

Electrical Network 2017 - Technical training catalogue



Life Is On



APPS – Utility transmission power system protection

Course topics

- Analysis of balanced & unbalanced faults
- Application of overcurrent & earth fault protection
- System grading studies
- Earth leakage & busbar protection
- Transformer, generator & motor protection
- Current transformer requirements for protection
- System earthing
- Line differential & distance protection
- Auto-reclosing and CB fail
- Substation automation using IEC 61850

Objectives

- Detailed understanding of the key principles of power system analysis and protection
- APPS is designed for engineers who wish to reinforce their knowledge and experience in protection and substation automation applications
- Emphasis on theory and methodology that can be applied in any circumstance or application of any protection relay

Audience

- Engineers or senior technical officers preferably with a few years experience in power systems
- Commissioning and maintenance engineers involved in testing protection schemes
- Experienced engineers aiming to expand their expertise

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

Basic knowledge and understanding of power systems, engineering and mathematics (technician or engineer level)

Duration

- 2 Weeks
- 100% Theoretical

Customer benefits



- Increase skills in fundamentals of protection system design
- Enable protection design engineers to make their systems safer, smarter and more reliable
- Specify protection solutions in accordance with power system requirements
- Undertake project from concept to commissioning
- Build your expert knowledge
- Comprehensive reference notes, tutorial examples and certificate
- Share experiences with course attendees



Power System Expertise

APPS – Industry and Oil&Gas power system protection

Course topics

- Analysis of balanced & unbalanced faults
- System grounding
- Application of overcurrent & ground fault protection
- Protection coordination rules
- Motor protection
- Transformer protection
- Busbar protection
- Feeder protection
- Generator protection

Objectives

- Gain more experience in the theory of protection application for Industrial medium voltage network with additional tutorials on fault calculation, relay settings and communication facilities
- APPS "Analysis and Protection of Power Systems Course" is designed for engineers who wish to reinforce their experience in protection and control automation & application. APPS course is a theoretical, manufacturer product neutral training program that covers the principles of power systems protection and control

Audience

- Maintenance and commissioning engineers, especially those involved in protection relays
- Protection engineers, protection design engineers
- Project managers

🗩 Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

Knowledge and understanding of power networks, electrotechnical and mathematical basics (technician or engineer level)

Duration

- 2 Weeks
- 100% Theoretical

Customer benefits



- Enable protection & control professionals in transmission and utilities to make electric power systems safer, smarter, less complex and more reliable
- Sustain the success of customer business by enhancing employee technical efficiency
- Reinforce customer company's
 expert knowledge
- Handle system operation effectively
 in all critical situations
- Specify own protection schemes in accordance with power system constraints



Power System Expertise

APPS Hands-on

Course topics

- Use of MiCOM S1 Studio features
- · Current injection in protection relay
- Set-up IEC 61850 communication including GOOSEs
- Distance protection function with auto-reclose and
- · Line differential protection
- Low impedance busbar protection
- Transformer protection

Duration

- 2 Weeks
- 100% Theoretical

Customer benefits

Objectives

- Put into practice the theoretical knowledge acquired during APPS course
- Learn how to set up protection relays, perform tests
- Perform fault analysis with a focus on high voltage dedicated protection functions.

Audience

- Transmission utility application engineer
- Front line managers

Date, place & price

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- Put knowledge acquired during APPS course into practice
- Be autonomous to choose, set up and test a protection relay
- Increase understanding of protection schemes
- Enable protection design engineers to make systems safer, smarter and more reliable
- Undertake engineering from implementation to commissioning
- Build your expert knowledge by experimenting different schemes
- Share experiences with course attendees

Learning Path



Prerequisites

Knowledge and understanding of power networks, electrotechnical and mathematical basics (technician or engineer level) Training APH014

NRJED114601EN



Course topics

· Basics of electrical systems (option 1) OR basics of IT energy (option 2)

Note: Option 1 and Option 2 will be conducted simultaneously, please select the one you want to attend depending on your background

- Electrical power system presentation
- Smartgrid evolution, technical and economic interactions . of smartgrids
- Interoperability The question of the implementation
- Use cases study: centralized management of a . distribution network; management of MV rings
- IEC 61850 as a modeling standard

Objectives

- · Learn about the advanced concepts in power systems analysis.
- · Understand the advanced concepts in power systems
- · Develop knowledge on:
 - · system operation
 - · technical constraints of a smart grid network and the economic stakes of managing a Grid.

Audience

- · Designed for engineers interested in power systems.
- · It is suitable for new comers in the area of power system.

Date, place & price

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Learning Path



Duration

- 5 Days
- 100% Theoretical

Customer benefits



Complete course from basic concept of electrical engineering towards electrical network calculation, solutions and smartgrid.



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- How to specify an electrical control system that optimizes operations and maintenance of a plant.
- Design methodology for a control system
- · Components of a monitoring and control system
- Control systems communication network infrastructures
- Interfaces with generators, motors, VSD, protections
- Power management system
- Interactions with process control systems (Fast load shedding, start inhibit, load sharing, gradual overload)
- Asset management
- Maintenance tools & diagnostics
- Cyber Security
- Standards

Objectives

 Understand what is for Oil and Gas an electrical and monitoring control system, its architecture and its interaction within power management system, process management system and business functions to improve your confidence in writing specifications of electrical control systems

Audience

- Electrical engineers or senior technical offers
- Design engineers involved in monitoring & control systems project specification

Date, place & price

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Learning Path

Prerequisites Electrical engineering, computer science (engineer level)



Duration

- 8 Days
- 70% Theoretical
- 30% Live case studies

NEW !

Customer benefits



- Increase skills in fundamentals of monitoring and control systems.
- Specify system solutions in accordance of Oil & Gas system requirements.
- Leverage the added value of a system within Oil & Gas challenges
- Comprehensive reference notes, certificate

MiCOM Px20 and Px40 - Master class

Course topics

- Presentation of MiCOM Px20 and Px40 protection relays ranges and functions
- · Setting creation and upload/download
- Event extraction and interrogation
- · Disturbance record extraction and interrogation
- · Programmable scheme logic creation and upload/download
- Measurement monitoring
- Menu text editing

Duration

- 2 Days
- 20% Theoretical 80% Practice

Objectives

- Give a comprehensive overview of selected MiCOM Px20 and Px40 relays
- Give detail insight into the MiCOM support software, MiCOM S1 Studio

Audience

- All MiCOM Px20 and Px40 users
- Technicians and engineers from application or control departments
- · Project managers
- Technicians or operators

Date, place & price

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Next step

Customer benefits



- Real hands-on work on electrical equipment
- A comprehensive insight into the product's application in the field, its setting and methods of remote interrogation
- Includes in-depth training in the MiCOM relay setting software MiCOM S1 Studio



MiCOM Px30 - Master class

Course topics

- Presentation of MiCOM Px30 protection relays ranges and functions
- Setting creation and upload/download
- Event extraction and interrogation
- Disturbance record extraction and interrogation
- Programmable scheme logic creation and upload/download
- Measurement monitoring
- Menu text editing

Objectives

- Give a comprehensive overview of selected MiCOM Px30 relays
- Give detail insight into the MiCOM support software, MiCOM S1 Studio
- Detail the relay construction, application, programming and communication

Audience

- All MiCOM Px30 users
- Technicians and engineers from application or control departments
- Project managers
- Technicians or operators

