs-Lieferanten

Das Problem:

- Manuelle und mehrfacher Dateneingabe
- Datenabgleich ist Fehleranfällig und zeitintensiv
- Datenkonsistenz kann auseinander laufen
- Fragmentierter Workflow
- Dokumentation nicht synchron

Was wird benötigt:

- Einfache Datenübernahme vom Design in die Automatisierung, Workflow basiert
- Flexible Anpassung der Dateninhalte
- Prüfung auf Datenkonsistenz
- Einfache Handhabung von Revisionen



CAEX (Computer Aided Engineering Exchange)

Die neutrale Schnittstelle - Merkmale und Entwicklung

- Ein neutrales Datenformat basierend auf XML
- Objektorientierte Technologie, Bibliothekskonzept
- Erlaubt eine automatische Konformitätsprüfung
- CAEX ist publiziert (2008) in der IEC 62424
 - Representation of process control engineering – Requests in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools
 - Teil 2: CAEX, ein Datenmodell zur Speicherung und zum Austausch von Anlagenplanungsdaten, sowie ein Modell für die in Teil 1 definierten Daten
- CAEX wird von der Automation ML weiter vorangetrieben



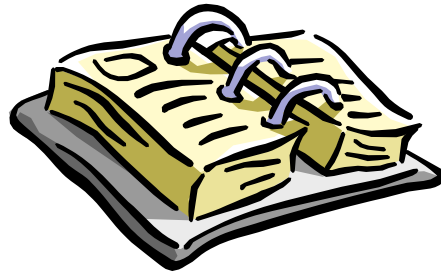
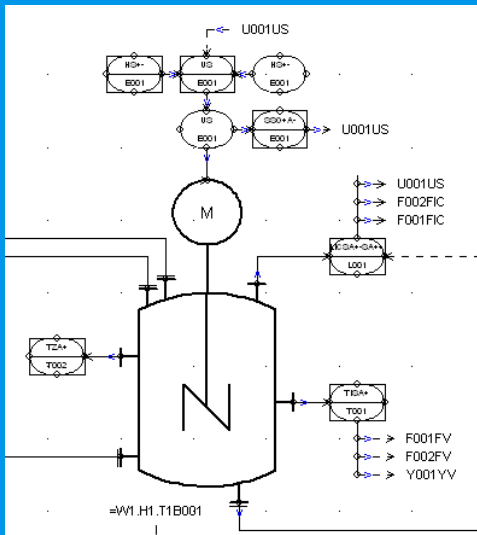
AutomationML: Planned IEC standard series	
Part I: Architecture*	Definitions, basic concepts, top-level architecture, usage of CAEX (IEC 62424)
Part II: Libraries	Role library, industry specific libraries
Part III: Geometry	Usage of COLLADA, CAEX interfaces to COLLADA
Part IV: Logic	Concepts, interlocking, usage of PLCopen XML, CAEX interfaces to PLCopen XML, extensions
Part V:
...	...

*) Version 1.1 released as Whitepaper at Hannover Messe 2009

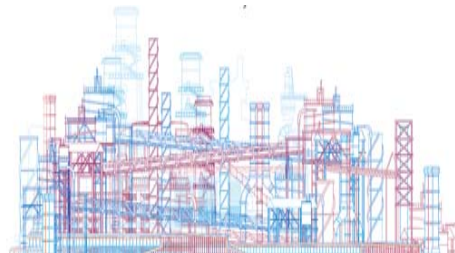
Gestern und Heute

CAEX – systemneutrale Schnittstelle

Verfahrenstechnik P&ID



Gestern:
manuelle Datenübertragung per Papier



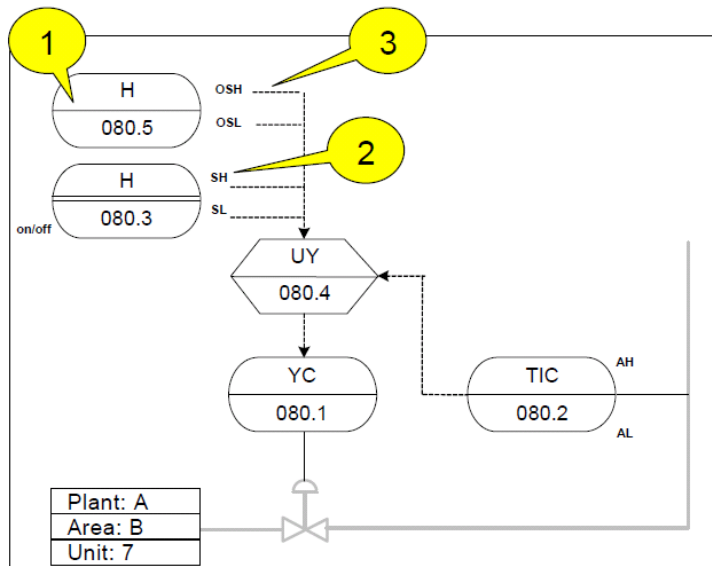
Heute:
automatische Datenübertragung mittels
systemneutraler Schnittstellen

Leittechnik

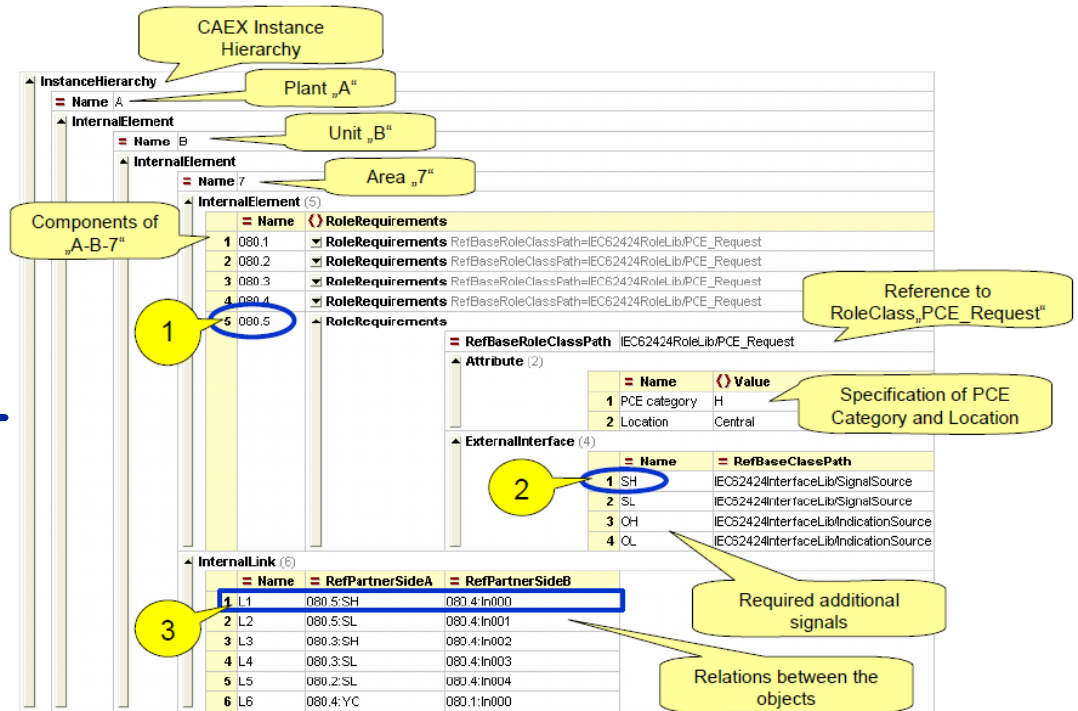


Abbildung Prozess-Engineering Informationen

Model (P&ID)



