

# DIGITAL ENTERPRISE

## **SITRAIN Vietnam**

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## Totally Integrated Automation in the Digital Enterprise - Introduction Compact | DI-INTROC | 1 day

### OBJECTIVE

Digital Enterprise, your path to Industry 4.0 - discover the possibilities. Today's technologies are so complex that, in order to keep up to date, it is almost essential for the training to be performed on the software and the associated training devices.

The target group of this course is comprised of configuration engineers, project planners and decision-makers working in medium-sized and large-scale industrial companies, who are working on end-to-end digitalization concepts.

The course gives you an introduction into the Totally Integrated Automation in the Digital Enterprise as your path toward Industry 4.0 and an overview of the various software solutions, so that you will be able to assess them after completing the course.

### TARGET GROUP

- Decision makers
- Sales personnel
- Planners

### CONTENT

- Digitalization - Industry 4.0
- Automatic execution of engineering tasks
- PLM-integration of automation engineering
- Efficient cloud-based engineering
- Virtual commissioning
- Integrated energy management
- Protection of machines and plants
- Data acquisition for cloud services

### PREREQUISITES

Basic knowledge of automation engineering

# COURSE DETAIL

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## Totally Integrated Automation in the Digital Enterprise - Introduction to Standardization | DI-STAND | 2 days

### OBJECTIVE

This course provides an overview of the benefits and the approach for standardization across processes. Through it you will be well prepared for the challenges of digitalization in discrete automation. From Siemens as manufacturer, learn how you can optimally design your operational interfaces and program structures through standardization effectively and efficiently.

Target groups of this course are project designers and planners of medium and large-scale industry who deal with an integrated digitalization concept approach.

You will be given suggestions on how you can establish a company standard or how you can expand and optimize your existing one.

In this way you can advance the standardization of your system/plant and its program creation and gain a competitive edge.

### TARGET GROUP

- Decision makers
- Project planners
- Programming persons
- Project designers
- System integrators

### CONTENT

- Standardization – on the way to digitalization
- Re-usability of program parts (in accordance with IEC 61131 and programming guide)
- Errors in the engineering are detected quicker
- Efficient working by way of uniform interfaces, behavior of blocks defined once, for example
- Optimizing communication and collaboration between departments
- Library concept in TIA Portal
- Versioning of stored PLC blocks
- Versioning of HMI faceplates
- Opportunities for implementing a standard
- Identification of blocks and interface parameters (style guide)
- The program/project of the machine/plant, for example, utilization of uniform hardware
- Data structures and data storage (programming guide)
- Call levels in the subprograms, nesting levels
- Structuring the machine/plant in individual functions/ sub-functions

### PREREQUISITES

Basic knowledge in SIMATIC TIA Portal Step 7 equal to TIA-PRO2 or TIA-SYSUP.





## Totally Integrated Automation in the Digital Enterprise - Automatic execution of engineering tasks | DI-AUTOEN | 5 days

### OBJECTIVE

The target group of these course is comprised of configuration engineers, project planners and programmers working for medium-size and large-scale industrial companies, who deal with the automatic execution of engineering tasks. This includes the generation of PLC programs and HMI visualizations. The objective of the course is to achieve higher efficiency in the creation of PLC code and HMI visualizations for modular machines. This is achieved by:

- The automatic execution of repetitive processes for identical functions
- A code that can be generated more quickly and more reliably for the same processes
- Reducing the engineering effort demanded by user interfaces, while standardizing the visualization across the plant
- Automatically generating and creating the visualizations, based on the program code of the controller and of corresponding visualization objects within the framework of system-wide library concepts

### TARGET GROUP

- Configuration engineers
- Project planners
- Programmers
- Planners

### CONTENT

- Digitalization - Industry 4.0
- Automatic execution of engineering tasks
- Standardization as the basis for digitalization
- Modularization of a machine
- Standardization and storage with the aid of the TIA Portal library
- Practical insight into standardized programming
- Standards in automation
- TIA Portal Openness and types of automated code generation
- Hardware and software generators and data exchange with ECAD
- Adaptation of a project generator
- The need for program tests
- Program block test based on PLCSIM Advanced
- Principles of the automated generation of visualizations
- Steps for generating visualizations with SiVArc
- Introduction to TIA Portal Openness Importing hardware from another engineering platform in the TIA Portal
- Executing functions automatically via Openness in TIA Portal
- Introduction to SIMATIC Visualization - SiVArc
- Demands on the PLC project in terms of standardization and structuring

### PREREQUISITES

- Good knowledge of automation engineering
- Knowledge of SIMATIC S7 appropriate to TIA-PRO2 or TIA-SYSUP, and practical experience of the application of this knowledge

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## Totally Integrated Automation in the Digital Enterprise - Virtual Commissioning for Machines | DI-VIRTCOM | 5 days

### OBJECTIVE

Target group of this course are project engineers, project planners and programmers of mid-level and big industries, who deal with the design and virtual commissioning of machines.

This course provides you with an overview of the interaction among the various software packages such as NX, MCD, TIA Portal, PLCSIM Advanced and SIMIT.

The objective of the course is to achieve greater efficiency in the design, automation and commissioning of machines. Through an overview of the tool landscape, you will learn to better understand and evaluate the resulting possibilities and types of simulation.

### TARGET GROUP

- Configuration engineers
- Project planners
- Programmers
- Planners

### CONTENT

- Introduction of concepts for virtual commissioning
- Complete software-in-the-loop approach
- Working with PLCSIM Advanced and TIA Portal
- Introduction to Siemens PLM Software NX and MCD
- Creating drawings in the NX CAD system
- Creating and positioning machine elements in the NX CAD system
- Preliminary planning of the program flow in NX MCD
- Connection of NX / MCD models to PLCSIM Advanced (with TIA Portal)
- Automating using the virtual machine model
- Virtual commissioning of custom machines
- Expansion and modification of the virtual machine
- Introduction of process simulation with SIMIT

### PREREQUISITES

- Good knowledge of automation technology
- SIMATIC S7 knowledge relevant for TIA-PRO2 or TIA-SYUP and practical experience in the application of this knowledge.





## **SINUMERIK 828D / 840D sl NX CAD / CAM with VNCK** **Virtual Twin of Machine tool on PC | NC-SINVNCK | 4 days**

### **OBJECTIVE**

In this course, programmers will learn how to validate an NC program by having NX CAM post process the program's tool paths and send the posted output to the embedded Sinumerik controller kernel. In turn, the controller kernel processes the data exactly as it would on a real machine and drives the 3D machine-tool model to display the simulation. At your discretion, you can have trained Siemens experts adapt the virtual machine control and simulation solution to your company's individual machine tools thereby ensuring compatibility with machine tools in your manufacturing environment equipped with Siemens Sinumerik controllers.

### **TARGET GROUP**

- Machine Operators & Programmer

### **CONTENT**

- Installation of NX and VNCK to PCs
- NX CAD Modeling
- NX CAD Drafting
- NX CAD Assembly
- NX CAM VNCK Milling
- NX CAM VNCK Turning

### **PREREQUISITES**

- Basic knowledge CNC Automation System
- Basic knowledge Siemens NX CAD CAM
- NC-84SLAPT, NC-84SLAPM class is strongly recommended