Training Title

GENERATOR EXCITATION SYSTEMS

Training Duration

05 days

Training Venue and Dates

REF EE065	Generator Excitation Systems	5	06-10 December 2020	$ 4,500	Dubai, UAE

In any of the 5 star hotel. The exact venue will be informed soon.

Training Fees

- **US$ 4,500 per participant for Public Training. Fees Includes Course Materials/ Handouts, Tea/Coffee, refreshments, International Buffet Lunch**

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION

The successful operation of any Generating Systems ultimately depends on how well the inspection, testing, maintenance and troubleshooting functions are carried out. Well-developed procedures and planning will in the long run result in reduced costs, equipment down time, parts requirements and troubleshooting complexity.

Delegates are encouraged to participate by active involvement in group discussions, practical exercises and sharing experiences.

TRAINING OBJECTIVES

Following the attendance at this seminar, participants will return to their respective departments equipped with new or refreshed skills to ensure that electrical generating equipment and it's control systems are inspected, tested, maintained and when necessary repaired using well planned troubleshooting procedures in a fashion that ensures reduced costs and/or down time plus identified faults or problems are repaired and the underlying causes are identified and eliminated to reduce further failures. On successful completion of this seminar, participants will have:

- **A better understanding of generator principles**

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- **A better understanding of troubleshooting procedures as applied to generating equipment**
- **An improved capability in the use of test equipment**
- **A better understanding of failure modes and failure analysis**
- **A refreshed awareness of electrical safety concerns**

TRAINING METHODOLOGY

A highly interactive combination of lecture and discussion sessions will be managed to maximize the amount and quality of information, knowledge and experience transfer. The sessions will start by raising the most relevant questions, and motivate everybody finding the right answers. The attendants will also be encouraged to raise more of their own questions and to share developing the right answers using their own analysis and experience

All attendees receive a course manual as a reference.

30% Lectures
30% Workshops & Work Presentations
20% Case Studies & Practical Exercises
20% Videos & General Discussions

WHO SHOULD ATTEND?

This is intended for Electrical Engineers, Electrical Supervisors and Electrical Technicians engaged in the inspection, testing, troubleshooting, maintenance and repair of electrical generation equipment.

DAILY OUTINE

Day 1

Definitions

- **Generator systems (AC) and equipment**
- **Generator systems (DC) and equipment**
- **Operation, inspection, testing, control, maintenance and troubleshooting**
- **Control systems**

Interpretation and Use of Drawings

- **Single-line electrical drawings**
- **Control schematics**
- **Wiring lists**
- **P&ID's**
- **Logic and standard symbols**

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- **Maintenance Planning**
- **Developing schedules and procedures**
- **Define operation requirements for parts and labor**
- **Define maintenance requirements for parts and labor**
- **Regular, preventative, predictive and emergency maintenance**

The Use of Test Equipment

- **Digital voltmeter (DVM)**
- **Oscilloscopes**
- **Megger**
- **Frequency meter**
- **Temperature probes/pyrometers**
- **Ammeters**
- **Power meters**
- **Load banks**
- **Digital hydrometers**
- **Cable fault locators**

Day 2

The Technology of Generators

- **Principles of electrical generation (AC, DC and Emergency)**
- **Power supplies (battery chargers, rectifiers, inverters)**
- **Batteries**
- **Generator Drivers (gas/steam/water turbine, diesel/gas engine)**
- **Governors (control systems)**
- **Programmable logic controllers (PLC)**
- **Synchronization**
- **Power grid and network considerations**

Day 3

The Technology of Generators

- **Increasing or decreasing the voltage (transformers)**
- **Neutral ground resistors (NGR)**
- **Switchgear**
- **Motor control centers (MCC)**
- **Disconnect switches**
- **Power monitoring**
- **Control relays/timers/switches**
- **Generator protective devices**

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Inspection and Testing of Generators

- **Methods**
- **Terminology**
- **Principles**
- **Special techniques**
- **NEC check lists**

Day 4

Troubleshooting of Generators

- **Methods**
- **Terminology**
- **Principles**
- **Special techniques**
- **Case studies/examples**
- **Single line drawings**
- **Group exercises**

The Development of a Job Plan

- **Identification of the troubleshooting step-by-step sequence**
- **Procedure preparation**
- **Documentation**
- **Follow-up**
- **Safety considerations and training**

A Review of Safety Requirements

- **Area classifications**
- **NEC electrical codes**
- **Safety information**

Day 5

The Identification and Repair of Problems/Failures

- **Common mode failures**
- **Phase imbalance**
- **Contact pitting/arcing**
- **Electronic component failure**
- **Fusing**
- **Generator windings/bearings/brushes**
- **Excitation circuits**
- **Battery cells**
- **Inverters/rectifiers/battery chargers**

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- **Bushings**
- **Switches**
- **Control circuits**
- **Ground faults**

NOTE:
Pre & Post Tests will be conducted
Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.

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