Training Program:

Testing Of Electrical Power Equipment According To Standard Specifications

Introduction:

Testing of electrical power equipment is essential for improving the power system reliability and reducing the network faults. The course presents the testing of different electrical power components such as power transformers , under ground power cables , circuit breakers , current transformer , potential transformers, relays , grounding switches , surge arresters , overhead transmission line insulators, motors and generators and isolating switches .The course contains testing of the electrical power components during manufacture , routine tests , type tests , special tests and installation tests.

Who Should Attend?

Electric power engineers and advanced operating staff of electrical substations

Methodology

This interactive Training will be highly interactive, with opportunities to advance your opinions and ideas and will include;

- Lectures
- Workshop & Work Presentation
- Case Studies and Practical Exercise
- Videos and General Discussions

Accreditation:

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

Course Objectives:

- To understand the causes of electrical power component failures.
- To be able for testing the power transformers, current transformers, potential transformers and overhead transmission line insulators
- To know the different types of circuit breakers and the causes of circuit breaker failure and how to make maintenance for switchgear
- To learn how to test the different types of circuit breakers. Grounding switches isolating switches , motors and generators.
- To learn how the underground power cables can be tested and the causes of the cables failures , also to learn how to locate the cable faults
- To know how the protective relays can be tested

Course Outline

- Introduction to standard specifications.
- Power substation and lay out
- Electrical power components
- Power transformer , Switchgear , Underground power cables, Grounding switches, Isolating switches, Surge arresters, Current transformers, Potential transformers, Protective relays and overhead transmission lines insulators
- Power transformer testing-Testing to British standard and IEC
- Detection of fault of transformer –Diagnosing transformer problems utilizing gas analysis-Tests during manufacture-Core frame insulation resistance-Core loss

measurements-Tank tests-Routine tests-Type tests-Special tests-Instruments used in testing

- Switchgear testing-Breakdown causes of circuit breakers-Common troubles of circuit breakers and remedial action –Important checks on circuit breakers – Breakdown maintenance and preventive maintenance-Testing of circuit breakers according to IEC -Type tests-Routine tests-Installation tests-Maintenance tests and factory tests.
- Type of protective relays-Testing of protective relays according to IEC
- Current transformers-Principle of operation-Rated current-Rated burden-Accuracy class-Short time rating-Instrument security factor-Testing according to BS 3938 , BS 7626 and IEC 60044-1
- Voltage transformer standards- Short time ratings- Testing according to Bs 3938 ,BS 7626 and IEC 60044-1
- Testing of Disconnecting switches according to BS 3078 and IS 9921-part 4 – Ratings and their selection- voltage and insulation level- frequency- normal current- Standard values- Short time withstand current- Duration of short circuit-Peak with stand current- Making current
- Testing of grounding switches
- Testing of underground power cables- Visual inspection- Cable insulation testing – AC and DC over voltage tests – Insulation resistance measurements – conductor resistance measurements – Testing according IEC-Dielectric absorption tests – Cable power factor and tan delta tests – Partial discharge tests- cable failure during over voltage tests – cable joints and terminations testing – fault locators.
- Testing of surge arresters according to IEC

- Testing of overhead transmission lines insulators according to IEC
- Testing of electrical motors and generators (electrical tests according to standard)