Power Skills Centre®
Course listings & schedule
2019–2020

Substations Courses
Specialist Courses
Cables Courses
Power Networks Courses
Protection Courses
Tailored Programmes
Qualification Programmes

www.eatechnology.com
EA Technology

EA Technology has a unique technical heritage within the power industry stretching back over five decades. Our specialist expertise has been used to develop an extensive range of power engineering courses.

Providing applied guidance from industry practitioners, these courses offer highly effective and specialised development routes. Our training provision has been externally assured as complying with the highest standards in the field.

Most of the specialist courses in this schedule run once or twice a year and many are often oversubscribed, so please check the dates and availability of any courses that you are interested in.

We can also provide onsite training and customised training programmes so please get in touch if you have a specific requirement that you would like us to assist you with.

For further information or to book a place visit:

www.eatechnology.com

e powerskillscentre@eatechnology.com

t 0800 028 9983
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• City & Guilds Level 2 Electrical Power Engineering - Distribution and Transmission
• City & Guilds Level 3 Electrical Power Engineering - Distribution and Transmission
# Substations courses

## Insulating Oil Diagnostics and Analysis

**Days** 1  
**Cost** £550  
**Dates** Call for details

This course will cover the sampling, analysis, storage and disposal of insulating oil used in transformers and switchgear and its role in condition-based asset management. It will provide participants with an understanding of this condition assessment technique which can help identify potential faults and prevent failures and improve strategic planning for maintenance, repairs and replacement.

## Introduction to Earthing and Lightning Protection

**Days** 1  
**Cost** £550  
**Dates** 27 June 2019

This one-day course will give you a basic understanding of earthing on low, medium and high voltage systems (distribution and transmission), how and why we test earthing systems and an understanding of earthing construction. This practical-based programme includes both the theoretical and practical aspects of earth testing construction.

The course also covers, the basics of lightning and its effects, to the use of risk assessment in the formulation of protection strategies, in line with current standard BS EN 62305-2.

## Introduction to Switchgear and Transformers

**Days** 1  
**Cost** £550  
**Dates** 19 Sep 2019

This course is designed to give delegates with no previous HV electrical plant training, sufficient knowledge, understanding and awareness of the operation and application of the main types of switchgear and transformers currently in use.

## Partial Discharge (PD)

**Days** 2  
**Cost** £795  
**Dates** 2 – 3 Jul 2019  
26 – 27 Nov 2019

A two-day course from the pioneers of Partial Discharge (PD) technology, covering PD theory, PD detection instruments and PD measuring techniques. The first day of the course will focus on hand-held equipment while the second day will cover the installation and operation of the UltraTEV® Monitor in detail.
SF6 Training

Days 2
Cost £795

Dates 25 – 26 Jun 2019
20 – 21 Jul 2019 – Weekend course
20 – 21 Aug 2019
17 – 18 Sep 2019
28 – 29 Sep 2019 – Weekend course
15 – 16 Oct 2019
19 – 20 Nov 2019
10 – 11 Dec 2019

An essential two-day course covering the EU training requirements for anyone involved in the handling or recovery of SF6 filled high voltage switchgear, leading to certification that is required and recognised throughout the EU.

Substation Design

Days 2
Cost £995

Dates 21 – 22 Aug 2019

High voltage substation design is a complex engineering activity that embraces engineering functions from numerous disciplines. This intensive course considers the aspects required to design a high voltage air or gas insulated substation. It looks at the design process, substation design methods and interfaces required to build a substation.

Substation Earthing

Days 3
Cost £1,220

Dates 25 – 27 Jun 2019

A three-day course providing a comprehensive review on the latest developments in earthing practice at transmission and distribution voltages. It considers specifications, regulations (CENELEC TC112), earth grids, resistivity, site areas, conductors and earth rods.

