AREVA T&D
Technical Institute

Stafford UK

Training Courses 2009

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AREVA T&D

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AREVA T&D Technical Institute

In the context of the current economic climate, many T&D customers are focusing on how to extend the life-cycle of existing assets while improving security, service continuity, power quality and network performance.

AREVA T&D Technical Institute can provide training on subjects ranging from safety, design, operation, maintenance to protection, control and network management. AREVA T&D Technical Institute will help you map out your training plans to enhance your staff competences on existing equipment and also to keep your staff up-to-date on the latest technology advances.

Get empowered with AREVA T&D training!

Contents

What is the **AREVA T&D Technical Institute**?

AREVA T&D Technical Institute is the brand for AREVA T&D technical training. It covers all technical trainings on T&D networks and AREVA T&D products.

The benefit of a global offer, covering the whole range of T&D products

Electrical safety

Network Substations

Medium Voltage Products

Protection Digital Control Systems

Transformers

High Voltage Products

Energy management

- Generic/Non AREVA specific training
- AREVA specific training on its products
- Generic/Non AREVA specific training

Over 160 programmes are available.
For more information on the global offer:
www.areva-td.com/training

AREVA T&D Technical Institute is an Institute of Engineering and Technology endorsed training provider

Endorsed Training Provider®

Where are **AREVA T&D Technical Institutes**?

≫ 16 locations around the world

To be closer to you but most of all to create a pool of expertise and competences all around the world to meet all your requirements and needs.

Facts and Figures

A team:
45 people working in
16 locations in 12 countries

A community:
165 instructors worldwide

AREVA T&D Worldwide Contact Centre

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Who is **AREVA T&D Technical Institute**, UK?

AREVA T&D Technical Institute
Stafford UK

AREVA T&D UK Limited
St Leonards Avenue
Stafford
ST17 4LX

Aude THOMASSET
Manager

≫ Over than 50 years of experience and innovation in power system protection.

≫ A Technical Institute close to you:

- **A pool of expert trainers**
  To deliver your training courses.
- **A unique contact point: the training co-ordinator**
  To answer any question you may have.
  email: **training.stafford@areva-td.com**
- **A dedicated training facility**
  To host the training:
  - » A reception area with hot beverages and internet access.
  - » Training rooms fully equipped for both theoretical courses and protection relays hands-on practical training.

A Member of energy&utilityskills

What type of training do we deliver?

Our expert trainers can deliver a large choice of hands-on and/or theoretical courses held in-house or in-company on your site.

Scheduled training described in this catalogue

These are programmes designed to specific objectives and for specific profiles. They are publicly open to registration. In the following pages, you will find the programmes that are currently available at the Technical Institute in Stafford.

- Classroom type courses
- On-line training modules
- Blended learning upon request.

Training tailored to your needs

According to your requirements and to the profiles of personnel we can design training programmes to meet your needs. These courses will have only your company employees attending.

An integrated solution through competence management

We can support you in defining how to improve your performance by assessing and training your staff where it is required and needed. This solution starts with the assessment of your staff knowledge and know-how, looking also at their behaviour, and ends with the delivery of an authorisation or “certificate”. It may include the use of quizzes, on-the-job evaluation, classroom training, coaching…

Right Equipment

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Right Competences

=

Operational Excellence

In any situation, we can help you develop your personnel’s performance to sustain operational excellence.

For which profiles

Our courses can benefit a wide range of audiences and be customised to specific requirements.

Management

Design

Installation

Operation

Maintenance

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Technical Institute

Courses at a glance

Reference	Programme	Page	Duration					
Knowledge and Design								
S3200[1]	**HV Power Transmission (>50kV) e-Learning training modules**	12	upto 17 Hours	✔	✔	✔	✔	✔
S3300[1]	**MV Power Distribution (>1kV) e-Learning training modules**	13	upto 15 Hours	✔	✔	✔	✔	✔
PROG001	**Fundamentals of Power System Protection**	14	2 Days	✔	✔	✔	✔	✔
PROG003	**APPS - Utility Power System Protection**	15	4.5 Days		✔	✔	✔	✔
PROG004	**Advanced Power System Protection**	16	4 Weeks		✔	✔	✔	✔
PROG005	**APPS Part 1: Power System Protection**	17	3 Days		✔	✔	✔	✔
PROG006	**APPS Part 2: Application of Protective Relays for Transmission Systems**	18	1.5 Days		✔	✔	✔	✔
PROG007	**APPS Part 3: Overcurrent Grading and Commissioning**	19	4 Days		✔	✔	✔	✔
PROG008	**APPS Combined course 1 (Part 1 + Part 2)**	20	4.5 Days		✔	✔	✔	✔
PROG009	**APPS Combined course 2 (Part 1 + Part 2 + Part 3)**	21	8.5 Days		✔	✔	✔	✔
Operation and Maintenance								
X5242	**Gas Insulated Switchgear - F35 Type Familiarisation - Maintenance and Breakdown Repair**	24	3 Days					✔
X6142	**Gas Insulated Switchgear - T155 Type Familiarisation - Maintenance and Breakdown Repair**	25	5 Days					✔
B4142	**VISAX Familiarisation - Maintenance and fault clearing**	26	3 Days				✔	✔
B4242	**Withdrawable Switchboards** (fitted with Vacuum Circuit Breaker) **- PIX Type Familiarisation**	27	3 Days				✔	✔
REG007[2]	**Gas Insulated Switchgear - WS Type - Familiarisation**	28	3 Days				✔	✔
GEM001[3]	**GEMSTART 5 Familiarisation - Basic Maintenance**	29	2 Days				✔	✔
GEM002[3]	**GEMSTART 5 Familiarisation - Advanced Maintenance**	30	3 Days				✔	✔
Protection and Substation Control								
PROP002	**MiCOM Px20 & Px40 Master class**	32	2 Days		✔	✔	✔	✔
PROP003	**MiCOM Px20 Px30 Px40 Master class**	33	4 Days		✔	✔	✔	✔
PROP004	**MiCOM Px30 Master class**	34	2 Days		✔	✔	✔	✔
SCS003	**Application on IEC 61850 Communication Protocol**	35	2.5 Days		✔			✔