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Duration

- 2 Days
- 20% Theoretical 80% Practice

Customer benefits



- Real hands-on work on electrical equipment
- A comprehensive insight into the product's application in the field, its setting and methods of remote interrogation
- Includes in-depth training in the MiCOM relay setting software MiCOM S1 Studio





Schneider Belectric

Railway Protection

Course topics

- Requirements for stream and tension converter for protection applications
- Basics of overcurrent applications
- Basic transformer-differential protection for feeder lines
- Basic distance protection facilities for overhead line arrangement
- Operating draft and operating programs
- Overcurrent protection mechanisms MiCOM P138
- Transformer protection facilities MiCOM P638
- Overhead line protection facilities MiCOM P436/P438
- Practical exercise with test facilities as well as settings about PC/notebook
- Exercises for the case evaluation woth operating programs

Objectives

• Learn the principles and application of railway protection

Audience

- Engineers involved in the protection of railway electricity
- Technicians and engineers from application or control departments
- Project managers
- Technicians or operators

Date, place & price

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Learning Path



Duration

- 3 Days
- 30% Theoretical 70% Practice

Customer benefits



- Real hands-on work on electrical equipment
- Participants will have a thourough knowledge of maintaining their protection system
- Participants will increase their fault finding and troubleshooting abilities for the protection system, thus reducing plant shut-down

Schneider GElectric

Overcurrent and feeder protection – MiCOM P12x and P14x

Course topics

- Reminder of overcurrent and feeder protection application
- MiCOM P12x/P14x functionalities
- Products characteristic
- Relay HMI: front panel, LEDs, push-buttons, navigation through front panel
- Alarms and acknowledgement
- MiCOM S1 Studio software
- Parameter file creation upload and download
- Programmable scheme logic creation, upload and download
- Disturbance, fault, event records
- Detailed presentation of MiCOM P12x/P14x functions
- Product connection
- Test with current injection
- MiCOM P12x/P14x hardware
- Maintenance
- Hands-on

Objectives

Operate and maintain MiCOM P12x and P14x
 overcurrent and protection relay

Audience

- · Electrical engineers
- Operators
- Maintenance engineers
- Protection design engineers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

- Good knowledge of electrical substations
- Good knowledge of overcurent and feeder
 protection principles

Duration

- 2 Days
- 30% Theoretical 70% Practice

Customer benefits



- Real hands-on work on electrical equipment
- Participants will be able to operate and carry out maintenance on MiCOM P12x/P14x
- Participant can test various functions of MiCOM P12x/P14x

Next step

Training

MiCOM120



Motor protection – MiCOM P22x and P24x

Course topics

- · Reminder of motor protection application
- MiCOM P22x/P24x functionalities
- Products characteristic
- Relay HMI: front panel, LEDs, push-buttons, navigation through front panel
- · Alarms and acknowledgement
- MiCOM S1 Studio software
- Parameter file creation upload and download
- Programmable scheme logic creation, upload and download
- Disturbance, fault, event records
- Detailed presentation of MiCOM P22x/P24x functions
- Product connection
- Test with current injection
- MiCOM P22x/P24x hardware
- Maintenance
- Hands-on

Objectives

 Operate and maintain MiCOM P22x and P24x motor protection relay

Audience

- Electrical engineers
- Operators
- Maintenance engineers
- Protection design engineers

Date, place & price

Contact us:

global-automation-training@schneider-electric.com

Learning Path

Prerequisites

- Good knowledge of Electrical substations
- Good knowledge of motor protection
 principles

Duration

- 2 Days
- 30% Theoretical 70% Practice

Customer benefits



- Real hands-on work on electrical equipment
- Participants will be able to operate and carry out maintenance on MiCOM P22x/P24x
- Participant can test various functions of MiCOM P22x/P24x





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Generator Protection – MiCOM P34x

Course topics

- · Reminder of generator protection application
- MiCOM P34x functionalities
- Products characteristic
- Relay HMI: front panel, LEDs, push-buttons, navigation through front panel
- · Alarms and acknowledgement
- MiCOM S1 Studio software
- Parameter file creation upload and download
- Programmable scheme logic creation, upload and download
- Disturbance, fault, event records
- Detailed presentation of MiCOM P34x functions
- Product connection
- Test with current injection
- MiCOM P34x hardware
- Maintenance
- Hands-on

Objectives

Operate and maintain MiCOM P34x
 generator protection relay

Audience

- · Electrical engineers
- · Operators
- Maintenance engineers
- Protection design engineers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

- Good knowledge of Electrical substations
- Good knowledge of generator protection
 principles



- 3 Days
- 30% Theoretical 70% Practice

Customer benefits



- Real hands-on work on electrical equipment
- Participants will be able to operate and carry out maintenance on MiCOM P34x
- Participant can test various functions of MiCOM P34x

 Training
 Next step

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Distance protection – MiCOM P44x

Course topics

- · Reminder of distance protection application
- MiCOM P44x functionalities
- Products characteristic
- Relay HMI: front panel, LEDs, push-buttons, navigation through front panel
- Alarms and acknowledgement
- MiCOM S1 Studio software
- Parameter file creation upload and download
- Programmable scheme logic creation, upload and download
- Disturbance, fault, event records
- Detailed presentation of MiCOM P44x functions
- Product connection
- Test with current injection
- MiCOM P44x hardware
- Maintenance
- Hands-on

Duration

- 3 to 5 Days
- 30% Theoretical 70% Practice

Customer benefits



- Real hands-on work on electrical equipment
- Participants will be able to operate and carry out maintenance on MiCOM P44x
- Participant can test various functions of MiCOM P44x

Objectives

Operate and maintain MiCOM P44x
 distance protection relay

Audience

- · Electrical engineers
- Operators
- Maintenance engineers
- Protection design engineers

Date, place & price

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Learning Path

Prerequisites

- Good knowledge of Electrical substations
- Good knowledge of distance protection
 principles

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Line differential protection – MiCOM P52x and P54x

Course topics

- Reminder of line differential protection application
- MiCOM P52x and P54x functionalities
- Products characteristic
- Relay HMI: front panel, LEDs, push-buttons, navigation through front panel
- Alarms and acknowledgement
- MiCOM S1 Studio software
- Parameter file creation upload and download
- Programmable scheme logic creation, upload and download
- Disturbance, fault, event records
- Detailed presentation of MiCOM P52x and P54x
 functions
- Product connection
- Test with current injection
- MiCOM P52x and P54x hardware
- Maintenance
- Hands-on

Objectives

 Operate and maintain MiCOM P52x and P54x line differential protection relay

Audience

- · Electrical engineers
- Operators
- Maintenance engineers
- Protection design engineers

Date, place & price

Contact us:

global-automation-training@schneider-electric.com

Learning Path

Prerequisites

- Good knowledge of Electrical substations
- Good knowledge of differential protection
 principles



- 1 to 4 Days
- 30% Theoretical 70% Practice

Customer benefits



- Real hands-on work on electrical equipment
- Participants will be able to operate and carry out maintenance on MiCOM P52x and P54x
- Participant can test various functions of MiCOM P52x and P54x

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Voltage and frequency protection – MiCOM P92x

Course topics

- Reminder of voltage and frequency protection application
- MiCOM P92x functionalities
- Products characteristic
- Relay HMI: front panel, LEDs, push-buttons, navigation through front panel
- Alarms and acknowledgement
- MiCOM S1 Studio software
- Parameter file creation upload and download
- Programmable scheme logic creation, upload and download
- Disturbance, fault, event records
- Detailed presentation of MiCOM P92x functions
- Product connection
- Test with current injection
- MiCOM P92x hardware
- Maintenance
- Hands-on