Switchgear Technology for Power Systems

Days 2
Cost £995

Dates 10 – 11 Sep 2019

The course considers the technical options and develops an understanding of switching phenomena essential for reliable system operation, as well as providing an essential update on technology and practice in this field.

Transformers for Power Systems

Days 2
Cost £995

Dates 9 – 10 Jul 2019

An essential two-day course covering all aspects of transformer specification, operation, and protection and maintenance, including condition assessment and asset management.
## Specialist courses

### The Essentials of Asset Management

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<tr>
<th>Days</th>
<th>Cost</th>
<th>Dates</th>
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<tbody>
<tr>
<td>2</td>
<td>£995</td>
<td>Call for details</td>
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This course offers a unique perspective on Asset Management; it provides practical lessons on a variety of approaches and ‘how to’ guidance for key stages of Asset Management implementation. It introduces the main concepts and common approaches to the management of physical assets from the relevant published standards and draws on the experience of Asset Management strategists, trouble-shooters, auditors and operational engineers.

### Failure Investigation on Electrical Assets

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<thead>
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<th>Days</th>
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<tbody>
<tr>
<td>1</td>
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<td>7 Nov 2019</td>
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</table>

This course examines best practice, procedures and methods for failure analysis and investigation. It covers well-documented investigation techniques, handling and analysis of evidence and reporting, panels of inquiry and how the impact of information gleaned from investigations can be used for asset management decisions.

### Introduction to Electrical Networks and the Electricity Supply Industry

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<thead>
<tr>
<th>Days</th>
<th>Cost</th>
<th>Dates</th>
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<tbody>
<tr>
<td>1</td>
<td>£305</td>
<td>18 Jun 2019</td>
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This course has been specifically designed to demystify the terminology used to explain the purpose, principals and components of electrical networks. It is aimed at the growing workforce that play a vital role in the support, management, and evolution of modern electrical networks but do not have a power or electrical engineering background. The course will help delegates to understand industry roles and structures, develop informed perspectives and provide the context for more effective communication.

### Introduction to Smart Grids

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<th>Days</th>
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<td>2</td>
<td>£995</td>
<td>Call for details</td>
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The UK is at the forefront of developments in Smart Grid technologies and this new two-day course outlines the impacts that they are having on distribution networks. The course considers potential future applications, as well as current developments and delegates will learn the characteristics of the new technologies that are driving progress.
ISO 55000: The Route to Effective Asset Management

Days 2
Cost £995
Dates Call for details

This two-day course provides an essential step by step explanation of the standard’s key enablers. Based on real world best practice, it provides a framework for asset-intensive industries to facilitate excellence in life-cycle planning and cost/risk optimisation.

Lightning Protection for MOD Sites

Days 2
Cost £995
Dates Call for details

This course takes the delegates through the basics of lightning including the major effects it has on the Ministry of Defence sites that contain explosives facilities. It takes delegates through the basics of lightning and lightning protection strategies. The course explains JSP482 lightning protection requirements, compares national and international standards and links BS EN 62305 with MOD practice. The maintenance, testing and compliance of lightning protection systems are also covered.

Power Systems Engineering

Days 5 / 10
Cost £1,655 / £2,365
Dates 14 – 25 Oct 2019

A comprehensive five- or ten-day course offering a thorough grounding in all aspects of power systems engineering for newly qualified engineers or engineers from other disciplines. The course covers Power systems engineering up to 132kV

- Regulatory framework of the industry
- Network planning
- Cables
- Switchgear
- Transformers
- Overhead lines design and operation (alternative session Motors/Variable Speed Drives)
- Protection
- Fault level calculations
- Substation earthing
- Lightning protection
- Asset Management
- Condition Assessment of HV assets
- Condition Based Risk Management
- Failure investigation (alternative session: Energy Efficiency)
- Renewable and distributed generation
- Industry safety
- Power Quality
- Commissioning and testing
- Site visit to an Industrial Electrical Network Operator.
Specialist courses (continued)

**Project Management: Managing Electrical Projects**

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<th>Days</th>
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<tr>
<td>Dates</td>
<td>18 – 19 Jun 2019</td>
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This course aims to help managers, engineers and technicians to become effective managers of electrical projects. Delegates can work through case study examples to reinforce the course’s key learning points. The course is equally applicable to those who manage single projects or a portfolio of electrical projects at all voltage levels from HV/LV, 132/33kV through to 400/275kV.

