The future of learning start now with **SITRAIN - Digital Industry Academy**

www.siemens.com/sitrain

SIEMENS

SITRAIN – Training For Industry

SITRAIN™ Brief Introduction

A knowledge advantage: Only today's manufacturer knows the product of tomorrow – and its possibilities.

In today's competitive market, a highly skilled workforce is vital for success. However, understanding how to deploy an effective learning strategy is a challenge.

What would you say if a friend tells you he had installed new fire extinguishers in his office and had taken all precautions for fire protection thereby? Yet, he had not thought about taking any preventive measures. Transfer this scenario to your own everyday work. Would you purchase and operate a system without initiating training measures that show how that system can be operated and maintained competently? You decide.

SITRAIN offers you training and knowledge directly from the manufacturer about our products and their possibilities. We train your personnel on training equipment we've developed especially for these products and in our courses we offer numerous practical exercises. This allows participants to try out products and make mistakes.

During this process you benefit not only from our trainers who work in this field and have considerable practical experience, but also from our innovative learning methods. You can view specifically what those methods are and discover additional benefits further to the right.

Worldwide, **SITRAIN** courses are available wherever you need a training course in over 200 locations in over 60 countries.

Since 1980 Siemens has been providing training for customers in the field of Automation & Drives across various locations in India.

Increased productivity: Our learning services integrate best practices and new learning technologies to deliver real business value.

Siemens technical learning services provide students with the critical knowledge they need for their job directly from the equipment manufacturer. Our training solutions build the competence to make informed decisions in the daily operation of your plant's automation and drives systems. Employees will achieve increased productivity, while staying up to date with new technologies and best practices. We offer your perosonnel complete learning solutions and competency management programs.

Your Training benefits at a glance

- Increase effectivity: less effort for configuration and commissioning
- A knowledge advantage: training courses are already available at the time of product market introduction, with hardware and software, appropriate training equipment, and always up-to-date
- Save time and resources: shorter orientation periods when technology or personnel change
- Improve production workflows, reduce down times – thanks to training units in the areas of troubleshooting and fault clearance

More about Siemens Industry Training

Online Booking Process

To explore full range of our offerings check out the link below:

www.siemens.co.in/sitrain

Training Overview

Industrial Training in Siemens has built up more than 200 professional training centers around the world. Here In India, we have 2 training executors located in Panchkula, Coimbatore, Thane. 'To be at the forefront of quality and technology is our principle'.

'To be at the forefront of quality and technology is our principle'. Each training centre follows uniform quality standard and principle of customer orientation. The training courses enable our Siemens technical expertise and practical skills in the most efficient way so as to acquire the ability of using our products and troubleshooting in on-site products. We provide various options to our customers, from classroom course to on-site training, from standard courses to customized courses and from self learning media to online courses. You may choose the suitable courses according to your level and condition.

Feedback Process – 1. Immediately after program 2. Telephonic Feedback after 15 days

The average feedback is 94.28%

Training Content

We offer training on most of the products and technology:

- SIMATIC Programmable Controller: SIMATIC S7
- SIMATIC NET: Industrial Ethernet, Profibus, AS-interface
- SIMATIC HMI: WinCC, WinCC Flexible
- Process Control System: SIMATIC PCS7
- Drives: SIMOVERT MASTERDRIVES VC/ MC, SIMOREG
- DC-Master, MM4, SINAMICS G150/ S120
- Motion Control System: SIMOTION
- Low Voltage Switchgear, Power Distribution products, Energy Management, Intelligent Motor control (Smart product): SIMOCODE
- Basic Automation for Switchgear users, basic communication for Power Distribution products
- Process Instrumentation & Mechatronics

Training Conducting Method

- Combination of Theory Teaching & Practical Exercises

Basic knowledge the Trainee should have

- Engineering Background
- Experience of Operating, Maintaining High-Tech Electrical Products
- Basic Knowledge of English Language to understand the English interface of Documentation

Various Course Setup

- Standard course/customized course/ Application Course
- Classroom Training/On -Site Training

Scientific Management and good service

- Agreeable Environment with complete facilities
- Standard training process
- Training Resource Management
- Training Quality Control

Certificate awarded on completion of the course


SITRAIN
Digital Industry Academy
Certificate of participation
Online Training - SIMATIC S7-300 & S7-400 with SIMATIC Manager
SIEMENS

USPs of SITRAIN

Digitalization in Training Process

1. Program selection questioner – entrance tests
2. Hassel free registration process. The industry participants can register themselves for training directly on the SITRAIN webpage through this link www.siemens.co.in/sitrain
3. Invitation/Confirmation from SITRAIN India
4. Web based Training (WBT) is provided to every participant to develop fundamental product knowledge before attending the classroom training
5. Pre & post test examination for self checking the subject development
6. Access the archives of training materials. Participants can download participated training documents/manual from the website
7. After 6 months, an examination to check retention of trained subject will be held (at special price)

Systematic approach for skill development

1. Introduction of new programs and training topics from time to time
2. More hands-on training through specially designed kits for individual participants
3. Practical Training directly from the manufacturer with updated features and technology
4. Possibility of course customization offering flexibility in contents, media, location, time & duration
5. Balanced ratio between theoretical and hands-on training
6. Comprehensive range of training courses
7. All training kits use industry products. Customer gets exposure to real industry products
8. Training documentation is made in Germany including practical sequences

Special Training Kits

SIMATIC S7 300

SIMATIC S7 1200

SIMATIC S7 1500

SINAMICS DC Master Drive

SINAMICS G120

SINAMICS S120

DCS PCS 7

SINAMICS V90

ACB

Mex With Digitalization

Mechatronic

SIMOCODE

Timer & Relay Kit

Major Industry Customers

- SAIL (10-Plants around the country)
- ONGC (Baroda)
- FORD (Chennai)
- Tata Motors (Pune & Lucknow)
- TATA Steel (Jamshedpur)
- Hindustan Zinc (Pantnagar & Rajashtan)
- Reliance (Jamnagar & Hazira)
- BPCL (Mumbai)
- ITC (Chennai, Sharanpur, Bangalore, Pune, Kidderpore)
- DIAL (Delhi International Airport)
- Aditya Birla Cement (Mumbai & National)
- HPCL (Vishakapatnam)
- RINL (Vishakapatnam Steel Plant)
- Ultratech Cement (Mumbai)
- BHEL (UP,MP,AP, etc.) - Contract
- FORD (Sanand)
- Vedanta (Orissa)
- Amazon
- Hindalco
- Hindustan Unilever (Mumbai)
- Mahindra & Mahindra (Nasik & Nagpur)
- TATA Steel (Kalinga-nagar, Orissa)
- ACC-HOLCIM
- UNILEVER (Global Plants

Our Training Locations

We train at over 200 locations in more than 60 countries.
You can find your personal contact at www.siemens.com/aspa using the selection are "by Competence: Training" and "by Country".

AUTOMATION

SIMATIC S7-1200 with STEP7 V17/18

Code: AS-1200

Objectives: Making participants familiar/work with **SIMATIC S7-1200 with STEP 7 V15**, various communication with S7-1200 like Modbus TCP/IP, G120 Integration.

Benefits: After successful completion of training the participant will be familiarized with the features of S7 1200 and its applications. This training will also help them to develop the understanding of hardware and software diagnostics of S7 1200 and networking capabilities of S7 1200.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- System Overview, PLC Tags, Programming Blocks
- Introduction to HMI & Introduction of 2nd generation HMI
- Troubleshooting & Trace Functionality, Memory card binding
- Web server with user defined WebPages, PID block
- AS-AS Communication, Modbus TCP Communication, MODBUS RTU
- I-device communication, MRP, Introduction to PROFINET
- G120 integration with S7-1200 using Motion Control
- Introduction of Migration from S7- 200 CL to S7-1200

Participant Prerequisite: Basic Knowledge of Automation technology / relay logic

Hardware and Software to be used:

- S71200 kit with HMI panel
- Laptops/ PC systems installed with TIA Portal V15 software

Duration: 5 days, full time

Language: English

Networking on Profibus/Profinet with V5.x

Code: AS-NTW

Objectives: This Course is designed for Engineers working in the field of Automation and not exposed to the field of SIMATIC Net.

Benefits: Participants will be able to configure Profibus – DP Communication for remote I/O's, configure Profibus – FDL Communication between S7 CPU's. Participants will be able to understand communication over industrial ethernet between PLC's and also to control drive through PLC.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- RS 232 and RS 485 details
- MPI Communication: GET&PUT and X-SEND & X-RCV
- Profibus–DP: DP-SEND & DP-RCV Blocks, Intelligent Slave
- Profibus-FDL: between CPUs of S7 family
- PLC to PLC communication over Industrial Ethernet
- Drive and PLC communication over Profibus DP network
- Diagnostic Tools in the Software
- Introduction to PROFINET and Modbus communication

Participant Prerequisite: The participant should be an engineer, knowledgeable about PLC and programming language in STEP 7 V5.6.

Duration: 5 days, full time

Language: English

SIMATIC S7-1500 with TIA V17/18 Basic

Code: AS-1500B

Objectives: Making participants familiar/work with **SIMATIC S7-1500 with STEP 7 V15**, various communication with S7-1500 like remote station and HMI communication.

Benefits: After undergoing this training participants will be able to understand various hardware and software features of S7-1500 PLC.Participants will be able to do the programming of PLC with the use of various instructions. Participants will access PLC through Web browser. Trouble shoot faults & errors and would be able to configure and Perform PLC-Drive Communication.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- System Overview S71500, ET200SP controller, Compact CPU's, PLC Tags, Programming Blocks
- Advance Programming Option in S7-1500 like Snapshot, Download without re-initialization
- Analog Value Processing
- Introduction to HMI & Introduction of 2nd generation HMI
- Troubleshooting & Trace Functionality
- Web server with user defined web pages
- Intelligent device configuration, remote station communication on PN
- TIA selection tool
- Introduction of Migration from S7-300 from STEP 7 V5.5 to S7-1500 STEP 7 V15
- PLC Drive Communication
- Introduction to optional packages

Participant Prerequisite: Basic Knowledge of Automation technology/relay logic

Hardware and Software to be used:

- S7 1500 kit with HMI panel
- Laptops/ PC systems installed with TIA Portal V15 software

Duration: 5 days, full time

Language: English

SIMATIC S7-1500 with TIA V17/18 Advance

Code: AS-1500A

Objectives: Making participants familiar/work with **SIMATIC S7-1500 with STEP 7 V15**, various communication with S7-1500 like Modbus TCP/IP, G120 drive Integration.

Benefits: After successful completion of training the participant will be familiarized with Advanced Programming Options, communication functionalities available with S7-1500 PLC such as PLC-PLC communication over industrial ethernet, modbus TCP & RTU communication, PLC-HMI communication. Participants will be able to learn about various HMI functions as alarm configuration. Participants will be able to configure drive using TIA portal and perform PLC-Drive communication, Trouble shoot faults & errors.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- System Overview S71500, ET200SP controller, Compact CPU's, PLC Tags, Programming Blocks; Multi Instance and Parameter Instance programming methods
- Programming of RTC, jump instructions and using indirect addressing
- Introduction to HMI & Introduction of 2nd generation HMI
- Configure HMI Alarms, Trends, Recipe
- Troubleshooting & Trace Functionality
- Web server with user defined web pages
- CPU-CPU Communication on TCP/IP
- Modbus TCP Communication, Modbus RTU
- G120 communication with S7-1500 using Motion Control
- TIA selection tool

Participant Prerequisite: Basic Knowledge of Automation technology/relay logic and participant should undergo S7 1500 Basic Training.

Hardware and Software to be used:

- S7 1500 kit with HMI panel
- Laptops/ PC systems installed with TIA Portal V15 software

Duration: 5 days, full time

Language: English

SIMATIC S7-300 with STEP7 V5.x Basic

Code: AS-300B

Objectives: Making participants familiar with **S7 300 PLC, work with STEP 7 V5.6** programming software. Communication with drive and remote station on Profibus DP/Profinet network.

Benefits: After successful completion of training the participant will be familiarized with the features of S7 300 PLC and its applications. This training will also help them to develop the understanding of hardware and software of S7 300. Participants will be able to do the programming of PLC with the use of various instructions, trouble shoot faults & errors and would be able to communicate drive through PLC.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- S7 300 hardware detailed information, protocols, DI/ DO module wiring, LED's Explanation, front indicators, terminals
- Structured Programming with industrial logics
- Various blocks such as FC, FB, DB and OB in details
- Analog wiring and programming
- Fault diagnostics, tools in software and through front indicators
- Communication basics: CPU to Remote station on DP or PN
- PLC Drive communication on DP/PN
- Introduction of TIA Portal V15

Participant Prerequisite: Basic Knowledge of Automation technology, relay logic essential but not mandatory.

Hardware and Software to be used:

- S7 300 PLC kit with remote I/O's
- STEP 7 Classic V5.6 software

Duration: 5 days, full time

Language: English

SIMATIC S7-300 with STEP7 V5.x Advance

Code: AS-300A

Objectives: Making participants familiar with **S7 300 PLC, work with STEP 7 V5.6** programming software. Complex data types and configuration of R systems.

Benefits: After successful completion of training participants will be able to understand Advanced Programming Options, communicate remote Io's and configure and use PID. Participants will be able to configure S7 300 Software Redundancy. Trouble shoot faults & errors.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- S7 300 hardware detailed information, protocols, DI/DO module wiring, LED's explanation, front indicators, terminals
- Structured Programming with industrial logics
- Various blocks such as FC, FB, DB and OB in details
- Information on complex data types, Multi Instance and Parameter Instance programming methods
- Programming of RTC, jump instructions and using indirect addressing
- CP to remote I/O communication on Profibus DP
- Continuous PID controller, Hi-speed counters
- Configure R system

Participant Prerequisite: Basic Knowledge of S7300 and SIMATIC Manager knowledge, knowledge regarding programming language & Practical Exposure of S7-300.

Hardware and Software to be used:

- S7300 PLC kit with remote I/O's. CP-345 is required
- STEP 7 Classic V5.6

Duration: 3 days, full time

Language: English

SIMATIC S7-400 with STEP7 V5.x Basic

Code: AS-400B

Objectives: Making participants familiar with **S7 400 PLC, work with STEP 7 V5.6** programming software. Configuration of Remote I/Os and Drive on Profibus DP/ Profinet network.

Benefits: After successful completion of training the participant will be able to understand various hardware and software features of S7-400 PLC, CPU to remote Io's communication.

Participants will be able to do the programming of PLC with the use of various instructions, troubleshooting and fault diagnostics and would be able to communicate drive through PLC.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- S7 400 hardware detailed information, protocols, DI/DO module wiring, LED's explanation, front indicators, terminals
- Structured Programming with industrial logics
- Various blocks such as FC, FB, DB and OB in details
- Analog wiring and programming
- Fault diagnostics, tools in software and through front indicators
- Communication basics:
  CPU to Remote station on DP or PN
  CP to Remote station on DP or PN
- PLC communication with Drive on DP or PN
- Introduction of TIA Portal V15

Participant Prerequisite: Basic Knowledge of Automation technology, relay logic essential but not mandatory.

Hardware and Software to be used:

- S7 400 PLC kit with remote I/O's. AC Drive for communication.
- STEP 7 Classic V5.6

Duration: 5 days, full time

Language: English

SIMATIC S7-400 with STEP7 V5.x Advance

Code: AS-400A

Objectives: Making participants familiar with **S7 400 PLC, work with STEP 7 V5.6** programming software. Configuration of Remote I/Os, Drive and HMI Panel on Profibus DP/Profinet network. Configuring panel using WinCC Flexible 2008 software.

Benefits: After successful completion of this training participants will be able to understand Advanced Programming Options, communicate remote Io's and configure and use PID.

Participants will be able to configure S7 400H System with redundancy.

Participants will be able to configure PLC-Drive Communication.

