Schneider Electric South Africa

Training Services

Guide
Using this catalogue

This catalogue offers more than just an overview of Schneider Electric’s scheduled instructor-led training courses and on-demand workshops; it also contains valuable information and suggestions on:

- Minimum prerequisite knowledge
- Objectives of each course
- Topics covered
- Intended audience
- Length of course

In addition, each of our courses and workshops are grouped into categories and include a training legend to provide a quick visual overview of the essential skills and knowledge targeted for each course including the type, structure, level and focus of each training course.

Course type

- Indicates a required module of our PlantStruxure certification program that provides expertise across the breadth of Schneider Electric solutions
- Indicates a required module for our SCADA Certification program; recognising those with extensive advanced experience integrating Schneider Electric SCADA solutions

Course structure and level

- Course structure broken down into percentage practical and theory.
- Course complexity or competency level. We recommend that you undertake the necessary prerequisite courses prior to attending.
- Course objective and focus. Larger arrows indicate primary focus, while smaller arrows indicate that some time will be spent exploring this aspect during the course.

Course focus

- Course focuses on Electrical Energy and Power concepts.
- Course focuses on topics relevant to the Building industry

PlantStruxure™ (SoCollaborative)

PlantStruxure™ is a collaborative system that allows industrial and infrastructure companies to meet their automation needs and at the same time deliver on growing energy management requirements.
# Schneider Electric and Education

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## Training Services

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General information and Course Locations, General Terms and Conditions for Training, Course Booking Form
Together, we build a future for young people

Our background in the industrial and commercial sectors and our close collaboration with the educational world (teachers, students, school boards, school inspectors) show our willingness to share a global vision of techniques and technologies in the rapidly evolving world with technical, secondary and higher education.

Our Social Responsibility

We are committed to advancing the successful integration and training of young people. These actions are undertaken in many countries in which Schneider Electric is present and then relayed throughout the world, principally through its foundation.

Training Solutions

Schneider Electric’s training solutions are continually evolving to ensure that they consistently deliver outstanding results. To make it easier for you, our automation training curriculum is now aligned to the PlantStruxure topography, with courses covering software and visualisation, control, networks and communications, and safety and system tools.
Training Services

Today, expertise is usually gained over years of experience on the job, with a significant time lag from hire date to useful productivity. However, acquiring the necessary technical skills through training ensures self-sufficiency; with many flow-on benefits, including: reduced downtime, increased safety and productivity, and improved bottom line.

Improving and educating our future workforce is everyone’s responsibility. At Schneider Electric we are committed to providing you with comprehensive knowledge of our products through high quality, interactive education that can immediately be applied in your workplace or institution.

Schneider Electric’s instructor-led courses are designed to empower your engineering and technical workforce with new skills. Training courses and programs provide hands-on experience, leaving students feeling confident enough to design and configure their own systems and applications using Schneider Electric products and solutions.

Our educational methodology has been proven effective through thousands of hours of instruction. Feedback received from customers confirms our success and drives continuous development of our training curriculum. With a team of qualified in-house product trainers, backed up by technical and solution specialists with domain knowledge expertise, Schneider Electric’s educational programs deliver the training solutions required in your business.

Our training services include on-line, standard instructor-led classes, on-demand workshops and on-site training sessions. Schneider Electric courses are designed to teach fundamental, theoretical and practical knowledge about our products, systems and the application of technology. There is a strong emphasis on increasing your productivity and helping you better manage your life-cycle costs, enabling you to maintain your competitive advantage.

We offer a broad curriculum that can be tailored to meet your specific requirements. This allows us to adapt training according to your existing projects and create manuals specific to your needs. Whether its alignment with your shift requirements, expansion projects or legacy migration strategies, Schneider Electric has the educational services you require.

For more information on Training courses, schedules or pricing, please contact us via telephone on +27 11 254 6400 or email us at za-training@schneider-electric.com
A Complete Range of Training Services

Schneider Electric South Africa offers a suite of Educational Services designed for end users, engineers, system integrators, equipment manufacturers, panelbuilders and educational establishments. Our courses and programs provide you with hands-on experience, leaving you feeling confident enough to design and configure your own systems and applications using Schneider Electric products and solutions.

Instructor Led Training

Schneider Electric’s Educational Services provides multi-level courses for end users, engineers and system integrators. All authorised courses have a limited number of attendees to ensure participating students get the most out of each course and access to an experienced Instructor. Each student is allocated with a PC which is pre-configured with relevant applications and other software needed throughout the course.

Workshops

We also offer a number of specialised workshops delivered by our technical and solution specialists. These workshops can be delivered at one of our local offices or on-site. Due to the specialist nature of these workshops they are available on request.

Custom On-site Training

Our Schneider Electric Instructors can deliver any of our listed courses on-site at your facility. In addition, we also offer Site Specific Courses where you can include modules relevant to your organisation from any of our existing training courses. For certification purposes, an exam invigilation service can also be provided on-site. You should discuss your requirements with your local Educational Services Manager and see how this might best be accomplished.

Self-paced Training

The SCADA curriculum of instructor-led courses is also available as Self-Paced Education Kits. This means you can study the material in your own time and at your own pace. These kits include all the materials you would receive if you attended an instructor-led course. The manuals are easy to follow and include exercises throughout to ensure you become familiar with the practical application of SCADA solutions.