Objectives

Operate and maintain MiCOM P92x
 voltage and frequency protection relay

Audience

- · Electrical engineers
- Operators
- Maintenance engineers
- · Protection design engineers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

- Good knowledge of Electrical substations
- Good knowledge of voltage and frequency protection principles

Duration

- 1 to 3 Days
- 30% Theoretical 70% Practice

Customer benefits



- Real hands-on work on electrical equipment
- Participants will be able to operate and carry out maintenance on MiCOM P92x
- Participant can test various functions of MiCOM P92x



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Differential transformer protection – MiCOM P63x and P64x

Course topics

- Reminder of transformer protection application
- MiCOM P63x/P64x functionalities
- Products characteristic
- Relay HMI: front panel, LEDs, push-buttons, navigation through front panel
- Alarms and acknowledgement
- MiCOM S1 Studio software
- Parameter file creation upload and download
- Programmable scheme logic creation, upload and download
- Disturbance, fault, event records
- Detailed presentation of MiCOM P63x/P64x functions
- Product connection
- Test with current injection
- MiCOM P63x/P64x hardware
- Maintenance
- Hands-on

Objectives

 Operate and maintain MiCOM P63x/P64x differential transformer protection relay

Audience

- · Electrical engineers
- Operators
- Maintenance engineers
- Protection design engineers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

- Good knowledge of Electrical substations
- Good knowledge of power transformer protection principles



- 1 to 3 Days
- 30% Theoretical 70% Practice

Customer benefits



- Real hands-on work on electrical equipment
- Participants will be able to operate and carry out maintenance on MiCOM P63x/P64x
- Participant can test various functions of MiCOM P63x/P64x





Distance Protection – MiCOM P43x

Course topics

- Reminder of distance protection application
- MiCOM P43x functionalities
- Products characteristic
- Relay HMI: front panel, LEDs, push-buttons, navigation through front panel
- · Alarms and acknowledgement
- MiCOM S1 Studio software
- Parameter file creation upload and download
- Programmable scheme logic creation, upload and download
- Disturbance, fault, event records
- Detailed presentation of MiCOM P43x functions
- Product connection
- Test with current injection
- MiCOM P43x hardware
- Maintenance
- Hands-on

Objectives

 Operate and maintain MiCOM P43x distance protection relay

Audience

- · Electrical engineers
- Operators
- · Maintenance engineers
- Protection design engineers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

- Good knowledge of Electrical substations
- Good knowledge of distance protection
 principles



- 3 to 5 Days
- 30% Theoretical 70% Practice

Customer benefits



- Real hands-on work on electrical equipment
- Participants will be able to operate and carry out maintenance on MiCOM P43x
- Participant can test various functions of MiCOM P43x



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NRJED114601EN

Feeder Protection – MiCOM P13x

Course topics

- Reminder of feeder protection application •
- MiCOM P13x functionalities
- Products characteristic
- Relay HMI: front panel, LEDs, push-buttons, navigation through front panel
- . Alarms and acknowledgement
- MiCOM S1 Studio software
- Parameter file creation upload and download
- Programmable scheme logic creation, . upload and download
- Disturbance, fault, event records
- Detailed presentation of MiCOM P13x functions
- Product connection
- Test with current injection
- MiCOM P13x hardware
- Maintenance
- Hands-on

Objectives

• Operate and maintain MiCOM P13x feeder protection relay

Audience

- · Electrical engineers
- Operators
- · Maintenance engineers
- Protection design engineers

Date, place & price

Contact us:

global-automation-training@schneider-electric.com

Learning Path



Duration

- 3 Days
- 30% Theoretical 70% Practice

Customer benefits



- · Real hands-on work on electrical equipment
- Participants will be able to operate and carry out maintenance on MiCOM P13x
- Participant can test various functions of MiCOM P13x

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Busbar differential protection – MiCOM P740 (Distributed) and MiCOM P746 (Centralized)

Course topics

- Overview of busbar protection application
- MiCOM P740 and P746 functionalities
- IO Box MiCOM P849
- MiCOM P740 distributed architecture: system architecture, presentation of the different modules, communication between modules
- MiCOM P746 centralized architecture
- Topology: principles, examples, configuration, virtual feeder
- Module HMI: front panel, LEDs, push-buttons, navigation through front panel
- Alarms & acknowledgement
- MiCOM S1 Studio software, dynamic synoptic (MiCOM P740) and P746 Remote HMI (MiCOM P746)
- Parameter file creation, upload and download
- PSL file creation, upload and download
- Disturbance, fault, event records
- Test with current injection
- MiCOM P740 and P746 hardware
- Maintenance facilities
- Hands-on

Objectives

 Operate and maintain MiCOM P74x and MiCOM P746 busbar protection relay

Audience

- · Electrical engineers
- Operators
- Maintenance engineers
- Protection design engineers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

- Good knowledge of Electrical substations
- Good knowledge of busbar protection
 principles

Duration

- 5 Days
- 50% Theoretical 50% Practice

Customer benefits



- Real hands-on work on electrical equipment
- Participants will be able to operate and carry out maintenance on MiCOM P740, P746 and P849
- Participant can test various functions of MiCOM P740 and P746



NRJED114601EN

Distance protection for railway protection -MiCOM P436 and P438

Course topics

- Reminder of the specific characteristic of railway protection applications
- MiCOM P436 and P438 functionalities
- Products characteristic
- Relay HMI: front panel, LEDs, push-buttons, navigation through front panel
- Alarms and acknowledgement
- MiCOM S1 Studio software
- Parameter file creation upload and download
- Programmable scheme logic creation, upload and download
- Disturbance, fault, event records
- Test with current injection
- MiCOM P436 and P438 hardware
- Maintenance
- Hands-on

Objectives

• Operate and maintain MiCOM P436 and P438 railway distance protection relay

Audience

- Electrical engineers
- Operators
- Maintenance engineers
- Protection design engineers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

- Good knowledge of Electrical substations
- Good knowledge of railway protection principles

Duration

- 3 to 5 Days
- 30% Theoretical 70% Practice

Customer benefits



- Real hands-on work on electrical equipment
- Participants will be able to operate and carry out maintenance on MiCOM P436 and MiCOM P438



Schneider Belectric

SEPAM - Master class

Course topics

- Sepam offer presentation
- Installation module presentation
- Understand Sepam control logic
- Use parameter setting software SFT2841
- · Customize the control logic with equation editor
- Understand and use Sepam HMI
- Logipam introduction
- Configure and test Sepam 20, 40 and 80 from case study

Objectives

- Implement, use and commission Sepam 20, 40 and 80
- · Know each Sepam serie in detail

Audience

- · Product application engineers
- · Service or technical support protection team
- Protection engineers

Date, place & price

Contact us:

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Duration

- 4 Days
- 30% Theoretical 70% Practice

Customer benefits



- Get used to Sepam protection
 range
- Be able to select and implement Sepam in your application
- Optimize your automation application and related cost

Learning Path





Schneider Belectric

SEPAM 80 - Expert

Course topics

- Understand advanced HMI
- Use advanced functions of SFT2841
- Understand and use the advanced control logic (Automatic transfer scheme)
- Practical example and exercises
 - Customize the mimic (Mimic editor)
 - Customization using equation editor

