

**Training Title**

**ELECTRICAL DRIVES & MOTORS – ADVANCED**

**Training Duration**

**5 days**

**Training Date**

<b>RM099</b>	<b>Electrical Drives &amp; Motors – Advanced</b>	<b>5</b>	<b>29 Jan-02 Feb 2024</b>	<b>\$6,500</b>	<b>London, UK</b>
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**In the below 5 star hotel as mentioned. The exact venue will be informed once finalized.**

**1. Events at Marble Arch**

**Central Cluster Meetings, Events and Group Sales - The Cumberland Hotel and Thistle Marble Arch**

**T. +44 (0) 207 523 5060**

**W. clermonthotel.group | A. Thistle Marble Arch, Bryanston St, Marylebone, London, W1H 7EH**

**Training Fees**

**\$6,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch**

**Training Certificate**

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

**Language: English**

**INTRODUCTION**

It is estimated that electrical drives and other rotating equipment consume about 50% of the total electrical energy consumed. The variable frequency drive (VFD) industry is growing rapidly, and it is now more important than ever for technicians and maintenance personnel to keep VFD installations running smoothly.

This outstanding seminar gives you a fundamental understanding of the installation, operation and troubleshooting of Variable Speed Drives (VSDs), electric motors & VFDs. Typical practical applications of VSDs in process control and materials handling such as those for submersible pumps, electric motors in mining and manufacturing and ventilations are covered in detail. You will learn the basic steps in specifying, installing, wiring and commissioning motors & VFD. The concluding section of the course gives you the fundamental tools for troubleshooting motors confidently and effectively.

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## COURSE OBJECTIVE

Upon completion of AC Electric Motors & Drives Masterclass, the participant will be able to:

- ✓ Understand the various types of AC motors and starters
- ✓ Determine the components and operations of variable speed drives
- ✓ Explain the different types of variable speed drives
- ✓ Analyse the common faults in a variable speed drive
- ✓ Design the protection requirements for motors and drives
- ✓ Principle of operation of variable speed drives
- ✓ Identification of the various types of variable speed drive
- ✓ Troubleshooting and maintenance of variable speed drives

## WHO SHOULD ATTEND

AC Electric Motors & Drives training course is suitable to a wide range of technical professionals includes:

- ✓ Maintenance Engineers and supervisors
- ✓ Project Engineers
- ✓ Operations & maintenance engineers, supervisors & technicians
- ✓ Junior graduated Electrical Engineers.
- ✓ Electrical Forman's and Technicians

## COURSE SCHEDULE

### Day-1

#### **Module 1 - Introduction to Different Types of Electric Motors**

- ✓ Pre-test
- ✓ Fundamentals of rotating machines theory, principles of operation of AC motors and their Motor construction
- ✓ Motor rotor slip and torque-speed characteristic
- ✓ Three-phase AC induction motors, types, construction, characteristics and applications
- ✓ Starting of induction motors and associated techniques and acceleration
- ✓ Speed control requirements of AC motors
- ✓ Selection of AC motors for industrial applications and service factor
- ✓ Medium voltage AC motors and applications
- ✓ Explosion-proof motors

### Day-2

#### **Module 2 – Troubleshooting and Maintenance of Motors**

- ✓ Characteristics of motors, enclosures and cooling methods
- ✓ Predictive maintenance, motor troubleshooting and diagnostic testing
- ✓ Failures in three-phase stator windings, rewind scenarios when a motor fails
- ✓ Troubleshooting and maintenance of AC motors, routine care

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- ✓ Slow acceleration or refusal to starting of an AC motor, overheating and noise
- ✓ Modern motor diagnostics and testing instruments.

### Day-3

#### **Module 3 – Overview of Drivers (Fundamentals, Benefits and Applications)**

- ✓ Fundamental principles and understanding of AC Variable Speed Drives
- ✓ Power semiconductors, diode, thyristor (SCR), IGBT, MOSFET, GTO and others.
- ✓ Voltage-source, current-source and pulse width modulated (PWM) inverters
- ✓ Benefits and applications of VSD
- ✓ Two-level PWM, regeneration and dynamic braking, volts per hertz control
- ✓ Medium voltage VSDs, switching transients, harmonics and power factor

### Day-4

#### **Module 4 – Troubleshooting and Maintenance of Drives**

- ✓ Soft starters and selecting the correct VSD
- ✓ VSD analysers for converter failures, inverters and rectifiers
- ✓ Troubleshooting techniques and maintenance for VSD
- ✓ VSD parameter guidelines and settings
- ✓ VSD bearing failures and remedies
- ✓ Testing instruments and scopemeters for VSD

### Day-5

#### **Module 5 – Protection of Drivers & Motors**

- ✓ Importance of protection of AC motors requirement and overload protection
- ✓ Motor overload relay classes
- ✓ Numerical relays and motor protection
- ✓ Protection of inverters and electronic converters in VSDs
- ✓ Case studies, selection and design of systems and their protection
- ✓ General Discussion
- ✓ Post test

## COURSE METHODOLOGY

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will make extensive use of real-life case examples in which he has been personally involved. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises
- 10% Role Play

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- 10% Videos, Software or Simulators (as applicable) & General Discussions

Case Studies, Group Discussions, Last Day Review, Assessments will be carried out.

MEETING ROOM PICTURES:



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