Online Training

Our on-line education modules are designed to provide students with the entry level fundamentals required for our broader industrial automation topics. These free modules act as both a primer for further instructor-led In-Class Training Courses, as well as developing knowledge and expertise for anyone involved in the life-cycle support of Schneider Electric’s automation and control equipment.
The Certified Engineer Program (CEP) distinguishes and recognises engineers skilled in the integration of automation projects. At the heart of the CEP are the SCADA Certified Engineer (SCE) exams, which provide a means of testing experienced systems engineers. They encompass tests for CitectSCADA/ Vijeo Citect knowledge as well as a range of related topics such as PLC communications, Windows OS and networking.

The SCE examinations consist of four separate areas that must be completed to attain the SCE certification:

**PlantStruxure™ Certification Program**

The PlantStruxure™ CEP (Certified Engineer Program) distinguishes and recognises engineers skilled in the integration of Schneider Electric technology based automation projects.

With the certification, Schneider Electric acknowledges to the market that the PlantStruxure™ Certified Engineer masters the Schneider Electric system offer/ technology. The engineer should therefore be capable, to implement a given solution/application in the best possible way using Schneider Electric technology. Currently, the PlantStruxure™ Certified Engineer Program is available only to employees of active Schneider Electric Alliance partners.

Today the Schneider Electric Alliance PlantStruxure Certified Engineer Exam is structured around four key topics:

- Module 1: Schneider Electric Architectures and Networking
- Module 2: Unity Pro and PAC Platforms
- Module 3: Vijeo Citect - SCADA Platform
- Module 4: Engineering Tools

Modules 1 through 3 are mandatory, and passing grades on each module are required to be eligible for certification. Module 4 contains two sub modules - one for UAG and one for sg². A passing grade on only one of these two modules is sufficient to be eligible for certification. A candidate can choose to take either one or both of these. No additional credit is given to candidates passing both sub modules.

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**Schneider Electric PlantStruxure™ Certified Engineer Program**

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**What is the PlantStruxure Certification Program?**

The PlantStruxure Certification Program is designed to test an engineer’s knowledge of Schneider Electric’s preferred systems and architectures. The PlantStruxure Certified Engineer (PCE) status is awarded to engineers who pass four exams designed specifically to test this knowledge.
Software and Visualisation Courses
Ampla Performance
Three-day Instructor Led Course

Course Description
The Ampla Performance training program introduces new Ampla users to the basic concepts and methods involved in configuring and using Ampla Studio and Production Analyst to model the performance of an iron ore mine.

Duration
Three-day course, with lunch provided

Audience
IT Admin and Business System Engineers who use Ampla

Prerequisites
It is essential that students are familiar with Windows operating systems

Course Outline

Day 1 of 3
Day one involves introduction to the various components of Ampla and the module Production.

- Overview of Six Sigma
- Overview of OEE
- Creating a Project (Service Manager)
- Opening a Project (Studio)
- System Configuration
- Defining a Hierarchy
- Security
- Data Sources
- Time Events
- Reporting Points
- Production Points
- Production Analyst
- Project Maintenance

Day 2 of 3
Day two implements various areas of the project design including the modules Downtime and Metrics.

- Downtime
- Standard Fields
- Downtime Classifications
- Cause Codes
- Equipment Types
- Downtime Reporting Point
- Web Client
- Operator Client
- Metrics
- Metrics Reporting
- Period Definitions
- Key Performance Indicator (KPI) Formulas
- Metrics Dashboard

Day 3 of 3
Day three applies the project design elements of Production, Downtime and Metrics from the first two days to a new Case Study

Part number: AUT-MES609310-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Ampla Performance Client
1/2 to One-day On Demand Workshop

Course Description
Users will learn the basics of Improvement Methodologies, why Ampla is being implemented and how Ampla will help them. Operators will be able to enter data into records. Managers will be able to practice using the client analysis tools. This ‘hands-on’ course includes practice with the modules Production, Downtime and Metrics.

Duration
1/2 to One-day course, with lunch provided.

Audience
First time Ampla users including operators and managers at all levels

Prerequisites
It is essential that students are familiar with Windows operating systems

Course Outline

Ampla
- Improvement Methodologies
- Ampla
- Overall Equipment
- Effectiveness

Ampla Clients
- Clients
- Using the Production Analyst and Web Client
- Navigating
- Data Pane
- Top Menu

Production
- Production Module
- Results Grid
- Filter Builder
- Production Charts
- Home Page and Favorites

Metrics
- Overview of Metrics
- Metrics Dashboard
- Metrics Analysis

Downtime
- Ampla Downtime
- Viewing Downtime
- Why Use Downtime?
- Adding Information to Downtime Records
- Analyzing Downtime
- Grouping Data
- Downtime Charts
- Operating Client

Part number: AUT-MES609311-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Cicode Programming
Two-day Instructor Led Course

Course Description
Learn about basic programming techniques using the Cicode programming language in this hands-on interactive course. The course is aimed at the user who has had no programming experience. It is also useful for the experienced user who wishes to become familiar with Cicode.