Trouble shoot faults & errors.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- S7 400 hardware detailed information, protocols, DI/DO module wiring, LED's explanation, front indicators, terminals
- Structured Programming with industrial logics
- Various blocks such as FC, FB, DB and OB in details
- Information on complex data types
- Multi Instance and Parameter Instance programming methods
- Programming of RTC, jump instructions and using indirect addressing
- Continuous PID controller, Hi-speed counters
- Configure H system

Participant Prerequisite: Basic Knowledge of S7400 and SIMATIC Manager knowledge, knowledge regarding programming language & Practical Exposure of S7-400 Controller.

Hardware and Software to be used:

- S7 400 PLC kit with remote I/O's. HMI Panel and AC Drive for communication.
- STEP 7 Classic V5.6, WinCC Flexible software 2008 softwares.

Duration: 3 days, full time

Language: English

Networking on Profibus/Profinet with TIA Portal V17/18

Code: AS-TNTW

Objectives: This Course is designed for Engineers working in the field of Automation and not exposed to the field of SIMATIC Net.

Benefits: Participants will be able to configure various Profinet networking options like I-Device, Open user communication, Ring topology, Modbus (RTU&TCP) with PLC's as well as HMI networking options like smart client and HTTP communication in HMI.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

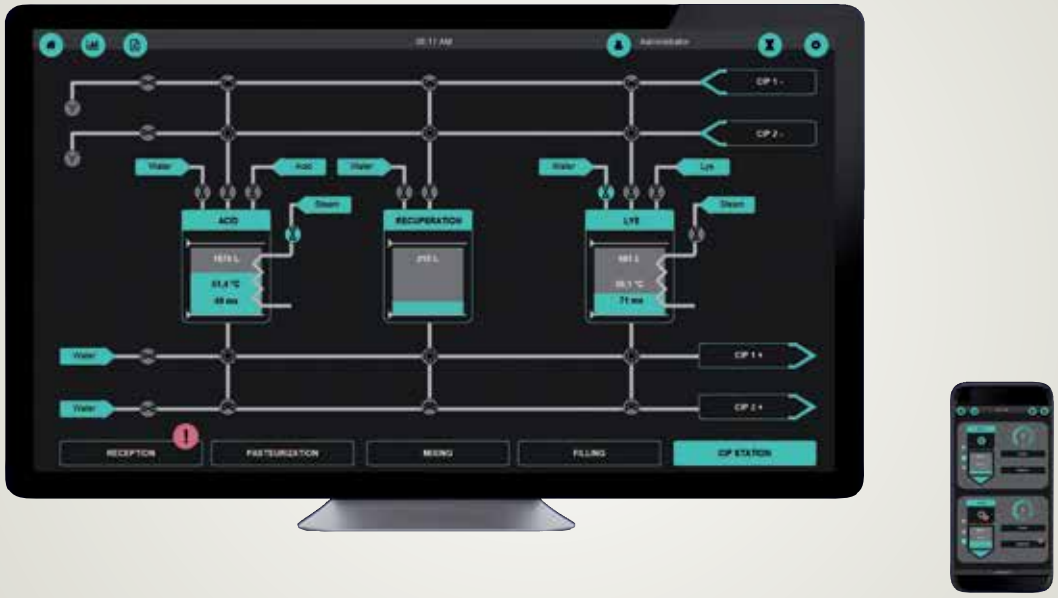
Course Contents:

- Introduction to PROFINET communication
- Intelligent device configuration with S7 1500/1200
- Shared Device
- MRP, PN-PN coupler
- Open User Communication with S7 1500/1200
- Modbus RTU, TCP with S7-1500/1200
- OPC UA in S7 1500/1200
- PLC-Drive Communication
- Smart client, HTTP Communication in HMI

Participant Prerequisite: The participants should be Engineers, knowledgeable about PLC and programming language in STEP 7 V15.

Duration: 3 days, full time

Language: English



SIMATIC WinCC (TIA Portal) Professional V17/18

Code: AS-TWINCCB

Objectives: This compact course deals with the configuring of **SIMATIC WinCC V15**. Course will be conducted by means of numerous practical exercises within the environment of SIMATIC S7. On completion of the course, you will have mastered the basic software and will understand the openness. Participants will recognize the interaction with other SIMATIC components and will be able to ensure the availability of the plant.

Benefits: Once you have completed the course, you will be familiar with WinCC Architecture in TIA framework, License info and use of various engineering tools important from engineering and diagnosis point of view. Participants will also know Server Client architecture.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

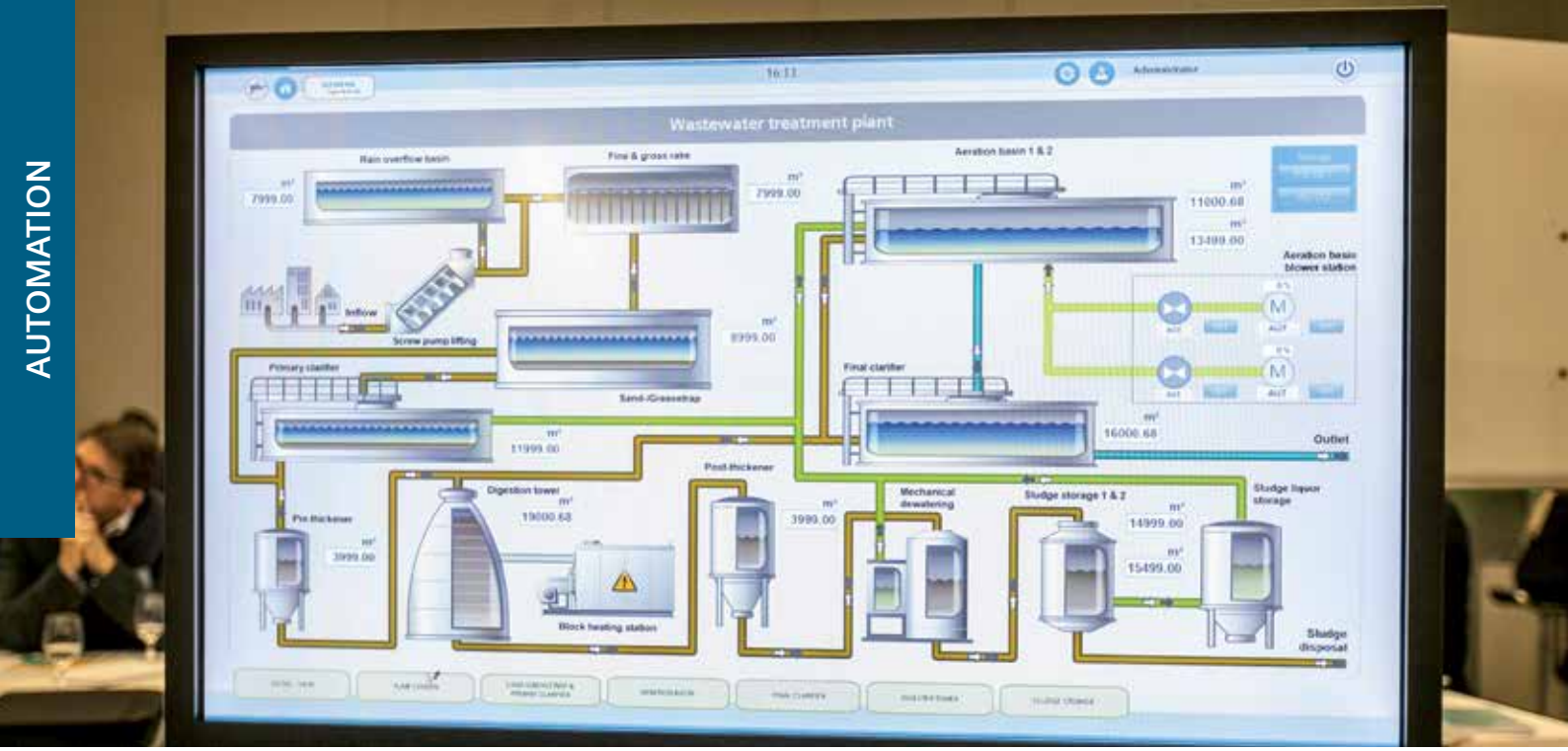
Course Contents:

- System overview of SIMATIC WinCC V15
- Configuring connections to the SIMATIC S7 series
- HMI Tag Table and Tag Connections, Project creation
- Testing functions with WinCC Simulation
- Graphics Designer, Alarm logging, Tag logging, User Archieve
- User Administration option (introduction)
- Introduction to WinCC Advanced V15 & Audit in WinCC Advanced
- Introduction Report Designer for logging (introduction)
- Background processing (introduction of Global Scripts)
- Server Client Configuration in TIA Portal
- Introduction to SiVarc and Prodiag, Cloud Connector, Energy Suite & Energy Manager Pro

Participant Prerequisite: Basic Know how about STEP 7 Professional V15 software is mandatory.

Duration: 5 days, full time

Language: English



SIMATIC WinCC Explorer V7.x Basic

Code: AS-WINCCB

Objectives: This compact course deals with the configuring of **SIMATIC WinCC V7.4**. Course will be conducted by means of numerous practical exercises within the environment of SIMATIC S7. On completion of the course, you will have mastered the basic software and will understand the openness. Participants will recognize the interaction with other SIMATIC components and will be able to ensure the availability of the plant.

Benefits: Once you have completed the course, you will be familiar with WinCC Architecture, License info and use of various engineering tools important from engineering and diagnosis point of view.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- System overview of SIMATIC WinCC V7.4
- Configuring connections to the SIMATIC S7 series
- Tag Management, Project creation
- Testing functions with variable simulation
- Graphics Designer, Alarm logging, Tag logging
- Create Faceplate
- User Administration option (introduction)
- Introduction of Configuration Studio
- Introduction of Report Designer for logging (introduction)
- Background processing (introduction of Global Scripts)

Participant Prerequisite: The course is designed for Programmers & Commissioning engineers, Service persons, Operators, Maintenance persons. Basic Know how about STEP 7 V5.X software and basic programming instruction is mandatory.

Duration: 5 days, full time

Language: English

SIMATIC WinCC Explorer V7.x Advance

Code: AS-WINCCA

Objectives: Making participants familiar with Siemens SCADA advance options. The participants will be able to configure Multi user system.

Benefits: Once you have completed the course, you will be familiar with Multi user system, License info for same and configure advance engineering options in WinCC.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- Introduction to WinCC Architecture & different components
- Concept of Power Tags, Structures and Indirect Tag, Horn Editor
- Client-Server and Multi-Client configuration, Server Redundancy
- Time Synchronization, OS Project Editor, Picture Tree Manager
- Web Navigator – Server/Client
- Data Monitor, User Archives
- Channel diagnosis & Life beat Monitoring
- Integration to STEP 7, Creating WinCC projects through Simatic Manager
- Introduction to WebUx, Audit, Electronic Signature
- Introduction to OPC

Participant Prerequisite: Knowledge of SIMATIC WinCC Basic V7.4 & STEP 7 V5.x is mandatory.

Duration: 3 days, full time

Language: English

DCS: SIMATIC PCS 7 Basic

Code: AS-PCS7B

Objectives: Making participants familiar with **SIMATIC PCS 7** System.

Benefits: One will be able to understand the following;

1. The basic system architecture of a DCS system with prerequisites of a PCS 7 project for a process plant
2. The role of SIMATIC Manager PCS 7 software in configuration of different hardwares in system architecture
3. The detailed working of programming language like CFC, SFC and use of pre-defined blocks from different libraries
4. The basic function of configuring OS station for monitoring & controlling process, use of Plant Hierarchy and generation of various Block icons and its relevant faceplates
5. Picture navigation, authorizations and Alarms/Values archiving concept under PCS 7 OS
6. The complete practical exercises in PCS 7 basic course revolves around a simulated process plant which gives feeling of working on actual plant software commissioning

Target Group: Engineers in Instrumentation / Electrical / Electronics / Engineering

Course Contents:

- Introduction to standard architecture of PCS 7 like ES, AS, OS-Server & OS-Clients
- Introduction to AS Hardware like PS, CPU & CPs. Communication of remote stations with AS
- Working with SIMATIC Manager in PCS7 fashioned way
- Creating the Multiproject and Configuring Hardware (AS & OS)
- Working with different views like Component View & Plant View
- Working with CFC Charts and develop logic using CFC charts & optimization of the charts
- Working with SFC Charts and develop sequences using SFC charts. Various control modes available with SFC charts
- Compiling, downloading & testing CFC & SFC charts
- Compiling Operator Station. Creating process pictures in Graphics editor
- User interface in Process Control mode
- Working with standard faceplates
- Messages and Trends
- Mass Data engineering tools like Process Object View, Process Tag Type & Models using Import Export assistant
- Introduction to Time synchronization, Life beat monitoring, Picture tree Manager & User Administration
- Introduction to OS Project Editor
- Licensing Concept in PCS 7
- Introduction of Server-Client architecture

Participant Prerequisite: Engineers working in DCS controlled plant having knowledge in the area of process automation. Basic Know how about STEP 7 & WinCC Explorer software.

Training Methodology: Explanation, demonstration and hands-on practice

Duration: 10 days, full time

Language: English

DCS: SIMATIC PCS 7 Advance

Code: AS-PCS7A

Objectives:

ASE: As **SIMATIC PCS 7** Engineer you will learn in this course the potential of the SIMATIC PCS 7-process control software with focus on AS-Engineering. As important topics for advanced SIMATIC PCS 7 Engineers the Advanced Process Library (APL), the configuration of SFC-Types, as well as principles and methods supporting an efficient AS-Engineering are in the center of the course. By practical exercises at training equipment you will put your newly acquired theoretical knowledge into the practice. Through this you increase your learning success. On completion of the course, you will be able to engineer a process automation optimally and efficiently.

OSE: As SIMATIC PCS 7 Engineer you will learn in this course the potential of the SIMATIC PCS 7-process control software with focus on OS configuration and design of graphic objects. As important topics for advanced PCS 7 Engineers the configuration of Single and Multi-Station-OS, as well as principles and methods supporting an advanced graphic engineering are in the center of the course. You will put your newly acquired knowledge of the theory to use in practical exercises on the training equipment which you will work on as if you were in a real plant. This will increase your learning success. On completion of the course, you will be able to achieve optimal design of the window to the process.

Benefits: One will be able to understand the following;

1. The use of Multi user engineering under a Multi-project environment of PCS 7 Software and the role of Master data Library in a Multi-project
2. Configuration of Fault tolerant AS and new concept of redundant PN IO
3. Important Controller information using system generated charts
4. Mass Data engineering using IEA and CMT concept
5. Creation and use of SFC types in process plants
6. Detail configuration of different OS architectures like Server-Client, Server-Redundancy, Web-Server, Maintenance-Server etc.
7. Use of OS editors like Life-Beat monitoring, Time Synchronization, Authorization using SIMATIC Logon and other new runtime features of OS
8. The complete practical exercises in PCS 7 Advance course revolves around a simulated Process plant which gives feeling of working on actual plant software commissioning

Target Group: Project manager, Project staff programmer, Commissioning engineers, configuring engineers, Service personnel, maintenance personnel

DCS: SIMATIC PCS 7 Advance (Contd.)

Course Contents:

ASE:

- Project Overview and Standards - Settings in SIMATIC Manager, HW-Configuration
- Multiproject Engineering - Structuring Multiprojects, Efficient Engineering, License Management, Modification of Process tags
- Use of Advanced Process Library (APL) - Structures and Signal status, Operating Modes, Protection Modes, Application of Parameter Feature-Bit
- CFC for Advanced – Forcing, Special Functions in CFC, Behavior when maximum cycle time exceeded
- Advanced alarm engineering - Generating additional messages, message configuration, managing messages in SIMATIC Manager
- SFC Advanced - Operating State Logic and state changes in SFC, configuration of SFC-Types
- SCL
- Application of APC Library - Overview APC Tools in the PCS7 Libraries and APC-Examples, controller optimization using the PID Tuner

OSE:

- ES/OS-PC-Station configuration - Project structure, Basic settings
- OS-Engineering - Multi-Project Engineering & Handling, SIMATIC Logon
- Multi-Station Engineering & Handling
- OS Server Redundancy
- Archiving - Tag and alarm logging, PH-Server & Information Server
- Web Navigator
- Advanced Graphic Engineering - openness for C, Customized objects and faceplate creation
- Smart Alarm Hiding
- Asset Management with Maintenance Station
- Time synchronization

Participant Prerequisite: Attendance of training course PCS 7 Basic recommended. Basic knowledge of process control engineering. Practical experience in SIMATIC PCS 7 project engineering.

