

## Digitalization Auto Engineering (DIGI-AUTOE)

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### Short Description

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Totally Integrated Automation in the Digital Enterprise - Automatic Execution of Engineering Tasks

### Objectives

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To make participants aware and familiar with:

- \* Concept of Industry 4.0
- Digitalization options available in TIA Portal
- Standardization in TIA portal for more efficiency and error-free machines
- SiVArc option of automatic visualization generation
- TIA Portal openness for faster project generation
- Various test methods for TIA portal projects

### Target Group

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- Programmers
- Solution engineers
- Configuration engineers
- Commissioning engineers
- Project planners
- Project designers
- System integrators

### Content

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#### Introduction to digitalization

- Digitalization - Industry 4.0
- Impact of digitalization on current business models
- Brief on user scenarios of digitalization

#### Standardization - on the way to digitalization

- Advantages of standardization of PLC software
- Possibilities for implementing a standard
- Structuring the machine/system in individual functions/subfunctions as a basis
- Re-usability of program parts (according to IEC 61131 and Programming Guidelines)
- Creating a Styleguide and automatically testing it
- Block modularization and automatically testing it
- Working correctly with libraries
- Creating a company library

#### SiVArc – option for automatic visualization generation

- Demands on the PLC project in terms of standardization and structuring
- Planning an automatic visualization
- Automatic screen generation
  - Layouting
  - Navigation
  - Extended positioning
  - Overflow screens
  - Creation of pop-ups
- Troubleshooting and analysis of the generated visualization

#### TIA portal openness

- Introduction to TIA Portal Openness and the Auto-save tool
- Adapting hardware through TIA Portal Openness
- Generation of PLC programs from library elements using openness scripter tool

#### Testing TIA portal project

- Introduction to PLCSIM advanced
- Project block tests
- S7 unit tests

#### Data collection for cloud services

- Introduction to cloud services

- Mindsphere as IOT platform
- Various gateways for MindSphere connectivity
- Data capturing from SIMATIC S7-1500 controller via asset manager
- Visualization in fleet manager in MindSphere dashboard

#### **Trending topics in digitalization**

- Introduction to virtual commissioning
- Virtual twin, SIMIT etc.
- PLM integration of TIA Portal

#### **HANDS ON**

- Application example-based exercises after each topic

#### **SOFTWARE VERSION**

- STEP7 TIA Portal v16 Professional
- WinCC TIA Portal Comfort/Advance/Professional TIA Portal v16
- TIA portal options/required tools:
  - Test Suite
  - SIVARC
  - Openness scripiter
  - S7 unit test

#### **Prerequisites**

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- Basic know how about automation technology is must
- Basic knowledge of electrical technology and digital electronics
- SIMATIC S7-1500 Basic course is highly recommended

#### **Note**

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#### **TECHNICAL REQUIREMENT**

- SIMATIC S7-1500 training kit with comfort HMI panel
- MindConnect IOT2040 gateway with USB drive and wireless router
- Laptop or computer system with following configuration (recommended), with SIMATIC STEP 7 Professional and WINCC comfort/Advance /Professional with TIA Portal v16 installed:

#### **Hardware - software Requirement**

- Processor Intel® Core™ i5-6440EQ (up to 3.4 GHz)
- RAM 16 GB (32 GB for large projects)
- Hard disk SSD with 50 GB free storage space
- Network 1 Gbit (for multi-user)
- Monitor 15.6" full HD display (1920 x 1080 or more)
- Operating system Windows 7 (64-bit), Windows 10 (64-bit) , Windows Server (64 bit)
- Additional TIA portal options to be installed/required tools:
  - Test Suite
  - SIVARC
  - S7 unit test
  - Openness tool(Openness scripiter)

#### **Type**

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Face-to-face training

#### **Duration**

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5 days

#### **Language**

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#### **Fee**

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0 INR

18% GST additional on course fees