

ELECTRIC SHOCK INVESTIGATION TRAINING





ELECTRIC SHOCK INVESTIGATION TRAINING

All-inclusive, industry standard training

This course equips participants to effectively lead or support electric shock incident investigations, making it essential for electricians and electrical engineers.

In an environment where shock incidents are a real concern, ensuring competent investigations is crucial for implementing solutions to prevent recurrences and, in the worst-case scenario, electrocutions.

Many employees lack the know-how and technical expertise for proper investigation and problem identification.

Given the prevalence of litigation, businesses must be prepared to mitigate the impact of incidents and defend against potential claims or prosecution.

This course not only reduces the aftermath of incidents but also empowers staff with the skills and knowledge to proactively prevent such incidents.

Additionally, there is an optional two-day course available specifically for Electrical Incident Report Writing.



COURSE CONTENT

This course comprises 18 theory modules, each module concluding with an assessment. The in-person training includes a daily practical session, post-lunch, focusing on hands-on investigations of electric shock incidents. The on-line training has videos like the in-person practical sessions but with imbedded assessment questions.

The modules for the course are as follows:

- Legal Issues for Electrical
- Incident Investigations
- Causes, Effects and Prevention of Electrical Incidents
- Effects of Current on Human Beings
- Effects of Current on Livestock
- Introduction to Lightning
- Introduction to Electric Arcs
- Earthing Systems Operation
- Fault Loop Impedance
- MEN Polarity, Neutral Integrity and Phase Rotation Testing
- Test Instrument Usage
- Residual Current Devices
- Types of Electric Shock Incidents
- Forensic Electrical Fire Investigations:
 - Preplanning
 - First Response
 - Collect the Evidence
 - Analysis and Interpretation
 - Report Writing
 - Finalisation



“Our mission is to provide high-quality electrical training for the safety and well-being of all, including those in their homes and at work.”

Chris Halliday – In Person Trainer

With an extensive career spanning over four decades in the electrical industry, Chris is a distinguished expert in electric incident/shock investigation training, electrical safety, and power quality strategy.

He is regularly delivering presentations at numerous conferences and contributing articles to a variety of reputable trade publications.

Chris's qualifications include a Masters Degree in Electrical Power Engineering, a Graduate Diploma in Management, an Advanced Diploma in Occupational Health and Safety (OH&S), a Certificate IV in Training and Assessment, and an Advanced Certificate in Industrial Electronics. In addition, he holds a license as a Qualified Supervisor - Electrician in NSW, having initially started his career with an electrical trade before transitioning into the field of electrical engineering.

Chris is deeply passionate about elevating safety standards and advancing the level of safety education within the electrical industry.



”Our online training centre enables 24/7 access to all our training courses for those working in this specialised industry.”

Daniel Halliday – Online Trainer

Daniel brings a wealth of practical experience to PowerLogic with his 20+ years in the industry.

Daniel ran his own electrical contracting business through PowerLogic before swapping to training. He has experience in home automation, power quality investigations, energy management, comm’s cabling, and non-destructive testing of large motors and generators including thermal imaging.

He is a member of EESA, MEMMES and the Institute of Electrical Inspectors (IEI) and represents IEI on some Australian Standards Committees. His qualifications include an Advanced Diploma in Electrical Engineering, Certificate IV in Workplace Health and Safety, Certificate IV in Training and Assessment, Certificate II in Air Conditioning and Refrigeration, Electrical Trade Certificate

He is a Licensed Electrical Supervisor - Electrician in NSW and is currently studying a bachelor’s in electrical engineering.



DETAILED COURSE CONTENT

Legal Issues for Electrical Incident Investigations

This module investigates the generic legal issues associated with an electric shock incident investigation, electrical installations and equipment compliance, electrical work compliance, and giving evidence in court.

Causes, Effects and Prevention of Electrical Incidents

The causes of electrical incidents are investigated using the Swiss Cheese Model. The effects of Incidents are also detailed in this module.

Root Cause Analysis (RCA) is briefly introduced to identify the causes of incidents, including any underlying causes, so corrective and preventative actions can be formulated.