Training Methodology: Explanation, demonstration and hands-on practice

Duration: 10 days, full time

Language: English

SIMATIC Distributed (Machine Safety) Course

Code: AS-SFM

Objectives: Making participants familiar / work with Distributed Safety standards. In this course participant will understand basic difference between Standard & Safety products.

Benefits: After successful completion of training the participant will be having the knowledge regarding the Standards in Safety and information on Siemens Safety Products.

Participants will also be able to understand the Safety wiring Concepts, Safety Programming Standards and can perform the communication of safety controllers.

Target Group: Engineers in Instrumentation / Electrical / Electronics / Engineering

Course Contents:

- Standard Overview of Safety
- Product Overview like Simatic Failsafe controller, Fail Safe system for factory automation
- Safety concept of Distributed Safety
- Sensor Actuator Interfacing like Sensor wiring to F-DI module, Actuator interfacing to F-DO
- Hardware Configuration like Configuration of S7-300/ ET 200S & Simatic selection tool
- Training unit Configuration & addressing of S7-300F & ET 200S
- Programming like Blocks of safety program, Structure & Execution of safety program
- Creating of F-FC/F-FB Block, Programming guidelines, passivation of F-module principle
- Fail safe communication between two failsafe controllers using PN/PN Coupler
- Exercises & Hands on practice

Participant Prerequisite: Basic knowledge of Automation technology / relay logic. Know how about SIMATIC STEP 7 and knowledge regarding Programming.

Duration: 3 days, full time

Language: English

SIMATIC Fail-safe (Process Safety) Course

Code: AS-SFP

Objectives: Making participants familiar / work with F-System Safety standards. In this course participant will understand basic difference between Standard & Safety products. Operation & maintenance, Communication & Safety matrix overview.

Target Group: Engineers in Instrumentation / Electrical / Electronics / Engineering

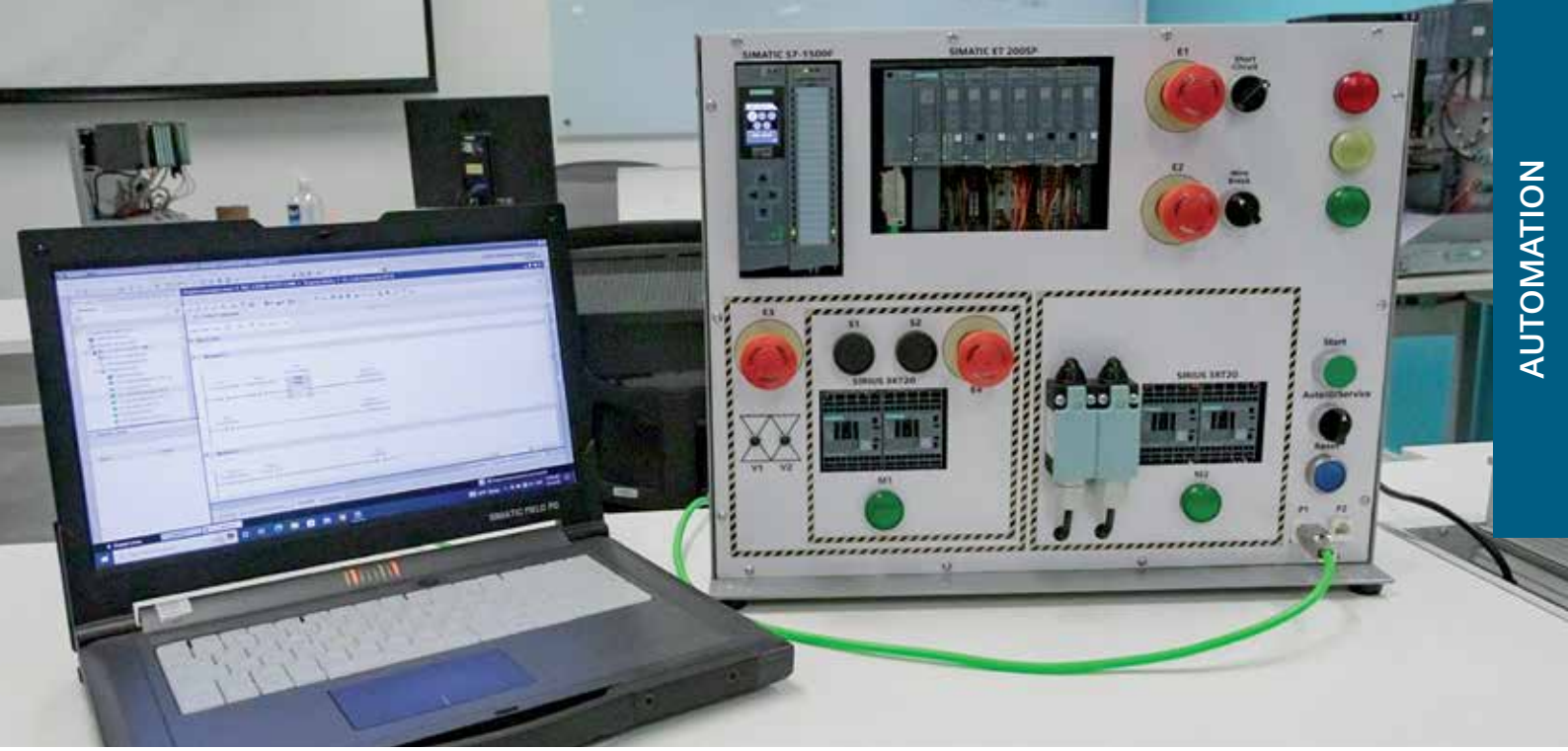
Course Contents:

- Introduction of S7 F-Systems
- Overview of S7 F-Systems Machinery & Plant safety
- F-Systems overview of hardware component
- Sensor & Actuator Interfacing like Sensor /encoder wiring to F-DI module
- Actuator interfacing to F-DO & Analog value processing
- Safety mechanism of S7-400 F/FH, Passivation of F-I/O's, Reintegration of F-I/O
- S7 F-System Configuration like power supply, rack, CPU, parameterization of CPU & configuration of Failsafe periphery
- S7 F-Systems CFC Basic, Rules for program structure, program Architecture, Runtime sequence, Shutdown groups, compile & Download of charts & validation of F-Program
- S7-F systems Operation & Maintenance, Trend Display in CFC, Dynamic display & Diagnostic of hardware
- Safety related CPU-CPU communication
- Safety Matrix-overview & engineering, components, software requirements, Licenses, maintenance options

Participant Prerequisite: Basic Knowledge of Automation technology / relay logic. Know how about SIMATIC STEP 7.

Duration: 3 days, full time

Language: English



TIA Safety Advanced on S71500F with TIA Portal

Code: AS-TIAF

Objectives: Making participants familiar/work with SIMATIC S7-1500F with TIA Portal, also configuring, programming, starting up, diagnose and troubleshoot of the failsafe CPUs of the S7-1500F PLC, distributed ET200SP systems.

Benefits: Participant will be able to understand and seamlessly integrate SIMATIC S7-1500F & ET200SP in machine safety environment, Comprehend Hardware parameterization & wiring for safety systems, Create failsafe programs with various instructions in TIA confidentlyand optimally for different SIL requirements.

Target Group: Engineers in Instrumentation / Electrical / Electronics / Engineering

Course Contents:

- Standard Overview of Safety
- Product Overview like SIMATIC Failsafe controller, Fail Safe system for factory Automation
- Introduction of S7-1200F
- Safety concept of Distributed Safety
- Sensor Actuator Interfacing like Sensor /encoder wiring to F-DI module, Actuator interfacing to F-DO
- Hardware Configuration like Configuration of S7-1500/ ET200SP & Simatic selection tool
- Training unit Configuration & addressing of S7-1500F & ET200SP
- Programming like Blocks of safety program, Structure & Execution of safety program
- Creating of F-FC/F-FB Block, Programming guidelines, Passivation of F-module principle
- Fail safe communication between two failsafe controllers using PN/PN Coupler
- Exercises & Hands on practice

Participant Prerequisite: Basic Knowledge of Automation technology/relay logic and S71500F

Duration: 3 days, full time

Language: English

Process Instrumentation

Code: AS-PI

Objectives: The course is aimed at customers who would like to use the expanded functionality of SIMATIC PDM, Field Instruments.

Target Group: Field technicians, Process Design Engineers & Service Providers active in the field of Instrumentation

Course Contents:

Pressure Transmitter

- Overview of the various pressure measurement technologies
- Overview of the Siemens made pressure measurement portfolio
- Unique features of Siemens made pressure transmitters
- Hands on training for configuration, commissioning and troubleshooting

Temperature Transmitters

- Overview of the various temperature measurement technologies
- Overview of the Siemens made temperature measurement portfolio
- Unique features of Siemens made temperature transmitters
- Hands on training for configuration, commissioning and troubleshooting

Electropneumatic Positioners

- Overview of the Siemens made Electropneumatic Positioners
- Unique features of Siemens made Electropneumatic Positioners
- Hands on training for configuration, commissioning and troubleshooting

Level Transmitters

- Overview of the various level measurement technologies
- Overview of the Siemens made level measurement portfolio (Ultrasonic, Radar, Capacitance)
- Unique features of Siemens make level transmitters
- Hands on training for configuration, commissioning and troubleshooting

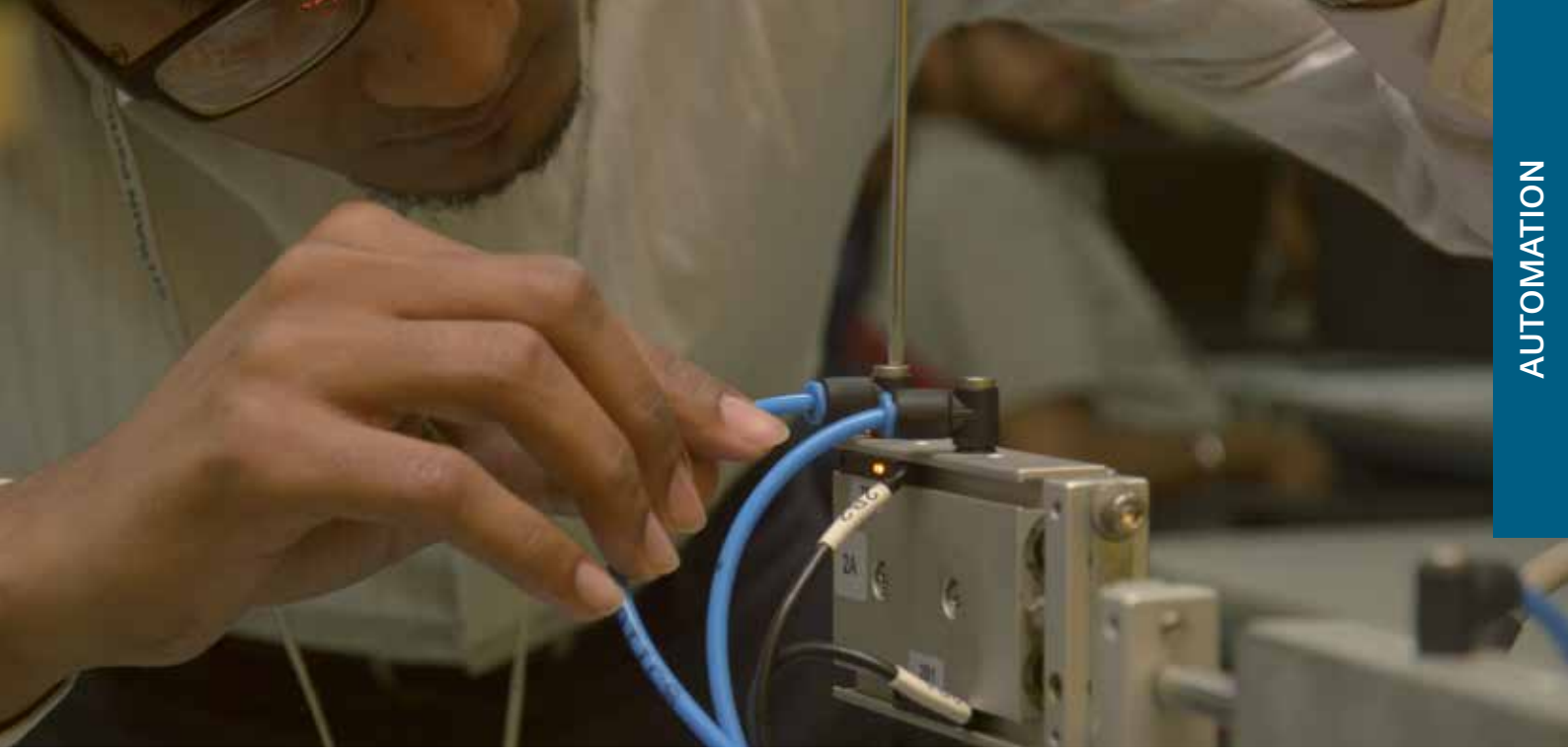
Flow Transmitters

- Overview of the various flow measurement technologies
- Overview of the Siemens made flow measurement portfolio (Mag Flow, Mass Flow, Ultrasonic Flow)
- Unique features of Siemens made flow transmitters
- Hands on training for configuration, commissioning and troubleshooting

Participant Prerequisite: Knowledge of Process and Field instruments

Duration: 4 days, full time

Language: English



Siemens Mechatronic Systems Certification Program (SMSCP-L1)

Assistant / Level 1

Code: SMSCP-L1

Description:

- Siemens Certified Mechatronic Systems Assistants understand the full system
- View the components or devices in terms of their roles within the system, and work to keep the system running at maximum capacity
- Because the individual components or devices are viewed as "black boxes" in this certification level, they will not be responsible for carrying out repairs of defective devices. However, they will be able to identify correctly where malfunctions are occurring

Job Role post certification:

- Localize, identify causes and sources, correct where possible and/or document malfunctions to be passed on to the appropriate experts for resolution, or (where appropriate) exchange or replace defective components
- Recognize potential or impending malfunctions and
- Recognize potential or impending malfunctions to keep the production line functioning and to prevent production loss
- Understand and explain mechatronic subsystems in a complex system
- Read, understand and create technical documents, reports and outlines specific to the system
- Understand and implement safety regulations required for operation of a Mechatronic system

Course Content:

- Fundamentals & Basics of
  - Electrical Components
  - Mechanical Components and Electrical Drives
  - (Electro) Pneumatic and Hydraulic Control Circuits
  - Digital Fundamentals and Programmable Logic Controllers
- System Approach Lesson Structure
- Learning within the System
- System Approach Learning Loop
- Start with System (What does it do, How does it work, How is the system broken into modules)
- Modularizing Systems (What does the module do, How does the module work, What happens in the module)
- Applications of Components (Selecting a component, Characteristic and design function in the system, Physical characteristic of components, Sources of error, Tracing of signal flow measurements, Troubleshooting examples)
- EMI Diagram (Energy, Material, Information)
- Function Chart
- Displacement-STEP diagram

Participant Prerequisite: Diploma/Degree students in Electrical/ Electronics / Electronics & Telecommunication / Mechanical / Instrumentation / Production Engineering

Duration*: 18 / 12 Days

*Based on knowledge/competency level of participants

TIA Safety Advanced on S71500F

Code: AS-TIAF

Objectives: Learn how to optimally utilize safety functionalities of SIMATIC S7-1500F controller for your safety applications independently.