Objectives

- Know the advanced features of Sepam 80
- Use and Implement advanced functions of Sepam 80
- Use advanced control logic
- Create examples of control logic with Logipam software
- · Create and customize the mimic editor

Audience

- · Product application engineers
- Service or Technical support Protection team
- Protection engineers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Duration

- 3 Days
- 30% Theoretical 70% Practice

Customer benefits



- Get used to Sepam protection range
- Be able to select and implement Sepam in your application
- Optimize your automation
 application and related cost
- Get a deep understanding of Sepam 80 and related software
- Optimize your automation
 application and related cost





Schneider Electric

SEPAM 60 - Expert

Course topics

- Use advanced functions of SFT2841
- Practical example and exercises

Duration

- 3 Days
- 30% Theoretical 70% Practice

Objectives

- Know the advanced features of Sepam 60
- Use and Implement Sepam 60
- Use control logic
- · Create and customize the mimic editor

Audience

- · Product application engineers
- · Service or technical support protection team
- Protection engineers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Customer benefits



- Get a deep understanding of Sepam 60 and related software
- Optimize your automation
 application and related cost

Learning Path



Feeder protection - VAMP protection relays

Course topics

- Protection functions available in feeder mode
- Active blocking of protection stages using another stages, digital inputs or logic
- Event and fault information tracking from the protection stage and entire relay related event buffers
- Configuration of single line mimic
- Primary object interlocking method
- Auto-recloser configuration and operations
- Overview of the model of the feeder protection system
- Protection of neutral isolated MV network, resonant earthed MV network, resistive earthed MV network, low impedance earthed MV network
- Local operation with the feeder terminal
- Settings of the feeder protection
- Testing of non directed short circuit protection
- Testing of the directional earth fault protection
- Testing of broken wire protection
- Disturbance recording

Objectives

• To be able to set a feeder protection scheme with VAMP protections relays and generate faults to test this solution

Audience

- Field engineers
- Maintenance technicians
- Substation operators who are interested to understand the feeder protection principles, setting guide and testing

Date, place & price

Contact us:

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Learning Path



Duration

- 1 Day
- 50% Theoretical 50% Practice

Customer benefits



- Possibility of doing this training course on your own site and at your own convenience
- Through practical training, and hardware simulators of a power distribution system, the trainee will be able to set a feeder protection scheme and generate faults to test his solution



Generator protection - VAMP protection relay

Course topics

- System overview
- Protection of generator at grid connection
- Stator earthing methods
- Over-current protection
- Reverse power protection
- Loss of excitation protection
- Stator winding fault protection
- Stator inter-turn fault protection
- Stator earth fault protection
- Over-voltage protection
- Under/over frequency protection
- Under-balance protection
- Unbalance protection
- Disturbance recording

Objectives

 To be able to set a generator protection scheme with VAMP protections relays and generate faults to test this solution

Audience

- Field engineers
- Maintenance technicians
- Power plant operators who are interested to understand the fault dynamics in a generator and how VAMP protection relays protect machines

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Duration

- 1 Day
- 50% Theoretical 50% Practice

Customer benefits



- Possibility of doing this training course on your own site and at your own convenience
- Through practical training, and simulators of a power plant, the trainee will be able to set a protection scheme and generate faults to test his solution. He/she can also test the efficiency of the protection relay at different fault situation, which could be impossible to test in a real situation



NRJED114601EN

Motor protection - VAMP protection relay

Course topics

- Characteristics of asynchronous motors
- Calculation of setting values using the motor name plate values
- Overcurrent protection, high-set over-current
- Current unbalance protection
- Stall protection
- Thermal overload protection including cyclic overload
- Temperature measurement
- Earth fault protection
- Undercurrent protection
- Disturbance recorder file analyzing methods
- Auto-reclosing operations
- Disturbance recording
- Setting and configuration of VAMP 40 for motor protection application
- Testing the motor
- Earth fault test
- Loading conditions, unbalance
- Measurement and recording overview of the model of the feeder protection system
- Measurements and disturbance recording

Objectives

 To be able to set a generator protection scheme with VAMP protections relays and generate faults to test this solution

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Duration

- 1 Day
- 50% Theoretical 50% Practice

Customer benefits



- Possibility of doing this training course on your own site and at your own convenience
- Through practical training, and hardware simulators of a three phase motor testing system, the trainee will be able to set a protection scheme and generate faults to test his solution

Audience

- Field engineers
- Maintenance technicians
- Substation operators who are interested to understand the fault dynamics and test the efficiency of the protection relays at predefined fault

Learning Path



Transformer protection - VAMP protection relay

Course topics

- Differential protection operation principle
- Connections and vector group of the transformer
- Settings of the differential protection
- Measurements
- Differential current and biasing current
- Second harmonic blocking
- Disturbance recording
- · Overview of the model of the power transformer
- Differential protection operation principle
- Connections and vector group of the transformer
- Settings of the differential protection
- Measurements and calibrations
- Definition of the operating characteristics
- Differential current and biasing current
- Transformer internal faults and their generation
- Testing against internal faults
- Second harmonic blocking
- Disturbance recording

Objectives

 To be able to set a transformer protection scheme with VAMP protections relays and generate faults to test this solution with a hardware simulator of a real power transformer

Audience

- Field engineers
- Maintenance technicians
- Substation operators who are interested to understand the fault dynamics in and test the efficiency of VAMP protection relay

Date, place & price

Contact us:

global-automation-training@schneider-electric.com

Learning Path



Duration

- 1 Day
- 50% Theoretical 50% Practice

Customer benefits



- Possibility of doing this training course on your own site and at your own convenience
- Through practical training, and hardware simulators of a power transformer, the trainee will be able to set a protection scheme and generate faults to test his solution. He/she can also test the efficiency of the protection relay at different fault situation, which could be impossible to test in a real situation



Vamp arc flash protection

Course topics

- Arc flash phenomenon
- Introduction to Vamp 221/321 + I/O units hardware and functions
- Basics of Vamp arc protection system
- · Vampset configuration tool overview
- Vamp 321 setup and configurations
- I/O unit configurations
- Application examples and designing

Objectives

- Understand the basics of Vamp Arc Flash protection,
- Become familiar with Vamp Arc Protection products and be able to configure Vamp Arc Protection products.

Audience

• Everyone insterested about Vamp Arc Protection range.

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Duration

- 2 Days
- 50% Theoretical 50% Practice

Customer benefits



- Possibility of doing this training course on your own site and at your own convenience
- Be able to set an arc protection scheme and generate faults to test his solution.
- Test the efficiency of the protection relay at different fault situation.

