Training Program:

Mastering Electrical Engineering

Introduction:

This delivers a critical blend of knowledge and skills, covering technology in electrical engineering, industry analysis and forecasts, leadership, management and everything that is relevant to a modern electrical engineer. It is intended to be the distillation of the key skills and know-how in practical, state-of-the-art electrical engineering.

Who Should Attend?

Electrical engineers and technicians, electrical technicians, instrumentation and design engineers, maintenance engineers and supervisors, energy management consultants, automation and process engineers, chemical and mechanical engineers, consulting engineers, field technicians, graduate engineers, project and production managers, project engineers

Course Objectives:

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

- Gain skills and know-how in the latest technologies in electrical engineering
- Gain a clear picture of the latest developments and future directions in electrical engineering from experts in the field
- Learn how to make reliable, well grounded and commercially viable technical, financial and management decisions in electrical engineering.
- Learn how successful electrical engineers communicate their vision and values to build up a super effective team.

Accreditation:

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

Course Outline

Understanding Electrical Drawings

- Engineering drawing for electrical engineers
- Symbols used in electro technology and governing standards
- Single line and 3-line diagrams
- Cabling and wiring drawings
- Layout drawings, Advances arising from computer aided drafting

Electrical Power Distribution Fundamentals

- Common distribution system alternatives
- Planning of power distribution system
- Fault level in electrical systems and their role in the choice of equipment
- Fault current evaluation of simple power distribution systems
- In-plant generation requirements and alternatives
- Distribution equipment sizing, Power distribution system automation
- Maintenance and Asset management in distribution systems

Circuit Breakers and Switchgear

- Circuit breaker basics, Difference between isolator and circuit breaker
- Principle of arc quenching, Major components
- Enclosures for indoor use and IP ratings, HV Circuit breakers
- Common types of HV circuit breakers
- Outdoor construction examples, Operating principles of different type of CBs
- Maintenance aspects of HV circuit breakers, LV Circuit breakers
- Common types of LV circuit breakers
- Selection of circuit breakers and switchgear, their Ratings and Specifications

Power Cables

- Introduction, Basic theory, Selection of cables and installation
- Joints and termination, Jointing and termination practice
- Commissioning and periodic testing, Failure modes and fault detection
- New trends in cable technology

Earthing and Lighting Surge Protection

- Electrical System Earthing, Earth electrode systems
- Earthing design of substations, Lightning and protection against lightning
- Lightning protection of structures, electrical lines and substations
- Lightning Protection of Marine Electrical Systems
- Surge protection, Electrical noise and mitigation-role of earthing

Power System Protection

- Need for protection, Fuses, Instrument transformers
- Tripping Power source, Relays and relay coordination
- Principles of unit protection, Switchgear (busbar) protection
- Transformer protection, Motor protection relays, Generator protection

Budgeting, ROI and Finance of Electrical Projects

- Introduction, Basic accounting concepts, Budget preparation and control
- Understanding cash flow, Estimation and costing
- Time value of money and discount rates
- Investment appraisal methods, DCF, Payback, NPV
- IRR, Capital budgeting, Decision making, Tax, Risk and uncertainty

Electrical Safety and Wiring Regulations

- An Introduction to Electrical Safety
- Role of protective earthing in electrical safety
- Hazards Due to Electrical Arcing and Heating
- Safety Aspect in Electrical Design and Selection
- Safe Operation and Maintenance
- Substation Safety, Safety in Battery Installations
- Organizational Aspects Of Safety, Australian regulations on safety

Testing, Trouble Shooting and Maintenance of Electrical Engineering

- Fundamentals of testing, Insulation testing
- High potential tests, Oil testing, TAN Delta Testing
- Partial Discharge (PD) Testing, Impulse testing
- Transformer testing, Cable testing

Project Management of Electrical Projects

- Fundamentals of project management, Time management
- Cost management, Integrated cost and time management
- Construction contracts, Management of the project team
- Risk management, Contract law, Project planning
- Application to instrumentation and control