Training Program:

Electrical Wiring Installation & Inspection Procedure

Introduction:

There was very little planning of wiring installations in those early days, but now, with supplies from the grid, very large sources of power are introduced into all premises which use electricity and proper planning and design have become essential. Like fire, electricity is a very good servant, but if not properly controlled and used it can prove to be a very dangerous master. The need for planned methods of wiring and installation work has long been recognized and all kinds of regulations, requirements, recommendations, codes of practice and so on have been issued. Some are mandatory and can be enforced by law, whilst others are merely recommendations. A designer of an electrical installation and subsequently the maintenance team are all expected to provide and ensure that an electrical installation is safe, cost effective and reliable throughout its lifetime.

As a result of many years developing and teaching courses devoted to compliance with the IEE Wiring Regulations for low voltage installations up to 750V & IEC 60364 as well, it has become apparent to me that many operatives and personnel in the electrical contracting industry have forgotten the basic principles and concepts upon which electric power supply and its use are based. As a result of this, misconceived ideas and much confusion have arisen over the interpretation of the regulations. It is the intention of this course to dispel such misconceptions and to educate and where necessary refresh the memory of the trainee. In this respect, emphasis has been placed on those areas where most confusion arises, namely earthing and bonding, protection, and circuit design.

Who Should Attend?

Electrical Engineers, Electrical Technicians, Electrical Inspectors, Electrical Professionals & Supervisors, Instrumentation and Design Engineers, Maintenance Engineers, Supervisors & Technicians, Energy Management Consultants, Control Engineers & Technicians, Automation & Process Engineers, Chemical & Mechanical Engineers, Consulting Engineers, Field Technicians, Graduate Engineers, Project and Production Managers, Project Engineers, Electronic Technicians, Plant Managers, Process Control Engineers, System Engineers, System Integrators, Testing Engineers & Technicians, Power System Engineers, Power System Technicians, Utility Engineers, Managers & Team Leaders of Engineering Departments, Safety Professionals, Plant Electricians, Facilities Engineers, Operations & Maintenance Engineers, Supervisors & Technicians, Project Engineers, Commissioning & Testing Engineers, Consulting Engineers, Electrical Technologists, Facility & Plant Managers.

Course Objectives:

By the end of this course delegates will be able to:

- The latest requirements of the IEE Regulations and the required Electrical Design concepts
- Working within an environment controlled by IEE Regulations
- The basis for safety and functional design
- Inspection and testing techniques that affect the maintenance routine of an installation

Accreditation:

BTS attendance certificate will be issued to all attendees completing a minimum of 80% of the total course duration.

Course Outline

Fundamental Requirements for Safety & Basics

Review of Electrical Fundamentals

Earthing & Bonding

- Earth: what it is, and why and how we connect to it
- Earthing systems & earth electrodes
- System classification & requirements (TN system, TN-C system, TN-S system, TN-C-S system, TT system & IT system)
- Earth fault loop impedance
- Residual current devices
- Supplementary bonding
- Earthing conductors
- Earthing arrangement selection

Protection & Shock

- What is protection?
- Protection against mechanical damage
- Protection against electric shock

- Protection against overcurrent
- Protection against under voltage
- Protection against overvoltage
- Protection against fire

Control

- Isolation and switching

Circuit Design

- Design procedure
- Design current
- Nominal setting of protection
- Correction factors
- Tabulated current-carrying capacity
- Choice of cable size
- Voltage drop
- Shock risk
- Thermal constraints

Example of Circuit Design

- Design problem

Conduit Installations & Raceways

Testing and Inspection

- Testing sequence
- Continuity of protective conductors
- Continuity of ring final circuit conductors
- Insulation resistance
- Polarity
- Earth electrode resistance
- Earth fault loop impedance
- Prospective fault current
- Functional testing