Learning Path





Human machine interface - VAMP protection relay

Course topics

- Description of VAMP front panel and its structure
- The use of the LCD and keys
- Reading the alarm indicators
- Menu structure and description
- Navigation in the menu
- Configuration and settings
- Calibration and event reading

Objectives

 To introduce new user to the HMI of the protection relay series Vamp 50, Vamp 200, Vamp 300 series

Audience

- Field engineers
- Maintenance technicians
- Substation operators who are interested to focus on the core protection functionality of the relay by mastering quickly the operation of the VAMP devices

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Duration

- 1/4 Day
- 50% Theoretical
- 50% Practice

Customer benefits



- Possibility of doing this training course on your own site and at your own convenience
- Through practical training, and hardware simulators, the trainees will learn how to use VAMP relays features

Learning Path





Schneider Electric

VAMPSET - VAMP protection relay

Course topics

- Getting started
- Communication settings
- Language support
- Program settings
- Relay configuration window
- Relay setting groups
- Disturbance record evaluator
- Navigation in the menu
- Configuration and settings
- Event reading
- Creation of project structure in VAMPSET
- Configuration example: relay addressing, scaling CT & VT, selection of protection stages, object and mimic configuration, output matrix determination, testing object control

Objectives

 To introduce new user to VAMPSET configuration software for VAMP protection relays

Audience

- Field engineers
- Maintenance technicians
- Substation operators who are interested to focus on the core protection functionality of the relay by mastering quickly the operation of the VAMP devices

Date, place & price

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Learning Path



Customer benefits

Duration

1/4 Day



- Possibility of doing this training course on your own site and at your own convenience
- Through practical training, and hardware simulators, the trainees will learn how to use VAMPSET configuration software features



Easergy telecontrol – Installation, operation and maintenance

Course topics

• Introduction:

Easergy range presentation and technical reminder about earthing systems and communication

- Easergy T200I serie 3: Installation Commissioning Operation Maintenance
- Easergy T2000 P: Installation Commissioning
- Easergy L500 supervisor: Installation Easergy L500 configurator Easergy L500 supervisor
- Easergy G200 & Flite 116SA
- Flair 200C & Flair 5xx
 Functionalities description
 Software configuration

Objectives

 To know how to use, install and perform a maintenance on Easergy range equipments

Audience

• All people interested in the Energy sector

🗩 Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites Knowledge of electrical networks & knowledge in communication Training EASER02

Next step

• 4 days

- 60% Theoretical
- 40% Practical

Customer benefits



• Possibility of doing this training course on your own site and at your own convenience





iRIO / XFLOW - Basics

Course topics

- Introduction: Equipment installation and maintenance Schneider Electric telecontrol Presentation of iRio hardware Installation
- Software Xflow Presentation of functionalities On-site implementation & maintenance RTU programmation Kervisu presentation

Objectives

 To know how to install on-site iRIO / Xflow products and how to perform a maintenance on it

Audience

 People interested in Easermetry range and how to use it

🗩 Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

- Types of sensors (4-20mA, Pt 1000, etc)
- Knowledge of IT networks
- RS485 field bus

Training IRIO01



Customer benefits



IRI001

 Possibility of doing this training course on your own site and at your own convenience

Next step



Kerwin - Basics

Course topics

- Software installation, getting started, initial configuration
- Configuring communication with RTUs
- Configuring W@de X series
- History and measurement files
- Creating graphics, synoptic, workgroups and site groups
- Configuring task scheduler, call procedures, charts
- Operation from Kerwin, from Kerweb

Objectives

• To know how to use and configure Kerwin software

Audience

 People willing to know how to use and configure Kerwin software

🗩 Date, place & price

Contact us: global-automation-training@schneider-electric.com

Duration

3 days

Customer benefits



• Possibility of doing this training course on your own site and at your own convenience

Learning Path





XFLOW - Advanced

Course topics

- Possible content to be adapted to participants requirements
- Calculation formulae, time schedules, automated control systems: advanced course, synoptic
- Inter-site Links
- Modus networking and supervision of RTUs
- Advanced maintenance functions
- Xflow table structures
- Presentation of hardware
 and software developments
- Communication protocols (Modbus, jbus, etc)

Objectives

• To know how to program the equipment and dedicated operation

Audience

 People knowing Xflow sottware and looking for more advanced knowledge

🗩 Date, place & price

Contact us: global-automation-training@schneider-electric.com



Duration

2 days

Customer benefits



 Possibility of doing this training course on your own site and at your own convenience XFLOW

Distribution management system - Overview

Course topics

- SCADA, DMS systems, global system functionality
- Description of Hardware and software architecture
- Global and detailed functionality of SCADA OASyS
- Global and detailed functionality of DMS
- Product description
- Database real time structure
- · Operation machines. Description of supported functions
- Description of historical database
- Tasks and operations
- Installation, configuration, operation, maintenance and administration

Objectives

- Understanding DMS/Scada systems
- Overview of the system set installed by DMS and OASyS DNA

Audience

 Users who want an overview of all aspects of the system set installed by DMS and OASyS DNA

🟉 Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path



Customer benefits

Duration

3 Days



- DMS overview
- Operation in DMS
- Administration in DMS

Distribution management system - Operation

Course topics

- Description of hardware and software architecture
- Database real time, duality, state of services
- Description of historical data base
- DMS operating environment
- DMD User interface
- Elements of network diagram
- Navigation options in DMD, operation modes, dispatching
- Graphic operator interface, operation modes, case studies, daily activities
- State of breaker element, measures, basic and advanced network functions
- Operating environment SCADA
- Navigation between graphics
- Lists of Signals, operations on lists, communication: PLC's, connections
- Alarms and events, reports, curves

Objectives

- · Know the operative environment of DMS
- Use the DMD: Dynamic Mimic Diagram
- Manage different options
- Create visibility profiles

Audience

 Users who are responsible for the operation and control system monitored by DMS with DNA OASyS

🟉 Date, place & price

Contact us: global-automation-training@schneider-electric.com

Training

DCS013

Next step

Learning Path

Prerequisites Windows operating system at user level Customer benefits

Duration

5 Days



- DMS overview
- Operation in DMS



Grid Automation Solutions

Course topics

- Overview of a SCADA
- Description of OASyS services .
- Initial notions about security .
- OASyS configuration •
- Topologies •
- Hardware and software architectures
- Configuration examples .
- Alarms and events .
- Brief introduction to OASyS database structure

Scada OASyS DNA - Overview

Objectives

- Get an overall idea of SCADA OASyS
- · Learn security configuration and multiple OASyS scenarios
- Dimension the OASyS database structure

Audience

· Users who want to acquire a first approach to OASyS DNA

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites Windows operating system at user level



DCS018

Customer benefits

Duration

3 Days

· First approach to OASyS DNA



OASyS DNA

Scada OASyS DNA - Operation

Course topics

- System description and services
- Topology
- Operating environment and navigation between graphics
- Lists of signals and operations on them
- Communications: remote and connections
- Alarms and events
- Operations on points
- Control signals
- Reports
- Curves: historical and real time

Objectives

- Get an overall idea of SCADA OASyS
- Operate the environment and navigate between models
- · Display the communications as well as the signals
- Manage alarms and events
- Control over field devices

Audience

 Users who are responsible for the operation and control of system overseen by OASyS DNA

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites Windows operating system at user level



• 4 Days

Customer benefits



 Operational environment in Oasys DNA

Course topics

- Design of the graphical user interface
- Getting to ezXOS environment, the graphical database and distribution processes.
- eXtended editor
- · Generic objects and controls
- .NET controls
- VB.NET basic programming
- Tips and tricks

Objectives

- · Learn the design of the graphical user interface
- Work with eXtended editor (XE), the user interface
- Distribute processes among stations
- Develop new models or modify the existing ones

Audience

• Users who are responsible for the development and customization of project drawings in environment of SCADA OASyS DNA

