Automation Designer integrating Electrics and Automation in Digital Manufacturing
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Automation Designer integrating electrics and automation in digital manufacturing

Changes in Digital Manufacturing
Positioning Automation Designer
Automation Designer Key Features
Benefits and Summary
Siemens offering the most holistic Digital Twin

Collaboration platform: Teamcenter
What are we talking about?
Industries covered by Automation Designer

Production Machines
(Machine Tools, E 2019)

Production Lines,
Automotive Production

Conveyor Systems

Automation Designer covers automated discrete manufacturing
Automated Production is Mechatronic, Digital Manufacturing so far wasn’t

Typical digital manufacturing
- Manufacturing planning
- Kinematics Simulation
- Robot Simulation, OLP
- Digital Mock-Up
- ...

Electrics and automation is still handled “outside”

- Sensors
- I/O systems
- Control cabinets
- Automation software
- HMI
- Valves, valve clusters
- Safety hardware
- Pneumatic cylinders
- Cables, tubes, pipes

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How does the automation engineering process perform today?

**Automation engineering today**
- Sequential engineering
- Manually synchronized
- Supported by home grown IT applications

**Challenges**
- Increasing degree and complexity of automation
- Increasing number of changes
- Production downtime for commissioning
- Reduced time for production engineering
- Costly maintenance of complex, home grown IT tools
Automation Designer integrates Electrics and Automation in PLM

Software portfolio

- Multidisciplinary design platform NX
- Automation Designer is an application within NX
- Tight coupling to NX mechanical design tools
- Strong integration with PLC programming (TIA Portal)
- E-CAD integration (EPLAN)
- Teamcenter as backbone
Automation Designer is the central tool for electrics and automation in digital manufacturing

- **Central design application** for electrics and automation software in the Digital Enterprise
- Enables functional, mechatronic engineering of production systems and machines
- Integrates electrical and automation data, with system design and mechanical data
- Provides **rule-based engineering** support with connection to downstream ECAD & automation tools
Automation Designer integrates PLM with automation in Production Systems Engineering

Production Systems Engineering

Production Lines
- Teamcenter Manufacturing
- Line Designer integrated in NX
- Automation Designer integrated in NX
- Totally Integrated Automation Portal
- Process Simulate/PLCSIM Advanced

Teamcenter
- Process planning
- Line design
- Mechanical design
- Automation design
- Automation engineering
- Virtual commissioning

Reusable components within mechatronics library
- Integrated engineering of mechanics and automation
- NX/MCD integrated in NX
- Automation Designer integrated in NX
- Generators
- Integrated simulation and integrated validation
- MCD/SIMT/PLCSIM Advanced

Teamcenter Manufacturing
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Mechanical design
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Automation Design
- Automation design
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Virtual Commissioning
- Generators
- Integrated simulation and integrated validation
- MCD/SIMT/PLCSIM Advanced
Design steps in Automation Designer

1. Multidisciplinary system design
   - Enhance 3D-model with electrics and automation data
   - Structuring and organization of components

2. Functional design
   - Define project breakdown structure
   - Define electrical functions & devices
   - Define relationships

3. Electrical design
   - Define electrical infrastructure
   - Define PLC configuration
   - Define catalogue parts
   - Rule-based electrical schematic creation

4. Automation design
   - Define program blocks
   - Define program structure
   - Rule-based PLC program & HW creation

SIEMENS
Ingenuity for life
Automation Designer –
Central application of electrical and automation design

1. Integrated data model
   Reduce risk, gain efficiency

2. Multi-disciplinary collaboration
   Execute projects efficiently

3. Rule-based engineering
   Save time, less errors, keep control

4. Mechatronic templates
   Set standards, reduce effort

5. Complete portfolio
   Enhanced production digital twin
Integrated data model

Multiple disciplines, one data source

Enter data once and use it wherever it is needed
Multi-disciplinary collaboration

Integrate your data, integrate your people

Work on a single engineering platform, where all disciplines can come together
Mechatronic templates

Focus on what you’re doing, not what you’ve already done

Capture complex engineering designs for quick and efficient reuse
Rule-based engineering

You have the rules, we have the tools

Automate ECAD and PLC software generation with built-in generation for EPLAN and TIA Portal
Collaborative Automation Design –
Enhanced digital twin for production

Benefits
- Reduced effort through knowledge re-use
- Reduced risk through consistent mechatronic data model and rule-based engineering keeps control of complex engineering solutions
- Reduced cost of ownership with use of OOTB software products saves IT maintenance costs

Automation Designer approach
- Parallel engineering with a central application
- Mechatronic collaboration / consistent data
- Knowledge re-use
- Rule-based engineering

Re-use

START

END

70-80% Generation

Electrical Schematics

PLC Project
Summary
Automation Designer – Integrated disciplines, rule-based engineering – The crucial step to the enhanced Digital Factory
Realize Mechatronics!
Thank you.
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