**Understanding Lightning Protection**

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<tr>
<td>Dates</td>
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A comprehensive two-day course covering everything from the basics of lightning and its effects, to the use of risk assessment in the formulation of protection strategies. It will not only provide you with a clear understanding of the threat from lightning and the protection options available, but also introduce you to the economics involved in protection system selection.
## Cables courses

### Cable Joints, Terminations and Accessories

<table>
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<th>Days</th>
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<td>£995</td>
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**Dates** 19 – 20 Jun 2019

A two-day course providing a comprehensive update on the latest in cable joints, terminations and accessories. Topics include XLPE cable, mechanical connectors, elastomeric insulation systems, resin systems, heat shrink technology and their applications.

### Cables for Power Systems: Part One

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<th>Days</th>
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<td>£995</td>
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</table>

**Dates** Call for details

A comprehensive overview of power cables up to 33kV, from the fundamentals of power cable engineering and design, through asset management, joints and terminations, fault location and analysis.

### Cables for Power Systems: Part Two

<table>
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<tr>
<th>Days</th>
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<tr>
<td>3</td>
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**Dates** 21 – 23 May 2019

A three-day course on cable system engineering, using example circuits, to take the participants from the planning stage through the preparation of technical and commercial specifications for the tender document, bid adjudication, contract award, manufacture, installation, maintenance and operation. The management of existing cable assets is considered in terms of condition assessment, life estimation, repair and diversions.

### Power Cable Fault Location

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<tr>
<th>Days</th>
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<tr>
<td>2</td>
<td>£995</td>
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</table>

**Dates** 20-21 Nov 2019

A two-day course providing theory and in-depth practical fault location and diagnostics on power cables in operation. This course is a world leading authority on fault location and delegates will have an opportunity to use a range of fault location equipment.
Power networks

Application of Variable-Speed Drives and Rotating Machines

Days 2
Cost £995
Dates 9 – 10 Oct 2019

The introduction to this course takes delegates quickly through basic theory for rotating machines and then moves on to introduce the power electronics used in AC variable-speed drives. The application of variable-speed drives includes performance, protection and matching torque demand to torque delivery. It then moves on to external factors for selecting variable-speed drives, harmonics, filters and the interface with electricity utilities including the demonstration of a power system analysis programme.

Distribution Overhead Lines

Days 2
Cost £995
Dates Call for details

This two-day course has been designed to cover many overhead line issues of the moment including the effect of European regulations on our standards, line design, lightning protection, and helicopter and foot line patrols, including condition assessment, and live line working.

Distributed Generation

Days 2
Cost £995
Dates Call for details

A two-day course focussing on distributed generation and its impact on both LV and HV networks, including connection issues, network design and operation, regulations, commercial aspects and the future of distributed generation.

HV Network Planning and Design

Days 2
Cost £995
Dates 14 – 15 May 2019

This two-day course combines the theory of network planning to relevant GB standards and legislation with the practice of carrying out load flow studies and calculations to ensure compliance with those standards. Fault Level, Voltage and Network Capacity Planning are all considered along with supporting knowledge in the areas of earthing design, basic HV protection and typical HV supply connection arrangements.
LV Network Planning with optional WinDEBUT™ training

Days | 2 with optional 3rd day for WinDEBUT™ software training

Cost | £995

Dates | 4 – 6 Jun 2019
      | 29 – 31 Oct 2019

A foundation course covering the basics of LV network planning and design, including all equipment and network components, network protection, legal and regulatory issues. An optional third day explores how EA Technology’s WinDEBUT™ software can be used for rapid modelling and analysis of LV networks, designing new LV networks, or adding new connections to existing networks, including embedded generators. The third day is free of charge when booked with the two-day course or £395 when booked as a stand-alone course.

