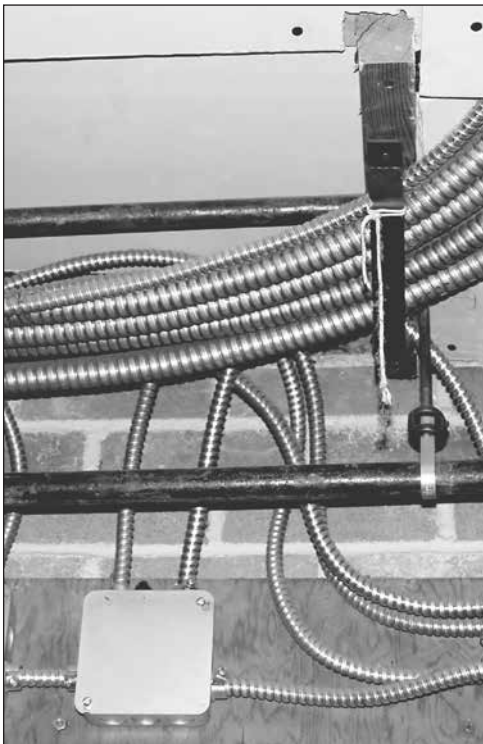


# SOUTH AFRICAN STANDARD SANS 10142

## - THE WIRING OF PREMISES



### WHAT YOU WILL LEARN:

- The role of the Occupational Safety and Health (OSHA) standards
- The necessity of international and national standards and their hierarchical relationships
- An introduction and elucidation of the SANS 10142:1 standards
- Basics of electrical power distribution systems
- Role and functioning of the different components of power distribution systems
- Simple calculations of equipment and rating requirements
- Safety requirements in power distribution systems
- Electrical system protection, bonding and earthing practices
- Electrical system and equipment operational and safety installation practices
- The nature, identification and mitigation of electric shock hazards in electrical distribution systems
- Verification and certification requirements for installations

### WHO SHOULD ATTEND:

A workshop designed to teach electrical and instrumentation personnel, who have prior knowledge of electrical engineering. This workshop is a "must have" for those working in the residential, commercial, or industrial electrical industry. Each article of the code is thoroughly discussed and reviewed in easy-to-understand language.



*Technology Training that Works*

## The Workshop

Electricity has long been recognised as a serious workplace hazard. SANS electrical standards are designed to protect employees exposed to dangers such as electric shock, electrocution, fires, and explosions. This unit standard is intended for use in the training of electricians and covers a basic understanding of the framework of standards, which govern their work in South Africa.

This workshop is designed to provide up to date information and training on the latest edition of South African Standard SANS 10142 – 'The Wiring of Premises'. With references to safety, maintenance, inspections, testing, and wiring of premises, it provides a summary of some of the basic principles necessary for a good understanding of electrical installation technology. It is compulsory for each user to follow the instructions given by authorised person to obtain the necessary certificate of compliance.

### Pre-requisites:

Fundamental knowledge of basic electrical engineering.

## Practical Sessions

- Study of surge protection requirements
- Harmonic correction
- Earthing of information technology equipment
- Assessment of load in domestic installations
- Cable sizing considering correction factors for installation
- Voltage drop calculation
- Conduit selection
- Testing documentation
- Compliance documentation

*To gain full value from this workshop, please bring your laptop/notebook computer.*

## On-Site Training

- ✓ SAVE over 50% by having an IDC workshop presented at your premises.
- ✓ Customise the training to YOUR workplace.
- ✓ Have the training delivered when and where you need it.

Contact us for a FREE proposal.

## The Program

### DISTRIBUTION SYSTEM OVERVIEW

- Historical perspective of growth of 3 phase AC electrical systems
- Generation, transmission and distribution
- Transformers
- Switching equipment
- Circuit breakers LV and HV
- Dangers of electricity
- Need for safety in operation and maintenance

### SAFETY REQUIREMENTS OF ELECTRICAL INSTALLATIONS - BASICS (PARTS 1 AND 2)

- Electric shock
- Earthing and bonding for safety
- System classification based on earthing
- Safe clearances
- Arc danger in electrical installations
- Protection against arc faults
- Importance of isolation
- Insulation
- Enclosures of electrical equipment (IP ratings)
- Role of electrical protection
- Protection against surge voltages
- Harmonics – fundamentals and need for harmonic control
- Designing for safety
- Role of periodic maintenance and safety procedures and safety education
- Certification and authorisation

### INTRODUCTION TO SANS 10142 STANDARD

- Need for standards in industry
- Objectives of SANS 10142
- Overview of the standard
- Scope and exclusions
- Applicability of amendments to the standard in contracts
- Compliance with acts for occupation health and safety and mine health and safety
- Future development – part 2 for HV installations
- Mandatory and informative requirements of the standard
- Information given under annexure to the standard
- Comparison with IEC and UK codes of wiring

### FUNDAMENTAL REQUIREMENTS

- Safety stipulations
- Basic requirements of electrical systems and wiring
- System characteristics
- Harmful effect of equipment on electrical systems
- Derating for altitudes exceeding 2000m
- Special requirements for medical location
- Safety by extra low voltage systems and special requirements

### INSTALLATION REQUIREMENTS (PARTS 1 AND 2)

- General circuit arrangements
- Current-carrying capacity of conductors and cables
- Installation of conductors and cables
- Positioning and fixing of cables
- Rigid and flexible wire ways
- Distribution boards
- Protections against excessive currents and earth leakage
- Circuit breakers and their use as disconnectors
- Main switch disconnectors
- Disconnection of neutral
- Fuses
- Earthing and consumer's earth terminal
- Bonding
- Requirements for lightning circuits
- Socket outlets
- Requirements for wiring of fixed appliances

### SPECIAL LOCATIONS AND INSTALLATION (PARTS 1 AND 2)

- Bathrooms, showers and spas
- Swimming pools, paddling pools and ornamental pools
- Saunas
- Construction and demolition sites
- Agricultural and horticultural locations
- Caravan parks, mobile homes and marinas
- Medical locations
- Temporary installations
- Extra low voltage lighting installations
- Stage and theatre equipment
- Safety and emergency lighting
- Alternative supplies
- High-voltage (HV) apparatus
- Hazardous locations
- DC system earthing

### VERIFICATION AND CERTIFICATION OF INSTALLATIONS

- Responsibility
- Installation characteristics
- Electricity supply system
- Prospective short-circuit current
- Inspection
- Testing
- Certificate of compliance

### SUMMARY, OPEN FORUM AND CLOSING