

Effective
Human
Intervention
LEADERS IN TRAINING

Technical Application of SANS 10142 – 1

EDITION 3.1 & 3.2 of 2024
Including Calculations and
Alternate Supply Requirements

SANS 10142 Part 1 of 2024 Edition 3.1 including the responsibilities required by all concerned terms of the Occupational Health and Safety Act 85 of 1993 and the general requirements of the Certificate of Compliance for any Electrical Installation up to 1000 Volts.



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



Accreditation No: 17-QA/ACC/0603/11

SANS10142-1 (EDITION 3.1& 2) FOR WIRING OF PREMISES

COURSE SYNOPSIS

Some individuals and Companies still hold the outdated perception that they might or should be exempted from compliance with the SANS 10142-1 code for the wiring of premises.

SANS 10142-1 is incorporated into law through reference in the Electrical Installation Regulations of the OHSACT. This act states that "no person shall connect or permit the connection of any completed or partially completed electrical installation to the electricity supply unless it has been inspected and tested by a registered person and a certificate of compliance for that electrical installation has been issued. This workshop would look at the fundamental and installation requirements under the code and how to get to the stage where an electrical installation can be inspected and tested and a COC issued.

ABOUT YOUR FACILITATOR

Ian Mee (CEM, Pr. Tech.Eng. Pr.Cert.Eng. SM-ICMEE-SA, M SAIEE, M-IPET MIE 00009)

Ian Mee is registered as a Professional Technologist, Professional Certificated Electrical and Mechanical Engineer and registered as a Master Installation Electrician. He has 55 years of Industrial experience in Electrical, Mechanical and Process Engineering which included chemical, rubber, paper, sugar, shipping and food industries. With over 20 years in the chemical and allied Industrial environment at senior management levels. The last 23 years running a consulting practice. Ian Mee is a registered Assessor for EWSETA and was a SANAS accredited Authorised inspection Body and is recognised by Department of Labour as an AIA (CI 014)

UNDERSTAND THE IMPLICATION OF THESE CODES AS APPLIED TO THE ELECTRICAL ENVIRONMENT INCLUDING:

- The connections to electrically powered machinery
- The design, construction, and repair of electrical installations
- The registered person, contractors, and other electrical practitioners
- The supervision of electrical installations
- The certificate of compliance and test reports
- Solar Installations
- Generator Installations



BENEFITS INCLUDE:

- Participation in an interactive workshop
- Learn from recognised expert with cross industry experience
- Comprehensive course documentation
- Certificate of Completion
- 2 CPD Credits

WHO SHOULD ATTEND?

The workshop is ideal for Engineering Professionals who have interest in electricity safety.

- ✓ Plant Engineers and Managers
- ✓ Electrical Engineers and Technicians
- ✓ All electrical practitioners, electricians, millwrights, contractors
- ✓ Engineering Managers
- ✓ Maintenance Engineers
- ✓ Instrumentation Engineers
- ✓ OHS Managers
- ✓ Workplace Safety Professionals
- ✓ Consultants
- ✓ Technicians and Supervisors
- ✓ Foreman, Superintendents and Artisans
- ✓ Electrical Contractors
- ✓ Solar Installers

REGISTRATION will commence at 08:00 on the first day with the workshop beginning at 08:30 each day. Refreshments will be provided at appropriate intervals, and lunch will be served at 12:30. The workshop will conclude at 16:30 each day.

**All timings are approximate due to the nature of the workshop.*

SANS10142-1 (EDITION 3.1& 2) FOR WIRING OF PREMISES

Session 1

Introduction

- Background to the working environment
- The general during of employers and employees
- The content and use of company regulations
- How the regulations apply when work must be carried out on apparatus
- Responsibilities and duties of authorised persons
- Abnormal conditions
 - Safety of personnel
 - Safety of equipment
 - Safety of plant NFPA 79 and 70B
- Electrical safety – how do we achieve it?
 - Electrical switchgear safe operating
- Electrical installations include many components such as switchgear and control gear.
- These items are regulated by the OHSACT, various Codes of Practice, Company Operating Policies and Safe Working Procedures.
 - How do these procedures make for a safe electrical environment?
- Electrical Installations in domestic, industrial and commercial environments.

