The Power Skills Centre
leading energy learning

technology

Specialist

Power Quality and Harmonics

Course overview

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

This practical course will take you step by step through the Engineering Recommendation G5/4 (and the updated G5/4-1) on harmonics, explaining the background to the recommendation and the relevance of British and International standards to modern power networks.

The course will take you through the theory behind various types of disturbance on power networks, including the concept of electromagnetic compatibility, the causes and effects of harmonics, voltage fluctuations and flicker, and the effects of variable speed drives, UPS and switched mode power supplies.

You will then get the opportunity to test your understanding of G5/4 by working through a number of worked examples. Finally the workshop course will discuss power quality measurements and how the results can be interpreted, as well as the kind of power quality mitigation and conditioning techniques that you can apply

Cost: Two-day course: £935 + VAT

Location: EA Technology, Capenhurst, Chester, CH1 6ES

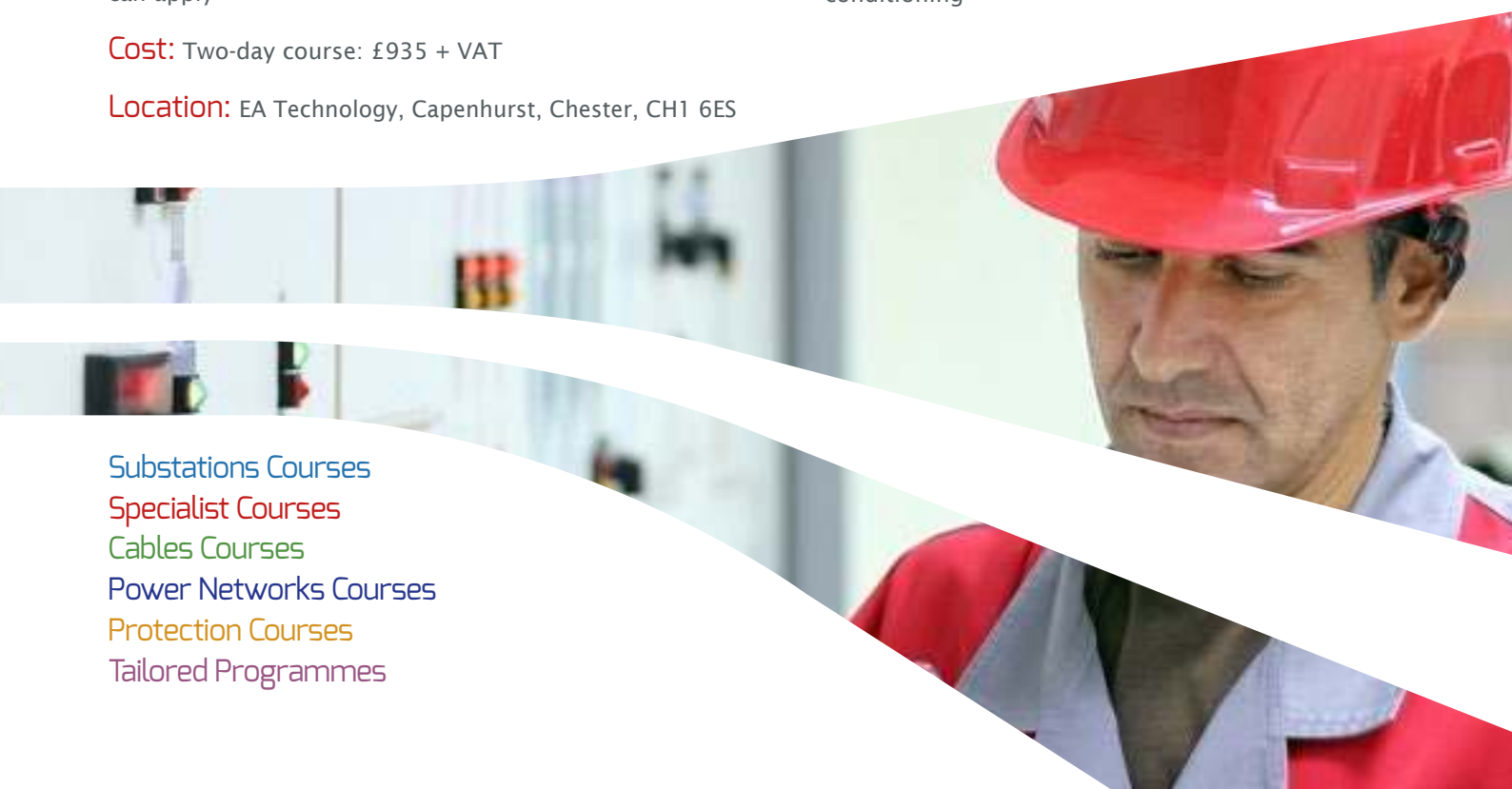
Who should attend?

This course contains essential knowledge for you if you are a user, owner or operator of an electrical distribution network, or a user or specifier of power equipment in the commercial and industrial sectors.

The course will also be of benefit to you if you are a manufacturer or supplier of non-linear equipment or a consultant or advisor on electrical distribution networks.

Benefits of attending this course

- Understand the problems and mitigate against the effects of harmonics on rotating machinery, transformers, cables and other assets
- Avoid over loading and degrading critical assets
- Gain essential knowledge of Engineering Recommendation G5/4
- Prevent the premature failure of key assets
- Test your learning on real life worked examples and case studies
- Develop vital skills in power quality measurement and interpretation that are in short supply
- Understand the process for connecting non-linear equipment
- Learn new techniques for mitigation and conditioning



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

Specialist

Power Quality and Harmonics

Course programme

Day one

Introduction to Power Quality

Power Quality Standards

- IEC 61000 series
- BS EN 50160
- ER G5/4-1
- P28
- P29

Harmonics Theory

- Harmonic distortion
- Loads that generate harmonics
- Effects of harmonics

ER G5/4

- Purpose of G5/4
- Features of G5/4

Worked Examples

Day two

Power Quality Surveys

- What to measure
- Where to measure
- Analysing the data

Harmonic Measurement and Standards

- Measurement standards
- VT's and CT's
- Instruments

Solutions to Harmonic Distortion

- Filters
- Isolating transformers

Unbalance

- ER P29
- Causes of unbalance

Voltage Fluctuations

- What is flicker
- ER P28
- Evaluation of flicker level

Worked Example

Programme may be subject to amendment

PSC019/CL/MAR15