



Training Program:

TAMCO High Voltage Switchgears

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Introduction:

High voltage equipment plays an important role in the safe distribution of electrical power. The equipment needs to be operated in a safe manner securing continuity of supply to consumers. The seminar focuses mainly on the installation, operation and maintenance of high voltage switchgear and equipment, with reference to auxiliary equipment necessary for its operation. Technical aspects of switching devices as well as their maintenance requirements are briefly included in the course in order to understand the risks associated with switchgear operation. Aspects of modern maintenance techniques in asset managements will be covered at the level appropriate for this course.

Protection systems are installed to prevent faults from damaging electrical plant and to initiate isolation of faulted sections in order to maintain continuity of supply elsewhere on the system.

The seminar will highlight:

- The roles of MV and HV switchgears
- Compression principles of circuit breakers
- Application and installation of vacuum interrupters
- Importance of maintenance and testing
- Protective relays and characteristics

Training Methodology

The goals of each participant are discussed to ensure their needs are fulfilled, as far as possible. Questions are encouraged throughout, particularly at the daily wrap up sessions. Each seminar participant will receive a copy of the comprehensive seminar notes. The presenter will outline and discuss the topics using computer displays, video clips and PowerPoint presentation. The seminar is designed to have an interactive format to maximize delegate participation.

Organizational Impact

Upon completion of the seminar, the organizational impact would be:

- Technical training and up-skilling to improve and realise the full potential of a competent workforce
- Productivity increase through minimisation of project time acceptance/design and commissioning
- Identification for opportunities of improvements due to deep understanding of the presented state-of-the-art maintenance technologies
- Networking of personnel with technology leaders and other engineers and technicians with strong field experience
- Exposure of personnel to the standard international procedures
- Attitude change of workforce, as continuous follow up of new technologies

Personal Impact

On successful completion of this course, delegate will be able to understand:

- The TAMCO high voltage switchgears types, installation, operations and maintenance
- The need for routine inspection, adequate maintenance of equipment and accurate record keeping
- Methods of maintenance management, using safe systems of work
- How to coordinate maintenance activities for best utilisation of time and resources, while ensuring safety is not compromised
- Switchgear maintenance requirements and techniques - properties of insulating oils and their analysis
- The use of non-intrusive condition monitoring methods

Who Should Attend?

The technicians and maintenance staff will be able to comprehend the types, construction, operations, function of transformers. This will enable them to carry out effective maintenance activities.

This seminar is suitable to a wide range of professionals but will greatly benefit:

- Electrical engineers
- Maintenance technicians
- Electrical supervisors
- Engineering professionals

- Managers of the electrical engineering department

Course Objectives:

This course is designed to enable participants to:

- Understand the operations and types of TAMCO high voltage switchgears
- Develop management and implementation of safe work systems
- Design coordination of maintenance activities and maintaining system safety
- Apply air and gas insulated switchgear operations and maintenance
- Explain the various types of protective relays
- Analyse troubleshooting and repair of high voltage switchgears

Course Outline

DAY 1

The Role and Importance of the Medium and High Voltage Air Insulated and Gas Insulated Switchgears in Power Systems

- Circuit breakers, ring mains unit and earth switches
- Switchgear symbols on single-line diagrams
- Switchgear selection
- Substation switchgear layouts
- Substation arrangements
- Auto-reclosers

- Air insulated switchgear verses Gas insulated switchgears
- Live tank and dead tank HV circuit breakers

DAY 2

Sulphur HexaFlouride (SF6) and Vacuum Circuit Breakers

- Compression principles
- SF6 hazards and test equipments
- Dead and Live tank HV circuit breakers
- Operation mechanisms of HV circuit breakers
- Vacuum interrupters operation and maintenance
- Types of vacuum circuit breaker characteristics
- Other applications and installations of vacuum interrupters
- Vacuum contactors

DAY 3

TAMCO High Voltage Switchgears Blueprint, Components, Operation and Maintenance

- Air insulated switchgear
- Gas insulated switchgear
- Single and double busbar switchgear
- TAMCO switchgear special features
- Interpreting TAMCO blueprint
- Ring mains unit

- Neutral earth resistors
- Container sub station

DAY 4

Maintenance and Testing of TAMCO High Voltage Switchgears

- Importance of maintenance and testing
- Maintenance strategies
- Preventive and condition-based maintenance services
- Installation and commissioning
- Documentation requirements
- Maintenance post commissioning
- Infrared testing
- Typical switchgear alarms

DAY 5

Protection and Types of Relay of High Voltage Installation Incorporating TAMCO Switchgears

- Characteristics of switching devices
- Fault currents
- Short circuit current situation
- Protective relay types and characteristics
- Busbar arrangement protection schemes
- Numerical and solid state relays

- Differential relays
- Wrap up session with Q&A

Accreditation:

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