Session 2

Electrical Installation Regulations (EIR Regulations)1-14

Including the Department of Labour Guidelines on EIR

Background to Electrical Concepts

- General electrical terms used in the industrial environment
- Electrical circuits including series and parallel
- Electrical protection components selection and applications
- Electrical components found in any electrical installation

Technical Implementations of the Code

- General calculations
- Specific to the supply to an installation
- Selection of distribution equipment
- Introduction to fault calculations
- General conductor selection
- Concepts of Volt drop

Session 3

Introduction to SANS 10142-1

SANS 10142-1 – What and how do we use and interperate the requirements in the light of the many opinions that influence the application.

Specific electrical requirements:

- What is covered by this code
- Statutory requirements
- Safety, Basic provisions, Characteristics of the supply,
- Installations and component selection
- Special installations
- Introduction to safety earthing concepts

Session 4

SANS 10142 - 1 – Edition 3 Wiring of Premises Section 3,4 and 5 – definitions, component compliance and safety requirements.

Section 6

Requirements for the general installation wiring and selection of components, including all the tables for cables.

Section 7

Special installations including swimming pools and hospitals.

Section 8

Inspection and testing including the function of various instruments required.

Annexure – The general concepts outlined in the Annexure B to S

The general guideline included in the Annexure for Volt drop calculation.

Group activity in doing hand calculation of cable selection, volt drop and fault handling, including the application of a simple computer programme that will be given to the delegates.



SANS10142-1 (EDITION 3.1& 2) FOR WIRING OF PREMISES

Session 5

The Certificate of Compliance, changes, and applications.

Details of the Certificate of Compliance

Details of the test report and the layout

Information:

- Calculations
- Pitfalls
- Instruments
- Measurements

Major Components in an installation:

Supply conditions

Transformer

Meter kiosk

Cable

Consumer

Residential/Industrial/Commercial/State owned

Consumer cable

Point of supply

Point of control

Point of consumption

Point of outlet

Some problem areas:

Fixed Appliances

Arms reach

Mixed Circuits and Loading

Ceiling Fans and Control Systems

Alternative supplies (Generators, UPS, Solar)

PSCC

Loop Impedance

Bonding

Earth Continuity Conductor



Session 6

Proposed changes from Edition 3.1 to Edition 3.2
Sections form the Code, specifically:

6 Installation

7 Special Installations

7.12 Alternative Supplies

8 Test and Measurement

9 Certificate of Compliance

10 Annexures

Session 7

General Discussion



SANS10142-1 (EDITION 3.1& 2) FOR WIRING OF PREMISES

Session 8

The certificate of compliance, changes, and applications.

- Details of the certificate of Compliance and test reports
- Certificate layout
- Unique number
- Test report (What is it?)
- Additional requirements
- Interpretation of the Certificate of Compliance

Additional certificates required for:

- Residential
- Industrial
- Hazardous areas
- Solar
- Other

Information

- Calculations
- Pit falls
- Instruments
- Measurements

Major components in an installation

- Supply conditions
- Transformer
- Meter kiosk
- Cable
- Consumer

Residential / industrial / commercial / state owned.

- Consumer cable
- Point of supply
- Point of control
- Point of consumption
- Point of outlet

Some problem areas:

- Fixed appliances
- Arms reach
- Mixed circuits and loading
- Ceiling fans and control systems
- Alternative supplies (generators, UPS, solar)
- PSCC
- Loop impedance measurement and interpreting results
- Bonding conductor and measurements
- Earth continuity conductor measurements



Session 9

Changes from Edition 3.1+2

Sections from the code

- Introduction
- Normative references
- Definitions
- Compliance
- Fundamentals
- Installation
- Special installations
- Alternative supplies
- Test and measurement
- Certificates of compliance
- General concepts from the annexures

Session 10

General discussion on all the codes required for an electrical installation

Industrial, commercial, medical, Solar and alternative supplies

Industrial earthing systems

Solar earthing systems