Metamodell (CAEX)

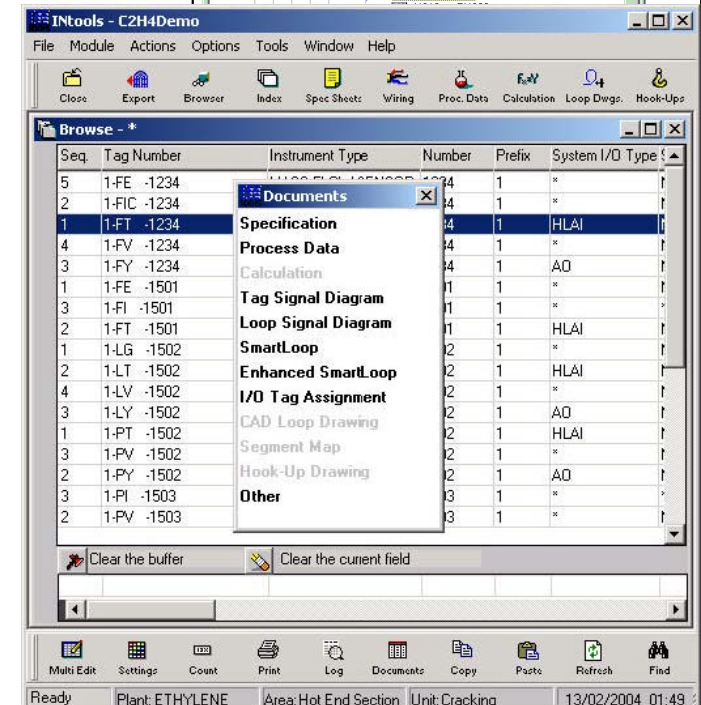
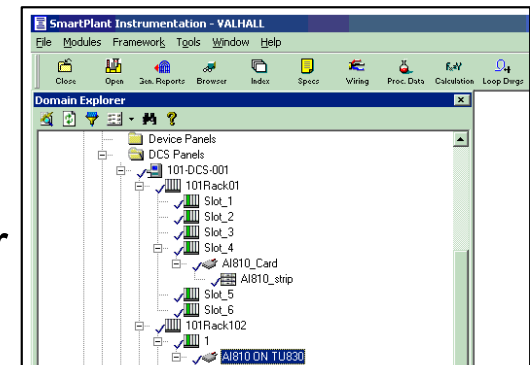


Source: IEC62424

Intergraph's SmartPlant Instrumentation Informationen für die Prozess-Automatation

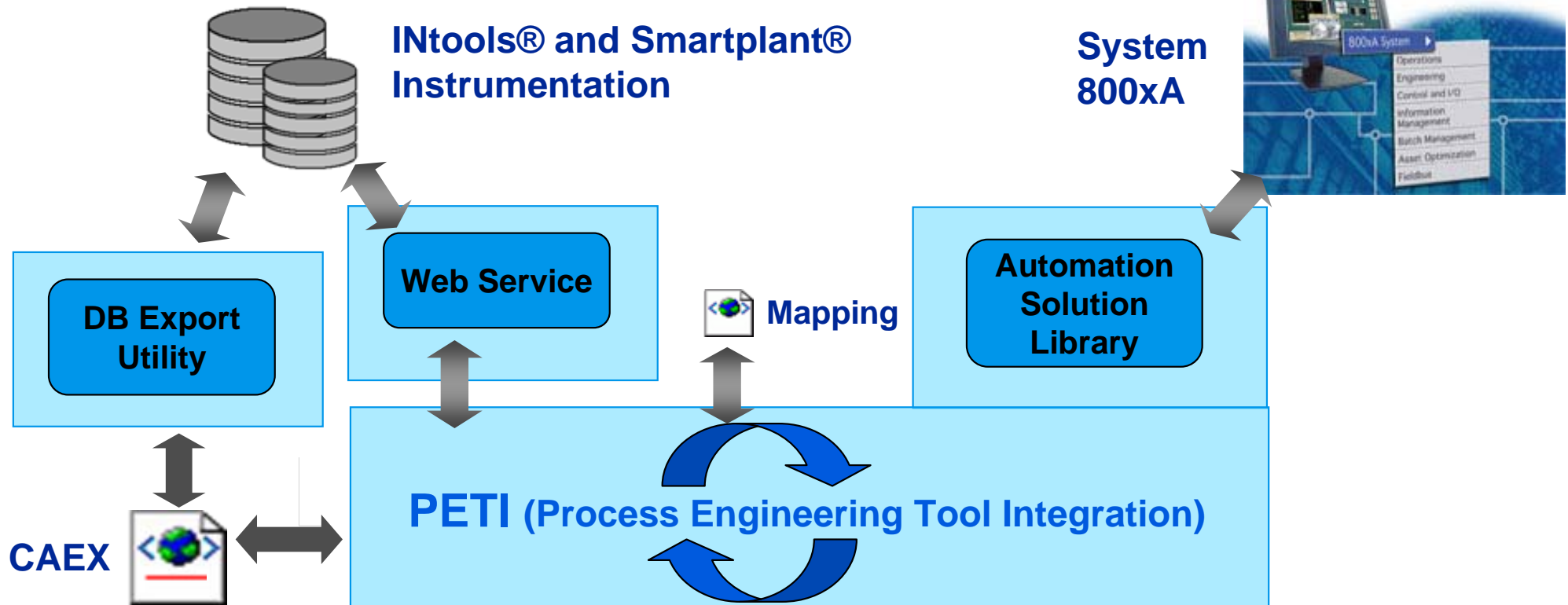
SmartPlant Instrumentation (SPI) Funktionalitäten:

- Instrument Index
- Instrumenten Spezifikationen und Datenblätter
- Bedieneinrichtungen und Verteilerboxen
- Control System I/O Belegung
- Verdrahtungs-Diagramme
- Loop Diagramme
- Reports
- ...



