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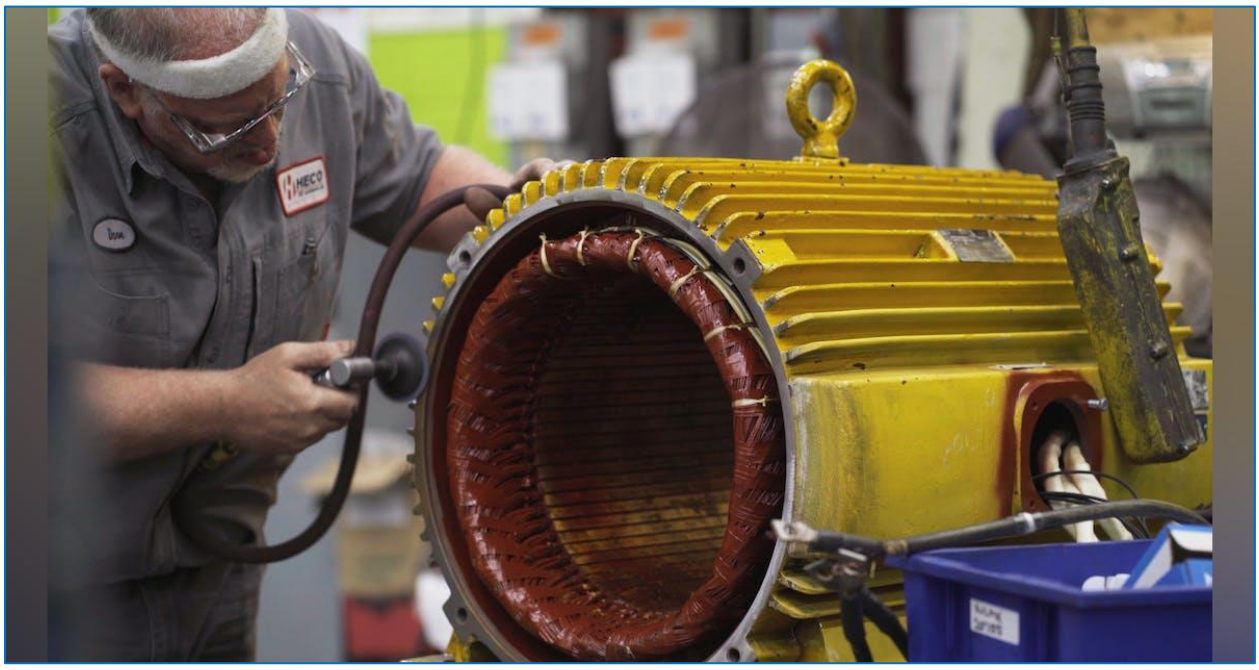

EE353:
Electrical Drives & Motors - Advanced

Training Description:

This Electrical Motors and Drives – Advanced training course covers all topics relating to both motors and their drives. Motors represent industry's workhorse in all applications. It is no exaggeration to suggest that more than half of the energy consumed worldwide is converted by AC motors into work and these are controlled by drives.

This intensive training course will help in the understanding of maintenance and troubleshooting procedures of such vital industrial equipment means that reduced downtime and increased productivity for the company. The protection is a requirement along with their function and integration with the overall system ensures that such expensive apparatus is well guarded against failures which further offer safety for operations personnel as well.

This training course will highpoint:

- Understanding types of AC motors and their starting methods
- Principle of operation of variable speed drives
- Identification of the various types of variable speed drive
- Troubleshooting and maintenance of variable speed drives
- Protection of motors and drives

Training Objectives:

By the end of the training, participants 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

Training Designed for:

This course is intended for Electricians, Electrical supervisors, Plant electricians, Operations & maintenance engineers, supervisors & technicians and Maintenance technicians. This course will benefit all levels of professional in an electrical installation. It will enable them to understand advanced operation, maintenance and troubleshooting of AC motors and drives.

Training Requirement:

"Hand's on practical sessions, equipment and software will be applied during the course if required and as per the client's request."

This training course is available upon request in English or Arabic, virtual online live or face to face public/inhouse. Content, location and duration can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

- AC Motors
  - Fundamentals and Advanced techniques of rotating machines theory, principles of operation of AC motors and their construction, 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

DAY TWO:

- Troubleshooting and Maintenance of Motors - Advanced
  - 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
  - Slow acceleration or refusal to starting of an AC motor, overheating and noise
  - Modern motor diagnostics and testing instruments

DAY THREE:

- Drives
  - 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 FOUR:

- Troubleshooting and Maintenance of Drives - Advanced
  - 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 FIVE:

- Protection of Motors and Drives
  - 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
- Course Conclusion

- POST-ASSESSMENT and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

As per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

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