Duration
Two-day course, with lunch provided

Audience
- Programmers and non-programmers who want to become familiar with Cicode language
- CitectSCADA System Integrators and Designers
- Technical users who develop and maintain their installed CitectSCADA or Vijeo Citect and control systems

Prerequisites
- Students must be familiar with Windows operating systems
- It is also recommended that students attend the CitectSCADA / Vijeo Citect Configuration course prior to attending this course, or have a good working knowledge of CitectSCADA / Vijeo Citect
- A general understanding of PLC communication is recommended.

Course Outline

Day 1 of 2
Day One involves introduction to the various components of CitectSCADA / Vijeo Citect, project design, communications and graphics:
- Introduction
- Commands
- Expressions
- Variable Operators
- The Cicode Editor
- Simple Cicode Functions
- Writing Simple Functions
  - Function Syntax
  - Void Functions
  - Cicode Variables
  - Converting and Formatting Cicode Variables
  - Include Files

Day 2 of 2
Day Two implements various areas of the project design, including controls, alarms and the graphic interface design:
- Conditional Executors
- IF Statement
- FOR Loop
- WHILE Loop
- SELECT CASE Statement
- Return Functions
- Arrays
- Comments
- Debugging

Part number: AUT-CT109320-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Vijeo Citect Historian Configuration
Three-day Instructor Led Course

Course Description
CitectHistorian/ Vijeo Historian (previously CitectSCADA Reports) takes information gathered from your SCADA system and makes it available for display in industry standard applications. This course is designed for engineers who wish to configure and maintain a Historian project and managers who wish to analyse the data in the client tools.

Duration
Three-day course, with lunch provided.

Audience
• People who want detailed knowledge on how to set up and use CitectHistorian/ Vijeo Historian
• Managers who require knowledge of how to use CitectHistorian/ Vijeo Historian on Client Tools to access data
• CitectSCADA/ Vijeo Citect System Integrators and Designers

Prerequisites
• Solid experience in both the Windows operating system and CitectSCADA/ Vijeo Citect

Course Outline

Day 1 of 3
Introduction to CitectHistorian/ Vijeo Historian Server and its various components, followed by hands-on technical training including:

• Installation
• Connecting to HMI, SQL Server
• Publishing Data
• Historian
• Backfill Manager
• Security
• Backup and Restore
• Active Project

Day 2 of 3
Day Two will look at the three clients as they are used “out of the box.” Each client is then customised to suit individual site needs using hands-on technical training:

• Tasks
• Events
• CitectSCADA Reports Web Server Client
• Excel Client
• Statistical Analysis using Excel
• Publishing Data

Day 3 of 3
Day Three extends the techniques studied in the first two days to include reporting. Users will set up a CitectHistorian/ Vijeo Historian system based on a new project to investigate:

• SQL Server Reporting Services

Part number: AUT-CT209310-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
CitectSCADA/ Vijeo Citect Configuration
Three-day Instructor Led Course

Course Description
Gain insight into CitectSCADA/ Vijeo Citect project design and become familiar with configuration techniques. This interactive course includes practice with plant control, data collection, trending and reporting.

Duration
Three-day course, with lunch provided.

Audience
- Those who want to become familiar with CitectSCADA/ Vijeo Citect project development techniques
- CitectSCADA/ Vijeo Citect users, including engineering staff, maintenance staff and plant supervisors
- Technical users who maintain and improve their installed CitectSCADA/ Vijeo Citect and control systems
- Managers who want more than a basic understanding of CitectSCADA/ Vijeo Citect
- CitectSCADA/ Vijeo Citect System Integrators and Designers

Prerequisites
- It is essential that students are familiar with Windows operating systems. Experience in PLC control system design and/or programming is desirable.

Course Outline

Day 1 of 3
Day One involves introduction to the various components of CitectSCADA/ Vijeo Citect, project design, communications and graphics:
- Citect Project Editor
- Citect Graphics Builder
- Cicode Editor
- Managing Projects
- XP Style Projects
- Include Projects
- Setting up Communications
- Graphics
- True Colour

Day 2 of 3
Day Two implements various areas of the project design, including controls and alarms:
- Commands & Controls
- Genies and Super-genies
- Devices
- Events
- Alarm

Day 3 of 3
Day Three continues with the project design elements of CitectSCADA/ Vijeo Citect and introduces methods of reporting and monitoring the system:
- Trends
- Process Analyst
- Navigation
- Accumulators
- Reports
- Security

Part number: AUT-CT209310-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
CitsectSCADA/ Vijeo Citect Customisation and Design
Three-day Instructor Led Course

Course Description
This interactive course will give you insight into the principles behind customising CitsectSCADA/ Vijeo Citect. You will be using different programming environments, including Cicode and VBA. In addition, you will learn about the Citect Kernel and exchanging data between CitsectSCADA/ Vijeo Citect and other applications such as Microsoft Access and Excel.

Duration
Three-day course, with lunch provided.