Process Engineering Tool Integration (PETI) Architektur Übersicht

- Import/Export Utility: Verbindung zwischen SPI und System 800xA notwendig
- Web service: On-line generierte Dokumente



Objekt orientiertes Mappen von Informationen

SPI

Control System Tag Properties

General Alarm and Range DCS Block

Control system tag
00-LT -10010

DCS range
Min:
2
Max:
88
Unit of measure:
cm

- \$MA
- \$MA_Sig
- \$MB
- \$MB_Sig
- \$OB
- \$OB_Sig

Property

- CALIB_RANGE_MIN
- CALIB_RANGE_MAX
- DCS_RANGE_MIN
- DCS_RANGE_MAX
- DCS_RANGE_UOM
- CHANNEL_ID

System 800xA

00-LT-10010_Sig : CBM_SignalParameter

AI 00-LT-10010_Sig:CBM_SignalPara

Check Print Extend RML

Scaling

Min 2
Max 88
Unit cm

CBM_Signal, Object Type Group

- AI CBM_A_S, Object Type
- AO CBM_AOS, Object Type
- DI CBM_DIS, Object Type
- DO CBM_DOS, Object Type

t/Property	Source Object	Source Property	Dir
LevelLL			
LevelLLL			
Linearization			
Max	\$MA_Sig	DCS_RANGE_MAX	➤
Min	\$MA_Sig	DCS_RANGE_MIN	➤
NormalPosition			

Process Engineering Tool Integration (PETI) Workflow

- Wizard unterstütztes Interface
 - Schritt für Schritt
 - Abgleich der Informationen
 - Definition der Transferrichtung (800xA ↔ SPI®)
 - Kein Expertenwissen notwendig
- Differenz Ansicht
 - Neue oder gelöscht Objekte
 - Modifizierte Objekte oder Parameter

The screenshot displays the PETI software interface with the following components:

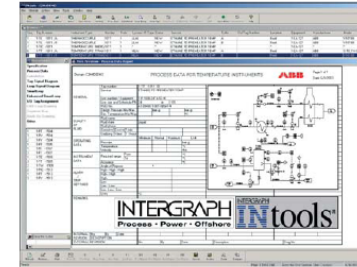
- Top Panel:** Shows the 'Transfer Menu' and 'Intools/SPI' environment. A 'Control Structure' dropdown is visible.
- Left Tree View:** Displays a hierarchical tree of SPI objects, including 'SEED2.\$Project-Site', 'SEED_PLANT.\$Plant-Site', and various control modules like '00-FT-10050.A, Reference'.
- Right Tree View:** Displays a hierarchical tree of 800xA objects, including 'Root.Domain', 'Lost And Found', and 'SEED2.Control Network'.
- Central Panel:** Contains a wizard with three steps:
 1. Change Mode Express
 2. Compare (Partial) with a 'Show Differences' button
 3. ExpressSync with a 'Last Sync @ 23:36:02 On 4/9/2008' timestamp
- Bottom Left Table:** A table showing SPI object parameters:

Property	Value
LOOP_ID	83606
LOOP_NAME	00L -10010
TAGID	73888
TAGNAME	00LT -10010
TAGSYSTEMTYPE	AI
TAGFUNCTIONTYPE	LT
- Bottom Right Panel:** Shows a list of 800xA object parameters, including 'Hardware Unit', 'ChannelInfo', and 'Control Designation'.

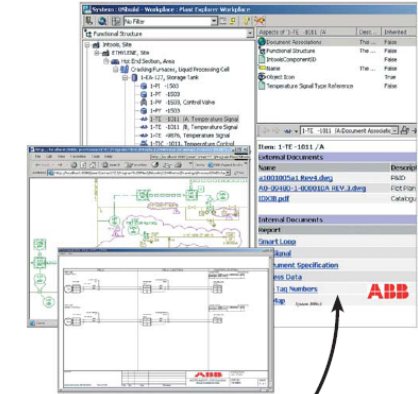
Process Engineering Tool Integration (PETI) Features

- Bi-direktionaler Datenaustausch zwischen SmartPlant Instrumentation® und System 800xA
- Interface basierend auf Standard (CAEX)
- Konsistente Daten in beiden Systemen
- Automatische Erstellung der 800xA Konfiguration
 - Hierarchien wie Anlage, Bereich, Einheit
 - Messstelleinformationen und Rangierung
 - Controller Applikationen (Module mit Parametrierung)

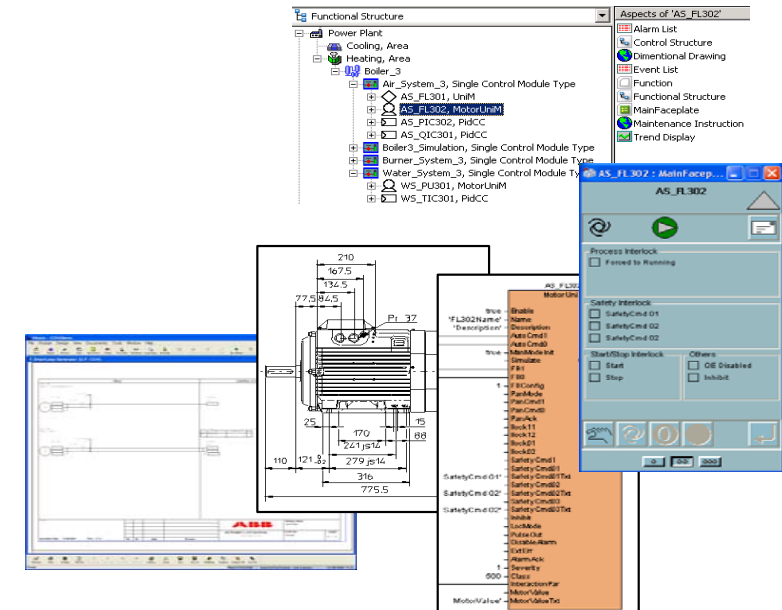
Process Engineering Environment



Control System Engineering Environment



bi-directional data exchange



SPI Video (10 Min)



