



Training Program:

**Selection, Installation And Testing Of Electrical
Equipment In Hazardous Areas**

www.btsconsultant.com

Introduction:

Selection, testing and installation of electrical power equipment is essential for improving the power system reliability and reducing the network faults in hazardous areas. 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, distribution panels, power factor correction capacitors, and feeders in hazardous areas. The course contains classifications of hazardous areas and explosives areas, regulations and standards and risk assessment in hazardous areas

Who Should Attend?

Electric power engineers and advanced operating staff of engineers operating in hazardous areas

Course Objectives:

After attending the training you will be able to:

Comply with provincial regulations, identify and mitigate job related hazards, safely operate and maintain your electrical equipment, recognize deficiencies and take corrective action and avoid the chance of an accident and/or injuries

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 Outline

- Introduction to standard specifications.
- Grouping and classifications of hazardous areas
- Selection of equipment and protection technique
- Installation requirements.
- Power transformer , Switchgear , Underground power cables, Grounding switches, Isolating switches, Surge arresters, Current transformers, Potential

transformers, Protective relays and overhead transmission lines insulators selection and installation in hazardous areas

- 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 with respect to hazardous areas
- 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 with respect hazardous areas
- 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 with respect to hazardous areas
- Voltage transformer standards- Short time ratings- Testing according to Bs 3938 ,BS 7626 and IEC 60044-1
- Testing of distribution panels 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 with respect to hazardous areas
- 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 with respect to hazardous areas

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