1 The on-line training modules can be completed by a T&D Product Overview Standard Programme (upon request).
2 Gas Insulated Switchgear WI Type can also be delivered (upon request).
3 Also available GEMSTART 5 + Controller Equipment.

Some of the above training programmes will be delivered in Central Europe. However, all of them can be delivered at your site (Min. 5 attendees per course), but when equipment is required, this must be accessible and isolated for safety reasons.


Management


Design


Installation


Operation


Maintenance

Price	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
On Request	Available 24/7											
On Request	Available 24/7											
£650					11-12	24-25					23-24	
£1,250						29 - 3						
£4,800					18-22		6-10		14-18		2-6	
£990				20-22							30 - 2	
£530				23-24								3-4
£1,160				27-30								7-10
£1,250				20-24							30 - 4	
£2,250				20-30							30 - 10	
£1,800										6-8		
£2,800										26-30		
£1,800				28-30					22-24			
£1,800		10-12							29 - 1			
£1,800			31 - 2								17-19	
£990									21-22			
£1,250										12-14		
£655					4-5	8-9				26-27		
£1,210					4-7	8-11				26-29		
£655					6-7	10-11				28-29		
£680					13-15							

For more information on additional course available from AREVA T&D Technical Institute please refer to **www.areva-td.com/training**

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Knowledge and Design

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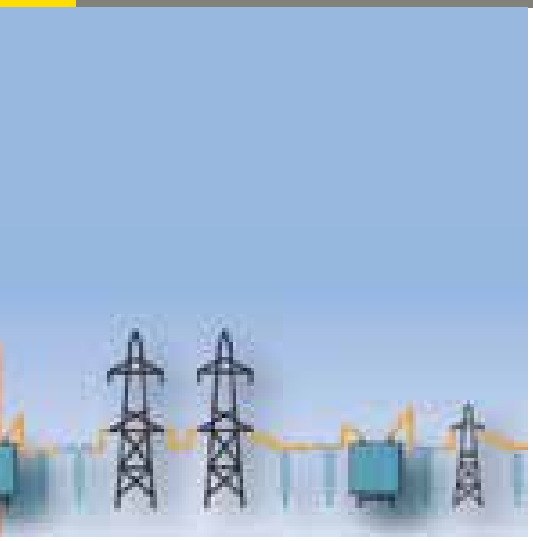


HV Power Transmission (>50kV) e-Learning training module

Objectives

Upon completion of the course participants should be able to:

- Understand the transmission network growth and operating conditions
- Understand the various technologies related to substation equipment
- Characterise the various structures and to master the substation operating conditions …

Course topics

Transmission network in Europe

- Interconnection timeline
- Organisations and network operators
- Energy exchanges and management
- Assessment

Substation technologies

- HV substations
- Power transformers
- HV circuit breakers
- HV disconnectors and surge arresters
- HV GIS
- Assessment

Architecture of HV substations

- HV substation structure and diagrams
- Step-up substations
- HV Interconnect and transformer substations
- Assessment

Substations operating safety and reliability

- Instrument transformers
- Protection and control
- Auxiliary services
- Assessment

HV overhead lines and cables

- Functions and structure
- Sizing
- Construction
- Assessment

Customer benefits

- Assess and train newcomers
- Improve and homogenise team members' knowledge
- Share technical issues and references within multi-disciplinary or multi-sites teams
- Self-assess knowledge acquisition through quizzes during learning process
- Be more prepared before entering a classroom type course

Course dates

Available 24/7

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Anyone wishing to obtain knowledge of the fundamentals of transmission network engineering	Basic knowledge in electrical engineering	**S3200** →	S3300	17 modules ±1h
		100% On-line		

MV Power Distribution (>1 kV) e-Learning training module

Customer benefits

- Assess and train newcomers
- Improve and homogenise team members' knowledge
- Share technical issues and references within multi-disciplinary or multi-sites teams
- Self-assess knowledge acquisition through quizzes during learning process
- Be more prepared before entering a classroom type course

Course dates

Available 24/7

Objectives

Upon completion of the course participants should be able to:

- Understand the evolution in time, the constitution, and the role of distribution network
- Understand the various technologies associated with the components of the networks
- Characterise the various structures and index the distribution layout

Course topics

Distribution network

- Distribution in the electrical network
- The people involved in deregulation
- Constitution of the distribution network
- Assessment

Substation equipment

- Transformers
- MV switchgear
- Auxiliary Equipment
- Assessment

Structure and network circuit diagrams

- Topology
- Overhead and underground networks
- MV wiring systems
- Assessment

Protection systems

- Overcurrents
- Neutral systems
- Earthing connection diagrams
- Assessment

Industrial networks

- Architecture and voltage levels
- Power supply sources
- The railway electrical network
- Assessment

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
All people wishing to make the first step in the principles of the distribution network	Basic knowledge in electricity	S3300 →	S3200	15 modules ±1h
		100% On-line		

Fundamentals of Power System Protection

Objectives

Upon completion of the course participants should be able to understand the application of protection to systems and plant, such as lines, transformers, generators and motors.