PETI als integraler Bestandteil von System 800xA



Engineering

Process Engineering Tool Integration



Process Engineering Tool Integration

SmartPlant
Instrumentation
Powered by **INtools**

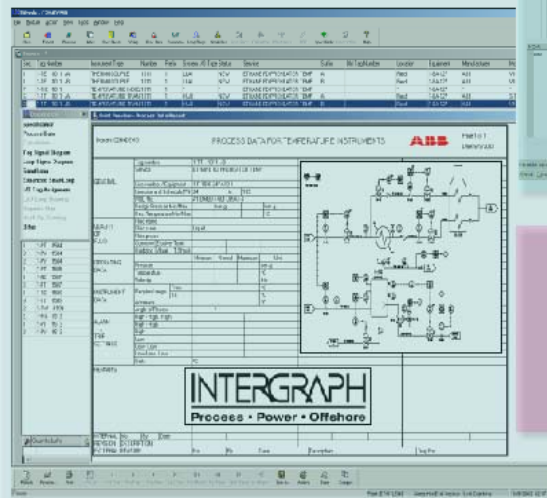
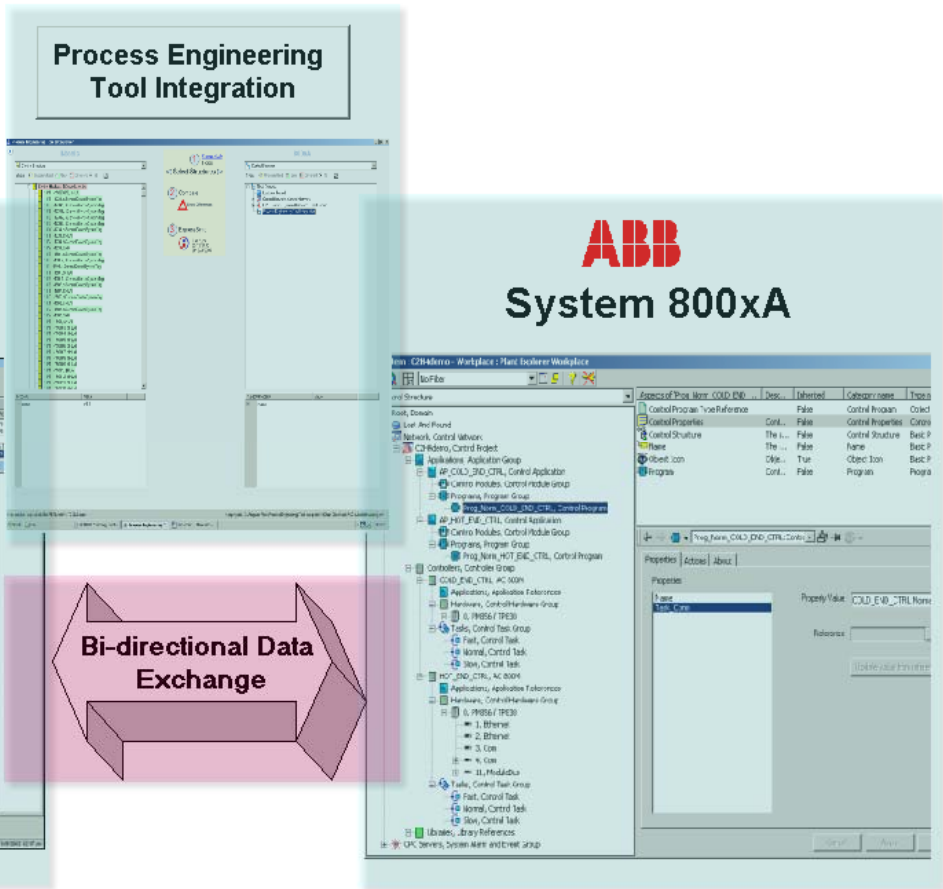


ABB
System 800xA



Bi-directional Data Exchange

System Architecture	Operations	Fieldbus	Batch Management	Investment Enhancement
Control and I/O	Engineering	Asset Optimization	Information Management	Industries

Abgleich der Dateninhalte

Process Engineering Tool Integration

INTools

Functional Structure

Show Uncommitted New Different All

- ETHYLENE, Reference
 - 1-FT-15014, Reference
 - 1-FT-15014_Sig, \$HLAI_Sig
 - 1-FT-15021, Reference
 - 1-FT-15021_Sig, \$HLAI_Sig
 - 1-FT-15022, Reference
 - 1-FT-15022_Sig, \$HLAI_Sig
 - 1-PT-1234, Reference
 - 1-PT-1234_Sig, \$HLAI_Sig
 - 1-PT-1569, Reference
 - 1-PT-1569_Sig, \$HLAI_Sig
 - 1-F-1234, Reference
 - 1-FIC-1234, Reference
 - 1-FIC-1234_Sig, \$Controller_Sig
 - 1-FT-1234, Reference
 - 1-FT-1234_Sig, \$HLAI_Sig
 - 1-FV-1234, Reference
 - 1-FV-1234_Sig, \$AD_Sig
 - 1-F-1501, Reference
 - 1-FIC-1501, Reference
 - 1-FIC-1501_Sig, \$Controller_Sig
 - 1-FT-1501, Reference
 - 1-FT-1501_Sig, \$HLAI_Sig
 - 1-FV-1501, Reference
 - 1-FV-1501_Sig, \$AD_Sig
 - 1-F-1502, Reference
 - 1-FIC-1502, Reference
 - 1-FIC-1502_Sig, \$Controller_Sig
 - 1-FT-1502, Reference
 - 1-FT-1502_Sig, \$HLAI_Sig
 - 1-FV-1502, Reference
 - 1-FV-1502_Sig, \$AD_Sig
 - 1-F-1601, Reference

Property	Value

1 [Change Mode](#)
Express

◀ Select Structures ▶

2 Compare
 Show Differences

3 ExpressSync
 Last Sync
@ 13:18:51
On 10/6/2005

800xA

Functional Structure

- Root.Domain
 - Demo800Engineering, Demo Site
 - Demo800, Demo Site
 - Function Templates, Templates
 - Process Engineering Tool Integration

Aspect/Property	Value
+	Name
+	Alarm and Event List
+	FBB PH Settings

Web service: <http://Ingsim/PETIWeb/INTOOLS.aspx> Mapping-file: C:\Program Files\ABB Industrial IT\Engineer IT\Engineering Studio\Process Engineering Tool Integration\800xA CI

Start | 800xA DEMO //... | Control Builder... | Process Engi... | << <> <> <> <> <>

Bi-direktionale Synchronisation

Process Engineering Tool Integration

INTools 800xA

Functional Structure

Show Uncommitted New Different All

ETHYLENE, Reference

- 1-FT-15014, Reference
- 1-FT-15014_Sig, \$HLAI_Sig
- 1-FT-15021, Reference
- 1-FT-15021_Sig, \$HLAI_Sig
- 1-FT-15022, Reference
- 1-FT-15022_Sig, \$HLAI_Sig
- 1-PT-1234, Reference
- 1-PT-1234_Sig, \$HLAI_Sig
- 1-PT-1569, Reference
- 1-PT-1569_Sig, \$HLAI_Sig
- 1-F-1234, Reference
- 1-FIC-1234, Reference
- 1-FIC-1234_Sig, \$Contro
- 1-FT-1234, Reference
- 1-FT-1234_Sig, \$HLAI_S
- 1-FV-1234, Reference
- 1-FV-1234_Sig, \$AD_Sig
- 1-F-1501, Reference
- 1-FIC-1501, Reference
- 1-FIC-1501_Sig, \$Contro
- 1-FT-1501, Reference
- 1-FT-1501_Sig, \$HLAI_S
- 1-FV-1501, Reference
- 1-FV-1501_Sig, \$AD_Sig
- 1-F-1502, Reference
- 1-FIC-1502, Reference
- 1-FIC-1502_Sig, \$Contro
- 1-FT-1502, Reference
- 1-FT-1502_Sig, \$HLAI_S
- 1-FV-1502, Reference
- 1-FV-1502_Sig, \$AD_Sig
- 1-F-1601, Reference

Property

1 Change Mode Express

Select Structures

2 Compare Show Differences

Transfer

1 Optional. Set breakpoints by clicking items in this column.

2 Click this column to sort transfer direction. Click items in this column to modify their direction.

If multiple items are selected in steps 1 or 2, all items will be affected.

