



An Introduction to the Protection of Transmission and Distribution Systems is an open learning course designed to give a good grounding in the basic principles of power system protection.

Anyone whose work puts them into situations where knowledge of protection is an issue will benefit from using the materials. All the material is written with the minimum of mathematical treatment – the aim is a solid introduction to protection, not an in-depth analysis.

Successful completion of the course will provide a sound basis for further study offered by the Premier Power System Protection Course also available from AFAQ-ETA. The course is an acknowledged method of Continuing Professional Development (CPD).

WHAT DOES THE COURSE CONSIST OF?

The course consists of seven open-learning modules covering an introduction to power system protection principles for electricity staff.

COURSE AIMS

The course aims to deliver the following:

- The fundamental engineering principles which dictate the extent and composition of protection within a power system
- Basic vocabulary to discuss and describe protection issues
- Understanding and knowledge of the devices making up protection systems
- Schematics showing the application of protection in transmission and distribution networks.

WHAT ARE THE ENTRY REQUIREMENTS?

There are no formal entry requirements, academic or otherwise.

STUDY AND ASSESSMENT

Following enrolment, the candidate will be sent a personal set of course materials. These are made up of a course guide, study materials for each of the seven modules and a supply of stationery. Each module is presented in the form of learning text and illustrations, and includes a series of self check questions for candidates to work through.

Candidates are encouraged to work through the text at their own pace and to consult outside sources of information to assist in advancing their knowledge of the subject.

An important feature of the course is the TMA. Where possible, these are linked to the candidates' workplace experience; this enables candidates to integrate their studies with their daily activities. Each module is accompanied by three assignments (TMA's) in the form of essay-style questions, of which any two should be completed and forwarded to AFAQ-ETA. On successful completion, candidates will receive an Industry recognised certificate detailing the modules completed and the marks achieved.

HOW DOES THE COURSE WORK?

Overview

Each module starts with an overview describing the ground to be covered and the learning objectives to be achieved by the end.

Content

Modules are divided into easily-identifiable sections which allow candidates to select the quantity of study material to suit their own available time. Candidates can then plan their own study periods and decide their own pace for their studies.

Clear descriptive diagrams illustrate the text throughout each module.

Self-Checking

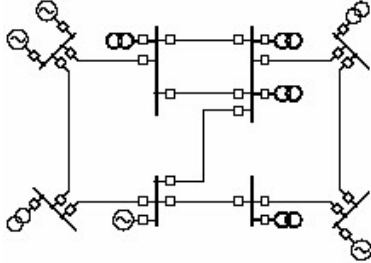
Most topics have self check questions to help you determine how much you have learnt – with comments in the Responses section at the back of the Course Guide.

Commentary on the self check questions relating to the individual topics – brief notes to let you see if you are understanding the topics as you go along, before proceeding to the Tutor Marked Assignments.

THE COURSE

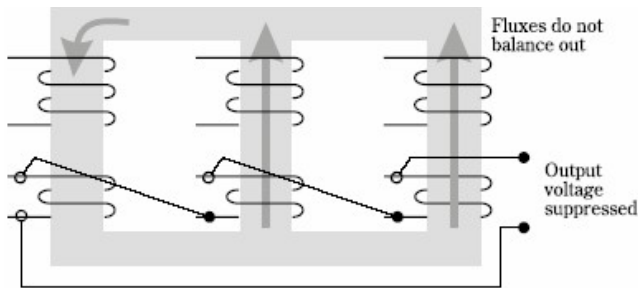
Module 1: Roles and Types of Protection

- What is power system protection?
- System configurations and substation layout
- Faults: causes, types and consequences
- Earthing systems and methods
- Unit and non-unit protection
- Methods of discrimination
- Costing protection



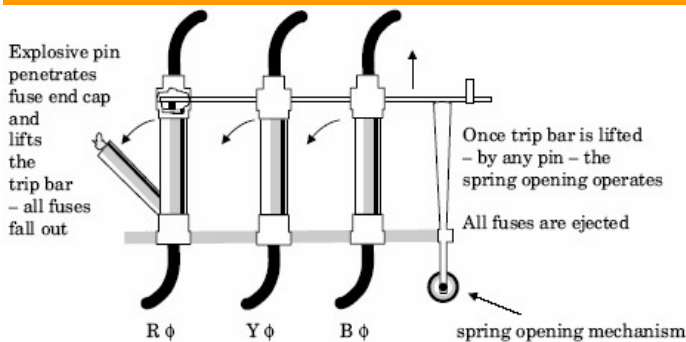
Module 2: Transformers – Measurement and Control

- Measuring voltage and current
- Current transformers – design and use
- Voltage transformers – design and use
- Earthing current and voltage transformers
- Combined current and voltage transformers