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

 Prerequisites
 Training
 Next step

 Windows operating
 DCS022
 Next step

 system at user level
 DCS022
 Next step

Customer benefits

Duration

5 Days



OASyS DNA using eXtended editor





OASyS Scada DNA - Administration

OASyS DNA

Course topics

- Description of OASyS services
- Network Management Console (NMC), monitoring and status icons
- Permissions and authorizations
- Services, systems and machines
- Data acquisition and communications
- Real Time Database (RTDB), table structure, backups.
- ACE routines (calculation engine)
- Historical database, recovery, access and queries
- Archive

Objectives

- Learn the OASyS functionality divided among all services it has
- Know OASys systems architecture, both software and hardware
- Dimension the structure of the realtime Database: tables and most important fields
- Dimension the structure of the historical database: tables and most important fields
- · Configure archiving and queries to database

Audience

 Users who are responsible for the maintenance and administration supervised by OASyS DNA system

Date, place & price

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Learning Path



Customer benefits

Duration

5 Days



 Administration and maintenance of OASyS DNA



OASyS Scada DNA - Development

OASyS DNA

Course topics

- OASyS DNA Software architecture
- Access layer database. Virtual layer
- Basic and network infrastructure
- Security active directory
- Middleware
- Distributed OASyS DNA
- Process functionality, start and stop processes, communication processes
- Inclusion of new OASyS processes
- Application programming on OASyS DNA, sample application
- ODBC: basis, examples and practices
- OASyS APIs: basis, examples and practices

Objectives

- Know the OASyS DNA Software architecture
- Access to the layer database, virtual layer
- Programming on OASyS DNA
- Work with ODBC & OASyS APIs

Audience

 Users who are responsible for developing new applications on OASyS DNA, based on obtaining information from the real-time and historical database

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites Windows operating system at user level Training DCS021



Next step



Duration

4 Days

 Developing new applications in OASyS DNA



METSO DNA - Maintenance



DCS015

Course topics

- Metso DNA system
- Processors. E/S Cards and power cards
- Communications
- Architectures
- Metso engineering tool EAS
- Scheduling E/S wired
- Real-time signal monitoring
- Forcing logic signals. Interlocks
- Basic logic blocks
- Alarm levels. Missed field readings
- Search by cross-reference signal

Objectives

- Understand the architecture of Metso DNA system
- Work with EAS
- Learn basic logic blocks

Audience

 Users who are responsible for the maintenance and administration the system supervised by Metso DNA system at user level

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

Windows operating system at user level



Next step

 Possibility of maintenance and administration in Metso DNA

Duration

4 Days

Customer benefits



METSO DNA - Operation



Course topics

- Structure desk of DNA use
- Control panel
- Working with screens. Navigation
- Alarms and events
- Data presentation, equipment and processes states
- PID controller
- Values, measures
- Engines, actuators
- Sequences
- Trends windows

Objectives

- Understand the structure desk of DNA use
- Operate Metso DNA environment
- Interact with PID and equipment

Audience

 Users who are responsible for the operation and control of system overseen by Metso DNA

📁 Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites Windows operating system at user level



_____ Customer benefits

Duration

3 Days



 Possibility of operation in metso DNA



METSO DNA - Programming



DCS017

Course topics

- Metso DNA environment
- DNAexplorer, function explorer
- Automation language, function blocks, application examples
- Functionalities fbcad
- Programming E / S wired, control loops, motors and valves
- Alarms and graphics editing process, monitoring real-time signals
- Forcing logic signals, interlocks, basic logic blocks, sequence analysis
- Alarm levels, missed field readings, search by cross-reference signal
- Functionalities, DNAuseEditor: basic programming functionalities and dynamic elements
- Debugging tools.: Diagnostics tools, debugger, function-test
- Historical database (Metso IA)
- Enable signals, monitoring the size of the DB
- Implementation and backup recovery of historic data

Duration

5 Days

Customer benefits



 Possibility of maintenance & administration as well as developing new applications in Metso DNA

Objectives

- To be able to use Fbcad
- Understanding DNAuseEditor
- To be able use debugging tools
- To be able use engineering tools

Date, place & price

Contact us:

global-automation-training@schneider-electric.com

Learning Path

Prerequisites Windows operating system at user level



Audience

 Users who are responsible of developing new applications in Metso DNA **Grid Automation Solutions**



NRJED114601EN

DCS014

Distribution management system - Administration

Course topics

- Functionality, storage architecture
- Starting and stopping the system, supervision
- DMD: Dynamic Mimic Diagram
- Operation interface, joint scheme and detailed view, details of network elements
- Breaker elements states, basic and advanced network functions
- Symbol Editor (SE)
- Configuration symbols, graphics editor
- Builder Network (DNB / Builder)
- Elements catalog, type curves, bays and other elements
- Configuring acquisition and control elements, electrical and graphic design network
- Management Options (DNO): Parameterizing Functions, visible attributes, appearance

Objectives

- Understand the concepts of DMS and initial approach to DMD
- Optimize the visibility options through DNO
- · Create the repository using network builder
- Draw basic elements using Symbol Editor (SE)

🟉 Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites Windows operating system at user level



Next step

Customer benefits

Duration

6 Days

- DMS overview
- Operation in DMS
- Administration in DMS

Audience

 Users who are responsible for the operation and control system monitored by OASyS and who have to configure DMS functions



NRJED114601EN

Fundamentals of digital control system and PACiS operation & maintenance principles

Course topics

- Introduction to Digital Control system (DCS)
- Global overview of DCS: architecture, communication . principles, IEDs, bay computers, gateways, human machine interface
- Introduction to IEC 61850 communication standard
- DCS specification principles
- PACiS architecture examples .
- PACiS architecture, elements, communication principles, operation principles
- PACiS configuration tools and process
- PACiS maintenance Tools and process
- Hands-on

Objectives

- Give an overview of the architecture and the task setting with the digital control system environment
- Understand what a digital control system is
- · Have a good understanding of PACiS solution, as well as on the functional capabilities, operation and maintenance point of view

Audience

- · Technicians and engineers from design or control departments
- Project managers
- · Operation / maintenance engineers and managers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites Electrical substation: Basic knowledge

Duration

- 3 Days
- 90% Theoretical 10% Practice

Customer benefits



- · Real hands-on on electrical equipment
- Brings key knowledge on digital control systems
- Gives the necessary knowledge to understand the corresponding advantages and application, applied on PACiS
- Gives an overview of operation & maintenance in a PACiS system



DCS007

PACiS protection automation & control -Architecture & operation

Course topics

- PACiS architecture, elements, communication principles, . operation principles
- PACIS human machine interface, screen views, alarms, log, control, command, security
- Hands-on EcoSUI HMI overview and use:
 - Single line diagrams presentation and use
 - System view
 - Commands
 - Faulty equipments diagnostic (system view & events)
 - Alarm management
 - Users management
 - (number and kind of profiles)
- MiCOM C264 bay computer
- Hands-on with MiCOM C264
- Maintenance level 1

Objectives

- · Learn the basics of PACiS
- Provide an overview of PACiS architecture and components focusing on EcoSUI HMI and how to operate the system
- · To know how to use EcoSUI, operate and monitor processes

Audience

- · Operators, electrical staff of PACiS system
- Final user Operation engineer using EcoSUI
- Engineer willing to discover EcoSUI

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Duration

- 3 Days
- 30% Theoretical 70% Practice

Customer benefits



- · Real hands-on on electrical equipment
- Brings key knowledge on digital control systems
- Participants will be able to operate the PACiS system