Planned Action	Dir	Path	Action Result	Information Written
ObjectInserted	▶	Functional Structure/PETISMAL...		
ObjectInserted	▶	Functional Structure/PETISMAL...		
ObjectCreated	▶	Functional Structure/PETISMAL...		
ObjectInserted	▶	Functional Structure/PETISMAL...		
ObjectCreated	▶	Functional Structure/PETISMAL...		
ObjectInserted	▶	Functional Structure/PETISMAL...		
ObjectCreated	▶	Functional Structure/PETISMAL...		
ObjectInserted	▶	Functional Structure/PETISMAL...		
ObjectCreated	▶	Functional Structure/PETISMAL...		
ObjectInserted	▶	Functional Structure/PETISMAL...		
ObjectCreated	▶	Functional Structure/PETISMAL...		
ObjectInserted	▶	Functional Structure/PETISMAL...		
ObjectCreated	▶	Functional Structure/PETISMAL...		
ObjectInserted	▶	Functional Structure/PETISMAL...		
ObjectCreated	▶	Functional Structure/PETISMAL...		
ObjectInserted	▶	Functional Structure/PETISMAL...		
ObjectCreated	▶	Functional Structure/PETISMAL...		
ObjectInserted	▶	Functional Structure/PETISMAL...		
ObjectCreated	▶	Functional Structure/PETISMAL...		

3 Execute Transfer

Start

Cancel

Exit

Web service: http://Ingsim/PETIWeb/INTOOLS.aspx

Mapping-file: C:\Program Files\ABB Industrial IT\Engineer IT\Engineering Studio\Process Engineering Tool Integration\800xA CI

Start Process Engine... Transfer 800xADEMO //... Control Builder...

Abgleich selektierter Informationen

Process Engineering Tool Integration

INtools 800xA

Control Structure

Show Uncommitted New Different All

PETISMAL, \$Project-Site
 ETHYLENE, \$Plant-Site
 Control Wiring, \$Hardware
 COLD_END_CTRL, \$AC 800M
 O, \$PM856 / TP830
 AI810, \$AI810
 HOT_END_CTRL, \$AC
 O, \$PM864 / TP830
 AI810, \$AI810

1 Change Mode Express
 Select Structures
 2 Compare
 Show Differences

Control Structure
 Root,Domain

Transfer

1 Optional. Set breakpoints by clicking items in this column.

2 Click this column to sort transfer direction. Click items in this column to modify their direction.

If multiple items are selected in steps 1 or 2, all items will be affected.

Planned Action	Dir	Path	Action Result	Information Written
ObjectCreated	▶	Control Structure/PETISMAL/P...		
ObjectCreated	▶	Control Structure/PETISMAL/P...		
ObjectInserted	▶	Control Structure/PETISMAL/P...		
ObjectInserted	▶	Control Structure/PETISMAL/P...		
ObjectInserted	▶	Control Structure/PETISMAL/P...		
ObjectInserted	▶	Control Structure/PETISMAL/P...		
ObjectInserted	▶	Control Structure/PETISMAL/P...		
ObjectInserted	▶	Control Structure/PETISMAL/P...		

3 Execute Transfer

Property

Web service: <http://Ingsim/PETIWeb/INTOOLS.aspx> Mapping-file: C:\Program Files\ABB Industrial IT\Engineer IT\Engineering Studio\Process Engineering Tool Integration\800xA CI

Start | Process Engine... | Transfer | 800xADEMO //... | Control Builder... | << >>

Konsistente Dokumentation

800xADEMO // Engineering Workplace

No Filter Replace (Enter search name)

Functional Structure

- Root, Domain
 - Demo800, Demo Site
 - Demo800Engineering, Demo Site
 - Function Templates, Templates
 - Process Engineering Tool Integration
 - PETISMAL, Control Network

Aspects of '1-FT-1502'

Aspects of '1-FT-1502'	Modified	Desc...	Inherited	Category name	Version
Alarm List	1/12/2004 10:58:...	Cont...	True	Alarm and Even...	ver 1.0
AlarmControl	8/11/2005 1:26:5...	Tran...	True	Graphic Element	ver 1.0
Confirmed Write Support	3/15/2005 2:25:0...	Supp...	True	Confirmed Writ...	ver 1.0
Control Alarm Event	3/15/2005 2:25:0...	Aspe...	True	Control Alarm E...	ver 1.0
Control Builder Name	3/15/2005 2:25:0...	The ...	True	Control Builder ...	ver 1.0
Control Module	3/15/2005 7:01:3...	Cont...	True	Control Module	ver 1.0

1-FT-1502 : Document Associations

1-FT-1502:Document Associations

Save a Copy Print Email Search Review & Comment Sign

Select Text 90%

Bookmarks Signatures Layers Pages Comments

GENERAL

Case name:
 Tag number: 1-FT -1502
 Service: 1-FA-107 FRESH ETHANE KO DRUM LEVEL Location: Line
 Fluid state: Liquid Line number:
 Fluid phase: Line size:
 Fluid name:

PROPERTIES

	@Minimum	@Normal	@Maximum	Units
Volumetric flow:				US gal/min@flow
Upstream pressure:				bar-g
Temperature:				°C
Viscosity:				cP
Velocity:				ft/s
Density:				kg/m³
Specific gravity:				
Compressibility:				
Vapour pressure:				Pa-a
Critical pressure:				bar-g

ADDITIONAL PROPERTIES

Design pressure min:	bar-g	Corrosive:
Design pressure max:	bar-g	Erosive:
Design temperature min:	°C	Toxic:
Design temperature max:	°C	Colored:
Entrained gas:	%	Transparent:
Required range:	From: 100 To: 7000 ft³/h@flow	Build-Up tendency:
Limits on press.drop across flowmeter:	inH2O	Angle of repose:

BASE CONDITIONS

Pressure:	14.7	psi-a	Density:	kg/m³
Temperature:	60	°F	Specific gravity:	
			Compressibility:	

ALARM

	Alarm	Trip	Engineering units:
Low-Low-Low:	80.5		US gal/min@flow
Low-Low:	100		

8.5 x 11 in 1 of 1

05-10-06 14:59:45:542 PETISMAL Invalid OPC DA Data Source co LNGSIM ppaservice ABB

Start Process Engine... 800xADEMO //... 1-FT-1502 : ... Control Builder...