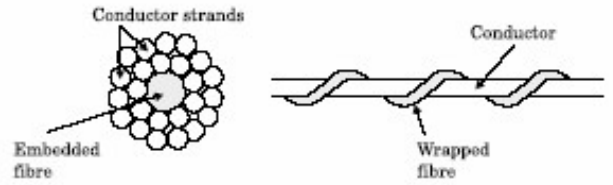
Module 3: Protection Equipment

- Fuses for high and low voltage use
- Relays: types and uses
- Directional and non-directional elements
- Buchholz relays



Module 4: Ancillary/Auxiliary Equipment

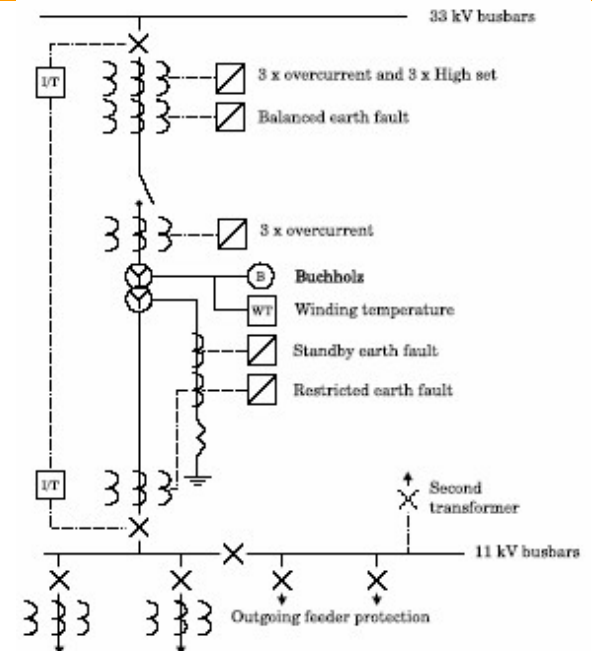
- Batteries – types and use
- Tripping and closing circuits
- Communications links – pilots, fibre optics, microwave radio and power line carrier
- Remote end fault clearance, intertripping, acceleration and blocking
- Auto switching and synchronising
- Fault recorders



Modules 5 & 6: Protection Schemes I & II

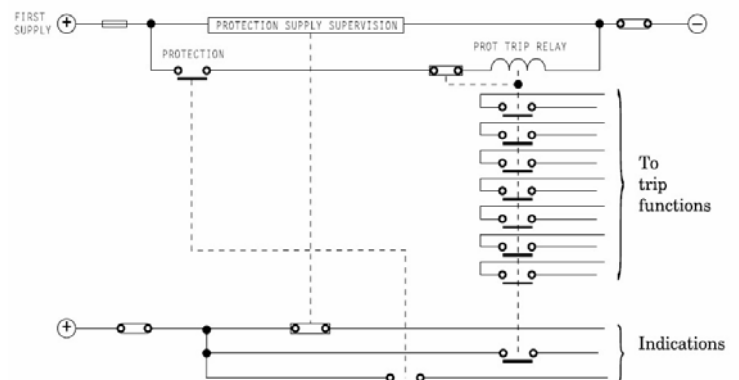
These modules expand on the earlier material and provide practical applications.

- Non-unit feeder protection
- Unit feeder protection
- Busbar protection
- Circuit breaker fail protection
- Transformer protection for low voltage distribution, primary distribution and transmission transformers
- Transformer feeder protection
- Backup protection
- Connection and protection of generators
- Remote control and monitoring



Module 7: Protection Management and Site Considerations

This module looks at practical issues such as drawings, commissioning and testing.



TO ENROL

To enrol simply complete AFAQ-ETA's Open Learning Courses Enrolment/Order Form, including details of how you will be paying and return it to Tyla Davis by e-mail, fax or post using the details at the bottom of the page.

Please note that unless an official purchase order has been raised, payment **must** be made (either by cheque or credit card) before the materials can be sent out.

For all our current prices, see our Open Learning Courses Enrolment/Order Form.



HOW LONG WILL IT TAKE TO COMPLETE THE COURSE?

The course duration is 7-12 months – one module almost every month.

Candidates are encouraged to work at their own pace, although they must submit at least one module within the first 12 months of enrolling, and should be aware that they will be liable for additional fees if the course is not complete within 2 years and they wish to continue studying.

CANDIDATE SUPPORT

Some companies have designated mentors to help and encourage students, to monitor progress and to advise on study planning etc. Technical information is supplied to mentors by AFAQ-ETA.

Day to day administration is arranged directly between the student and AFAQ-ETA after the initial enrolment.

Frequently Asked Questions are available to students on request.

Students may submit their own queries regarding specific problems to AFAQ-ETA who will liaise with tutors to assist the students. Tutors may decide to speak directly to the students to answer enquiries.

For more information about any of our training products please contact Tyla Davis, Training & Development Manager, using the details below.

We also offer a range of courses in support of ISO certification – see our website for more details!



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