Customer benefits

- This course suits all profiles with a minimum of electricity theory

Course topics

The course concentrates on the fundamentals of industrial protection and covers the following topics:

- Protection fundamentals
- Basic application principles
- Introduction to overcurrent protection
- Differential protection
- Generator protection

Course dates

11 - 12 May
24 - 25 June
23 - 24 November

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Aimed at those with little or no previous experience of protection engineering	Persons attending this course must have a basic understanding of electrical theory	PROG001 100% Theoretical		2 days

APPS Utility Power System Protection

Objectives

Upon completion of the course participants should have a comprehensive understanding of the principles of selection and application of the most common types of protection found in distribution, transmission and sub-transmission power systems.

Course topics

- Fault analysis tutorials
- Detailed overcurrent grading/co-ordination
- Pilot wire differential protection
- Power transformer protection
- Distance protection
- Busbar protection
- Current transformer requirements for protective relaying

Customer benefits

- Focus on distribution, transmission and sub-transmission power systems for our utility customers

Course dates

29 June - 03 July

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Engineers/Managers who already have experience of protection principles, but want to expand/update this knowledge in the area of distribution, generation power systems	Persons attending this course must have a reasonable understanding of electrical theory	PROG003 100% Theoretical		4.5 days

Advanced Power System Protection

Objectives

The course concentrates on aspects of protection for applications and provides a more analytical approach than the fundamentals course.

This is an intensive course covering every facet of protection for relays at all voltage levels.

Customer benefits

- The participants will have comprehensive understanding of protection principles and application
- They will gain confidence in electric system operations and protections

Course topics

This course will cover all topics covered in our 2 week APPS course and more.

The course covers:

- Fault analysis techniques and application considerations for feeders, transformers, generators and motors.
- The principles of selection and application for the most common types of relay found in transmission systems
- Presentations and worked examples on distance protection, busbar protection, autoreclosing and system stability.

Course dates

18 - 22 May
06 - 10 July
14 - 18 September
02 - 06 November

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
This course is intended for engineers who want to work in the protection industry	It is recommended that people attending this course have at least a degree in Electrical Engineering	PROG004 100% Theoretical		4 weeks

APPS Part 1: Power System Protection

Objectives

Upon completion of the course participants should be able to understand the aspects of protection for applications and provides a more analytical approach than the basic course.

Customer benefits

- Knowledge gain to choose the suitable relay to match your system parameters

Course topics

- Relays and protection schemes
- Basic fault calculations
- Power system grounding arrangements
- Application principles and setting procedures of:
  - feeder protection
  - motor protection
  - generator protection
  - transformer protection
- Application examples and tutorials
- Current & voltage transformer requirements for protection

Course dates

20 - 22 April

30 November - 02 December

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Aimed at engineers who wish to gain more experience in protection setting and application of transmission protection	Persons attending this course must have a reasonable understanding of electrical theory	PROG005 →	PROG006 ↓ PROG007	3 days
		100% Theoretical		

APPS Part 2: Application of Protective Relaying to Transmission Systems

Objectives

This course addresses the principles of selection and application of the most common types of relay found in transmission systems.

This course may be attended as a stand alone course or as part of the one week APPS Combined 1 course (PROG003) which includes “Power System Protection”.

Course topics

Please note that this is a theoretical module and does not cover practical workshops or commissioning and maintenance procedures, such topics are covered in later modules.

This course covers:

- Application principles and setting procedures of:
  - distance protection
  - distance protection schemes
- Auto reclose on Distribution Systems
- Auto reclose on Transmission Systems
- System Stability
- Application principles and setting procedures of busbar protection
- Application examples and tutorials

Customer benefits

- Worked examples for better understanding

Course dates

23 - 24 April

03 - 04 December

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Aimed at engineers who wish to gain more experience in protection setting and application of transmission protection	Persons attending this course must have a reasonable understanding of electrical theory	PROG006 →	PROG007	1.5 days
		100% Theoretical		

APPS Part 3: Overcurrent Grading and Commissioning

Objectives

This course includes fault analysis and overcurrent grading tutorials, basic commissioning techniques and hands-on testing of overcurrent, differential, motor, generator and distance protection relays.

Customer benefits

- Hands on testing on protection relays in one of our equipped laboratories

Course topics

- Fault analysis tutorials
- Detailed overcurrent grading/coordination tutorial
- Basic commissioning and maintenance techniques
- Hands-on testing of overcurrent, differential, motor, generator and distance protection relays

Course dates

27 - 30 April

07 - 10 December

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
This course is intended for delegates who have attended parts 1 & 2 but also require more tutorial time on fault calculations and application of overcurrent relays, together with knowledge of basic relay testing.	Persons attending this course must have a reasonable understanding of electrical theory. It is also recommended that delegates have already attended at least APPS Part 1 – Power Systems Protection Course.	PROG007 100% Theoretical		4 days

APPS Combined Course 1
(Part 1 + Part 2)

Objectives

This course is a combination of the APPS Part 1 and APPS Part 2 Protection courses (PROG005 + PROG006).