Audience
• Advanced Programmers
• CitsectSCADA/ Vijeo Citect System Integrators and Designers

Prerequisites
• Students must be familiar with Windows operating systems
• Students should also have attended the CitsectSCADA/ Vijeo Citect Configuration course and a Cicode Programming or CitsectSCADA/ Vijeo Citect Networking and Architecture course or have at least six months experience in CitsectSCADA/ Vijeo Citect design and programming

Course Outline

Day 1 of 3
Day One focuses on the details of creating customised pages in your CitsectSCADA/ Vijeo Citect project:
• Custom Templates
• Complex Genies
• Genie Forms
• Smart Popup Pages

Day 2 of 3
Day Two extends the material from Day One to improve the operation and management of graphics pages:
• Cicode Forms
• Custom Navigation
• Custom Menus
• True Color
• Graphics Builder
• Automation Interface

Day 3 of 3
Day Three incorporates some of the most commonly used advanced features of CitsectSCADA/ Vijeo Citect, including connecting to other applications, using ActiveX and using the Citect Kernel:
• CitsectSCADA/ Vijeo Citect and ODBC
• CiRecipe Active X Control
• ActiveX and Cicode
• ActiveX Events
• Process Analyst
• The Citect Kernel and Debugging Code
• Custom Alarm Filtering

Part number: AUT-CT109370-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
ION Fundamentals
Three-day On Demand Workshop

Course Description
Introduction to ION devices using ION Enterprise systems and software

Duration
Three-day course, with lunch provided

Audience
System Integrators and End Users

Prerequisites
- Students must be familiar with Windows operating systems
- An electrical qualification would be an advantage

Course Outline

Day 1 of 3
- Introduction to ION Enterprise
- Introduction to ION meters and ION technology
- Configuring ION devices using the front panel
- Understanding ION communications

Day 2 of 3
- Enter setup mode through the front panel Open of ION setup
- Connect directly to an Ethernet meter
- Use the Setup Assistant Wizard
- View data from an ION device
- PM800 meter by selecting the desired interval of logging and the desired quantities to log
- Configure the onboard alarm options of a PM800 meter

Day 3 of 3
- Basic Vista Navigation
- Introduction to Web Reporter

Part number: AUT-IONF-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Networks and Communication Courses
Citect/Vijeo Citect SCADA Architecture and Redundancy

Two-day Instructor Led Course

Course Description
Gain advanced skills including knowledge of the principles behind networking in CitectSCADA/ Vijeo Citect, such as how CitectSCADA/ Vijeo Citect interacts with a network, redundancy and distributed servers. Learn more about the Citect Kernel and connecting to CitectSCADA/ Vijeo Citect remotely through the Web Client.

Duration
Two-day course, with lunch provided

Audience
- Network administrators who need to understand how CitectSCADA / Vijeo Citect is configured on their network
- CitectSCADA/ Vijeo Citect System Integrators and Designers
- Technical users who maintain and improve their installed CitectSCADA/ Vijeo Citect and control systems

Prerequisites
- Students must be familiar with Windows operating systems.
- It is also recommended that students have attended a CitectSCADA / Vijeo Citect Configuration course or have at least six months experience in CitectSCADA/ Vijeo Citect design.

Course Outline

Day 1 of 2
Day One focuses on the details of networking in CitectSCADA/ Vijeo Citect and the implementation of a fully networked and redundant system:

- Introduction to Networking
- How CitectSCADA Uses a Network
- Clustering
- Online Changes
- Distributed Processing
- Runtime System Management
- CitectSCADA Redundancy
- Distributed Servers
- Configuring a Global Display Client

Day 2 of 2
Day Two incorporates some of the most commonly used advanced features of CitectSCADA/ Vijeo Citect, including remote communications and using the Citect Kernel:

- Using the Citect Kernel
- Web Client
- OPC
- Windows Integrated Security

Part number: AUT-CT109330-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Industrial Communication
Five-day Instructor Led Training Course

Course Description
The objective of this course is to provide students with an understanding of the key communication fieldbuses and networks in the industrial market; including: Modbus, Profibus, CANopen, Ethernet Modbus TCP/IP.

Duration
Five-day instructor led training course with lunch provided.

Audience
- This course is optimised to suit Project, Design, Commissioning or Maintenance Engineers; or anyone who needs to implement industrial communication networks.

Prerequisites
- Knowledge of industrial communication principles
- Ability to configure a PLC using Unity Pro

Course Outline

Day 1 of 5
Day One introduces principles of industrial communications including:
- Fieldbus main features:
  - Medium
  - Size
  - OSI Model.
- Communication principles
  - Master / Slave
  - Publisher / Consumer
- Setup and configuration
- Physical connections to devices (SubD9, RJ45)

Day 2 of 5
Day Two extends the material from day one to include:
- Profile descriptions and implementation
- Mapping, EDS, GSD files
- Network layers, syntax, architecture and topology
- Access to data
  - Read_Var
  - Parameter Telegram
  - PDO & SDO
  - IO Scanning

Day 3 of 5
Day Three continues to extend the concepts covered in the previous days by including:
- Implementation, operating principals, hardware overview
- Diagnostics and error detection
- Helpful hints and things to remember

Day 4 of 5
Network design and implementation using Premium Quantum and M940

Day 5 of 5
Exploring the complete control system

Part number: AUT-ICOMM-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
System Tools
Courses
sg2 Object Library and Configuration
One-day On Demand Workshop

Course Description
This workshop will teach engineers how to quickly build integrated control system elements using our sg2 tool to generate Unity Pro and Vijeo Citect projects. sg2 includes a comprehensive library of pre-tested and validated objects for process control functions, Schneider Electric devices, integrated diagnostics, access control and traceability, it also provides automatic tag synchronisation between Unity Pro and Vijeo Citect.