Effects of Current on Human Beings

This module looks at the short and long-term effects of the various types of electricity on the human body.

The role the human body plays when current passes through it are discussed. The three important 'threshold' values of current are discussed as well as the maximum duration of touch voltage and the values of voltage likely to cause the three 'thresholds' of touch current.

Effects on Current on Livestock

This brief module looks at the effects of electric current on livestock, particularly dairy cattle. The values for the threshold of reaction and ventricular fibrillation are discussed. The module is completed with a few brief case studies.

DETAILED COURSE CONTENT

Introduction to Lightning

How lightning is propagated, the various shock mechanisms, the effects of lightning on livestock and humans and how to investigate electrical incidents to determine if lightning has played a role in the incident, are all discussed in this module.

Introduction to Electric Arcs

Arc Flash incidents are investigated in this module including what happens in an arc flash event, the injuries that can be sustained, common causes of arc flash incidents, how to manage arc flash incidents and their prevention including designing out the risk and the use of lower order controls such as procedures and PPE. The module also includes how to investigate incidents from arc flash perspective.

Fault Loop Impedance

Loop impedance is covered in detail in this module including what it is, requirements from the Wiring Rules, how to measure, acceptable test results, standard requirements, test instruments and specifications, errors and problems that occur with the loop impedance testers and how to overcome the errors.

Earthing System Operation

The purpose of earthing and what can go wrong with earthing are detailed in this module. Additionally, the module includes a detailed investigation into the MEN system and a brief look at other earthing systems including the IT, TT, HV earthing and Single Wire Earth Return (SWER) earthing. Testing of earthing using various pieces of test equipment is included.

MEN Polarity, Neutral Integrity and Phase Rotation Testing

This module covers the various testing methods for MEN polarity and neutral integrity, the effects of reverse polarity connections in the MEN system and why they occur and prevention, acceptable voltage levels for the voltage method of checking neutral integrity, and phase rotation issues and requirements.

DETAILED COURSE CONTENT

Test Instrument Usage

Understanding test instruments is important in the interpretation of their measurements. This module investigates the principles of instrument usage, purchasing test instruments, maintenance and calibration, legal requirements, various test instruments and their limitations, and tests required by the Wiring Rules. Proximity testers, voltmeters, power quality loggers and the Electric Shock Investigations Kit are investigated in depth.

Residual Current Devices

RCD issues, such as their design, wiring Rules requirements including installation and testing issues, legislative requirements, testing and tagging, additional requirements for construction and demolition sites, 'nuisance' tripping issues and the investigation of electrical incidents where RCDs are involved, are all covered in this module.

FORENSIC INCIDENT INVESTIGATION

This section is divided into 6 training modules as follows:

Preplanning

Being prepared for a forensic investigation of an electric shock incident is important. This module prepares individuals and companies for an investigation and looks at investigation procedures, forms, training, report writing templates, equipment issues and evidence storage preparations.

First Response

This module details requirements to ensure no further victims fall foul of risks at the incident site. Additionally, requirements in allowing 'the rescue', securing the incident scene, reporting to the authorities, establishing an investigation team, and investigating ASAP are important, and parallel investigation issues are all covered in this module.

FORENSIC INCIDENT INVESTIGATION

Collecting the Evidence

Scene examination, and evidence gathering including documenting the scene, sketching, collecting visual evidence, and the collection of electrical evidence are detailed in this module. The collection of evidence via interviews is also important and so requirements and interview techniques are discussed. Offsite evidence and evidence preservation are also detailed.

Analysis and Interpretation

In this module, all the evidence is analysed and interpreted, materials are analysed and examined as necessary, a hypothesis is developed, and an action plan is developed to rectify and prevent further incidents.

Report Writing

A report can be formulated from the analysis and interpretation of all the evidence. Reports take various formats, but a written report is important. What to include, what not to include, and formatting mistakes are investigated in this module so a high-quality report can be formulated.

Finalisation

This course is concluded with finalising corrective and preventative actions, conducting a post-investigation review, ensuring counselling is provided, final reporting and competing all internal records.