Course topics

The combined course covers:

- Relays and protection schemes
- Basic fault calculations
- Power system grounding arrangements
- Application principles and setting procedures of:
  - feeder protection
  - motor protection
  - generator protection
  - transformer protection
  - distance protection
  - distance protection schemes
  - busbar protection
- Application examples and tutorials
- Current and Voltage transformer requirements for protection
- Auto reclose on Distribution Systems
- Auto reclose on Transmission Systems
- System Stability

Customer benefits

- Cost saving by combining PROG005 and PROG006
- In one week the participant will understand the full range of protections

Course dates

20 - 24 April

30 November - 04 December

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Aimed at engineers who wish to gain more experience in protection setting and applications.	Persons attending this course must have a reasonable understanding of electrical theory	**PROG008** →	PROG007	4.5 days
		100% Theoretical		

APPS Combined Course 2
(Part 1 + Part 2 + Part 3)

Customer benefits

- Cost saving by combining PROG005, PROG006 and PROG007
- The course can be broken in two different weeks if customers cannot book two consecutive weeks

Course dates

20 - 30 April

30 November - 10 December

Objectives

This course is a combination of the APPS Part 1, APPS Part 2 and APPS Part 3 Protection courses (PROG005 + PROG006 + PROG007).

The course concentrates on aspects of protection for applications and provides a more analytical approach than the basic course. The course covers fault analysis techniques and application considerations for feeders, transformers, generators and motors. It also addresses the principles of selection and application of the most common types of relay found in transmission systems and includes presentations and worked examples on distance protection, busbar protection, auto-reclosing and system stability.

Course topics

The combined course covers:

- Basic commissioning and maintenance techniques
- Basic fault calculations
- Relays and protection schemes
- Power system grounding arrangements
- Application principles and setting procedures of:
  - feeder protection
  - motor protection
  - generator protection
  - transformer protection
  - busbar protection
  - distance protection
  - distance protection schemes
- Application examples and tutorials
- Current and Voltage transformer requirements for protection
- Auto reclose on Distribution Systems
- Auto reclose on Transmission Systems
- System Stability
- Fault analysis tutorials
- Detailed overcurrent grading/coordination tutorial Hands-on testing of overcurrent, differential motor, generator and distance protection relays

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Aimed at engineers who wish to gain more experience in protection setting and applications and additional tutorials on fault calculations and application of overcurrent relays, combined with knowledge of basic relay testing	Basic knowledge of electricity and associated mathematics	PROG009 100% Theoretical		8.5 days

AREVA T&D
Technical Institute

Operation and Maintenance

AREVA

Gas Insulated Switchgear - F35 Type Familiarisation - Maintenance & Breakdown Repair

Objectives

Upon completion of the course participants should be able to know the GIS F type, the maintenance philosophy and corresponding procedures; they will get to practice on different maintenance operations.

Customer benefits

- Exchanges with experienced trainer
- Practice in operation conditions
- Immediate practice of the theoretical knowledge acquired
- High technicality of contents

Course topics

- Presentation of the company
- Sulphur hexafluoride SF_6
- Concept of a substation in a metal enclosure F type
- Electrical phenomena related to breaking
- Switchgear technology F type
- Gas module service F type
- Compartments preparation and SF_6 filling for apparatus F type
- FK, FKF spring mechanism
- FKF 3.2 spring mechanism
- High Voltage tests for apparatus F type
- SF_6 practical works F type
- Apparatus maintenance F type
- Operating mechanism maintenance for apparatus F type
- Manufacturer maintenance schedule for apparatus F type
- Factory visit (if applicable)
- Works repair for apparatus F type
- Evaluation of the session

Course dates

6 - 8 October

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Maintenance team	• Basic knowledge in electricity & mechanic • Normal experience in HV Switchgear	X5242 50% Theoretical 50% Practical		3 days

Gas Insulated Switchgear - T155 Type Familiarisation - Maintenance & Breakdown Repair

Objectives

Upon completion of the course participants should be able to know the GIS T type, the maintenance philosophy and corresponding procedures; they will get to practice on different maintenance operations.

Customer benefits

- Exchanges with experienced trainer
- Practice in operation conditions
- Immediate practice of the theoretical knowledge acquired
- High technicality of contents

Course topics

- Presentation of the company
- Sulphur hexafluoride SF_6
- Concept of a substation in a metal enclosure
- Electrical phenomena related to breaking
- Apparatus technology T155 type
- Gas module service T type
- Treatments of the compartments
- FK spring mechanism
- FKF 3.2 spring mechanism
- High Voltage tests for apparatus S&T type
- Manufacturer maintenance schedule for apparatus type
- Factory visit (if applicable)
- In situ study of a bay T type
- SF_6 practical works type
- Apparatus maintenance
- Works repair for apparatus
- Evaluation of the session