Duration
Two-day workshop, with lunch provided.

Audience
- This workshop is intended for design engineers and system integrators, seeking to deploy Schneider Electric’s preferred implementation strategy for increased productivity; using our device library and system tool to deliver a pre-validated architecture.

Prerequisites
- Previous experience with our system applications tools: Unity Pro, Vijeo Citect and OFS
- As well as general knowledge of Schneider Electric’s intelligent devices and communications protocols: Ethernet (Modbus TCP), CANopen and Modbus

Course Outline

Day 1
Day One provides an introduction to the sg2 tool, including:
- Navigating the easy to use configuration interfaces to implement pre-tested and validated object libraries
- Process library
- Smart devices library
- Automatically synchronise Unity Pro and Vijeo Citect databases
- Communication and device objects
- Process Control and Regulation
- Sequential Control
- Rich Object Features:
  - Operation modes
  - Bypass and rearm with individual manual interlock and/or alarm conditions
  - Simulation
  - Alarms (HH, H, L, LL, Trip, etc)
  - Independent access control (role dependant)
  - Event logging and traceability of system operation

Part number: AUT-SG2-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Unity Application Generator (UAG) Software

One-day On-Demand Workshop

Course Description
This course covers how to design, build and maintain an automation control system (PLC and SCADA) using the related Unity Application Generator (UAG) software tools. Using reusable objects and automatic application generation, UAG can save up to 30% engineering time. UAG is a functional system development tool used by process engineers and system integrators and has been designed to comply with GAMP and S-88 standards.

Participants are required to bring their own laptop with at least 16GB of spare hard disk capacity as this training is conducted using virtual PCs.

Duration
Three-day workshop, with lunch provided.

Audience
- This course is intended for project/design engineers who design, configure and install Modicon Quantum or Premium hardware, and who write, commission and document Unity Pro user application programs.

Prerequisites
- Be familiar with Unity / Concept or IEC-61131-3
- Be familiar with Vijeo Citect or SCADA development

Course Outline

Day 1
Day One provides an introduction to the UAG system approach, including:
- System setup
- Customising UAG to enforce site standards
- System requirements
- Physical model
- Topological model
- Generating HMI
- Vijeo Citect configuration
- Fieldbus
- PLC channels
- PLC-PLC communication
- Net Partner
- Generation
- DFB Unity Pro
- DFB Concept
- Structured data
- SCoD Editor
- Vijeo Citect graphics design
- Workflow to build an application
- Case study

Part number: AUT-UAG-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Control Courses
Variable Speed Drives (V.S.D) (A.C)
Two-day Instructor Led Course

Course Description
An introduction to theoretical instruction and practical hands-on exercises on the Altivar series of AC Variable Speed Drives. The aim is to provide user or potential users with a sufficient level of competence to correctly select, install and commission Altivar Speed Drives.

Duration
Two-day course, with lunch provided

Audience
- The course is designed to suit Systems Integrators, OEM's or anyone who needs to implement a V.S.D system in industry

Prerequisites
- You will need a background in the basics of general electrical, electronics and VSD basics.

Accreditation
CPD Points: 2 SAIEE 0103

Course Outline

Day 1 of 2
- History
- Speed control methods
- Characteristics / principles of operation
- The Asynchronous Motor
- Features and benefits
- Man/machine dialogue
- Special applications
- Maintenance

Day 2 of 2
- The Altivar range
- Installation or the ATV312
- Commissioning of the ATV 312 range
- Powersuite programming
- Installation or the ATV71
- Programming and commissioning

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com

Part number: AUT-VSD-00
Vijeo Designer (HMI) Programming
Three-day Instructor Led Course

Course Description
This course aims to provide an understanding of the structure and purpose of an HMI system in industry. Downloading of a project into a screen and the interface with a PLC will be covered.

Duration
Three-day course with lunch provided.

Audience
- Project/Design/Plant personnel who maintain, develop or install Magelis HMI hardware.

Prerequisites
- Knowledge of PCs and Microsoft Windows is essential
- Basic PLC knowledge

Course Outline

Day 1 of 3
Overview of HMI and SCADA systems in Industry. HMI hardware and configuration of a new project. Elementary Animation.

Day 2 of 3
Day two continues with Animation and also deals with Save/Restore and Alarms. A student application is built using the information covered thus far.

Day 3 of 3
Day three covers Trends, more detail on Animation, graphs and charts as well as Recipes. The student application is extended to include the new topics.

Part number: AUT-HMI-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Unity Pro Programming
(with Quantum/ M340/Premium PLC Hardware)
Five-day Instructor Led Course

Course Description
This course aims to provide knowledge to develop and/or expand a PLC operated plant. Knowledge of Hardware, Software and Communications is covered. Delegates will then be able to maintain, develop or initiate a PLC project using Unity on a Quantum/M340/Premium PLC. The course is essentially a conversion course from Concept or PL7 Pro.

Duration
Five-day course with lunch provided

Audience
• Project/Design/Plant personnel who maintain, develop or install Quantum/M340/Premium hardware including writing logic, commissioning and documenting

Prerequisites
• Some knowledge of Concept or Unity is an advantage
• Knowledge of PCs and Microsoft Windows is essential

Course Outline
Day 1 of 5
Detailed overview of the Unity package including an understanding of the IEC 1131 standard. Quantum and M340 and Premium hardware is covered as well as the configuration of a PLC for a Unity project.