Power Quality and Harmonics

Days | 2

Cost | £995

Dates | 6 – 7 Nov 2019

A two-day power quality course that explains the Engineering Recommendations associated with power quality, and demonstrates its practical application through worked examples and case studies.
## Protection courses

### Commissioning and Testing

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<th>Days</th>
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<td>Dates</td>
<td>Call for details</td>
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A practical course covering the complete process of commissioning and testing new protection systems prior to initial switch-on, and the testing of existing asset protection to prove its continuing integrity.

### Power System Protection: Part One

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<td>Dates</td>
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A comprehensive course covering the principles of power system protection. The course includes practical exercises and a ‘walk through’ the LV and HV system. It provides a very detailed introduction to essential protection principles at a level that does not require knowledge of complex numbers.

### Power System Protection: Part Two

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<th>Days</th>
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<tr>
<td>Dates</td>
<td>8 – 10 Oct 2019</td>
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This course covers the role of protection, fault characteristics and design principles for a range of networks and network assets including a detailed examination of transformers and embedded generators. The management of protection is examined including the use of new knowledge based systems to create cost-effective maintenance procedures. This course includes complex numbers and introduces inductance and capacitance.
Tailored programmes

Graduate Development and Conversion Programmes Call for details

Dates Call for details

Structured development routes for a range of power engineering roles and competence levels, including graduates, apprentices, new entrants and career changers. Our modular development programmes can help increase your training capacity. We can work with you to develop and deliver structured training programmes that provide a comprehensive route to specified levels of knowledge and professional competence.

Bespoke Training

Dates Call for details

In addition to our scheduled programme of courses we can, on request, deliver courses at locations and dates to suit you. We can also develop bespoke training courses to meet your specific requirements.
Qualification Programmes

### City & Guilds Level Two Electrical Power Engineering - Transmission and Distribution

<table>
<thead>
<tr>
<th>Duration</th>
<th>24 months</th>
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<tbody>
<tr>
<td>Cost</td>
<td>£1,950</td>
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<tr>
<td>Dates</td>
<td>Rolling enrolment</td>
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</table>

The City & Guilds level 2 Certificate in Electrical Power Engineering – Transmission and Distribution (2339-17) is available as both a structured, taught programme for groups of learners within an organisation, and as a distance-learning course for industry engineers and technicians requiring a formal qualification, apprentices and new entrants to the industry. This unique qualification is specifically aimed at gaining the fundamental knowledge required for a career in the electricity supply industry and provides a platform for further progression on to the City & Guilds level 3 Diploma.

### City & Guilds Level Three Electrical Power Engineering - Transmission and Distribution

<table>
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<tr>
<th>Duration</th>
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<tbody>
<tr>
<td>Cost</td>
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</table>

The City & Guilds level 3 Diploma in Electrical Power Engineering – Transmission and Distribution (2339-45) is available as both a structured, taught programme for groups of learners within an organisation, and as a distance-learning course for industry engineers and technicians requiring a formal qualification, apprentices and new entrants to the industry. This unique qualification is specifically aimed at developing the fundamental knowledge required for a career in the electricity supply industry and provides a significant platform for further career progression including the knowledge component of the Advanced Apprenticeship framework.
Notes
At EA Technology we specialise in asset management solutions for owners and operators of power network assets.

Founded in 1966 we have over 50 years’ experience in the industry and 6 regional offices around the world to support our global customer base.

We work with a lot of our clients on a long-term basis to help them safeguard their power networks. We advise our clients on strategy and implementation of a range of technology solutions to manage power assets, delivering maximum life and minimise cost.

Safer, Stronger, Smarter Networks

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