Benefits:

The participants will be able to:

- Understand and seamlessly integrate SIMATIC S7-1500F & ET200SP in machine safety environment
- Comprehend Hardware parameterization & wiring for safety systems
- Create failsafe programs with various instructions in TIA confidently and optimally for different SIL requirements

Course Contents:

- SIMATIC S7-1500F controller offerings in technology, Fail Safe system for factory automation.
- Safety concept of Distributed Safety
- Understanding hardware wirings for different SIL levels
- Training unit Configuration & addressing of S7-1500F & ET200SP
- Fail safe communication between two failsafe controllers using PN/PN Coupler

Participant Prerequisite: Basic knowledge of automation technology is must. Basic concepts of electrical relays logic and digital electronics

Duration: 3 days, full time

Language: English

DIGITALIZATION

Digitalization Basic

Code: AS-DIGIB

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

This course gives you an overview of totally Integrated Automation in the Digital Enterprise as your way towards Industry 4.0 and an overview about the interaction of the various state of the art technologies, so that you will be able to assess them after completing the course.

The objective of the course is to understand latest emerging technologies which can help increase productivity and reduces human efforts & time required.

Benefits: After successful completion of this Course Participants will have an Introduction to Digital Enterprise, Standardization of Program, Reducing the engineering time and performing virtual commissioning. Participants will also learn about data analytics, sending data to cloud, dashboarding, server generation, robotics etc.

This course is intended to share theoretical concepts and live demonstrations on latest digitalization solutions available from Siemens with limited hands-on experience.

Target Group: Managers, Commissioning Engineers, OEM Engineers, Sales Colleagues, Technical Support Engineers, End Users

Course Contents:

- Overview: Digitalization- Industry 4.0
- Wincc Unified Systems
- Mindsphere Configuration & Dashboarding
- Digital Twin using PLC Sim Advanced & SIMIT
- Kinematics in TIA Portal
- OPC UA Communication & Modelling
- Modular Application Creator
- HMI Template Suite
- TIA Openness

Participant Prerequisite: Basic Knowledge of Automation technology, Basic knowledge of SIMATIC TIA Portal corresponding S7-1500, HMI and SCADA and practical experience in field applications.

Course Certification: Certificate of participation will be awarded after training

Hardware and Software to be used:

- Laptops/PC systems installed with TIA Portal V17 with Wincc Unified Systems, OPC UA Server & Clients, SIMIT SP & CTE, Modular Application Creator, PLC SIM Advanced

Duration: 3 days, full time

Language: English

Digitalization Extended

Code: AS-DIGIX

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

This course gives you an overview of totally Integrated Automation in the Digital Enterprise as your way towards Industry 4.0 and an overview about the interaction of the various state of the art technologies, so that you will be able to assess them after completing the course.

The objective of the course is to understand latest emerging technologies which can help increase productivity and reduces human efforts & time required.

Benefits: After successful completion of this Course Participants will have an Introduction to Digital Enterprise, Standardization of Program, Reducing the engineering time and performing virtual commissioning. Participants will also learn about data analytics, sending data to cloud, dashboarding, server generation, robotics etc.

This course is intended to share the oretical concepts and live demonstrations on latest digitalization solutions available from Siemens with extended hands-on experience.

Target Group: Managers, Commissioning Engineers, OEM Engineers, Sales Colleagues, Technical Support Engineers, End Users

Course Contents:

- Overview: Digitalization - Industry 4.0
- Wincc Unified Systems
- Mindsphere Configuration & Dashboarding
- Digital Twin using PLC Sim Advanced & SIMIT
- Kinematics in TIA Portal
- OPC UA Communication & Modelling
- Modular Application Creator
- HMI Template Suite
- TIA Openness

Participant Prerequisite: Basic Knowledge of Automation technology, Basic knowledge of SIMATIC TIA Portal corresponding S7-1500, HMI and SCADA and practical experience in field applications.

Course Certification: Certificate of participation will be awarded after training

Hardware and Software to be used:

- Laptops/PC systems installed with TIA Portal V17 with Wincc Unified Systems, OPC UA Server & Clients, SIMIT SP & CTE, Modular Application Creator, PLC SIM Advanced

Duration: 4 days, full time

Language: English

OPC UA with SIMATIC Controllers

Code: DIGI-OPCUA

Objectives: OPC UA is manufacturer- and platform-independent protocol, supports extensive security mechanisms and can be optimally combined with PROFINET in a common Industrial Ethernet network. This training teaches you the basics of OPC UA and enables you to use OPC UA with SIMATIC Controllers.

Benefits:

The participants will be able to:

- Implement server-client architecture using SIMATIC Controllers In TIA Portal
- Implement Companion specification with SiOME
- Implement different services possible in server-client

Course Contents:

- Know the basics of OPC UA
- Understand information model of OPC UA
- Know the architectures using OPC UA for horizontal and vertical integration
- Security in OPC UA
- Certificate handling in TIA Portal

Participant Prerequisite: Basic knowledge of automation technology is must. Must have worked on TIA Portal with S7-1200/S7-1500.

Duration: 2 days, full time

Language: English

SIMATIC WinCC Unified Comfort Panel in TIA

Code: AS-TIA UWCCM

Objectives: Siemens offers training on UCP system which is perfectly integrated in the TIA Portal and with which you are optimally prepared today for the new era of visualization & digitalization.

Benefits:

The participants will be able to:

- Navigate the screen in new HMI system, WinCC Unified.
- Getting to know various Logging techniques such as Tag Logging & Alarm Logging, Functional scenarios like Trends, Recipes etc.
- Skill is more than knowledge. Upon completion of the course, you will have mastered WinCC Unified by performing numerous practical exercises.

Course Contents:

- Create screen navigation (screen window technology) in unified Comfort panels
- Efficient configuration through the use of faceplates
- Access S7 controllers
- Configure alarms and messages, User Administration
- Overview of Digitalization offerings for end User viz. SIMATIC EDGE
- Overview of Custom Web Control

Participant Prerequisite: Basic Know how about TIA Portal & programming instructions.

Duration: 3 days, full time

Language: English

SIMATIC WinCC Unified PC Systems in TIA

Code: AS-TIA UWCCPC

Objectives: Siemens offers training on WinCC Unified PC systems which is perfectly integrated in the TIA Portal. Learn how to use WinCC Unified and the new PC Runtime and get a personal impression of the performance of the new system.

Benefits:

The participants will be able to:

- Navigate the screen in new PC Systems Runtime, WinCC Unified.
- Getting to know various Logging techniques such as Tag Logging & Alarm Logging,
- Learn futuristic techniques of visualization like Plant Hierarchy, Collaboration & Plant Intelligent options.

Course Contents:

- Web-based remote operation an control
- OPC UA communication
- Database archives for large data volumes
- Connectivity using OPENNESS
- Technological plant hierarchy
- Distributed plant configurations

Participant Prerequisite: The prerequisite is attendance of the course SIMATIC WinCC Unified Comfort Panels (AS-TIA UWCCM)

Duration: 2 days, full time

Language: English

DRIVES

Basic course on AC/DC Drives

Code: DR-BDT

Objectives:

The participants:

- will have a basic or fundamental knowledge of various DC/AC Variable speed drives
- will know about the product specifications, range, hardware / constructional details and features of the product

Benefits: After successful completion of this training, you will be able to perform drive start-up and parameterize drive for different configurations including use of programmable digital and analog inputs and outputs.

Target Group: Users, Commissioning / Service / Maintenance / Fresh Engineers

Course Contents:

- Brief Basic Power Electronics (including Thyristors, Power-Transistors & IGBTs)
- DC Motor Basics (construction, principle of operation, T-N Characteristic etc)
- DC Drives Basics (Block diagram, 1Q-4Q principle of operation, T-N Curves etc)
- Selections, calculations & applications of typical DC drives
- Siemens DC Drives (6RA80) - Ratings, Specs, features, options & applications
- AC Motor Basics (construction, principle of operation, T-N Characteristic etc)
- AC Drives Basics (Block diagram, 1Q-4Q principle of operation, T-N Curves etc)
- Selections, calculations & applications of typical AC drives
- AC Drives (Sinamics V, G & S) - Ratings, Specs, features, options & applications
- MV Converter Basics & types (Voltage, Current Source & Cyclo-converters)
- Siemens MV Converters (Sinamics GM / GL, Sinamics SM / SL)
- Sinamics Perfect Harmony GH180 Drive
- Selection, configuration & applications of MV Drive systems
- Hands on practice on DC and AC drive

Participant Prerequisite: Engineers in Electrical / Electronic Engineering with Power Electronics Background.

Duration: 5 days, full time

Language: English

SIMOTION Basic

Code: DR-SIMOBAS

Objectives: You will learn how to configure and start up the SIMOTION Motion Control system with the associated drives and visualization devices. The course also includes the programming of movement sequences with the help of Motion Control Chart and ladder diagram.

The technology positioning, synchronous operation, probe, are explained and reinforced by means of practice-oriented examples.

Benefits: The course enables you to use SIMOTION optimally in the automation of production machinery.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

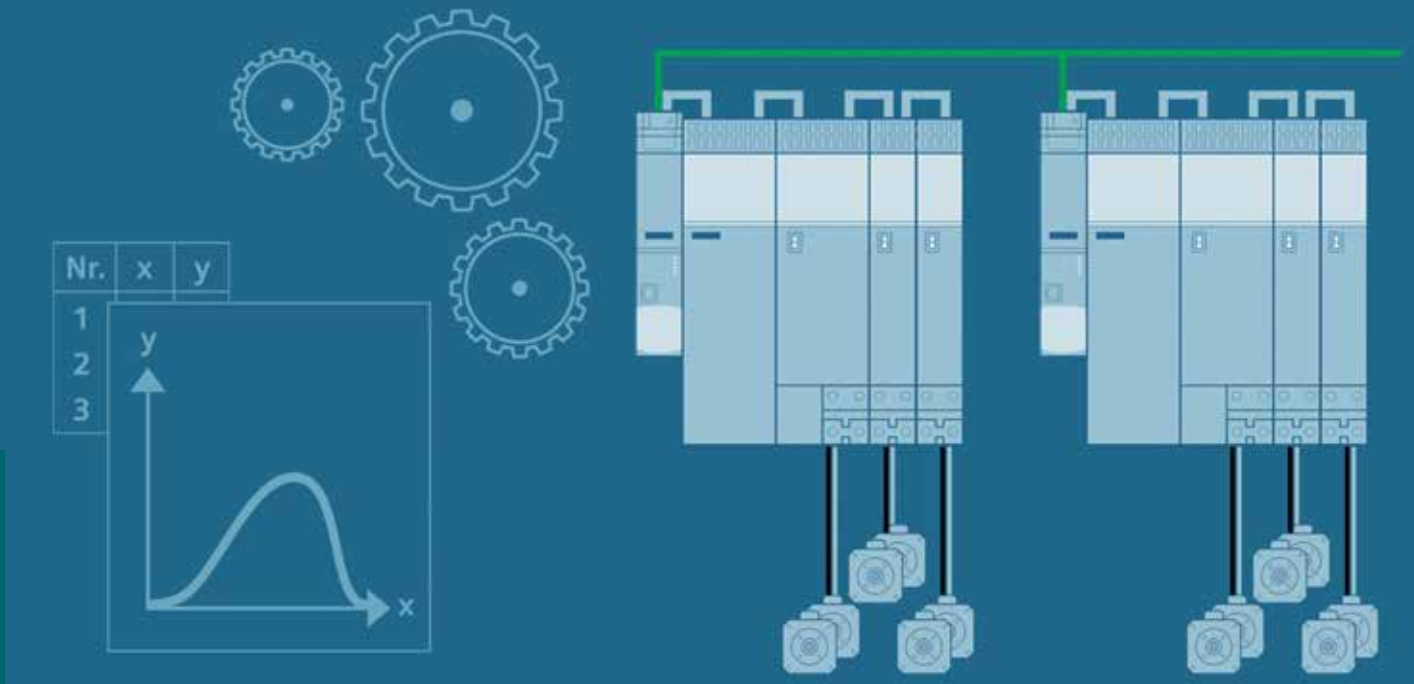
- Need of Variable Frequency Drive
- Types & Basics of Motor, speed variation of AC motors, reversal & braking
- Difference between Induction Motor & Servo Motor
- Product overview/portfolio of Siemens Servo motors
- Various feedback systems for Speed & Position feedback
- Block diagram of Drive System
- Introduction to Product Variants (Sinamics-G/Sinamics-S/ Sinamics -V)
- Basic hardware components of Sinamics-S system & their details & specification
- Topology comparison
- Simotion System & its hardware platforms
- Details of hardware components of Simotion-D system
- Software Components of Simotion
- Creating Project with SCOUT
- Start Up – Axis Configuration & testing with SCOUT
- Programming with LAD/FBD
- Programming with MCC
- Run time licensing
- Fault diagnostics (Simotion & S120)
- Introduction to Remote Diagnostics using web server
- FW Upgrading
- Optional Hardware Components

NOTE: Hands-on practice will be on Simotion-D controllers.

Participant Prerequisite: Participant should have basic knowledge on servo system or S120 Basic and S120 Advance training should be attended.

Duration: 5 days, full time

Language: English



SIMOTION Advance

Code: DR-SIMOADV

Objectives: Building on the knowledge gained in the programming course, you will learn the advanced programming facilities using TIA-SCOUT with Structured Text and Motion Control Chart.

The applications for the technologies are reinforced using selected examples on our exercise equipment.

Benefits: On completion of the course, you will be able to create parameterizable blocks such as FCs and FBs with the help of the Structured Text language. With knowledge of the cam plate function, you will be able to parameterize and program cam plate synchronization.

This extends your scope for creating programs for your production machine.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- Creating Project with SCOUT & TIA SCOUT
- Start Up – Axis Configuration & testing with SCOUT
- Programming with MCC
- Introduction to Programming with ST
- Creating Functions, Function Blocks & Libraries with ST
- Program locking with Scout
- Simotion Execution System
- Introduction to Gearing
- Introduction to Camming, creating CAMs with CAM EDIT
- Communication of Simotion with ET stations & HMI

NOTE: Hands-on practice will be on SIMOTION-D controllers.

Participant Prerequisite: SIMOTION Basic should be attended

Duration: 5 days, full time

Language: English

SINAMICS S120 Basic

Code: DR-S120BAS

Objectives: In this course you will learn the procedure at commissioning step by step. You can handle parameter setting and data saving with the software STARTER. By a correct parameter setting you support the reliable operation of the entire plant.

Benefits: After the course you can put the converter system SINAMICS S120 efficiently into operation. You can adapt the parameters of the closed-loop controller to the respective application and use the diagnostic tools in case of a fault.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- Design and functional principle of the converter system SINAMICS S120
- Control unit, line infeed and motor modules
- Motors, encoders and interfaces
- Block diagram of Drive System
- Parameterization, data backup and diagnostics using Software STARTER
- Online connection via PROFIBUS and Ethernet
- Project structure: drive objects and drive components
- Various Function Modules in S120
- Automatic Optimization
- Using various Data sets – CDS, DDS
- Operation of drive with speed control
- Sinamics Compact Flash structure
- Licensining of Sinamics S120 system
- Sinamics S120 & PLC (S7 300) over Profibus
- Fault Diagnostics with Trace in Starter & other software / hardware options
- Free Function Blocks
- Project Backup
- FW & Project Upgradation
- Introduction to Web server functionality with S120
- Hands on practice on demo kit.

Participant Prerequisite: Engineers in Electrical / Electronic Engineering with Power Electronics Background

Duration: 5 days, full time

Language: English

SINAMICS S120 Advance

Code: DR-S120ADV

Objectives: In this technology course, you will learn how you can use integrated position control for positioning. You will create flexible function extensions with Drive Control Chart DCC.