Day 2 of 5
Continuing with the configuration, day two also looks at Variables and Programming using the Function Block Diagram (FBD)

Day 3 of 5
Day three completes the treatment of the FBD and also covers Ladder Logic programming (basic treatment to show where Unity is the same, or how it differs from previous editors)

Day 4 of 5
Day four covers the Structured Text (ST) editor

Day 5 of 5
Day five deals with Sequential Function Chart (SFC) and the Derived Function Block (DFB)

Part number: AUT-UNY-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Introduction to PLC
(with M340 PLC Hardware)
Three-day Instructor Led Course

Course Description
This course is aimed at people who have never worked with a PLC. Newcomers will obtain a good and basic knowledge about General PLC Technology.

Duration
Three-day course, with lunch provided.

Audience
• Project/Plant personnel who are starting out with PLC work..

Prerequisites
• Competent in using Microsoft Windows

Course Outline

**Day 1 of 3**
- Fundamentals of Automation Control
- Overview of PLC theory and structure
- Boolean Logic
- Basic Windows
- PLC hardware to be used on this course

**Day 2 of 3**
Day two completes the treatment of the PLC hardware. Unity programming languages are introduced with a brief look at each Editor.

**Day 3 of 3**
Day three continues with Unity software

Part number: AUT-PLC-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Legacy Courses
Concept Programming
(with Quantum/ Momentum PLC Hardware)
Five-day Instructor Led Course

Course Description
This course aims to provide knowledge to develop and/or expand a PLC operated plant. Knowledge of Hardware, Software and Communications is covered. Delegates will then be able to maintain, develop or initiate a PLC project using Concept on a Quantum/ Momentum PLC. The course focuses on the graphic editors but a treatment of the text editors is included for self study. Modbus Plus and Ethernet communication is also covered.

Duration
Five-day course, with lunch provided.

Audience
• Project/Design/Plant personnel who maintain, develop or install Quantum/Momentum hardware including writing logic, commissioning and documenting.

Prerequisites
• Basic understanding of PLCs is required (not necessarily Modicon PLCs)
• Competent in using Microsoft Windows

Course Outline

Day 1 of 5
Detailed overview of the Concept package including an understanding of the IEC1131 standard. Quantum and Momentum Hardware is covered as well as the Configuration of a PLC for a Concept project.

Day 2 of 5
Continuing with the configuration, day two also looks at Variables and Programming using the Function Block Diagram (FBD).

Day 3 of 5
Day three completes the treatment of the FBD and also covers Concept Features including Project Browser, uploading, Search and Controller Status.

Day 4 of 5
Day four deals with the Derived Function Block (DFB), Sequential Function Chart (SFC) and Ladder (basic treatment to show where Concept is the same, or how it differs from previous editors).

Day 5 of 5
Day five looks at PLC to PLC comms using Modbus Plus and Ethernet. Documentation and the simulator is also covered.

Part number: AUT-CPT-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
PL7 Pro Programming and Maintenance
Three-day Instructor Led Course

Course Description
This course takes you through Premium and Micro PLC hardware configuration, PL7 Pro’s Project Browser. Students will learn how to successfully assemble, connect and configure the hardware: understand reasons behind programming in sections and the use of Derived Function Blocks and use PL7 Pro software to troubleshoot systems.

Duration
Three-day course, with lunch provided.

Audience
• Electrical engineers and maintenance personnel who maintain plant and systems controlled by Premium or Micro PLCs using PL7 Pro programming software

Prerequisites
• Basic understanding of PLCs is required
• Competent in using Microsoft Windows

Course Outline
Day 1 of 3
Day One focuses on the fundamentals of Micro PLCs including:
• Overview of Premium and Micro PLC hardware configuration
• Overview of the use of PL7 Pro’s Project Browser

Day 2 of 3
Day Two extends the material from Day One to include:
• Connection from the IBM-PC running PL7 Pro to Premium and Micro PLC Processors, using both Unitelway and Ethernet connections.
• Full coverage of basic logic programming using both G7 Grafcet and ladder diagram

Day 3 of 3
Day Three incorporates the skills learned using Derived Function Blocks and basic programming:
• Preparation and use of Derived Function Block types (DFBs)
• Basic PLC-PLC communications programming

Part number: AUT-PL7-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Power Courses
Low Voltage Electrical Distribution (L.V.E.D)
Three-day Instructor Led Course

Course Description
Instruction and assessment in selection, critical functions, faulty analysis and safety aspects of low voltage electrical distribution installations. The aim of this course is to raise the standard of knowledge and skill amongst learners concerns with the design, installation or maintenance of low voltage electrical distribution and power switching component systems, including modern ‘cutting edge’ technology and engineering ‘codes of practice’.

Duration
Three-day course, with lunch provided.

