



Effective
Human
Intervention
LEADERS IN TRAINING



Recognised for Continuing
Professional Development
(CPD) by SAAMA in accordance
with ECSA guidelines



Advanced Electrical Installation & Arc Flash

What are your responsibilities?

Assessment based on the material presented and the practical application of the Electrical Principles

EHI has been accredited by MERSETA | Accreditation No: 17-QA/ACC/0603/23 | B-BBEE Level 2

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Electrical Installation & Arc Flash

About this Course

This training course is specifically designed to provide professional training covering the application of electrical concepts such as, design, construction, assembly, installation, testing of general electrical systems found in industry today. **The focus is on the management and maintenance, including fault finding of such systems.**

The workshop will address issues such as planning and supervision of these activities.

Course Outcomes:

On completion of this course you will understand:

- The practical application of maintenance management principles in the electrical environment
- The application of the various technical standards and procedures required for an electrical installation
- General fault finding techniques for electrical installations
- Completion of an assessment

About Your Facilitator

Ian Mee is registered as a Professional Technologist, Professional Certificated Electrical and Mechanical Engineer and registered as a Master Installation Electrician. He has 50 years of Industrial experience in Electrical, Mechanical and Process Engineering which included chemical, rubber, paper, sugar, shipping and food industries. With over 10 years in the chemical and allied Industrial environment at senior management levels.

Ian is a registered Assessor & Moderator for EWSeta.

Who should attend?

Anyone wanting to gain an advanced understanding of electrical engineering and fault-finding techniques

- ✓ All Electrical Practitioners
- ✓ Electrical Mechanics
- ✓ All Electrical Artisans
- ✓ Electrical Millwrights
- ✓ Electrical charge hands / Supervisors
- ✓ Electrical Contractors
- ✓ Electrical Control Panel Construction Artisans

Day 1

Introduction

- Maintenance management principles
 - Planning and scheduling
 - Quality control plan
- Standards and procedures
- The electrical installation
- General electrical safety considerations
- Occupational Health and Safety Act requirements
- Mines and works act (electrical regulations) including simple risk assessments
- Electrical codes of practice such as SANS 10142
- Mines and works regulation for electrical installations
- Outlining the functions of the electrical practitioner

Electrical Systems

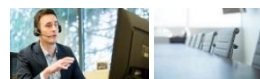
- General aspects of electrical systems and their environments
- Principles of electrical circuits
- Electrical measurements
- Power measurement techniques
- Fault finding techniques
- Components in an electrical system
- Electrical machine fault finding
- Panel building & Low voltage Switchgear up 1 kV
- Cable and cable installations
- Motors connections and motor control gear
- Control circuits
- Energy management concepts

Review of the Electrical System Calculations

- Electrical Network conditions
- Source impedance
- System fault level
- Fault level calculations to the transformer primary
- Mine M V reticulation systems
- M V skid earthing systems
- Overhead cable systems
- Auto re-closures information
- Fault detection

Electrical Network Calculations

- Transformer load conditions
- Transformer impedance at secondary bushing
- Fault level at secondary bush
- Transformer earthing
- Cable system and installations
- Protection systems (L V systems)
- M V Switchgear



Customised Virtual Training and/or In-house Training

If you wish to organize a Virtual Instructor Led Training session or In-House session for your organization, we will custom design a session that will help you achieve your desired learning goal. The main advantage of custom designed VILT, in addition to being significantly cost effective, is that they address topics specifically related to the needs of your organization. **To discuss the possibility of designing and conducting such a session or In-House training session, contact us on 021 979 5891 or callie@ehiafrica.co.za for a comprehensive quotation.**

Electrical Installation & Arc Flash

Day 2

Transformer Maintenance

- General concepts
- Transformer system design conditions
- Transformer cooling systems
- Transformer oil management
- Transformer protection
- Transformer components and their functions

Cable Systems

- Selection of cables
- Installation of cable
- Joints
- Couplers
- Volt drop calculations
- Cable fault calculations
- Fault finding on cable systems
- Fault location
- Cable testing

Introduction to Motor Control Systems

- Direct on line
- Reduced voltage starting
- Star – delta starting
- Soft starters
- Introduction to variable speed drives
- Some fault finding techniques
- Panel configuration

Introduction Control Systems

- PLC basic function
- Components
- Operational functions
- Applications
- General programming
- Fault finding
- Profibus system
- Maintenance of electrical equipment
- Maintenance techniques
- Maintenance planning

Day 3

Controls and Instrumentation

- Objectives of control systems
- Elements of control systems
- Types of control and control devices
- Methods of control
- Selection of control systems

Installation and Commissioning

- Installation of any electrical system
- Commissioning of the system
- Documentation
- Drawings
- Certification

Practical Panel building

- Design
- Layout
- Bus bar systems
- Electrical equipment
- Electrical connections
- Control circuits
- Electrical Drawings
 - Power circuits
 - Control circuits
 - Protection elements
 - Earth leakage protection

Troubleshooting on various Electrical Systems

- Objectives of fault finding
- Types of Fault to expect
- Troubleshooting on electrical panel systems
 - Electrical panel system configuration
 - Motor control systems
 - Motors and control
 - Simple PLC systems
 - Variable speed drives
 - Electrical Instruments
 - Protection systems and settings
- Practical fault finding

Day 4

Introduction to Energy Management Including Energy Measurement

Assessment

Based on the material presented and the practical application of the electrical principles

- Energy Management
- Electrical system
- Cable system
- Transformers
- Switchgear
- PLC
- VSD
- Panel systems
- Motor systems
- Motors
- Electrical instruments
- Practical fault finding