Benefits: After the course, you will know these drive system function extensions. You can commission the drive for demanding and complex applications and use the possibilities for the STARTER PC program for efficient work.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- Position control and basic positioner
- Configuration and commissioning
- Operating modes: Referencing, setpoint setting and positioning block
- Drive Control Chart DCC
- Creation of DCC programs
- Using block libraries
- Diagnostics using reference data and online test
- Communication over profibus/Profinet with S7 300 & S7 1500
- Drive HMI direct communication
- Drive to Drive communication over Sinamics Link
- Drive to Drive communication over drive CLIQ (open application link)
- Practical exercises on training equipment with SINAMICS S120

Participant Prerequisite: Participants should attend S120 Basic course.

Duration: 5 days, full time

Language: English

SINAMICS S120 Drives Safety Functions

Code: DR-S12SAF

Objectives: In this course you learn the handling of drive based safety functions. You know applications of the different functions and you can parameterize them.

Benefits: Therefore you use the benefits in comparison with a conventional safety technology, like reduced cabling or faster commissioning of identical machines.

In the course you get to go through all steps for the implementation of the safety functions until the final acceptance report.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- Basic hardware components of Sinamics-S system & their details & specification
- Topology comparison
- Fundamentals, standards and regulations of Machine Safety
- Procedure of risk assessment
- Performance Level (PL) and Safety Integrity Level (SIL)
- Safety Evaluation Tool (SET) for the evaluation of PL and SIL
- Information about safety functions available in Sinamics family
- SINAMICS S120 Safety Integrated Basic Functions and Extended Functions
- Control of the drive integrated Safety Functions via. Terminal Module TM54F and DRIVE-CLiQ. SIMATIC F-CPU and PROFIsafe
- Effect of the settings of the closed-loop control and the kinetic energy of an axis on the safety functions
- Execution of the acceptance test and preparation of the acceptance report
- Licensing and diagnostics
- Practical exercises on training kits with SINAMICS S120, TM54F and SIMATIC F-CPU

Participant Prerequisite: Knowledge of Sinamics S120 system according to the course DR-S120. For the topic PROFIsafe knowledge of SIMATIC S7 is useful.

Duration: 3 days, full time

Language: English

SINAMICS G120 With Starter

Code: DR -G120

Objectives: SINAMICS G120 allow the variable-speed operation of induction motors to drive pumps, fans, conveyor systems and many other machines. This course shows you how to handle the SINAMICS G120 inverter.

Benefits: After the course you will be able to correctly commission the inverter and adapt it to address the particular application. You will know suitable inverter functions and parameter settings for a wide range of applications. You can make a data backup, and taking the appropriate measures when faults occur.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- Design and principle of operation of the SINAMICS G120 inverter with:
- Control Unit CU
- Power Module PM
- Parameterization, data backup and diagnostics with:
- BOP-2 and IOP operator panels
- Starter PC tool
- Setpoint channel and closed-loop control
- Control signals and signal interconnections
- Communication with PLC
- Inverter functions
- Diagnostics
- Practical exercises using the training device

Participant Prerequisite: Engineers in Electrical / Electronic Engineering with Power Electronics Background.

Duration: 5 days, full time

Language: English

SINAMICS G120 With TIA Portal

Code: DR-G12TIA

Objectives: SINAMICS G120 allow the variable-speed operation of induction motors to drive pumps, fans, conveyor systems and many other machines. This course shows you how to handle the SINAMICS G120 inverter.

Benefits: After the course you will be able to correctly commission the inverter and adapt it to address the particular application. You will know suitable inverter functions and parameter settings for a wide range of applications. You can make a data backup, and taking the appropriate measures when faults occur.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- Design and principle of operation of the SINAMICS G120 inverter with:
- Control Unit CU
- Power Module PM
- Parameterization, data backup and diagnostics with:
- BOP-2 and IOP operator panels
- TIA Start drive PC tool
- Setpoint channel and closed-loop control
- Control signals and signal interconnections
- Inverter functions
- Diagonistics
- Practical exercises using the training device

Participant Prerequisite: Engineers in Electrical / Electronic Engineering with Power Electronics Background

Duration: 4 days, full time

Language: English

SINAMICS G130 / G150

Code: DR-G130

Objectives: Making participants familiar with Siemens made AC Drives: **SINAMICS G130 / G150** The participants should be able to wire and power the drive, parameterize the drive for different requirements, using operator interfaces, understanding the Engineering concepts, commissioning steps and fault diagnostics in the Drive.

Benefits: After the course you will be able to commission the converter and make changes to the parameterization. In case of faults, you can reduce downtimes by analyzing the faults and their associated causes, and you can replace faulty components.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- Overview of SINAMICS G130/G150
- Commissioning and diagnostics with:
  - Advanced Operator Panel AOP30
  - STARTER PC tool
- Design of the converter and electrical cabinet
- Setpoint channel, closed-loop control and trace function
- Signal interconnection and BICO technology
- Communication through PROFIBUS
- Handling and using function diagrams and circuit diagrams
- Function of modules and options
- Diagnostics and troubleshooting, handling spare parts
- Replacing modules and power blocks
- Practical exercises at converter cabinet units:
  - Commissioning
  - Diagnostics and data backup
  - Replacing components

Participant Prerequisite: Engineers in Electrical / Electronics Engineering with basic working Knowledge of AC Drives.

Training Methodology: Explanation, demonstration and hands-on practice

Duration: 6 days, full time

Language: English

SINAMICS V20

Code: DR-V20

Objectives: This course shows you how to handle the **SINAMICS V20** inverter using operating panel and smart access module.

Benefits: After the course you will be able to commission the inverter. You know suitable inverter functions and parameter settings for wide range of applications. You can make data backup and taking appropriate measures when faults occur.

Target Group: Users / Commissioning / Service / Maintenance Engineers

Course Contents:

- Basics of AC Motor, speed variation of AC motors, reversal & braking
- VFD working principle, PWM technique and power switching devices
- Block diagram of AC Drive
- Specifications, range, features and hardware details of SINAMICS V20
- Getting familiar with the drive
- Block diagram of the product, terminal details
- Understanding of Operator panel functions, key operation & status LEDs
- on the drive
- Parameter structure and quick commissioning procedure
- Working with Connection & Application Macros
- Details of various advanced Functions
- Using optional accessories – Parameter loader, External BOP interface, MMC card
- I/O Extension module and Smart Access Module
- Concept of CDS, DDS
- Details on Free Function Blocks
- Firmware upgradation
- Communication capabilities with PLC (S7 1200) on Modbus
- Application examples
- Fault diagnostics
- Hands-on practice

Participant Prerequisite: Basic knowledge of electrical engineering

Duration: 3 days, full time

Language: English

SINAMICS V90

Code: DR-V90

Objectives: This course shows you how to handle the **SINAMICS V90** inverter using operating panel and V Assistant software.

Benefits: After the course you will be able to commission and control the drive with different control modes. You will understand positioning concepts and be able to use them for different applications. You can create data backup and take appropriate measures when faults occur.

Target Group: Users / Commissioning / Service / Maintenance Engineers

Course Contents:

- VFD working principle and getting familiar with the drive
- Block diagram of AC Drive
- Specifications, range, features and hardware details of SINAMICS V90
- Block diagram of the product, terminal details
- Understanding of Operator panel functions, key operation & status LEDs on the drive
- Parameter structure and quick commissioning procedure
- Different control modes – speed control, Torque control, Position control
- Basics of Positioning
- Commissioning and monitoring the drive using software Sinamics V Assistant
- Controlling the drive with different control modes
  - Internal Speed control
  - Internal position control (IPos)
  - Pulse train input (PTI) – Using S7 1200 PLC
- Different positioning tasks using Motion control library in S7 1200 PLC
- Electronic gear ratio
- Real time tuning
- Application examples
- Fault diagnostics
- Hands-on practice

Participant Prerequisite: Basic knowledge of electrical engineering and Servo system

Duration: 3 days, full time

Language: English

SIMOREG DC Master 6RA70

Code: DR-DC70

Objectives: This course is designed for Engineers and maintenance technicians who are not exposed to digitally controlled DC drive technology and further needs to work with Siemens make DC Drive 6RA70.

Benefits: After the course you will be able to reliably and efficiently commission the DC converters and adapt parameter settings to address the various applications. You can optimize the controller settings and in the case of faults, use diagnostic resources.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- Basics Of DC Drive:-
  - Basic DC Motor equations
  - Three phase controlled converter Thyristor accessories
  - PI Controller
  - Block diagram of DC Drive
  - Braking & Reversal/ Single & Multiquadrant Drive
  - Optimization
  - Speed variation techniques
- Introduction to SIMOREG DC MASTER 6RA70
- Hardware Details
- Block Diagram and Terminal Details
- Basic Start-Up Procedure
- Thyristor Checking & Automatic Optimisation
- Working with OP1S
- BICO Technology, Binary Inputs & Outputs
- Analog Interfaces
- FDS & BDS
- Copying Of Data Sets
- Introduction to Drive Monitor Software
- Set -Point Channel
- Control & Status Word
- Ramp Function Generator
- Motorised Potentiometer
- Speed Controller
- Armature Current Controller
- Manual Optimisation
- EMF / Field Controller
- Field Weakening
- Parallel Configuration
- Parameterisation of Free Function Blocks
- Dynamic Overloading
- Fault Memory and Fault Diagnostics
- Typical applications

Participant Prerequisite: Engineers in Electrical / Electronic Engineering with Power Electronics Background.

Duration: 6 days, full time

Language: English

SINAMICS DC Master 6RA80

Code: DR-DCM

Objectives: This training course shows you how to adapt the parameter settings for the converter in line with the application and DC motor. It also gives you the opportunity to broaden your theoretical knowledge by means of exercises carried out on special training equipment.

Benefits: Once you have completed the course, you will be familiar with the functions of a converter and the respective interfaces. You will also be able to commission a converter quickly and reliably. Routine fault diagnosis and rectification help save time and optimize the availability of your plant.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- Basics of DC Drive:-
  - Basic DC Motor equations
  - Three phase controlled converter Thyristor accessories
  - PI Controller
  - Block diagram of DC Drive
  - Braking & Reversal/Single & Multiquadrant Drive
  - Optimization
  - Speed variation techniques
- Structure and functional principles of the SINAMICS DC MASTER converter: Control Unit CUD, Power Module, excitation circuit, interfaces
- Commissioning and parameterization activities using the BOP20 and AOP30 operator panels as well as the STARTER PC program
- BICO Technology, Binary Inputs & Outputs
- Procedures for commissioning and functional checks
- Optimizing current regulation and closed-loop speed control, automatic optimization
- Function block diagrams: Setpoint channel, inputs/ outputs, free function blocks
- Concept of CDS and DDS
- Using Micro Memory Card: Structure and data backups
- Information on Drive Control Charts (DCC)
- Drive-end interface to PROFIBUS / PROFINET
- Expansions with Terminal Modules and Sensor Modules via DRIVE-CLiQ
- Parallel connections and peer-to-peer interfaces
- Thyristor Checking
- Operating states, alarms, and fault codes
- Service functions: Trace, measurement functions, diagnostic memories
- Practical exercises with AOP30 and STARTER on training equipment

Participant Prerequisite: Engineers in Electrical / Electronic Engineering with Power Electronics Background.

Duration: 6 days, full time

Language: English

Application Based Crane Training

Code: AP-CRANE

Objectives: Making participants familiar with Crane System, Product used, Configuration, Commissioning & Maintenance of crane.

Benefits: You will understand crane specifications, system configuration, operational interlocks and control logic including brake control. You will able to commission trouble shoot, aware about common faults and able to take appropriate measures when fault occur.

Target Group: Users, Commissioning / Service /Maintenance Engineers of Instrumentation / Electrical / Electronic Engineering.

Course Contents:

- Crane Basics
- Crane types & components overview
- Crane specifications, Standard system configurations
- Schematic drawing
- Switchgear part
- Product pallet for Crane applications & product features
- Operational interlocks & Stop categories for Hoist, Cross travel & Long travel
- Operation philosophy, Control logic, flowchart (On command & speed reference)
- Brake control
- Pre-commissioning guidelines
- Commissioning procedure
- Checking & setting important parameters
- Load test, trace recording
- Add-on features/technology for crane control
- Overview on Sway control, Positioning, Straight run controller, Wireless,
- CMS, YMS, RCOS
- Fault diagnosis through touch panel / CMS station
- Common faults/problems in crane application
- Troubleshooting & maintenance guidelines

Participant Prerequisite: Basic Knowledge of Electrical system

Duration: 5 days, full time

Language: English

LV SWITCHGEAR & MOTOR

LV Switchgear Products & Coordination

Code: LV-SWPC

Objectives: The participants will learn the functional principal and operation of the air circuit breakers, MCCBs, Contactors, MPCBs and Relays. The main emphasis of the course is on teaching practical product knowledge, in order to enable maintenance, inspect and service LV Switchgear products, to find simple errors, and to replace the spare parts.

Benefits: After this course participants shall be able to troubleshoot the errors, inspect and service LV Switchgear products, change or replace the spares / accessories.

Target Group: Operation / Service / Maintenance / Commissioning staff

Course Contents:

Power Distribution Basics

- Grid system
- Distribution types
- Basic Concepts of fault level
- Principle of selectivity and cascading
- Introduction and basic principles of low-voltage switchgear, switching principles

Low Voltage Protection Devices

ACB: 3WA

- Function and operation of 3WA circuit breakers
- Installation and de-installation of the standard accessories
- Introduction in protection settings of circuit breakers (characteristic curves)
- Overview of communication regarding 3WA air circuit breakers
- Maintenance instructions

ACB: 3WL

- Function and operation of 3WL circuit breakers
- Installation and de-installation of the standard accessories
- Introduction in protection settings of circuit breakers (characteristic curves)
- Overview of communication regarding 3WL air circuit breakers
- Maintenance instructions

ACB: 3WT

- Function and operation of 3WT/3WT plus circuit breakers
- Installation and de-installation of the standard accessories
- Introduction in protection settings of circuit breakers (characteristic curves)
- Maintenance instructions

MCCB: 3VT

- Function and operation of 3VT MCCB
- 3VT Range TMTU, ETU and accessories
- Installation and de-installation of the standard accessories

MCCB: 3VA

- Function and operation of 3VA MCCB
- 3VA Range TMTU, ETU and accessories
- Installation and de-installation of the standard accessories
- Overview of communication regarding 3VA MCCB

Fuse & Switch Disconnectors

- Function and operation of HRC fuse
- Range and product overview
- Semiconductor Fuses and functions
- Switch Disconnector Fuse

LV Switchgear Products & Coordination (Contd.)

Control Products

Contactors: SIRIUS 3RT

- Function and operation of Contactors
- Contactor duty cycle and selection
- SIRIUS series advantage
- Latch contactor, Power contactors
- Energy Efficient contactor coil
- Compact starters DOL, RDOL, Star-Delta starters
- Contactor accessories
- RLT contactors
- Vacuum Contactor range
- Capacitor duty contactors
- Contactor Maintenance.

Overload Relays: Sirius 3RU/3RB

- Overload Relay principle
- Overload characteristic, CLASS selection
- Thermal Overload relay and Electronic Overload relay range, difference

MPCB: SIRIUS 3RV

- Motor Protection Circuit Breaker function and operation
- Why MPCB?
- MPCB Range: Standard, Relay Function and SC only

Type-2 Co-Ordination

- Problems in non-coordinating feeders
- Type-1 and Type-2 Co-ordination
- Type-2 Co-ordination chart reading

Timers and Relays

- On delay, Off delay, Star-delta timers
- Voltage Monitoring Relays
- Current Monitoring relays
- Line Monitoring relays
- Earth Fault Relays

RCCB and AFD

- Working of RCCB, RCBO
- Why type A RCCB?
- Function and operation of AFD
- MCB
- Working of MCB and selection

Motor Starters

- Overview of Soft- starter
- Overview of IMCC SIMOCODE

Hands On

- Exercises defined based on topic explained
- Hands on practice on demo kit

Participant Prerequisite: Basic principles of electrical engineering and power distribution, knowledge of technical options and specifications of LV Switchgear products.