Audience
- This course is designed to suit Systems Integrators, OEM’s, Consulting Engineers, End Users ro anyone designing or maintaining electrical distribution in the electrical industry

Prerequisites
- You will need a background in the basics of general electrical principles
- It is also recommended that students bring calculators and laptops without administrator rights

Course Outline

Day 1 of 3
Day One consists of theory and practical:
- Circuit breaker development
- Basic symbols, acronyms and descriptions
- Standards IEC, SABS, and testing
- Current limitation of circuit breakers
- Earthing systems and earth leakage
- Correct cable section and volt drop calculations
- Power quality, power factor and harmonics
- Voltage sags
- Fault level calculations and diversifying factors
- Introduction to network design

Day 2 of 3
Day Two consists of theory
- Schneider range of products
- Specify the final distribution equipment and accessories, product muti9, vitawatt
- Specify the intermediate distribution and trip modules, includes Easypact, NSX and NS
- Specify final distribution equipment and trip modules includes masterpack and micrologic trip units
- Coordination of circuit breakers includes cascading, discrimination and reading discrimination tabl

Day 3 of 3
Day Three continues with practical:
- Design a network
- Design two projects using Ecodial software

Part number: AUT-LVED-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Medium Voltage Electrical Distribution (M.V.E.D)

Three-day Instructor Led Course

Course Description
Introduction and assessment in selection, critical functions, faulty analysis and safety aspects of medium voltage switchgear. The aim of this course is to raise the standard of knowledge and skill amongst learners concerned with selection, commissioning and protections of medium voltage switchgear.

Duration
Three-day course, with lunch provided.

Audience
- This course is intended for electricians, technicians, consulting and plant engineers who require a working knowledge of medium voltage switchgear.

Prerequisites
- Students attending this course should have a fundamental understanding of electrical low and medium voltage.
- It is also recommended that students bring calculators.

Course Outline

Day 1 of 3
- Introduction, symbols, acronyms, medium voltage fundamentals
- Practical switchgear, metacclad compartmented
- Standards, oschact, basics
- Switchgear safety and testing
- Networks, radial, ring networks
- CT’s and VT’s
- Basics of network design, cables, volt drops
- M.V calculation and fault level calculations

Day 2 of 3
- Switchgear commissioning
- Protection, EFPI’s, IDMT’s
- Protection relays, VIP300 CPAM, differential protection, buchholz protection
- Medium voltage fuses
- Arc breaking mediums, vacuum, SF6, air, oil
- Management of networks easergy T200P and transmission protocols

Day 3 of 3
- Practical network design
- Class breaks into two groups and designs a network
- Layout of plant, site transformers, switchgear, fault levels and protection relays

Part number: AUT-MVED-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Electro Magnetic Power Control (E.M.P.C) (Motor Control)

Two-day Instructor Led Course

Course Description
Instruction and selection, critical functions, fault analysis and safety aspects of electric power control and circuit breaker motor protection. The aim of this course is to raise the standard of knowledge and skill amongst personnel concerned with the design, installation or maintenance of electric motor controls and power switching component systems.

Duration
Two-day course, with lunch provided.

Audience
• This course is designed to suit Systems Integrators, OEM’s and consultants or anyone who wants optimum motor protection

Prerequisites
• Students attending this course should have a background in the basics of motor control
• It is also recommended that students bring calculators

Course Outline

Day 1 of 2
• PCP terms, definitions and symbols
• The AC motor and starter
• The electronic soft starter
• Motor failure and earthing
• The contractor and how to select
• Coordination theory and cable selection
• Short circuit calculations

Day 2 of 2
• Contactor overloading and Auxiliaries
• Intelligent motor starters, TesysU and SesysT operation and set-up
• Basics of motor starter network communication

Part number: AUT-EMPC-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Medium Voltage Electrical Distribution (M.V.E.D)

Three-day Instructor Led Course

Course Description
Introduction and assessment in selection, critical functions, faulty analysis and safety aspects of medium voltage switchgear. The aim of this course is to raise the standard of knowledge and skill amongst learners concerned with selection, commissioning and protections of medium voltage switchgear.

Duration
Three-day course, with lunch provided.

Audience
• This course is intended for electricians, technicians, consulting and plant engineers who require a working knowledge of medium voltage switchgear.

Prerequisites
• Students attending this course should have a fundamental understanding of electrical low and medium voltage
• It is also recommended that students bring calculators

Course Outline

Day 1 of 3
• Introduction, symbols, acronyms, medium voltage fundamentals
• Practical switchgear, metacclad compartmented
• Standards, oshact, basics
• Switchgear safety and testing
• Networks, radial, ring networks
• CT's and VT's
• Basics of network design, cables, volt drops
• M.V calculation and fault level calculations

Day 2 of 3
• Switchgear commissioning
• Protection, EFPI's, IDMT's
• Protection relays, VIP300 CPAM, differential protection, buchholz protection
• Medium voltage fuses
• Arc breaking mediums, vacuum, SF6, air, oil
• Management of networks easergy T200P and transmission protocols

Day 3 of 3
• Practical network design
• Class breaks into two groups and designs a network
• Layout of plant, site transformers, switchgear, fault levels and protection relays

Part number: AUT-MVED-00

Registration and Training Dates
Web: www.schneider-electric.co.za
Email: za-training@schneider-electric.com
Further Information
General Information and Course Locations

Commence at 8:00 am
All of our courses, unless otherwise indicated, commence with registrations at 8:00 for 8:30 am start

End Time at 4:30 pm
Our Classes finish at 4:30 pm with breaks and refreshments during the course of each day