Modifikationen können zurück synchronisiert werden

800xADEMO // Engineering Workplace

No Filter | Replace | (Enter search name)

Functional Structure

- Root, Domain
 - Demo800, Demo Site
 - Demo800Engineering, Demo Site
 - Function Templates, Templates
 - Process Engineering Tool Integration
 - PETISMAL, Control Network
 - 1-F-1234, ControllerPidLoop
 - 1-F-1501, ControllerPidLoop
 - 1-F-1502, ControllerPidLoop
 - 1-FIC-1502, ControllerPID
 - 1-FT-1502, Transmitter
 - AI 1-FT-1502_Sig, CBM_AIS
 - 1-FV-1502, ControlValvePneumatic
 - 1-F-1601, ControllerPidLoop
 - 1-F-1602, ControllerPidLoop
 - 1-FT-15014, Transmitter
 - 1-FT-15021, Transmitter
 - 1-FT-15022, Transmitter
 - 1-PT-1234, Transmitter
 - 1-PT-1569, Transmitter

| Aspects of '1-FT-1502_Sig' | Modified | Desc... | Inherited | Category name | Version |
|----------------------------|---------------------|----------|-----------|---------------------|---------|
| AesPropertyTransfer | 8/14/2003 3:10:1... | AesP... | True | AesPropertyTra... | ver 1.0 |
| CBM_AIS Type Reference | 10/6/2005 2:41:3... | | False | CBM_AIS | ver 1.0 |
| CBM_SignalInformation | 10/6/2005 2:41:2... | Alloc... | False | CBM_SignalInfo... | ver 1.0 |
| CBM_SignalParameter | 10/6/2005 3:24:5... | | False | CBM_SignalPar... | ver 1.0 |
| ChannelNumber | 10/6/2005 2:41:4... | Cont... | False | Control Designa... | ver 1.0 |
| Control Builder Name | 10/6/2005 2:41:2... | The ... | False | Control Builder ... | ver 1.0 |
| Control Structure | 10/6/2005 2:42:3... | [Con... | False | Control Structure | ver 1.0 |
| CreatedByPETI | 10/6/2005 2:41:3... | /CAE... | False | CreatedByPETI | ver 1.0 |
| Function | 1/20/2005 9:23:0... | Com... | True | Function | ver 1.0 |
| Function Parameters | 10/6/2005 2:41:3... | Used... | False | Function Param... | ver 1.0 |
| Functional Structure | 10/6/2005 2:41:3... | [Fun... | False | Functional Stru... | ver 1.0 |
| Name | 10/6/2005 2:41:3... | The ... | False | Name | ver 1.0 |
| Object Icon | 5/24/2002 6:45:2... | Icon ... | True | Object Icon | ver 1.0 |

1-FT-1502_Sig:CBM_SignalParamet

Check | Print | Extend | XML

Connection

Application: Hotend string[32]
 Variable: x1_FT_1502_Sig string[120]
 (name of the application global variable)
 Type: AI string[32]

Channel Settings

Activate: true string[50]
 ColdJunctionComp: Measured string[50]
 Deadband: Update every time string[50]
 FilterTime: 0 string[50]
 Linearization: No Linearization string[50]
 Inverted: boolean
 SensorType: Type J, -210..1200 C string[50]
 SignalRange: 4-20mA string[50]
 ISPControl: Keep current value string[50]
 ISPValue: 0 string[50]

Scaling

Min: 199 float
 Max: 799 float
 Unit: string[50]

Auto Refresh | Apply | Cancel | Help

05-10-06 15:31:43:578 OPCDA_Provider_ASAOL Service provider started ASAOL ppaservice ABB

Start | Process Engine... | Control Builder... | 800xADEMO ...

Erkennung von Änderungen und selektierte Synchronisation

Process Engineering Tool Integration

INTools

Control Structure

Show Uncommitted New Different All

- PETISMAL, \$Project-Site
 - ETHYLENE, \$Plant-Site
 - Control Wiring, \$Hardware
 - HOT_END_CTRL, \$AC 800M
 - 0, \$PM864 / TP830
 - AI810, \$AI810
 - 1-FT-1502, Reference

1 [Change Mode](#)
Express

◀ Select Structures ▶

2 Compare
▲ Show Differences

3 ExpressSync
Last Sync
@ 15:20:28
On 10/6/2005

800xA

Control Structure

- Root,Domain
 - HSE_Seg1, HSE Subnet
 - RTPI, Generic OPC Server Network
 - OPC Servers, System Alarm and Event Group
 - IT Server, IT OPC Server Network
 - Asset Optimization, Asset Optimization
 - Control Network, Control Network
 - Process Engineering Tool Integration
 - PETISMAL, Control Network
 - PETISMAL, Control Project
 - Applications, Application Group
 - Controllers, Controller Group
 - Controller_1, AC 800M
 - COLD_END_CTRL, AC 800M
 - HOT_END_CTRL, AC 800M
 - System Alarms and Events, System Alarm and Event Group
 - Applications, Application References
 - Hardware, Control Hardware Group
 - 0, PM864 / TP830
 - 1, Ethernet
 - 2, Ethernet
 - 3, Com
 - 4, Com
 - 11, ModuleBus
 - 01, AI810
 - AI 1-FT-1501_Sig, CBM_AIS
 - AI 1-FT-1602_Sig, CBM_AIS
 - AI 1-FT-1601_Sig, CBM_AIS
 - AI 1-FT-1502_Sig, CBM_AIS
 - 02, AO810
 - 03, DI810
 - Tasks, Control Task Group
 - Access Variables, Access Variables

| Property | Value |
|------------------------|-----------------------|
| LOOP_ID | 4357 |
| LOOP_NAME | 1-F-1502 |
| CMPNT_ID | 12009 |
| Tagid | 12009 |
| TagName | 1-FT -1502 |
| TagFunctionType | FT |
| TagFunctionDescription | FLOW TRANSMITTER |
| service | 1-FA-107 FRESH ETH... |
| Min | 100 |
| Max | 7000 |
| UOM | %h |

| Aspect/Property | Value |
|-----------------|------------------|
| LevelHH | 5885 |
| LevelHHH | 5950 |
| LevelL | 160 |
| LevelLL | 100 |
| LevelLLL | 60.5 |
| Linearization | No Linearization |
| Max | 7999 |
| Min | 199 |
| NormalPosition | False |
| OperationMode | DI+SOE |
| OSPCControl | Set OSP value |

Web service: <http://lngsim/PETIWeb/INTOOLS.aspx> Mapping-file: C:\Program Files\ABB Industrial IT\Engineer IT\Engineering Studio\Process Engineering Tool Integration\800xA CI

Start | Process Engi... | Control Builder... | 800xADEMO //...