PACiS protection automation & control – Architecture, operation & maintenance

Course topics

- Introduction to the digital control system
- Field area/ functionalities/ architecture
- EcoSUI: Human machine interface, alarm moitoring, control, security
- C264 bay computer: functionalities, hardware overview, maintenance troubleshooting & commissioning
- Database of the system, process configuration, configuration editor, database management
- PACiS gateway for scada communication
- Hands-on

Objectives

- Learn how to use PACiS
- Get an overview of various subjects allowing participants to understand the PACiS Integrated solution
- Learn how to operate, define the subsets and carry out maintenance on the system

Audience

- Technicians and engineers from design or control departments,
- Project managers
- Operation / maintenance technicians

🟉 Date, place & price

Contact us: global-automation-training@schneider-electric.com

Duration

- 5 Days
- 50% Theoretical 50% Practice

Customer benefits



• Real hands-on on electrical equipment

Next step

- Provides the knowledge necessary to understand the advantages and application of the PACiS digital control system
- Gives operation and maintenance teams autonomy in their daily job

Learning Path

- Prerequisites
- Electrical substation: Basic knowledge
- Good knowledge of Windows

Training DCS009



MiCOM C264 - Compact remote terminal unit

Course topics

- Functionalities of compact RTU
- MiCOM C264: field area, functionalities, architecture
- RTU: hardware and software architecture
- Human machine interface
- Configuration tools
- Maintenance: 1st level / error messages
- Hands-on

Objectives

- Understand and use the compact RTU MiCOM C264
- Understand how the new compact RTU allows decentralized control and monitoring

Audience

- Technicians and engineers from design or control departments
- · Project managers
- Operation, maintenance engineers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites Electrical substation: Basic knowledge



Next step

Duration

- 4 Days
- 60% Theoretical 40% Practice

Customer benefits



- Real hands-on on electrical equipment
- Gives operation and maintenance teams autonomy in their daily jobs

7

DCS025

SAITEL DP & SAITEL DR

Course topics

- · Introduction to remote systems, architecture of such systems
- Modules Saitel 2000 DP
- Functional description and hardware, hardware and software sonfiguration
- Diagnosis and treatment of abnormalities indicators
- · Configuration database, terminal operations
- Signal generation and modification of existing
- Generating configuration files, loading and monitoring of DB
- Introduction to IsaGraf (logic program)
- Project management logic, introduction to programs: consultation and analysis, FBD language
- Connection to the system CPU.
 Maintenance and monitoring of the project

Objectives

- Understand the different hardware configurations
- Configure the database by different options of software
- · Generate configuration files to load into the RTU
- Introduce Isagraf (Logic Program)

Audience

 Users who are responsible for the maintenance of the system monitored by Saitel DP or DR

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path



Duration5 Days

Customer benefits



- Maintenance and monitoring of the project
- Configuration of the database
- Introduction to logics

Cyber Security in electrical substations

Course topics

- · Introduction: Cyber Security definition and concepts
- Status of Cyber Security related standards
- Risk assessment introduction
- Organizational concept of Cyber Security
- Process requirements concept of Cyber Security
- Technical solutions to make and keep a system Cyber Secure

Duration

- 3 days
- 100% theoretical

Customer benefits

 Get the basic knowledge of risk analysis and Cyber Security

• Get an updated picture of Cyber

· Know how to protect a substation

Security current challenges

 Be able to identify security weaknesses for a given system

from cyber attacks

concepts



- Get along Cyber Security concepts
- Be able to identify Cyber Security risks on substation scales
- Raise awarness about Cyber Security state of mind

Audience

- Application engineers
- Maintenance administrator
- Substation design architects
- Operation engineers
- Project managers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites

Knowledge and understanding of power networks, substation communication

Training GEE010 Next step



Schneider Electric

Cyber Security

Course topics

- · Configuration of active directory and group policies
- McAfee ePolicy orchestrator
- Symantec back-up
- SolarWinds network performance ponitor
- Juniper SRX firewall
- Windows Software Update Service (WSUS)

confidentiality and to empower staff to have the technical knowledge and ability to continue on with the security efforts of the organization.

· To ensure availability, integrity, and

Duration

- 5 days
- 100% theoretical

Customer benefits



• Dedicated technical Cyber Security training environment, balanced with an appropriate level of theory to allow users to apply their newlygained technical knowledge

Audience

Objectives

 Technical staff with direct responsibility for supporting and configuring host-based security controls for Schneider Electric industrial automation systems

Date, place & price

global-automation-training@schneider-electric.com



CSIN01



Cyber Security awareness for your operational teams - Empower your staff

CSAL1

Course topics

- · Examples of recent attacks on critical infrastructures
- Physical security, Cyber Security and cyber physical security
- Difference between Informational technology and operational technology
- Cyber Security risks in energy automation systems
- IEC 62443/ISA99 overview
- Defence in depth approach to Cyber Security
- Overview of maintenance operations in secure environment

Duration

- 2 days
- 80% theoretical 20% pratical

Customer benefits



· Ensure business contrinuity

· Cyber Security sensitive staff

Reduce risk of social engineering type attacks and system misuse
Ensure quick incidence response

Objectives

- Introduce Cyber Security in energy automation context.
- · Sensitize participants on Cyber Security risks
- Provide overview of Cyber Security international standards e.g. IEC 62443/ ISA99

Audience

• Engineering, operations and maintenance staff managing energy automation systems for critical infrastructure companies

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path Prerequisites: Basic knowledge of computer system and IT knowledge of automation system network architectures. Training CSAL1 Next step CSSL2



Cyber Security Specialist Confidence to your organizational DNA

Course topics

- IEC 62443-2-4 basics
- · Managing risk on grid automation systems
- Security countermeasures
- Secure system architecture concepts based on concrete examples
- · Patch management in automation systems
- Incidence response
- Managing commissioning and maintenance
 operations in secure environment

Objectives

- Understand: security risks on energy automation systems, secure system architectures, security countermeasure for energy automation systems
- Develop understanding of IEC 62443
- Understand mandatory processes to manage security in automation systems

Audience

• Engineering and operational staff managing energy automation systems for critical infrastructure companies

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Duration

- 5 days
- 70% theoretical 30% practical

Customer benefits



- Business continuity
- Specialist Cyber Security staff
- Benchmark your security strategy
- Reduce risk of social engineering type attacks and system misuse
- Ensure quick incidence response

Learning Path



Cyber Security Expert Confidence to your organizational DNA

Course topics

- Cyber asset management
- Perimeter security configuration
- System hardening
- System anti-malware management
- System security policy management
- Next generation firewall
- IPS/IDS configuration
- System security auditing
- System security testing
- System patch management
- System commissioning and maintenance management
- Security reporting

Objectives

- · Perform regular review of automation systems
- Communicate effectively with suppliers to manage security deliveries
- Implement security countermeasure & perform security update on the systems

Audience

• Operation and maintenance experts in working in substations and control centers

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path



Duration

- 5 days
- 80% theoretical 20% pratical

Customer benefits



- Reliable in-house Cyber Security expertise
- Ensure business continuity
- Ensure quick incidence response
- Reduce risk of social engineering type attacks and system misuse

Cyber Security



Advanced Cyber Security and networking expert Acceleration to your Cyber Security deployment

Course topics

Networking basic and advanced concepts

- Understanding system networks
- · Advanced networking and architectures
- · Management and monitoring of system networks

Cyber Security basic and advanced concepts

- Security essentials
- Ethernet/IP security concepts
- Advanced network security
- Implementing enterprise architectures, operational technology security
- · Management of operational technology security

System administration

Management and administration of system network servers

Certification

Objectives

- Strong competence building to manage Cyber Security in large systems
- Develop capability monitoring, analysis, and troubleshooting of systems and networks

Audience

 Operation and maintenance automation system experts working in large substations and control centers & Cyber Security core team in large utilities.