Course dates

26 - 30 October

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Maintenance team	• Basic knowledge in electricity & mechanic • Normal experience in HV Switchgear	X6142 50% Theoretical 50% Practical		5 days

VISAX Familirarisation - Maintenance and Fault Clearing

Objectives

Upon completion of the course participants should be able to:

- Understand the function of each mechanism
- Operate the switchgear
- Apply the maintenance and fault clearing procedures

Customer benefits

- Practical work on bays, circuit breakers and associated control mechanisms

Course topics

MV cubicles VISAX type

- Technical characteristics
- Standards and circuit-breakers manufacture range
- BLV Vacuum circuit-breaker
- Different compartments
- Arrangements

Installation and commissioning

- Transport and handling
- Installation and connections
- Circuit-breaker handling
- Commissioning tests

Operation and maintenance

- Operating instructions

Course dates

28 - 30 April

22 - 24 September

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Technicians involved in the operation and maintenance of installations handling voltages between 1kV and 50kV	Fundamentals of electricity and mechanics	B4142 100% Theoretical (incl. demonstration)		3 days

Withdrawable Switchboards
(fitted with Vacuum Circuit Breaker)
- PIX Type Familiarisation

Objectives

Upon completion of the course participants should be able to:
- Understand the function of each mechanism
- Operate the switchgear
- Apply the maintenance procedures

Course topics

PIX Cell
- description, operation, installation, connecting to the busbar
- tightening torques
- installation of the moving part (FPX circuit breaker)
- tests

Vacuum breaking
- breaking principle

Vacuum circuit breaker
- interruption chamber
- verifications
- switching operations, maintenance

Different control mechanism
- description, operation
- O-C-O sequence: tensioning, closing, tripping
- switching operations
- maintenance: 3 year or 6 year service interval, verification, lubrication, replacement of auxiliaries, adjustments, tests

Low voltage module
- function, commissioning, operation

Practical work on bays, circuit breakers and associated control mechanisms

Customer benefits

- Full scale practical works on real size equipment
- To master and optimise the use of your equipment
- To optimise the qualification and the reactivity of your staff
- To limit production stoppages
- To acquire “know how” and correct conduct

Course dates

10 - 12 February
29 September - 01 October

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Technicians involved in the operation and maintenance of installations handling voltages between 1kV and 50kV.	Fundamentals of electricity and mechanics	B4242 70% Practical 30% Theoretical		3 days

Gas Insulated Switchgear WS Type - Familiarisation

Customer benefits

- Exchanges with experienced trainer
- Practice in operating of the switchgear type WS
- Immediate practice of the theoretical knowledge acquired
- Repair of minor failures

Course dates

31 March - 02 April

17 - 19 November

Objectives

Upon completion of the course participants should be able to:

- Understand the function of the WS circuit breaker and the mechanism
- Operate the switchgear
- Apply the maintenance procedures
- Apply the safety rules

Course topics

Theoretical part:

- Presentation of the company
- Fields of application
- General development of medium voltage switchgears
- Principal rated values
- Design concept
- Operation panel
- Drive and interlock unit
- Interrogation interlock
- Gas compartments
- Gas line concept
- Encapsulation of all live parts
- Busbar system
- Vacuum circuit breaker
- Arc quenching in vacuum
- Contact material
- Three-position disconnector
- Voltage and current transformer
- Dimension and weights
- Voltage – and gas indication devices
- Sulphur hexafluoride SF_6

Practical part:

- Visiting of the VCB and WS production line
- Principle arrangement and function of driving mechanism of VCB in switchgear type WS
- Mechanism ON
- Mechanism OFF
- Charging, coupling and switching shaft
- Principle arrangement of Vacuum Interrupter
- Maintenance according to operating instructions

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Technicians involved in the operation and maintenance of installations of medium voltage substations	Fundamentals of electricity and mechanic	REG007 50% Theoretical 50% Practical		3 days

Gemstart 5 Familiarisation Basic Maintenance

Customer benefits

- Practical exercises on simulated starters
- Familiarises the trainee with the MCC components, drawings and configuration
- Off plant hands on experience with the Hand Held Programmer and GEMPRO software
- Overall to reduce downtime on plant by knowing the correct actions to take when interrogating and replacing Gemstart 5 units

Course dates

21 - 22 September

Objectives

Upon completion of the course participants should be able to:

- Understand the function and operation of Gemstart 5.
- Understand the operation of the Gemstart 5, Hand Held Programmer for monitoring and modifying the Gemstart 5 configuration.
- To understand the operation of GEMPRO configuration software for monitoring and modifying the Gemstart 5.
- Be able to replace a faulty Gemstart 5 unit.

Course topics

Theoretical Part

- The functionality and integration of Gemstart 5 into an MCC.
- Different options available on Gemstart 5 units.
- Wiring diagrams and Gemstart 5 configuration options.
- Understanding Gemstart 5 system configuration data sheets.
- The different control methods available on Gemstart 5.
- Gemstart 5 communication link configuration.

Practical work

- Gemstart 5 configuration using the Hand Held Programmer.
- Gemstart 5 configuration using GEMPRO software.
- Gemstart 5 monitoring using the Hand Held Programmer.
- Gemstart 5 monitoring using GEMPRO software.
- Gemstart 5 operation, in manual, local and communication link modes.
- Gemstart 5 communication link operation.
- Replacement of a faulty Gemstart 5 unit.

