



All modern industrial and commercial business processes rely on a continuous and secure supply of electricity; electrical circuit protection plays a vital role in achieving this. In order to prevent severe supply disruption and minimise health and safety risks, systems need to be protected from the consequences of overload and fault conditions.

This course will explore how electrical circuit protection systems function and the role they execute. Ideal for delegates with a background in electrical power systems, this course highlights the importance of electrical circuit protection, examining the protection of all major plant by providing an insight into selecting circuit settings and resolving protection issues. Practical workshops reinforce material covered on the course.

Your programme

Day one

08.45 Registration and refreshments

Protection basics

- Why do we need circuit protection?
- How can protection be achieved?
- Protection of plant and equipment
- Protection of site personnel
- Protection by system design
- Faults (causes, types)
- System arrangements that influence protection.

10.45 Refreshments

General design concepts

- Design philosophy
- Protection quality
- Protection zones
- Main and backup protection
- Types of fault
- Basic protection components
- HV protection components
- Overcurrent protection.

12.30 Lunch

Protection software introduction

General design concepts (continued)

- Grading by time and current
- Earth fault protection
- Unit protection
- Distance protection
- LV protection components
- Intertripping
- Summary.

15.15 Refreshments

Protection workshop

16.30 Close.

Day two

08.45 Refreshments

Overview of BS 7671 requirements

- Terminology
- Protection against Overcurrent
 - Fault current protection
 - Requirements relating to maximum and minimum short-circuit and earth faults
 - Disconnection time requirements
- Overload current protection
 - Co-ordination of cables and protective devices.

Equipment protection

- Generators
 - Introduction
 - Small, embedded and large generators
- Busbars and switchgear
 - Speed and stability
 - Main and check schemes
 - Frame earth leakage.
- Transformers
 - Types of fault
 - Small distribution transformers
 - Large industrial transformers.

11.15 Refreshments

Equipment protection (continued)

- Incomers and feeders
 - Differential protection
 - Overcurrent and earth fault protection
 - Distance protection.
- Motors
- UPS.

13.00 Lunch

14.00 Commissioning and testing

14.30 Protection workshop

- Worked examples.

Summary and questions

16.30 Close.

Ever thought about in-company training?

This course can be delivered at your site. To discuss your training requirements, please call the Events Team on +44 (0)1372 367439.



Your speakers



George McDowell - Head of Power Systems, ERA Technology Ltd

George is an internationally renowned electrical power engineering expert and represents ERA Technology Ltd on a number of professional bodies. His work has focused on design, power quality, failure analysis, solving operational problems of power systems, earthing and lightning protection of structures, and electrical systems.



Paul Mason - Principal Power Systems Engineer, ERA Technology Ltd

Paul joined ERA Technology's Engineering Consultancy Services division in 2007. His main interests and activities are in power system studies, power quality measurements and operational problems of high voltage power plants.



Mark Coates - Cable Engineering Consultant, ERA Technology Ltd

Mark joined ERA Technology in 1983. Registered with the UK Register of Expert Witnesses, his work focuses on the measurement of thermal properties of cable materials, calculation of heat flow through complex thermal paths, MV partial discharge, tan δ and breakdown testing and life prediction using statistical analysis. He is also a member of the IEE/BSI Committee concerned with electrical installations.

Booking form

Please photocopy this form if you wish to register more than one delegate. Send a second person at a discounted price!

Delegate details

Name <small>Dr Mr Mrs Miss</small>
Job Title
Organisation
Address
Postcode
Telephone
Fax
E-mail
VAT number <small>(EU customers only)</small>
<input type="checkbox"/> Please tick if you are happy to receive further information about ERA Technology Ltd via e-mail. It is our policy NOT to supply your details to third parties.

Venue:

Your course will take place at ERA Technology Ltd, Cleeve Road, Leatherhead, Surrey KT22 7SA, UK. It is a 15 minute walk from Leatherhead main-line station. Visitor car parking is available on-site. A location map and directions are available at: www.era.co.uk/location.

Early booking rates:

Early booking rates are valid up to one calendar month before the date of the course and can only be claimed at the time of booking.

Additional booking rates:

Additional booking rates are applicable to second and subsequent delegates and may only be claimed at the time of booking.

Did you know?

An AccessERA subscription is an excellent way of accessing technical advice and information in the right format at the right time. All AccessERA subscribers receive a 10% discount on the current course price at time of booking when the booking is made directly with the Events Team. To find out more, please call us on: +44 (0)1372 367439 or e-mail: events@era.co.uk.

Ways to book:

- <http://shop.era.co.uk>
Total security is assured and normal booking conditions apply.
- +44 (0)1372 367439 - please be prepared to quote a purchase order number or supply us with credit card details.
- +44 (0)1372 367321*
- The Events Team, ERA Technology Ltd, Cleeve Road, Leatherhead, Surrey KT22 7SA.

* Please note that booking forms received without payment will be considered binding and invoiced automatically.

Enquiries:

Please contact the Events Team by calling: +44 (0)1372 367439 or e-mail: events@era.co.uk.

How to pay:

Payment must be made before attendance at the event and must be made in £ sterling only. Acceptable methods of payment are by cheque (payable to ERA Technology Ltd), credit card or bank transfer. Bank transfers, free of all charges, can be made to ERA Technology Ltd via: HSBC, 9 The Boulevard, Crawley, RH10 1UT; sort code: 40-18-22, account no. 22178095. When paying by bank transfer, please quote the relevant course, reference number and the delegate and company name.

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ERA Technology Ltd:

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Bookings

I wish to make a firm booking for:

Introduction to Electrical Circuit Protection

19-20 October 2011 Ref: 31138 13-14 March 2012 Ref: 31204

Fees*

Fee rate	Fee	VAT@20%	Total	Please tick
Early Booking Rate	£720.00	£144.00	£864.00	
Standard Rate	£800.00	£160.00	£960.00	

*AccessERA subscribers and additional delegates receive a 10% discount on these rates. If you subscribe to AccessERA and would like to use your AccessERA credits to attend, please contact the Events Team on: +44 (0)1372 367439. For more information on booking rates, please go to: <http://shop.era.co.uk>.

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