Johannesburg – Midrand (Head Office)
1 Riverview Office Park
Janadel Avenue, Halfway Gardens,
Midrand
1685
Tel: +27 11 254 6400
Fax: +27 11 254 6702

Cape Town – Western Cape
Unit 4, Rainbow Park,
Racecourse Road,
Montague Gardens
7442
Tel: +27 21 551 0120
Fax: +27 21 551 0130

Port Elizabeth – Eastern Cape
Cowlin Centre,
Buxton Avenue,
Kensington Northend
6056
Tel: +27 41 373 5242
Fax: +27 41 374 3250

Durban – KwaZulu Natal
270 Brickfield Road
Overport
4001
Tel: +27 31 268 1111
Fax: +27 31 288 1515

Richards Bay – KwaZulu Natal
Unit 6 Pinnacle Point,
9 Lira Link,
Richards Bay
Tel: +27 35 789 0911
Fax: +27 35 789 0913

Regional Locations
Our regional locations are carefully selected to meet demand.
Please contact us for more information by telephone on +27 11 254 6400 or via email on za-training@schneider-electric.com
General Terms and Conditions for Training

Applications for enrolment
Please send your completed Course Booking Form together with payment (and proof thereof) in good time, at least 10-working days prior to the course commencement date.
Confirmation of acceptance will be made prior to the course commencement date by email, fax or telephone.
Waiting list - if a class is filled, you will be placed on the waiting list or offered a later course. In any event, you will be kept notified of your status.

Tuition Fee
Course fees are payable in advance via cheque or EFT made out to Schneider Electric South Africa (PTY) Ltd for the full amount of tuition (incl VAT) and proof of payment thereof must accompany the enrolment application.

Schneider Electric S.A (PTY) Ltd banking details
Standard Bank of South Africa Ltd,
Corporate and Merchant Division
SWIFT Code SBZA ZA JJ, Telegrams «FOCAL».
Sandton Branch Code: 01-92-05
Account No.: 022711953
V.A.T No.: 437 0101 109

The supply of all course writing materials, all relevant technical reference material, lunches, refreshments, and the use of training equipment are included in the tuition fee. All course fees quoted herein are exclusive of VAT and 14% SA VAT is applicable.
Prices are shown in ZAR and are subject to change without notice.
Provisional reservations without payment are subject to cancellation ten working days prior to the course commencement date in order to accommodate those on the waiting list. Requests for cancellation of a confirmed registration or transferring to another course, must be made in writing and acknowledged by Schneider Electric. Full refund of course fees will be given for cancellations received up to 10 working days prior to course commencement. The full course fee will be charged for cancellations received within 10 working days prior to course commencement. Suitable qualified replacements are welcome, provided they register prior to commencement on the first day of the course.

Accommodation & Expenses
Information on local accommodation venues is available upon request. Trainees are liable for their own travel, accommodation and living expenses when attending training courses at any of our locations.

General
Insufficient enrolment - Schneider Electric reserves the right to cancel any course should insufficient bookings be received. In this event, you will be notified immediately, and either fully refunded, or the tuition applied to a future course.
It is the responsibility of your organisation to ensure that the trainees attending have sufficient prior knowledge and experience to benefit from attendance of selected. Please note the prerequisites shown in the detailed descriptions of the courses.

On-site courses - for further information and costings, please submit:
• on-line at www.schneider-electric.co.za or
• e-mail za-training@schneider-electric.com, or
• fax +27 11 254 6702,
or contact Customer Care +27 11 254 6500

Schneider Electric reserves the right to change course schedules, discontinue courses, modify course content, limit class size, and cancel courses.

Endorsement and public statements
You must not directly or indirectly represent that you are endorsed, certified, sponsored, approved or affiliated with Schneider Electric in any way as a result of attending any training provided by Schneider Electric.

Copyright
Course documentation, hand-outs, software programs and any other teaching aids provided as part of the course are subject to the normal laws of Copyright. Attendance at a course does not confer any right to reproduce such information, or to disclose it to a third party, without the prior written permission of Schneider Electric South Africa (Pty) Limited. No audio or visual recording of Schneider Electric training courses, or of Schneider Electric personnel teaching such courses, may be taken or reproduced electronically without prior written consent.

Easy ways to register
On-line:
www.schneider-electric.co.za

Email booking form to:
za-training@schneider-electric.com

Phone: +27 11 254 6400
Fax: +27 11 254 6702
Course Booking Form

To book one of Schneider Electric’s Training courses, simply complete this form and send a clear, scanned copy with your official purchase order and proof of payment to za-training@schneider-electric.com or fax to +2711 254 6702

Course Details

Course Name

Course Location & Date

Trainee Details

Name (s)

Surname

Position in Company

Telephone Numbers

Email Address

Special dietary requirements

Company Details

Company Name

Contact Person for payment:

V.A.T Number

Invoice Address

Contact Numbers

Email

Payment Details

Purchase Order Number

Course Cost

Payment Type

Payment Reference

Are there any additional courses you would be interested in attending?

NB: Please note that YOU are required to deposit the full course fee, including VAT, via bank transfer into Schneider Electric’s bank account at least 10-working days prior to the commencement of the booked course(s) and fax proof of payment to +27(11) 254-6702 in order to secure your booking(s)

Signature ___________________________ Date _________________
Installed Base Services

As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.