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Engineers, Technicians and Electricians involved in the operation and maintenance of Gemstart 5 MCC installations	Fundamentals of MCC's and motor control	GEM001 30% Theoretical 70% Practical		2 days

Gemstart 5
Advanced Maintenance

Customer benefits

- Practical exercises on simulated Gemstart 5 starters
- Off plant hands on experience with the Hand Held Programmer and GEMPRO software
- Gaining practical experience on the host controller operation of the Gemstart 5 control system

Course dates

12 - 14 October

Objectives

Upon completion of the course participants should be able to:

- Understand the function and operation of Gemstart 5.
- Understand the operation of the Gemstart 5, Hand Held Programmer for monitoring and modifying the Gemstart 5 configuration.
- To understand the operation of GEMPRO configuration software for monitoring and modifying the Gemstart 5.
- Be able to replace a faulty Gemstart 5 unit.
- To configure the Gemstart 5 communication link to the host controller.

Course topics

Theoretical Part

- The functionality and integration of Gemstart 5 into an MCC.
- Different options available on Gemstart 5 units.
- Wiring diagrams and Gemstart 5 configuration options.
- Understanding Gemstart 5 system configuration data sheets.
- The different control methods available on Gemstart 5.
- Gemstart 5 communication link configuration, using Profibus, Gembus and Modbus.

Practical work

- Gemstart 5 configuration using the Hand Held Programmer.
- Gemstart 5 configuration using GEMPRO software.
- Gemstart 5 monitoring using the Hand Held Programmer.
- Gemstart 5 monitoring using GEMPRO software.
- Gemstart 5 operation, in manual, local and communication link modes.
- Gemstart 5 communication link operation.
- Replacement of a faulty Gemstart 5 unit.
- Configuration of the Gemstart 5 communications link with the host controller using Profibus, Gembus and Modbus.
- Data exchange and control of the Gemstart 5 by the host controller.
- Monitoring and fault data associated with the host controller communications link.

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
Engineers, Technicians and Electricians involved in the operation and maintenance of Gemstart 5 MCC installations with host controller control and communications	Fundamentals of MCC's, motor control and host controller operation	GEM002 30% Theoretical 70% Practical		3 days

AREVA T&D
Technical Institute

Protection and Substation Control

AREVA

MiCOM Px20 & Px40 Master Class

Objectives

This course is designed to give customers a comprehensive overview of selected MiCOM Px20 and Px40 relays and a detailed insight into the MiCOM support software, MiCOM S1. The course specifically details the relays construction, application, programming and communication.

Course topics

- Settings creation and upload/download
- Event extraction and interrogation
- Disturbance record extraction and interrogation
- Programmable Scheme logic creation and upload/download
- Measurements monitoring
- Menu Text editing

Customer benefits

- The training will cover relays from the MiCOM Protection series Px20, Px40. The course will give a comprehensive insight into the product's application in the field, its setting and methods of remote interrogation
- The training will include in-depth training on the MiCOM relay setting software MiCOM S1

Course dates

04 - 05 May
08 - 09 June
26 - 27 October

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
All MiCOM Px20 and Px40 User	Technicians and Engineers from application or control department, project manager, technician or operator	**PROP002** 20% Theoretical 80% Practical	→ PROP004	2 days

MiCOM Px20 Px30 Px40 Master Class

Objectives

This course is designed to give customers a comprehensive overview of selected MiCOM relays and a detailed insight into the MiCOM support software, MiCOM S1. The course specifically details the relays construction, application, programming and communication.

Course topics

- Settings creation and upload/download
- Event extraction and interrogation
- Disturbance record extraction and interrogation
- Programmable Scheme logic creation and upload/download
- Measurements monitoring
- Menu Text editing

Customer benefits

- The training will cover relays from any MiCOM Protection series Px20, Px30, Px40. The course will give a comprehensive insight into the product's application in the field, its setting and methods of remote interrogation
- The training will include in-depth training on the MiCOM relay setting software MiCOM S1
- By deciding to attend this programme participants will save rather than attending PROP002 and then PROP004

Course dates

04 - 07 May
08 - 11 June
26 - 29 October

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
All MiCOM Users	Technicians and Engineers from application or control department, project manager, technician or operator	PROP003 20% Theoretical 80% Practical		4 days

MiCOM Px30 Master Class

Objectives

This course is designed to give customers a comprehensive overview of selected MiCOM relays and a detailed insight into the MiCOM support software, MiCOM S1.

The course specifically details the relays construction, application, programming and communication.

Course topics

- Settings creation and upload/download
- Event extraction and interrogation
- Disturbance record extraction and interrogation
- Programmable Schme logic creation and upload/download
- Measurements monitoring
- Menu Text editing

Customer benefits

- The training will cover relays from any MiCOM Protection series Px30. The course will give a comprehensive insight into the product's application in the field, its setting and methods of remote interrogation
- The training will include in-depth training on the MiCOM relay setting software MiCOM S1