Date, place & price

Contact us: global-automation-training@schneider-electric.com

Learning Path

Prerequisites: Basic knowledge of computer system and IT knowledge of automation system network architectures Training ACSNE3 Next step

Duration

- 11 weeks
- 40% theoretical
 60% pratical

Customer benefits



- Optimize your Cyber Security
 investment
- Rapid, reliable in-house Cyber Security expertise
- Ensure business continuity
- Certified experts





	T '11		Duratio	
Refence	litle	Objectives	~ 10 min fo	
B1 IEC 61850	Introduction to IEC 61850 standard	Learn where IEC 61850 standard is used, for what purpose and what is its content	each modu	
B2 IEC 61850	Main values of IEC 61850	This module describes the main us benefits expected from IEC 61850 and what could be achieved in practice.	ser	
B3 IEC 61850	Application domains of the IEC 61850 standard	This module describes the main application domains and associate parts in the IEC 61850 standard document structure	ed	
B8 IEC 61850	IEC 61850 information model	Understand the principles of modelling information in IEC 61850 how it is represented and how it is used),	
B13 IEC 61850	Communication services and network model	To introduce communication capabilities offered by IEC 61850 and to present different levels of communication		
B20 IEC 61850	System Life Cycle and IEC 61850	IEC 61850 accompanies the user throughout the life cycle from planning to decommissioning		
B31 IEC 61850	IEC 61850 Today's status and Future evolutions	The roadmap of the IEC 61850 standard, the main application domains and associated parts in t standard document structure	he	

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Bx IEC 61850

Audience

- Managers
- · Anyone that appreciates the benefits of understanding IEC 61850 standard!

Customer benefits

- Get he overview of IEC 61850 standard in term of application domains, system life cycle and user benefits
- Training accessible 24/7

Web portal access

These modules are available at:

https://industrialtraining.schneider-electric.com/plantstruxure/energyautomationtraining

Learning Path

Step 1							
B1	B2	B3	B8	B31	B20	B13	
IEC 61850							

IEC 61850 modelling standard level 1 – General concepts

Course topics

- IEC 61850 standard Introduction (history, objectives)
- Data modeling: from physical devices to data attributes
- IEC 61850 language for configuration
- · Communication models and services
- Abstract services mapping
- IEC 61850 related documentation: certificates, PICS, MICS, etc.
- IEC 61850 engineering files

Objectives

- Get the general overview of IEC 61850 standard
- Understand the application of IEC 61850 protocol to electrical substations

Audience

- Maintenance and commissioning engineers
- Protection Engineers, protection design engineers
- Project managers



Contact us: global-automation-training@schneider-electric.com

Duration

- 2.5 Days
- 80% Theoretical 20% Practice

Customer benefits



- Get the basic knowledge to understand and use IEC 61850 standard
- Be able to write a IEC 61850 specification for a project

Learning Path



Training DCS003 Next step DCS004

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C61850

IEC 61850 modelling standard level 2 – How to implement IEC 61850 standard

Course topics

- Introduction
- Modeling: data architecture
- ACSI dervices: DataSet model, report model, control model, etc
- IEC61850 documentation: standard chapters, PICS, TICS, MICS
- Top-down and bottom design
- Practical exercise: Application to a complete IEC 61850 project (Protection functions IEC 61850 set-up, station bus network simulation and supervision)

Objectives

- Be able to use and deploy concepts studied in DCS003 course
- Be able to specify IEC 61850 aspects of a system using substation engineering tool

Audience

- · Maintenance and commissioning engineers
- Protection engineers, protection design engineers
- Project managers

Date, place & price

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Learning Path



Duration

- 5 Days
- 50% Theoretical
- 50% Practice

Customer benefits



- Be automous in IEC 61850 files creation
- Be able to create IEC 61850 based configurations
- Be able to commission and maintain an IEC 61850 project

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IEC 61850 - SEPAM

Course topics

- Ethernet TCP/IP overview
- Discover IEC 61850 protocol
- IEC 61850 level 1 solutions
- IEC 61850 level 2 solutions (GOOSE)
- Ethernet architectures recommendations
- Customize SCL files
- Control operation with IEC 61850

Duration

- 5 Days
- 30% Theoretical
- 70% Practice

Objectives

- Get used to the configuration and the commissioning of IEC 61850 for Sepam range
- Understand IEC 61850 protocol

Audience

- Communication engineers
- Product application engineers
- · Service or technical support protection team
- System integrators

Date, place & price

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Customer benefits



• Take full advantage of IEC 61850 communication protocol which is a standard for Industry



SEP04

IEC 61850 - MiCOM Px30 and Px40 series

Course topics

- Basic knowledge of IEC 61850 focusing on protection engineering & field engineers needs
- Service, modeling, network architectures, configuration files, time synchronization, goose and reports, control
- Hands-on:
 - IED configurator use
 - SCL file management
 - Protection relay identification and basic parameters
 - Time synchronization management
 - Protection relay data model through the documentation
 - Data set creation
 - Report control block use
 - Goose configuration
 - Control configuration

Duration

- 3 Days
- 50% Theoretical
- 50% Practice

Customer benefits

• Take full advantage of IEC 61850 communication protocol which is a standard for Industry

Objectives

- Setup IEC 61850 parameters on MiCOM Px30 Px40 series
- Be able to use IED Configurator from MiCOM S1 Studio

Audience

- Technicians
- Design engineers
- Protection engineers
- Commissioning engineers

Date, place & price

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EC 61580

IEC 61850 - SAITEL

Course topics

- Content Standard. Fundamental concepts and data model
- SCL language. Introduction and file types
- Configuration file "CID.xml" (Configure IED Description)
- Description and file structure
- Configuration file "SCD" (Substation Configuration Description)
- Description and file structure. configuration
- Bin Controller IEC 61850
- Importing files needed
 - Configuration as 'Server', 'Goose' o 'Client'
 Other configuration parameters
- Setting coordinate CoreDB

Objectives

- Standard basis
- SCL tool
- Bin controller 61850

Audience

 Users who are responsible for the configuration and equipment maintenance Saitel communicating under this standard

Date, place & price

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Learning Path

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Customer benefits

Duration

3 Days



- Knowledge of the standard
- Configuration of the database using IEC 61850

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DCS024

IEC 61850 - VAMP

Course topics

- Protection functions available in feeder mode
- Historical view to communication protocols
- Communication protocols requirements to industrial and utility systems
- Communication protocols used in industrial applications
- · Communication protocols used in utility applications
- · Tools used for protocol performance evaluation
- Communication gateway requirements for different protocols

Objectives

 Understand benefits of different communication protocols used in utility and industrial installations, and get basic knowledge of the protocols in VAMP protection relays

Audience

- Field engineers
- Maintenance technicians
- Substation operators
- Potection system designers who are interested to focus on basics of the protocols used in protection relays

Date, place & price

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Learning Path



Customer benefits

Duration

• 1 Hour



- Possibility of doing this training course on your own site and at your own convenience
- Through practical training, and hardware simulators, the trainees will learn how to use VAMPSET configuration software features





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