Duration: 4 days, full time

Language: English

LV Switchgear Products, Distribution & Panel

Code: LV-SWPD

Objectives: : The participants will learn the functional principal and operation of the Low Voltage power distribution and control products like ACB, MCCB, SDF, contactors, relays and SIMARIS Software. The main emphasis of the course is on teaching practical product knowledge, in order to enable maintenance, inspect and service LV Switchgear products, to find simple errors, and to replace the spare parts.

Benefits: After this course participants shall be able to troubleshoot the errors, inspect and service LV Switchgear products, change or replace the spares/accessories. Also, they will learn the SIMARIS software which can be helpful in the Designing part.

Target Group: Operation/ Service / Maintenance/ Commissioning staff

Course Contents:

Power Distribution Basics

- Grid system
- Distribution types
- Basic Concepts of fault level
- Principle of selectivity and cascading

Low Voltage Products

ACB: 3WA, 3WL& 3WT

- Function and operation of 3WA/3WL/3WT circuit breakers
- Installation and de-installation of the standard accessories
- Introduction in protection settings of circuit breakers (characteristic curves)
- Overview of communication regarding 3WA & 3WL air circuit breakers

MCCB: 3VA & 3VT

- Function and operation of 3VA/3VT MCCB
- 3VA/3VT Range TMTU, ETU and accessories
- Installation and de-installation of the standard accessories
- Overview of communication regarding 3VA MCCB

Control Products

Contactors: SIRIUS 3RT

- Function and operation of Contactors
- Contactor duty cycle and selection
- SIRIUS series advantage
- Energy Efficient contactor coil
- Compact starters DOL, RDOL, Star-Delta starters
- Contactor accessories
- RLT contactors
- Vacuum Contactor range
- Capacitor duty contactors
- Contactor Maintenance

LV Switchgear Products, Distribution & Panel (Contd.)

Overload Relays: SIRIUS 3RU/3RB

- Overload Relay principle
- Overload characteristic, CLASS selection.
- Thermal Overload relay and Electronic Overload relay range, difference.

MPCB: SIRIUS 3RV

- Motor Protection Circuit Breaker function and operation
- why MPCB?
- MPCB Range: Standard, Relay Function and SC only

Type-2 Co-Ordination

- Problems in non-coordinating feeders
- Type-1 and Type-2 Co-ordination
- Type-2 Co-ordination chart reading

Switchboard Panel

- Overview of SIEPAN switchboards family
- Different types of LV Switchboards
  - PCC
  - Draw out type MCC
  - Fixed type MCC
  - Fixed type PDB

Intelligent MCC

- Need for industry solutions.
- Comparison with conventional MCC
- Salient features
- Customer benefits

Installation & Commissioning of Switchboards

- Procedure
- Video demonstration
- Caution points
- Special tips

Operation & Maintenance

- Feeder Trolley Handling
- ACB Maintenance
- Contactor Maintenance
- DO's & DON'Ts

Hands On

- Exercises defined based on topic explained
- Hands on practice on demo kit

Participant Prerequisite: Basic principles of electrical engineering and power distribution, knowledge of technical options and specifications of LV Switchgear products.

Duration: 4 days, full time

Language: English

SIMOCODE AC-Motor control

Code: LV-SM

Objectives: Making participants familiar with SIEMENS make SIRIUS Motor Management Systems (SIMOCODE). The main emphasis of the course is on teaching practical product knowledge in order to configure, parameterize SIMOCODE as per requirement, to find out simple errors and to communicate with the PLC device.

Benefits: After this course participants shall be able to configure the SIMOCODE as per the plant requirement, use the logic modules, apply the different types of protections to the motor and troubleshoot the errors.

Target Group: Operation / Service / Maintenance/ Commissioning staff

Course Contents:

- Overview of Traditional panel and IMCC

Hardware:

- Overview of Pro C, PRO S and Pro V versions
- Overview of Basic Unit, Digital Module, CMM and Operator panel
- Expansion modules used in Simocode PRO V and PRO S
- Installation and wiring considerations

Commissioning:

- Configuration of a Reverse starter using Simocode ES2007/TIA Simocode ES V1x
- Explanation of parameters
- Basic unit operation
- Operator panel configuration
- Use of control station to choose suitable ON/OFF operations from variousControl stations
- Protection settings and detail explanation
- Use of standard functions including Test/Reset, External faults, Emergencystart
- Use of logic modules including truth tables, signal conditioning, timers,counters, flashing, flickering

Diagnostics:

- Diagnostic functions in Simocode ES software
- Maintenance, service data and online trends
- Use of Simocode graphic parameterization
- How to use of memory module and addressing plug
- Feedback ON/Off, Execution On/Off

PLC Simocode Communication:

- Basic introduction to PROFIBUS, PROFINET
- Introduction of Simocode into an automation system using CPU S7-300/S7-400/S7-1500
- Configuration of Simocode ES via Step7 (V5.x)/TIA Portal hardwareconfiguration
- Simocode Pro -> PLC Communications
- Cyclic data exchange&Bit Mapping
- Diagnostics at Simocode& PLC Side

Digitalization:

- Access of SIMOCODE PROFINET with web browser

Hands On:

- Exercises defined based on Topic explained
- Hands on practice on demo kit

Participant Prerequisite: Basic principles of electrical engineering, LV motor & Switchgear products. Basic knowledge about IMCC.

Duration: 3 days, full time

Language: English

Basic Automation for Switchgear User

Code: LV-BAS

Objectives: The participants learn communication options using various bus systems (PROFIBUS, MODBUS TCP/IP) with SENTRON Devices (3WL, 3VA, PAC meter) and SIMOCODE. The effective use of the commissioning and parameterization tool powerconfig is communicated in the practical unit.

Benefits: After this course participant shall be able to make a communication network with the various communicable switchgear devices which can help them to exchange the data from the switchgear devices to the PLC and SCADA system. Also they will be able to troubleshoot the communication related problems.

Target Group:

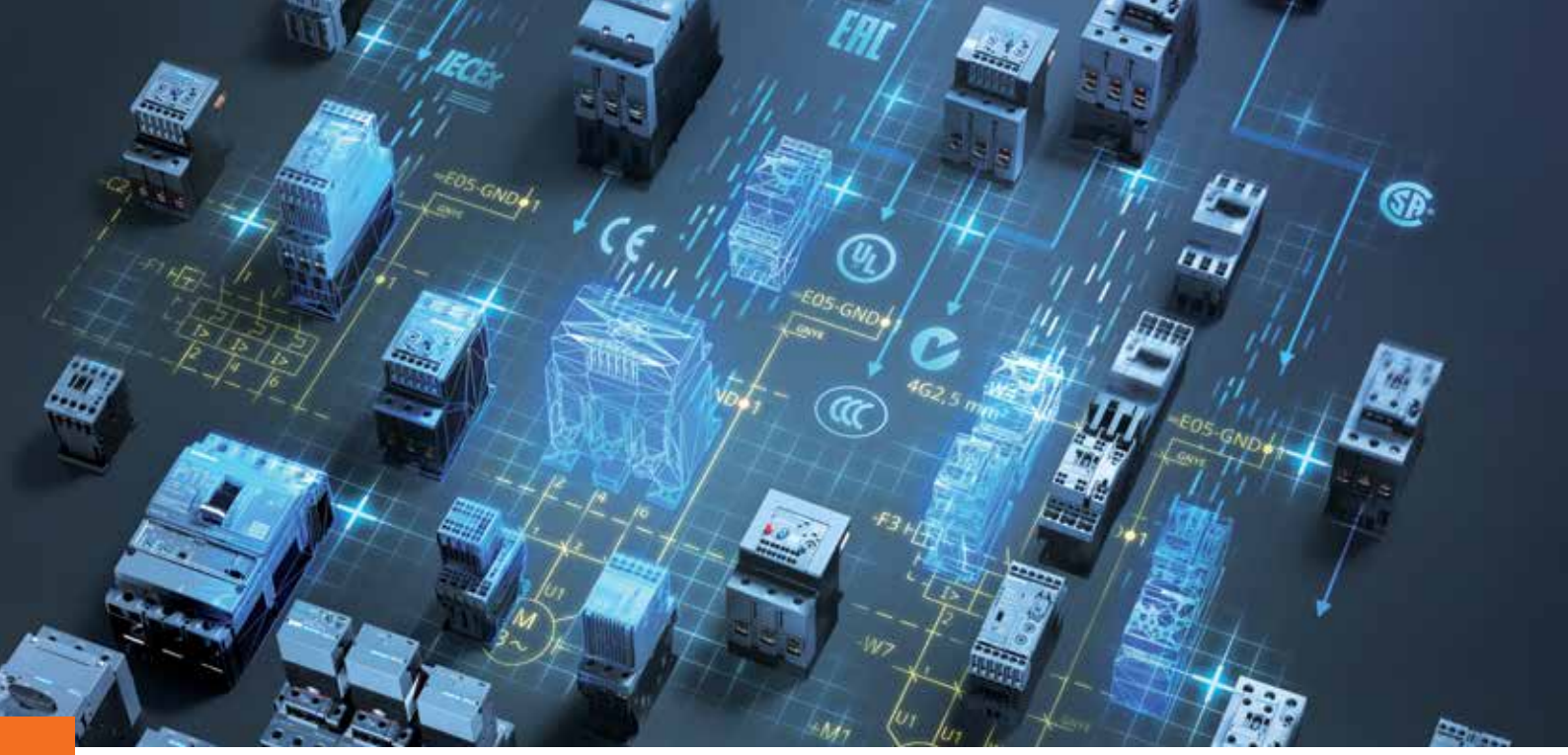
Course Contents:

- Introduction to Digital / Analog Signals
- Basic Concepts of Bits, Bytes, Word, Binary, Decimal, BCD, Hex
- Input types (Sinking/Sourcing), Output types (Trans / Relay), Isolation -Galvanic/Optical etc.
- RS232, RS485 difference
- Introduction to various bus systems - PPI, MPI, Profibus, TCP/IP
- Basic Constituents of PLC
- How PLC works?
- Overview of SIMATIC S7 PLC
- Range, Functionality
- Hardware details like front indication, terminals, ports on module
- Introduction to selection
- Hardware configuration in TIA Portal
- PC-PLC communication
- Installation guidelines, powering & wiring of modules, addressing
- Hand-on practice
- Programming language and representation in LAD
- Elementary Data types in PLC
- Using Symbol Table and VAT
- Basics of Communication (Topology, Synchronous/ Asyncchronous, Half duplex etc.)
- ISO / OSI 7 layers - brief overview
- Master-Slave, Multi master, TCP/IP
- Profibus Details
- No. of slaves per master
- Criteria for using repeater / MLFB
- Brief overview of data structure
- Function and use of GSD files
- Difference between ES and SCADA
- Diagnostics functions
- Reading and understanding communication manual of SIMOCODE, WL/VA, Soft Starter, PAC meter
- Basic types, Data Sets, Data Records
- Setting up the Profibus network on SIMATIC Manager, adding DP devices like SIMOCODE, WL, Soft starter, PAC meter
- Communicating / controlling switchgear from PLC

Participant Prerequisite: Engineers from electrical / electronics engineering. Participants should be familiar with the 3WL ACB, Soft-starter, PAC meter and Simocode.

Duration: 3 days, full time

Language: English



SIRIUS Soft Starter

Code: LV-SS

Objectives: The participants will learn the function, principal and operation of the Soft Starter. The main emphasis of the course is on teaching practical product knowledge for installation, commissioning and to find out simple errors.

Benefits: After this course participant shall be able to configure the Soft-starter (Soft-start and Soft-stop) for different types of applications and loads. Also they can apply different protections to the motor and troubleshoot the faults.

Target Group: Operation / Maintenance / Commissioning / Sales staff

Course Contents:

Motor Basics

- Characteristics, speed, and torque equation of 3 phase SQIM (Motor)
- Different terminologies of the characteristics, DOL starting, S-D starting
- advantages, disadvantages
- Need of soft starter

Soft-Starter Basics

- Expectations from electronic soft starter
- Block diagram of electronic soft starter
- Speed Torque characteristics after usage of soft starter

Hardware

- 3RW30,3RW40 and 3RW44 Soft Starter
- Communication Module 3RW49

Commissioning

- Power and control Connections
- Different settings required at the time of commissioning
- Information about different starting classes
- Motor Protections
- 3RW44 configuration using Soft Starter ES 2007/TIA Soft Starter ES V1x

Diagnostics

- Diagnostic through LEDs (3RW30/40)
- Diagnostic through Display and Soft-starter ES2007/TIA Soft Starter ES V1x (3RW44)

PLC-Soft Starter Communication

- Basic introduction to PROFIBUS, PROFINET and Communication Module
- Introduction of Soft starter into an automation system using CPU S7-300/S7-400/S7-1500
- Configuration and data transfer from PLC via Step7 (V5.x)/TIA Portal V1x
- Bit Mapping

Hands On

- Exercises defined based on topic explained
- Hands on practice on demo kit
- Start-up Procedure
- Parameterization using keypad
- Parameterization using Soft starter ES/TIA Soft Starter ES V1x

Participant Prerequisite: Electrical/Electronics Engineers. Participants should be familiar with the Induction Motor and PLC.

Duration: 2 days, full time

Language: English

MAINTENANCE FOCUS COURSE

Maintenance Focus Course on 6RA70 and 6RA80

Code: MFC-R70R80

Objectives: This training course shows you how to adapt the parameter settings & use of hardware / software options to diagnose the DC drive. It also gives you the opportunity to broaden your technical skills and troubleshoot the Drive system quickly to reduce downtime in the plants.

Benefits: After the course you will be able to read and understand operating parameters. In the event of a fault, you can carry out a target-oriented troubleshooting. You will also be able to back up data using the Software Tool.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

Grasp a basic overview of terminology, functions and components:

- Three phase-controlled converters
- Block diagram of DC Drive
- Line-side & Load-side components
- Typical applications

Getting familiar with hardware, wiring diagrams and features:

- Hardware Identification of 6RA70
  - Control Unit – CUD1 & CUD2
  - Power module – Armature & Field Circuit
  - Block Diagram, Terminal & Wiring Details
  - LBA, ADB & supplementary option boards
- Hardware Identification of 6RA80
  - Control Unit: Standard CUD & Advanced CUD
  - Power Module & Field card
  - Interfaces, Terminal & Wiring Details
  - Expansions with Terminal Modules & Sensor Modules via Drive-CLiQ

Setting of drive parameters & I/O assignment:

- SIMOREG DC Master 6RA70
  - Basic Start-Up Procedure & operating with OP1S
  - BICO Technology, Binary Inputs / Outputs & Analog Interfaces
  - Commissioning and parameterization using Drive Monitor Software
  - Automatic Optimization
- SINAMICS DCM 6RA80
  - Commissioning and parameterization activities using the BOP-20 and AOP 30 operator panels as well as with STARTER PC tool
  - Online connection of Drive via PROFIBUS interface
  - Procedures for commissioning and functional checks
  - Project structure: drive objects and drive components
  - Automatic Optimization

Maintenance Focus Course on 6RA70 and 6RA80 (Contd.)