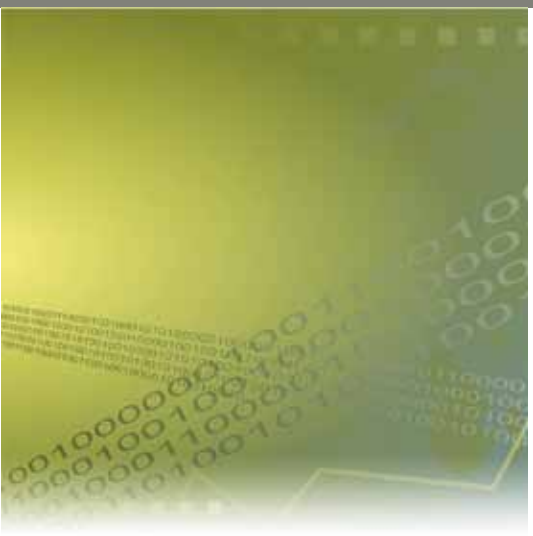
Course dates

06 - 07 May

10 - 11 June

28 - 29 October

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
All MiCOM Users	Technicians and Engineers from application or control department, project manager, technician or operator	PROP004 →	PROP002	2 days
		20% Theoretical 80% Practical		



Application on IEC 61850 Communication Protocol

Objectives

The purpose of this course is to explain how to move from the 1000+ pages of the IEC 61850 standard to real substation automation projects. It explains the key concepts and jargon of the standard, highlights what is not defined for a real project and discusses applications through real products and projects.

Customer benefits

- Participants will have a through knowledge in IEC 61850 Standards to substation Automation projects
- End users and System integrators will know about specifications and have the required knowledge to improve project follow-ups
- The System Architects and Consultants are expected to have a better understanding of future evolutions of the substation Automation applications

Course topics

IEC 61850 From paper to Business Overview

IEC 61850 concepts

- Services
- Modelling
- Substation configuration language
- Conformance tests

Going for real projects

- Architectures
- Distributed functions
- Retrofit cases
- System configuration
- Interoperability tests
- Project management

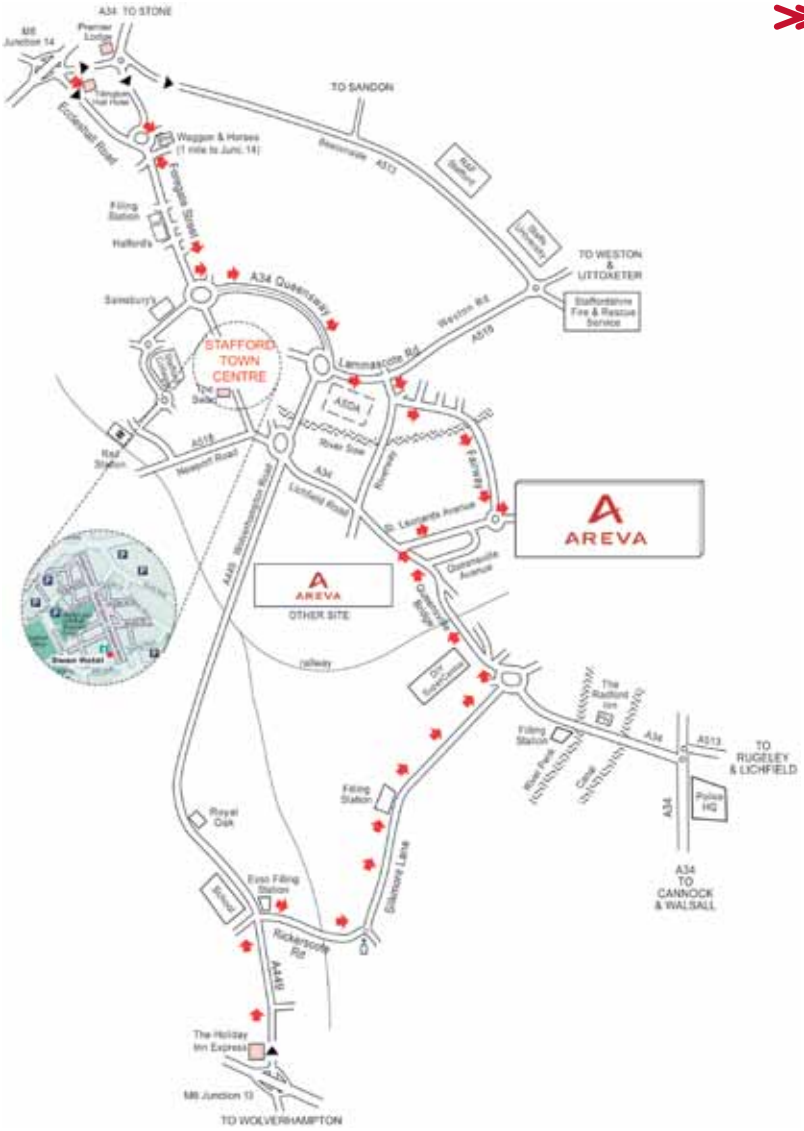
Course dates

13 - 15 May

Audience	Learning Path			Duration
	PRE REQUISITES	TRAINING	NEXT STEP	
End users and System Integrators who want to specify and/or follow-up a IEC 61850 project, System architects and Consultants who want to understand future evolutions of the Substation and Network Automation applications	Substation environment, protection and control current applications	**SCS003** Training on the PACiS system is interesting since it is structured under IEC 61850 protocol. 100% Theoretical		2.5 days



Directions to **AREVA T&D Technical Institute** Stafford



From the North:

Exit M6 at Junction 14. Ignore the sign “A34 to Stafford” and take the second exit to Eccleshall Road.