Bi-direktionale Synchronisation

Process Engineering Tool Integration

INTools

Control Structure

Show Uncommitted New Different All

- PETISMAL, \$Project-Site
- ETHYLENE, \$Plant-Site
 - Control Wiring, \$Hardware
 - HOT_END_CTRL, \$AC 800M
 - 0, \$PM864 / TP830
 - AI810, \$AI810
 - 1-FT-1502, F

1 Change Mode Express

◀ Select Structures ▶

2 Compare

▲ Show Differences

800xA

Control Structure

- Root.Domain
 - HSE_Seg1, HSE Subnet
 - RTPI, Generic OPC Server Network
 - OPC Servers, System Alarm and Event Group
 - IT Server, IT OPC Server Network

Transfer

1 Optional. Set breakpoints by clicking items in this column.

2 Click this column to sort transfer direction. Click items in this column to modify their direction.

If multiple items are selected in steps 1 or 2, all items will be affected.

| Planned Action | Dir | Path |
|---------------------|-----|--|
| ObjectCreated | ▶ | Control Structure/PETISMAL/PETISMAL/ETHYLENE/Control Modules |
| ObjectCreated | ▶ | Control Structure/PETISMAL/PETISMAL/ETHYLENE/Control Wiring |
| AttributeDifference | ◀ | Control Structure/PETISMAL/PETISMAL/ETHYLENE/Control Wiring/HOT_END_CTRL/0/AI810/1-FT-1502/Max |
| AttributeDifference | ◀ | Control Structure/PETISMAL/PETISMAL/ETHYLENE/Control Wiring/HOT_END_CTRL/0/AI810/1-FT-1502/Min |

3 Execute Transfer

Property

| | |
|------------------------|-----------------------|
| LOOP_ID | |
| LOOP_NAME | |
| CMPNT_ID | |
| Tagid | |
| TagName | |
| TagFunctionType | FT |
| TagFunctionDescription | FLOW TRANSMITTER |
| service | 1-FA-107 FRESH ETH... |
| Min | 100 |
| Max | 7000 |
| UOM | ft/h |

| | |
|----------------|------------------|
| Linearization | No Linearization |
| Max | 7999 |
| Min | 199 |
| NormalPosition | False |
| OperationMode | DI+SOE |
| OSPControl | Set OSP value |

Direkter Zugriff auf SPI Dokumentation aus System 800xA

The screenshot displays the '800xADEMO // Engineering Workplace' application. The main window is titled '1-FT-1502 : Document Associations'. The interface is divided into several panes:

- Left Pane (Functional Structure):** Shows a tree view with nodes like 'Root, Domain', 'Demo800, Demo Site', 'Demo800Engineering, Demo Site', 'Function Templates, Templates', 'Process Engineering Tool Integration', and 'PETISMAL, Control Network'.
- Top Pane (Aspects of '1-FT-1502'):** A table listing various aspects with columns for Modified, Desc..., Inherited, Category name, and Version.
- Main Pane (Document Associations):** Displays a table with columns 'Name' and 'Description'. It is organized into sections: 'External Documents', 'Internal Documents', and 'Report'. Under 'Internal Documents', there are links for 'Smart Loop', 'Tag Signal', 'Process Data', 'Loop Tag Numbers', and 'I/O Map'. A mouse cursor is hovering over the 'Process Data' link.
- Right Pane:** A scrollable list of document properties, including 'properties', 'structure', 'PETI', 'lement', 'lement', 'e', 'e Element', and 'Element', all with 'ver 1.0'.

The bottom status bar shows the date and time '05-10-06 15:46:31:394', the user 'ppaservice', and the ABB logo. The taskbar at the very bottom includes icons for 'Start', 'Process Engine...', 'Control Builder...', '800xADEMO //...', and '1-FT-1502 : ...'.

Datenkonsistenz über den gesamten Life Cycle

1-FT-1502 : Document Associations

1-FT-1502:Document Associations

Save a Copy Print Email Search Review & Comment Sign

Select Text 144%

GENERAL

| | | | |
|--------------|-------------------------------------|--------------|------|
| Case name: | | | |
| Tag number: | 1-FT -1502 | | |
| Service: | 1-FA-107 FRESH ETHANE KO DRUM LEVEL | Location: | Line |
| Fluid state: | Liquid | Line number: | * |
| Fluid phase: | Line size: | | |
| Fluid name: | | | |

PROPERTIES

| | @Minimum | @Normal | @Maximum | Units |
|--------------------|----------|---------|----------|-----------------|
| Volumetric flow: | | | | US gal/min@flow |
| Upstream pressure: | | | | bar-g |
| Temperature: | | | | °C |
| Viscosity: | | | | cP |
| Velocity: | | | | ft/s |
| Density: | | | | kg/m³ |
| Specific gravity: | | | | |
| Compressibility: | | | | |
| Vapour pressure: | | | | Pa-a |
| Critical pressure: | | | | bar-g |

ADDITIONAL PROPERTIES

| | | | |
|--|-----------|--------------------|------------|
| Design pressure min: | bar-g | Corrosive: | |
| Design pressure max: | bar-g | Erosive: | |
| Design temperature min: | °C | Toxic: | |
| Design temperature max: | °C | Colored: | |
| Entrained gas: | % | Transparent: | |
| Required range: | From: 199 | To: 7999 | ft³/h@flow |
| Limits on press.drop across flowmeter: | inH2O | Build-up tendency: | |
| | | Angle of repose: | ° |

BASE CONDITIONS

| | | | | |
|--------------|------|-------|-------------------|-------|
| Pressure: | 14.7 | psi-a | Density: | kg/m³ |
| Temperature: | 60 | °F | Specific gravity: | |
| | | | Compressibility: | |

8.5 x 11 in 1 of 1

Start Process Engine... Control Builder... 800xADEMO //... 1-FT-1502 : ...

