ES 680 the TELEPERM XP Engineering System

Hans-Martin Wismath
The Structure of TELEPERM XP
ES 680 the TELEPERM XP world of engineering

Topology diagram
Cabinet allocations
Process operation
Process information
Process management
Logic diagrams

Plant bus

OM 650
DS 670
ES 680

AP; APF
FUM; FUM-F; SIM
The step by step engineering concept

Powerful network solution to be used for the engineering of large plants

Compact solution

OT
OT
ET
DT
CU-OM/ES

Terminal bus

PU
SU
ES
DS

Plant bus

AP; APF
FUM; FUM-F; SIM
Optimized initial engineering and documentation

- Initial documentation
- Logic diagram
- Plant display
- ET-ES
- Engineering network
- CU-ES
- ET-ES

- Forward engineering
- Forward documentation
- Automatic code generation of the application software

TELEPERM XP

Power Generation | Instrumentation & Controls
CE_R7_e, Hans-Martin Wismath, 05/2003
Optimized commissioning and documentation on site

- On site workstation
- Modifications and supplements are made via the screen
- Automatic generation of the documentation
- Automatic generation of the application software structure
- Application software is downloaded via the plant bus and the terminal bus

Terminal bus
Plant bus

OT
OM
ES

AP; APF; FUM; FUM-F; SIM
Homogeneous working on the logic and arrangements diagrams

Clear navigation by the engineering of DCS hardware and software

Logic diagrams

Arrangement diagrams

Overview

Area

Individual diagram

Navigation

Subrack

Topology

Automation system

Homogeneous working on the logic and arrangements diagrams

Clear navigation by the engineering of DCS hardware and software

Logic diagrams

Arrangement diagrams

Overview

Area

Individual diagram

Navigation

Subrack

Topology

Automation system
Top down structure of the logic diagrams

Overview level

Area level

Individual level

Density

Resolution
Top down structure of the arrangement diagrams

Overview level

Area level

Individual level

Density

Resolution

AP; APF; FUM; FUM-F; SIM cabinet allocation

AP; APF; FUM; FUM-F; SIM sub-rack allocation

AP; APF; FUM; FUM-F; SIM

AP; APF; FUM; FUM-F; SIM
Design of the arrangement diagrams with ES680- topology

Topology of the TELEPERM XP DCS
Design of the arrangement diagrams
AS 620 cabinet allocation diagram

Graphical design of the cabinet allocation with sub-racks

AP-A

FUM

AP-B

FUM

Design of the arrangement diagrams
AS 620 cabinet allocation diagram

Graphical design of the cabinet allocation with sub-racks

AP-A

FUM

AP-B

FUM

Graphical design of the cabinet allocation with sub-racks
Design of the arrangement diagrams
AS 620 sub-rack allocation diagram

Graphical design of the sub-rack allocation with modules
I&C solutions are designed with the logic diagram.
Standard symbols to design logic diagrams

- measurement
- open loop control
- closed loop control
The AP; APF; FUM; FUM-F; & SIM logic diagrams

- Graphical design of the signal flow
- Modifications of parameters via window technique
- Automated code generation
The dynamic logic diagram

- Selection of the logic diagram via plant identification code (KKS)
- Actual processing status of all inputs, outputs and calculated results
- Navigation between the logic diagrams of AS620 B & APF automation systems
OM 650 HMI design

Symbol library

Display design

- Standard symbol library
- Easy display design through “drag and drop” of the standard symbols
- Automatic arrangement of operation windows/detail windows and standard symbols

**Display design**

- **Saugzug**
  - Temperature: 18.3 °C
  - Pressure: 0.84 kPa

- **Razirkulation**
  - Temperature: 18.2 °C
  - Pressure: 0.16 kPa

**Easy display design through “drag and drop” of the standard symbols**

- **Standard symbol library**
- **Automatic arrangement of operation windows/detail windows and standard symbols**
The process interface of OM 650

Parameters including plant identification code

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<th>KKS</th>
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Recirculation

ID Fan

FD Fan

PIC PAR

CLC flue/gas damper

Flue/gas damper

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Centralized engineering and diagnostic functions of field devices

**SIMATIC PDM**

**ES 680**

**AP**

**PROFIBUS-PA**

* Process Device Manager

- Improved commissioning
  - remote changing of parameters
  - simple and fast changing of parameters

- Simple maintenance
  - remote diagnostics
  - extended and detailed diagnosis
  - on demand maintenance by
    - maintenance alarms
    - maintenance diagnostic functions
Authorization level

- **ET:** Definition of user classes and privileges
- **ET:** Definition of users and their assignment to a user class and to a process area via graphic user interface
- **OT:** The operation functions that can be selected depend on the user login
- **Multi-stage "skeleton key" function**

Diagram:
- **Terminal bus**
  - OT/DT
  - ET
  - OT
- **Plant bus**
  - DS
  - ES
  - OM
  - AP
Interface to the Technology Editor

ES 680 Functional Diagrams can be generated automatically

Technological Functional Diagram

Diagram Generator

Functional Diagrams Individual Level
Highlights

Software is automatically generated from the diagrams built with the ES680

ES 680 calculates automatically: AS 620B cycle time / AS 620B cycle load, FUM running time

With the ES 680 knowledge about programming languages is not required

Navigation within the diagrams on the ES680

Dynamic logic diagrams on the ES 680 and the OM 650

Signal simulation on the ES 680

Modifications of the ES 680 logic diagrams can be loaded online