Continue for 1 mile to traffic island and follow sign “Cannock A34”. Approach the traffic lights at next island using the left hand lane to follow the sign “ALL OTHER TRAFFIC AND TOWN CENTRE”

Take the exit A518 and then follow the red arrows as found on the “map of Stafford” located here.

From the South:

Exit the M6 at junction 13 and follow the A449 sign posted “Stafford”. Continue to the ESSO filling station turning right into Rickerscote Road. Follow the red arrows as found on the “map of Stafford” located here.

For assistance with finding a local hotel please contact us.

AREVA T&D - St Leonards Avenue, Stafford

AREVA T&D
Technical Institute

Booking form

AREVA

Please photocopy accordingly for multiple bookings

Please complete and return to the Technical Institute Co-ordinator

Technical Institute
AREVA T&D UK Limited
St Leonards Avenue
Stafford
ST17 4LX

tel: +44 (0)1785 786463
fax: +44 (0)1785 227729
email: stafford.training@areva-td.com

www.areva-td.com/training

Course title: _____ **Course date:** _____

PLEASE USE BLOCK CAPITALS

Title/Forename: .....

Surname: .....

Nationality: .....

Job title: .....

Company: .....

Address: .....

.....

.....

..... Postcode: .....

Telephone: .....

Fax: .....

E-mail: .....

Do you have any special dietary requirements?
If **yes**, please give details

.....

.....

Fee: See course lists or website for details

Cancellation charges: AREVA regrets that a fee must be charged when confirmed bookings are cancelled. A substitute may be nominated at any time.

Cancellation fees are: **28 days or less 50% of fees**
14 days or less 100% of fees

Net amount of sale: .....

VAT* amount: .....

Gross amount: .....

Signed: .....

Note: Registration cannot be accepted without a signature

Method of Payment
(Please tick as appropriate)

☐ **I enclose a cheque payable to 'AREVA T&D UK Ltd'**

☐ **Credit or Debit Card**

☐ Mastercard ☐ Visa ☐ Switch

☐ Other (please specify) .....

Card Number: .....

Cardholder Name: .....

Valid from Date: .....

Expiry Date: .....

Card payments can only be accepted upon receipt of a completed AREVA Credit Card Purchase Consent Form, please contact us. Unfortunately AMEX cards are not accepted.

☐ **Please invoice quoting order number below:**

.....

Name and address to which invoice should be sent, if different from opposite:

.....

.....

.....

..... Postcode: .....

☐ **By Bank transfer to AREVA T&D UK Limited**

HSBC Bank plc
City of London Corporate Office, PO Box 125, 8 Canada Square, London E14 5XL
Account No: **51222155**
Sort code: **40-02-50**

A receipt invoice will be sent as confirmation of payment. Full details and joining instructions will be sent approximately two weeks before the commencement of the course. Bookings are normally accepted up to the event unless numbers are restricted.

Date: .....

* VAT is chargeable at current rate.

AREVA T&D
Technical Institute

Terms and Conditions

Course bookings

Acknowledgement

After reception of the fully completed and signed booking form, all confirmed bookings will be acknowledged and will include joining instructions.

Course organisation

Cancellation of the course

All courses are offered on a basis of there being sufficient candidates to justify holding the course. Where this or other circumstances force the AREVA T&D Technical Institute to cancel a course, liability shall be limited to a refund of any fees paid and alternative dates suggested.

Health and Safety

All delegates are required to observe the Health & Safety Policy of AREVA T&D Ltd. Persons ignoring this policy will not be allowed access to the Technical Institute.

Prices

VAT

Fees are quoted exclusive of U.K. Government Value Added Tax, which is charged as appropriate and is applicable to all training delivered in the United Kingdom.

Inclusion

For Technical Institute based courses, unless stated to the contrary, fees include course manuals, certificates and a light lunch.

Exclusion

Accommodation, breakfast, evening meal and travel.

Course certificates

They are dispatched upon completion of the full course upon attendance.

Cancellation

No fee will be charged for cancellations received in writing by AREVA T&D Technical Institute at least 28 days prior to the course commencement. A cancellation charge of 50% of the full course fee will be charged for cancellations within 28 days, and 100% charge for cancellation within 14 days.

Transfer

In case confirmed booked candidates are not able to attend, the client may substitute candidates, without penalty, up to the course commencement date, providing this is notified in writing, or report once the booking to the next available course.

Payment

Mode

Payment can be received by cheque, bank transfer, purchase order and credit or debit card (except American Express).

Tailored courses

The fee charged for courses tailored to customers specific requirements are by negotiation.

Liability

AREVA T&D Technical Institute cannot accept responsibility for the competence level of any particular candidate upon completion of the course.

Specific Terms and Conditions should be applied for on-line training modules.

With manufacturing facilities in 43 countries and a sales network in more than 100, AREVA offers customers reliable technological solutions for CO_2-free power generation and electricity transmission and distribution. We are the world leader in nuclear power and the only company to cover all industrial activities in this field.

Our 71,000 employees are committed to continuous improvement on a daily basis, making sustainable development the focal point of the group's industrial strategy.

AREVA's businesses help meet the 21st century's greatest challenges: making energy available to all, protecting the planet, and acting responsibly towards future generations.

www.areva-td.com

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