Engineering

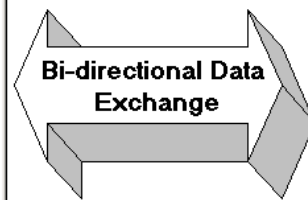
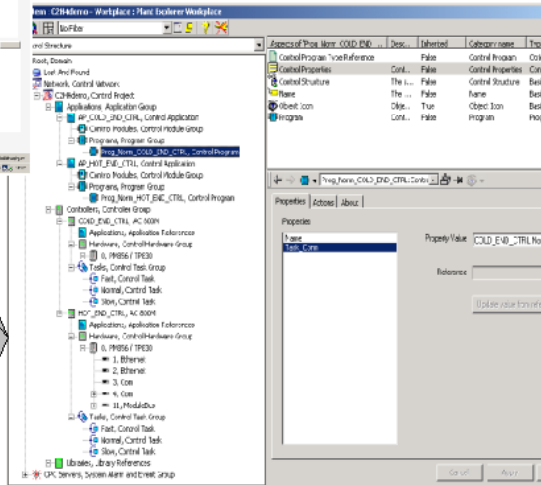
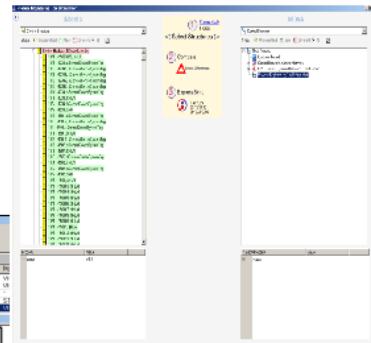
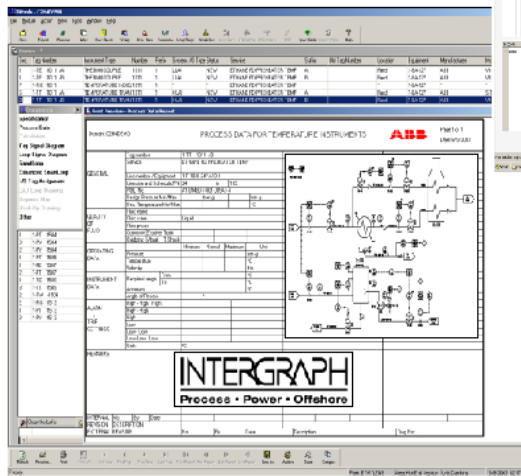
Process Engineering Tool Integration



SmartPlant
Instrumentation
Powered by **INtools**

Process Engineering
Tool Integration

ABB
System 800xA



| | | | | |
|---------------------|-------------|--------------------|------------------------|------------------------|
| System Architecture | Operations | Fieldbus | Batch Management | Investment Enhancement |
| Control and I/O | Engineering | Asset Optimization | Information Management | Industries |



Vorteile der Integration System 800xA und SPI®

- Reduktion der Engineering Aufwendungen
- Automations-System neutrales Prozess-Design
- Reduziertes Risiko durch verbesserte Qualität
- Verbesserte und verlängerte Änderungsmanagement
- Automatische Generierung von As-built Dokumentation.
- Konsistente Informationsablage durch definierte Quelle

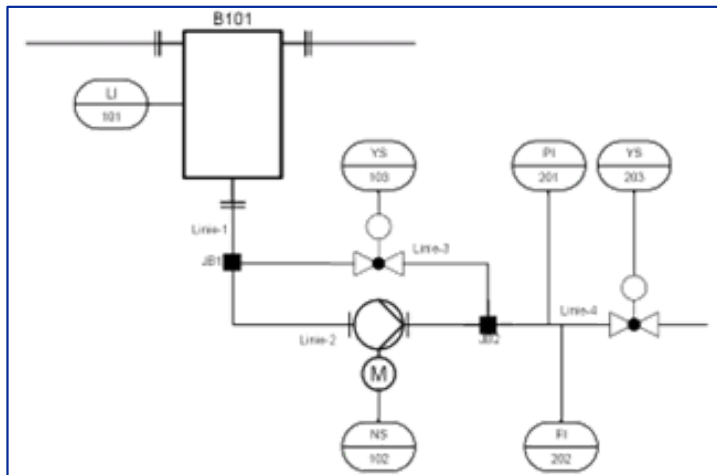
Kosteneinsparung im Engineering von 15 - 15%



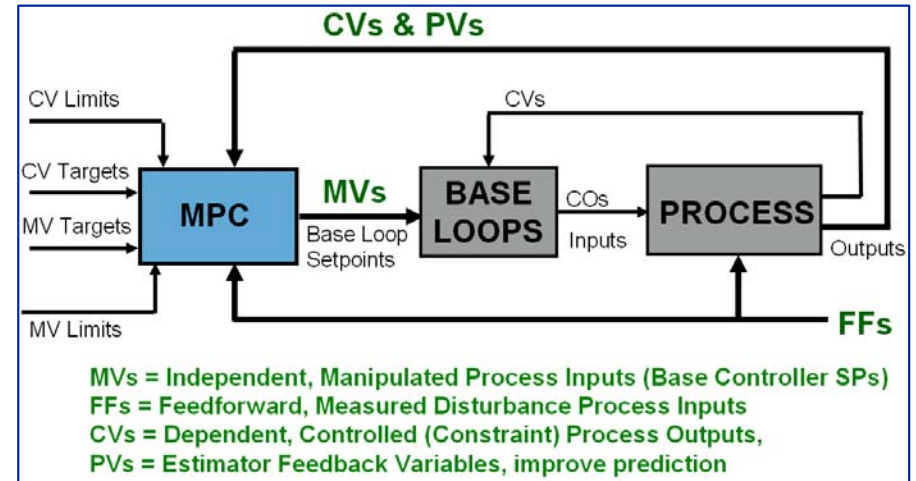
Mögliche Ausblicke

Es ist noch mehr zu erreichen

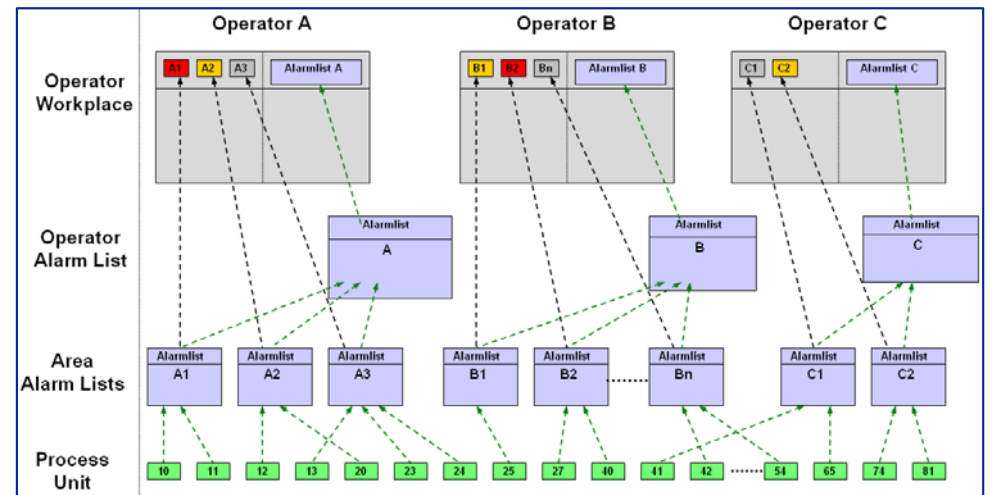
Prozess-Design



Advanced Process Control (APC)



Alarm Management System



- Advanced Process Control
- Intelligente Alarm Management System
- Informations-Management Systeme mit semantischen Informationen
- ...

Power and productivity
for a better world™