Diagnostics & Troubleshooting:

- Hardware
- LED diagnostics
- Cold testing
- Diagnostics using operating panel
- Software
- Fault Memory and Fault Diagnostics
- Service function -Trace
- Control & Status Word
- Missing Enables & Interconnections
- Thyristor Checking
- Project Backup using OP1S, Micro Memory Card & Software
- FW & Project Upgradation

Maintenance & Service:

- Procedure for replacement & handling of hardware (CUD, Interface card & power cards)
- Procedure for FAN replacement
- Precautions regarding ESD while handling electronic cards
- Regular service & maintenance activities. (Dust deposit, ventilation, cable & screw terminals)

FAQs:

- Important Parameters
- Frequently occurred faults
- 6RA70 to 6RA80 Migration guide

Hands On:

- Exercises defined based on topic explained
- Hands-on practice on training kit

Participant Prerequisite: Engineers in Electrical / Electronic Engineering with Power Electronics Background

Duration: 5 days, full time

Language: English

Maintenance Focus Course on SINAMICS G130 & S120 Maintenance

Code: MFC-G13S12

Objectives: This training course shows you how to adapt the parameter settings & use of hardware / software options to diagnose the drive. It also gives you the opportunity to broaden your technical skills and troubleshoot the drive system quickly to reduce downtime in the plants.

Benefits: After the course you will be able to read and understand operating parameters. In the event of a fault, you can carry out a target-oriented troubleshooting. You will also be able to back up data using the STARTER PC program.

Target Group: Users, Commissioning / Service / Maintenance Engineers

Course Contents:

Getting familiar with hardware, wiring diagrams and features:

- Control Units
- Chassis module (AC-AC/ DC-AC)
  - CIM
  - Power block
- Line infeed & Motor module of S120
- Option boards, Terminal modules, Sensor modules.
- Motors, encoders, and interfaces
- Operator panels: BOP 20, AOP 30
- Block Diagram, Terminal & Wiring Details
- Line-side & Load-side components

Setting of Drive Parameters & I/O Assignment:

- Basic Start-Up Procedure & operating with BOP20 / AOP30
- BICO Technology concept & different interfacing options
- Commissioning & Parameterization using STARTER software
- Online connection via Profibus or Profinet
- Configuration procedure with drive object concept
- Drive CLiQ Component Interconnection with Topology Concept
- Motor ID/Optimization

Diagnostics & Troubleshooting:

- Hardware
  - LED diagnostics
  - Cold testing
  - Diagnostics using operating panel
- Software
  - Fault Memory and Fault Diagnostics
  - Service function -Trace
  - Control & Status Word
  - Missing Enables & Interconnections
  - Inverter Checking
  - Project Backup using CF card & Software tool.
  - FW & Project Upgradation

Maintenance Focus Course on SINAMICS G130 & S120 Maintenance (Contd.)

Maintenance & Service:

- Procedure for replacement & handling of hardware (Power Block, Power Module, Drive CLiQ components, CIM & Control Unit)
- Procedure for FAN replacement of Chassis & Block size module
- Maintenance for chassis format components. (Dust deposit, ventilation cable & screw terminals)
- Procedure for forming DC link capacitors
- Precautions regarding ESD while handling electronic cards

FAQs:

- Important Parameters
- Frequently occurred faults

Hands On:

- Exercises defined based on topic explained
- Hands-on practice on training kit

Participant Prerequisite: Engineers in Electrical / Electronic Engineering with PowerElectronics Background

Duration: 5 days, full time

Language: English

SIMATIC S7-300 with SIMATIC Manager

Code: MFC-S7300

Objectives: To make participants aware and familiar with:

- SIMATIC S7-300 automation system
- STEP7 Classic software (SIMATIC Manager)
- Troubleshooting of S7-300 system and related signal modules

Benefits: After successful completion of training the participant will be familiarized with the features of S7 300 PLC and its applications. This training will also help them to develop the understanding of hardware and software of S7 300. Participants will learn maintenance related activities with S7-300, trouble shoot faults & errors.

Target Group: Service engineers, Maintenance engineers.

Course Contents:

Hardware troubleshooting:

- SIMATIC S7-300 family in detail
- Addressing & wiring of signal modules
- Selecting successor of an obsolete module
- Hardware configuration of SIMATIC controller in STEP7
- Comprehending LED indicators behavior of PLC & other modules for diagnosis

Software troubleshooting:

- Working with symbol table
- Working with VAT tables
- Working with force table
- Renaming, and rewiring concepts
- Perform reverse engineering using Cross referencing & Program Call structure
- Memory overlap identification
- Project comparison
- Program Archiving & Retrieving procedure
- Maintain program documentation using PLC Upload method
- Understand the Memory concept of PLC & Checking memory of in-production PLC
- Error interpretation using diagnostic buffer
- Demonstration of general faults related to programming, hardware Components & Communication between devices
- Explore tools for device address identification & their modification using Edit Ethernet Nodes & Accessible Nodes General maintenance topics:
- CPU & modules Firmware upgradation procedure explanation
- Understanding earthing rules for PLC & components, ESD characteristics in Maintenance etc.

Hands On:

Example-based exercises after each topic.

Participant Prerequisite:

- Basic know how about automation technology is must
- Basic knowledge of electrical technology and digital electronics is essential
- Should have worked on SIMATIC S7-300 hardware and SIMATIC Manager

Duration: 3 days

Language: English

SIMATIC S7-400 with SIMATIC Manager

Code: MFC-S7400

Objectives: To make participants aware and familiar with:

- SIMATIC S7-400 automation system
- STEP7 Classic software (SIMATIC Manager)
- Troubleshooting of S7-400 system and related signal modules

Benefits: After successful completion of training the participant will be familiarized with the features of S7 400 PLC and its applications. This training will also help them to develop the understanding of hardware and software of S7 400. Participants will learn maintenance related activities with S7-400, trouble shoot faults & errors.

Target Group: Service engineers, Maintenance engineers.

Course Contents:

Hardware troubleshooting:

- SIMATIC S7-400 family in detail
- Addressing & wiring of signal modules
- Selecting successor of an obsolete module
- Hardware configuration of SIMATIC controller in STEP7
- Comprehending LED indicators behavior of PLC & other modules for diagnosis
- Configuration of diagnostic settings in DI, DQ, AI, AQ

Software troubleshooting:

- Diagnostics with symbol table
- Diagnostics with VAT tables
- Diagnostics with force table
- Renaming, and rewiring concepts
- Diagnostics with Cross referencing & Program Call structure
- Diagnosis in Memory overlap identification
- Project comparison
- Program Archiving & Retrieving procedure.
- Maintain program documentation using PLC Upload method.
- Understand the Memory concept of PLC & Checking memory of in-production PLC.
- Error interpretation using diagnostic buffer.
- Demonstration of general faults related to programming.
- Hardware Components & Communication between devices
- Diagnosis of device address identification & their modification using Edit Ethernet Nodes & Accessible Nodes

General maintenance topics:

- CPU & modules Firmware upgradation procedure explanation
- Understanding earthing rules for PLC & components
- Diagnostics with ESD characteristics in Maintenance etc.

Hands On:

Example-based exercises after each topic.

Participant Prerequisite:

- Basic know how about automation technology is must
- Basic knowledge of electrical technology and digital electronics is essential
- Should have worked on SIMATIC S7-400 hardware and SIMATIC Manager

Duration: 3 days

Language: English

MAINTENANCE FOCUS COURSE

SIMATIC S7-1500 with TIA Portal

Code: MFC-S71500

Objectives: To make participants aware and familiar with:

- SIMATIC S7-1500 automation system
- STEP7 in TIA portal framework
- Troubleshooting of S7-1500 system and related signal modules

Benefits: After successful completion of training the participant will be familiarized with the features of S7 1500 PLC and its applications. This training will also help them to develop the understanding of hardware and software of S7 1500. Participants will learn maintenance related activities with S7-1500, trouble shoot faults & errors.

Target Group: Service engineers, Maintenance engineers.

Course Contents:

Basic hardware topics:

- System Overview S71500, ET200SP controller, Compact CPU
- Demonstration of Hardware Configuration, Addressing & Wiring of PLC signal modules
- Selecting successor of an obsolete module

Diagnostics from hardware:

- Diagnostics with LEDs on CPU and SM
- Diagnostics with the display in S7-1500
- Diagnostics from software:
- Diagnostics in TIA Portal from
- Project navigation
- Inspection window
- Diagnostic buffer
- Task card “online tools”
- Diagnostics using Cross-references, call structure, assignment list, dependency structure.
- Memory resource allotment
- Diagnosis of Memory overlap identification
- Diagnostics with Trace analyzer function
- Diagnostics with the Web Server
- Diagnosis using Forcing, renaming, and rewiring.
- Project comparison
- Project archiving and retrieval
- PLC program upload

General maintenance topics:

- Downloading DB without re-initialization of variables
- Factory reset of PLC.
- Firmware update procedure
- Understanding of SIMATIC Automation tool
- Understanding of SIMATIC Notifier tool
- Understanding earthing rules for PLC & modules
- Diagnostics with ESD characteristics in Maintenance

Hands On:

Example-based exercises after each topic.

Participant Prerequisite:

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

Duration: 3 days

Language: English

ENERGY MONITORING

Energy Monitoring Basic Course

Code: EM_B

Objectives:

- The Training program intends to strengthen the Endeavor of participants in the field of energy management and energy efficiency.
- Program is designed to provide the theoretical and practical aspect of energy conservation and energy auditing technique.
- To sensitize staff on climate change, GHG emission & accounting, ISO standards and energy efficiency

Target Group: Energy Managers, Sustainability Managers & Utility/ Plant Maintenance Team, Engineering Final Year Student (Electrical, Mechanical, Chemical), Graduate Engineer Trainee, ITI Professionals, Diploma holders.

Course Contents: This introductory course provides a solid foundation in energy management principles and practices, focusing on decarbonization strategies. You will gain a comprehensive understanding of energy fundamentals, measurement and monitoring, as well as learn about key industrial assets and their associated consumption patterns. Additionally, the course will introduce you to energy efficiency strategies and best practices for reducing energy waste and achieving GHG emission reduction in your facility.

Participant Prerequisite: Willingness to learn and contribute for a greener and sustainable tomorrow.

Duration: 2 days

Language: English

Energy Monitoring Advance Course

Code: EM_A

Objectives:

- The Training program intends to strengthen the Endeavor of participants in the field of energy management and energy efficiency.
- Program is designed to provide the theoretical and practical aspect of energy conservation and energy auditing technique.
- To sensitize staff on climate change, GHG emission & accounting, ISO standards and energy efficiency

Target Group: Energy Managers, Sustainability Managers & Utility/ Plant Maintenance Team, Engineering Final Year Student (Electrical, Mechanical, Chemical), Graduate Engineer Trainee, ITI Professionals, Diploma holders.

Course Contents: Building upon the knowledge gained in the basic course, this advanced program delves deeper into advanced energy management techniques and technologies with a specific focus on decarbonization and sustainability. You will explore energy auditing procedures, learn about financial analysis of energy projects that prioritize GHG emission reduction, and discover cutting-edge solutions for maximizing energy efficiency in specific industrial assets. Furthermore, the course will equip you with the skills to develop and implement an effective energy management program tailored to your specific industry and facility needs, with a focus on achieving decarbonization and sustainability goals.

Participant Prerequisite: Willingness to learn and contribute for a greener and sustainable tomorrow.

Duration: 3 days

Language: English

CYBER SECURITY COURSES

Cyber-Security for IT/OT Industry

Code: CUST-CYBER-SEC

Objectives: This comprehensive Cybersecurity Training Program is tailored for Tailored for industrial professionals, this program immerses participants in hands-on labs and simulations, bridging theory with real-world scenarios in operational technology.

Equipping attendees with proactive threat identification, assessment, and mitigation skills, this program fortifies energy system security, fostering customer trust. Compliant with industry regulations, standards, and cybersecurity protocols, participants gain expertise to safeguard energy systems, ensuring proficiency in this intricate cybersecurity domain.

Benefits:

- Cybersecurity Proficiency: After completing the program, participants will have a strong grasp of cybersecurity principles, protocols, and standards tailored to the energy sector.
- Practical Cybersecurity Application: Participants will gain practical experience in implementing cybersecurity measures within energy systems, including network segmentation, data protection, and compliance with industry standards.
- Regulatory Compliance: Develop expertise in understanding and adhering to industry-specific regulations and standards, ensuring compliance in energy system cybersecurity.
- Customer-Centric Communication: Participants will be skilled in effectively communicating the importance of cybersecurity to customers, incorporating security considerations into sales proposals, and addressing customer cybersecurity concerns.
- Proactive Threat Response: Gain the ability to identify and respond proactively to potential cyber threats, enhancing the security of industrial systems and providing customers with a reliable and secure service.

Target Group: Operation / Service / Maintenance/ Commissioning staff.

Course Contents:

- Fundamentals of Operational Technology (OT)
- Networking Essentials for Industrial Cybersecurity
- Foundations in Cybersecurity for Industrial Systems
- Risk Awareness and Cyber Threats in OT
- Cybersecurity Frameworks and Standards
- Building Secure OT Security Architectures
- Tools and Technologies for OT Security
- Risk Identification & Management

Participant Prerequisite:

- It's beneficial if participants have some background or experience in the industrial sector, as this will help them apply cybersecurity concepts more effectively
- Participants should have a fundamental understanding of information technology and computer systems.
- A strong willingness to learn and an open attitude toward adapting to new cybersecurity concepts and practices.

Duration: 5 days

Language: English

COMBO COURSES

SIMATIC S7-300 & S7-400 with SIMATIC Manager Online Training

Code: CO-CLS3040

Objectives: To make participants aware and familiar with:

- SIMATIC S7-300/S7-400 automation system
- STEP7 Classic software (SIMATIC Manager)
- Basic programming concepts in STEP7
- Troubleshooting of S7-300/S7-400 system

Benefits: After successful completion of training the participant will be familiarized with the features of S7 300 PLC and its applications. This training will also help them to develop the understanding of hardware and software of S7 300. Participants will be able to do the programming of PLC with the use of various instructions, trouble shoot faults & errors and would be able to communicate drive through PLC.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

Hardware topics:

- SIMATIC S7-300 hardware detailed information, protocols, DI/DO module wiring, LED's explanation, front indicators
- SIMATIC S7-400 family in detail
- Hardware configuration of SIMATIC controller in STEP7

SIMATIC Manager topics:

- SIMATIC Manager i.e. STEP7 Classic software overview
- Licensing concept for STEP7

Software and Programming concepts:

- Working with symbol table
- Bit logic instructions
- Programming rules
- Timers and counters
- Working with VAT tables
- Analog value processing
- Linear v/s structured programming approach
- Effective programming using function and function blocks
- Use and need of data blocks
- Types of data blocks
- Concept of Organization blocks

Communication – Offline demo:

- S7-300/S7-400 controller with remote station on Profinet(PN)/Profibus DP protocol

Troubleshooting and diagnostic topics:

- Significance of LED indication on different modules
- Diagnosis using diagnostic buffer
- Cross-references, call structure, assignment list, dependency structure
- Memory overlap identification
- Project backup
- Forcing, renaming, and rewiring concepts
- Project comparison.

SIMATIC S7-300 & S7-400 with SIMATIC Manager Online Training (Contd.)

Participant Prerequisite: Basic Knowledge of Automation technology, relay logic essential but not mandatory.

Hardware & Software to be used:

- Laptops/ PC systems installed with Simatic Manager V5.x.
- S7-300/400 Kits with Remote I/Os

Duration: 6 days

Language: English

SIMATIC S7-300 and WinCC v7.x Online Training

Code: CO-300WIN

Objectives: To make participants aware and familiar with:

- SIMATIC S7-300 automation system
- STEP7 Classic software (SIMATIC Manager)
- Siemens Wincc Platform
- Wincc Explorer 7.x

Benefits: After successful completion of training the participant will be familiarized with the features of S7 300 PLC and its applications. This training will also help them to develop the understanding SCADA Development with Wincc Explorer. Participants will be able to do the programming of PLC with the use of various instructions, trouble shoot faults & errors and would be able to communicate drive through PLC.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

Hardware topics:

- SIMATIC S7-300 hardware detailed information, protocols, DI/DO module wiring, LED's explanation, front indicators
- Hardware configuration of SIMATIC controller in STEP7
- SIMATIC Manager topics:
- SIMATIC Manager i.e. STEP7 Classic software overview
- Licensing concept for STEP7
- Programming concepts:
- Working with symbol table
- Bit logic instructions
- Working with VAT tables
- Analog value processing
- Linear v/s structured programming approach
- Effective programming using function and function blocks
- Use and need of data blocks
- Types of data blocks
- Cross-references

WinCC V7.x

- Scope of WinCC V7.x
- License management for WinCC V7.x
- Overview of the software
- Communication
- Communication with SIMATIC S7-300 on simulator with WinCC V7.x.
- Software and Programming concepts
- Tag Management
- Program creation.
- Testing functions with variable simulation
- Graphic designer
- Alarm Logging
- Tag Logging
- Introduction of User Administration
- Troubleshooting and diagnostic topics
- Project Backup
- Communication diagnostics
- Cross-references

SIMATIC S7-300 and WinCC v7.x Online Training (Contd.)

Participant Prerequisite: Basic Knowledge of Automation technology, relay logic essential but not mandatory.

Hardware & Software to be used:

- Laptops/ PC systems installed with Simatic Manager V5.x & Wincc Explorer V7.x.
- S7-300 Kits with Remote I/Os

Duration: 6 days

Language: English

SIMATIC S7-1200 & S7-1500 with TIA Portal Online Training

Code: CO-TIA1215

Objectives: To make participants aware and familiar with:

- SIMATIC S7-1200/1500 automation system
- STEP7 software (TIA Portal)

Benefits: After successful completion of training the participant will be familiarized with the features of S7 1200/1500 PLC and its applications. This training will also help them to learn working with TIA Portal. Participants will be able to do the programming of PLC with the use of various instructions, trouble shoot faults & errors and would be able to communicate drive through PLC.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

Hardware topics:

- SIMATIC S7-1200/1500 hardware detailed information, protocols, DI/DO module wiring, LED's explanation, front indicators

2.SIMATIC S7-1200/1500 family in detail

3.Hardware configuration of SIMATIC controllers in STEP7

TIA Portal topics:

- TIA Portal i.e. STEP7 software overview
- Licensing concept for STEP7

Software and Programming concepts:

- Working with symbol table
- Bit logic instructions
- Programming rules
- Timers and counters
- Working with Watch tables
- Analog value processing
- Linear v/s structured programming approach
- Effective programming using function and function blocks
- Use and need of data blocks
- Types of data blocks
- Concept of Organization blocks

Communication – Offline demo:

- S7-1200/1500 controller with remote station on Profinet(PN)/Profibus DP protocol

Troubleshooting and diagnostic topics:

- Significance of LED indication on different modules
- Diagnosis using diagnostic buffer
- Cross-references, call structure, assignment list, dependency structure
- Memory overlap identification
- Project backup
- Forcing, renaming, and rewiring concepts
- Project comparison.

Participant Prerequisite: Basic Knowledge of Automation technology, relay logic essential but not mandatory.

Hardware & Software to be used:

- Laptops/ PC systems installed with TIA Portal V19.
- S7-1200/1500 Kits with Remote I/Os

Duration: 6 days

Language: English

SIMATIC S7-1500 PLC & SINAMICS S120

Code: CO-TIAS120

Objectives: To make participants aware and familiar with:

- SIMATIC S7-1500 automation system
- Sinamics Starter Software & S120 Drive

Benefits: After successful completion of training the participant will be familiarized with the features of S7-1500 PLC and its applications. This training will also help them to learn working with S120 Drive. Participants will be able to do the programming of PLC with the use of various instructions, trouble shoot faults & errors and would be able to communicate drive through PLC.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

Hardware:

- System overview of SIMATIC controller families
- SIMATIC S7-1500 family in detail
- Hardware configuration of S7-1500 controller in TIA
- Installation guidelines, powering & wiring of modules, addressing
- Software and Programming concepts:
- Programming language, PLC Tags and representation in LAD
- Elementary Data types in PLC
- Symbol Table and VAT
- Communication:
- S7-1500 controller with remote station ET200SP on Profinet (PN)/Profibus DP protocol
- Diagnostic topics:
- Basic Diagnostics & Web Server as a diagnostic tool
- Upgradation & Migration of PLC program.
- SINAMICS S120
- Design and functional principle of the converter system SINAMICS S120
- Hardware:
- Control unit, line infeed and motor modules
- Option boards, Terminal modules, Sensor modules.
- Motors, encoders, and interfaces
- Block diagram of Drive System
- Commissioning:
- Operation of Drive through BOP20 (Drive Object Concept)
- BICO technology concept.
- Parameterization using STARTER / STARTDRIVE Tool
- Online connection via Profibus or Profinet
- Automatic configuration.
- Project structure: drive objects and drive components
- Topology Concept.
- S120 function & feature:
- Extended Setpoint channel
- Operation of drive with speed control
- Sinamics Compact Flash card structure
- PLC Drive Communication:
- Establishing Communication between Sinamics S120 & Simatic PLC S7-1500 over Profibus or Profinet.
- PZD Configuration (Send / Receive data)
- Diagnostics:

SIMATIC S7-1500 PLC & SINAMICS S120 (Contd.)

- Fault Diagnostics with Trace in Starter / Startdrive & other software / hardware options
- Project Backup
- FW & Project Upgradation
- Hardware Replacement
- Diagnostics Using Web Server.

Participant Prerequisite: Basic Knowledge of Automation & Drive technology, relay logic essential but not mandatory.

Hardware & Software to be used:

- Laptops/ PC systems installed with TIA Portal V19 & Starter V5.4.
- S7-1500 Kits with Remote I/Os & S120 Drive.

Duration: 6 days

Language: English

SINAMICS G120 & S120 Drives with STARTER

Code: CO-G12S12

Objectives: To make participants aware and familiar with:

- Sinamics S120 Drive System
- Sinamics G120 Drive System

Benefits: After successful completion of training the participant will be familiarized with the features of G120/ S120- Drives and its applications. This training will also help them to learn working with S120 & G120 Drive. Participants will be able to do commissioning of G120/S120 drives with the use of various instructions, trouble shoot faults & errors and would be able to communicate drive through PLC.

Target Group: Developer, Users, Commissioning / Service / Maintenance Engineers

Course Contents:

- Design and principle of operation of the Sinamics G120 & S120 inverter.
- HARDWARE:
- Control Unit CU
- Power Module PM
- Operator panels: BOP-2 and IOP/IOP-2
- Operator panels: BOP-20
- Option boards, Terminal modules, Sensor modules.
- Motors, encoders, and interfaces
- Detailed Block diagram of AC Drive System
- COMMISSIONING:
- Operation of Drive through BOP-2/IOP/IOP-2/BOP20
- BICO Technology concept
- Parameterization using STARTER or SCOUT software
- Online connection via Profibus, Profinet or mini USB cable
- Motor ID/Optimization
- Automatic configuration.
- Project structure: drive objects and drive components
- Topology Concept.
- SINAMICS G120 & S120 FUNCTION & FEATURE:
- Various Function Modules
- Setpoint channels
- Operation of drive with V/F control & Vector Control mode.
- Using various Data sets – CDS, DDS.
- Sinamics Compact Flash structure
- Free Function Blocks
- PLC DRIVE COMMUNICATION:
- Establishing Communication between Sinamics G120/ S120 & Simatic PLC (S7-300/S7-400) over Profibus or Profinet
- PZD description (Send / Receive data)
- Diagnostics at Drive & PLC Side (Control word /Setpoint / Status word)
- Logic Blocks for Send / Receive data.
- DIAGNOSTICS:
- Fault Diagnostics with Trace in Starter & other software / hardware options
- Project Backup
- Firmware & Project Upgradation
- Hardware Replacement
- DIGITALIZATION:

SINAMICS G120 & S120 Drives with STARTER (Contd.)

- Access of S120 with web browser without using commissioning software.

Participant Prerequisite: Basic Knowledge of Automation & Drive technology, relay logic essential but not mandatory.

Hardware & Software to be used:

- Laptops/ PC systems installed with TIA Portal V19 & Starter V5.4.
- S7-1500 Kits with Remote I/Os, G120, S120 Drive.

Duration: 6 days

Language: English

Feedback from our customers

6RA70 training at IATC, Panchkula (ATC, North)

"I particularly liked the infrastructure here, the sincerity of trainer. All are very punctual. The trainer has the sufficient industry experience."

- From Mr. Gaurav Singh, Hindalco Industries, Renukoot

SIMATIC WinCC Training at Karunya University (ATC South)

"Karunya University campus is Excellent. Efforts taken by faculties to make the WinCC course interesting is appreciable."

- From Mr. Ajay Jadhav, BOSCH Ltd., Goa

TIA Basic with SIMATIC S7 300 & STEP 7 at Esskay Services (ATC West)

"SITRAIN Trainers have excellent skills to explain technicalities step by step. Good understanding about Step 7-300. Personnel like engineers working with Siemens products, get good exposure on professional front."

- From Rahul Ganeshwadi, Essar Oilfield Services, Dubai

Training at SITRAIN, Kalwa

"In the days of mass quality production through automation, Siemens PLC is playing a vital role. Siemens Training Center is further adding to the value by providing in depth training and applications knowledge to the engineers."

- From Mr. S. Raghuveer, ITC Ltd., Andhra Pradesh

TIA Basic with SIMATIC S7 300 & STEP 7 at Esskay Services (ATC East)

"I particularly liked the training methodology adopted by the trainer and cordial atmosphere in the training centre."

- From Mr. Subramanian, TATA STEEL, Jamshedpur

General Notes & Commercial Terms

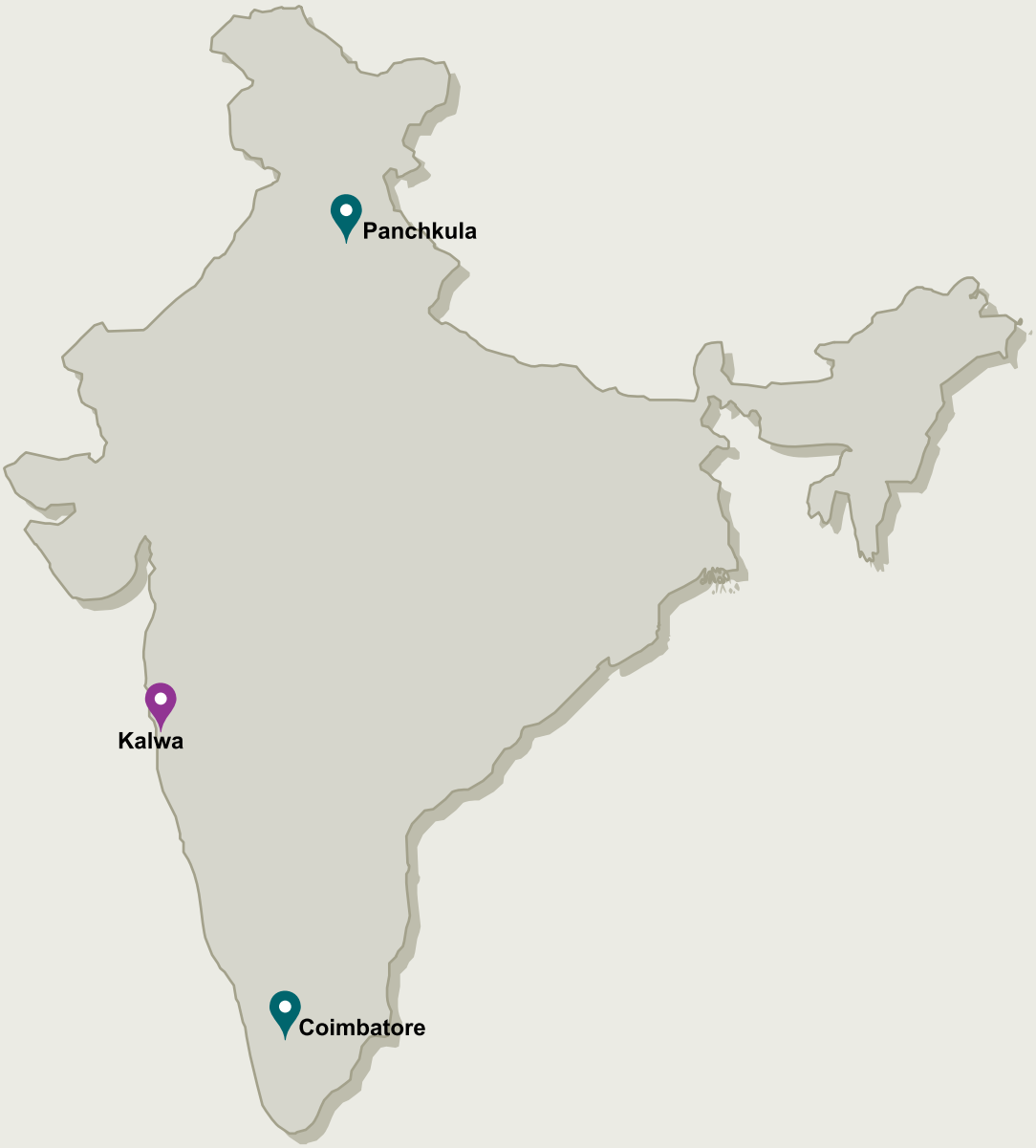
(Common to all the Training Centres operating under SITRAIN-INDIA)

Note: Training Centre (SITRAIN-Siemens Kalwa) and 2 STE's (SITRAIN Training Executors) are all centrally coordinated, monitored & controlled by Siemens-SITRAIN, Kalwa. MCMT (Machine Tool Drives) Training at Bangalore/Pune is controlled from Bangalore.

- (a) Advanced courses will be conducted at Siemens Ltd., Kalwa Works, Thane-Belapur Road, Airoli Thane - 400 601, Maharashtra
- (b) Basic courses will be conducted in our SITRAIN Training Executors (STE's).
- Registration-Booking of seats for all clients at all Training Centres & Courses will continue to be made centrally at SITRAIN-KALWA by online & Email / Phone: +91 (022) 39663208 www.siemens.co.in/sitrain E-mail: customer.training.in@siemens.com, You may also contact nearest Siemens Regional Office, Customer Care, Regional Service Centres
- Course fees is to be paid in advance (only on confirmation of seat), in the form of Credit Card (Visa/ Master) / DD / Cheque drawn in favor of SIEMENS LTD & payable at Mumbai or location of our Customer Care Office along with complete taxes and duties
- The course fee includes the course material, breakfast, lunch and tea. The training is nonresidential.
- Since there are limited seats in each program, the seats are confirmed on 1st come 1st served basis. The course timings are from 8.30 AM to 5.00 PM General Notes & Commercial Terms (Common to all the Training Centers operating under SITRAIN-INDIA)
- (A) Every attempt will be made to conduct the courses as announced. However, we reserve the right to postpone or cancel the courses due to inadequate booking or circumstances beyond our control. We shall do our best to send timely communication in such situations, if possible
- (B) Every attempt will also be made to accommodate the participants at nearest (geographically) Siemens Training Centre in your area. This is valid for all parts of India including North/South/West/East
- Kindly contact us for the course contents and information on prerequisite qualification / knowledge to attend the courses
- Please note that the course fee is exclusive of service tax at present applicable rate of 18%. However any change in the tax rate structure will be accordingly applied
- Please note that Rupee rates are applicable ONLY for Indian Nationals sponsored by INDIAN COMPANIES. For Foreign Nationals or Indian Nationals sponsored by FOREIGN COMPANIES rates will be quoted in EURO. Kindly contact us for more details on the same
- All the transactions (mainly commercial) like Training Order, Payment should be done necessarily through your nearest Siemens Regional Office only. You may contact us here at Kalwa Training Center for additional details.
- Training fees once paid are non-refundable
- For complaints / queries / suggestions log in to www.siemens.co.in/sitrain

Notes

SITRAIN Locations in INDIA



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