



TÉCNICAS AVANZADAS PARA EL MANTENIMIENTO PREDICTIVO DE MOTORES ELÉCTRICOS

Al terminar la actividad el asistente podrá (descripción de objetivos de la actividad):

The attendants will learn different electrical techniques for condition monitoring of electric motors. They will apply different methods based on current analysis for the diagnosis of faults in electric motors. These techniques will comprise both the classical methods (MCSA) as well as basic versions of modern transient-based tools (ATCSA). Moreover, they will learn the basics of partial discharge technique and the foundations of several off-line tests that commonly applied in the field to determine the condition of such machines.

Conocimientos previos necesarios:

BASIC KNOWLEDGE OF ELECTRIC MACHINES

Temas a desarrollar:

DAY 1

1. INTRODUCTION

- 1.1. Generalities of electric motors.
- 1.2. Typologies and constructive aspects.
- 1.3. Most usual faults.
- 1.4. Diagnosis techniques.

2. CURRENT ANALYSIS: MCSA

- 2.1. Introduction to current analysis.
- 2.2. Basic variants (MCSA vs. ATCSA).
- 2.3. Measurement point and necessary equipment.
- 2.4. Classical analysis of the current at steady-state (MCSA).
 - 2.4.1. Rough analysis of the motor current.
 - 2.4.2. Harmonics in healthy condition.
 - 2.4.3. Requirements for a high quality spectrum.
 - 2.4.4. Harmonics introduced by rotor faults: examples.
 - 2.4.5. Harmonics introduced by eccentricities: examples.
 - 2.4.6. Harmonics introduced by bearing faults: examples.
- 2.5. Problems of the classical method (MCSA).
- 2.6. Exercises and laboratory tests.

DAY 2

3. NEW TECHNIQUES BASED ON TRANSIENT CURRENT ANALYSIS: ATCSA

- 3.1. Introduction to transient analysis.
- 3.2. Measurement point and necessary equipment.
- 3.3. New transient based techniques (ATCSA).
 - 3.3.1. Rough analysis of the startup current.
 - 3.3.2. Advanced analysis of the startup current: introduction
 - 3.3.3. Advanced analysis of the startup current: requirements
 - 3.3.4. Advanced analysis of the startup current: available tools.
 - 3.3.5. Operation of discrete and continuous transforms: Exercises and practical examples.
 - 3.3.6. Advanced analysis of the startup current: results and examples.
 - 3.3.7. Extrapolation to other transients and machines
- 3.4. Exercises and laboratory tests.

DAY 3

4. MONITORING THE INSULATION DEGRADATION VIA PARTIAL DISCHARGES

- 4.1. The insulation system in electric motors.
- 4.2. Faults in the insulation system.
- 4.3. Partial discharges: foundations.
- 4.4. Partial discharges: tests.
- 4.5. Partial discharges: interpretation of the results.
- 4.6. Partial discharges: periodicity.
 - 4.7 Partial discharges: other technologies and devices

5. OFF-LINE ELECTRIC MOTOR TESTING

- 5.1. Ohmic resistance test, IEEE 118-1978
- 5.2. Insulation resistance test, IEEE 43-2000 (IEEE 43-2013)
- 5.3. Polarization index (PI)/Dielectric absorption (DA), IEEE 43-2000 (IEEE 43-2013)
- 5.4. Standard capacitive test
- 5.5. HiPot (Step Voltage), IEEE 95-1977
- 5.6. Surge test, IEEE 522-1992
- 5.7. Rotor Influence Test- RIC
- 5.8. Inductance measurement
- 5.9. Single phase rotation test, EASA 2003
- 5.10. Core ring test.

6. OTHER ASPECTS WITH INFLUENCE ON ELECTRIC MOTOR MAINTENANCE

- 6.1. Interpretation motor plate and characteristics sheet.
- 6.2. Technological aspects of motor starting.
- 6.3. Reactive power compensation aspects.
- 6.4. Commissioning.

Condiciones generales

La acción formativa cumple las siguientes condiciones generales: http://www.cfp.upv.es/cond_gen?4

Organizadores:

Responsable de actividad

JOSE ALFONSO ANTONINO DAVIU

Datos básicos:	
Tipo de curso	FORMACIÓN ESPECIFICA
Estado	ANULADO
Duración en horas	18 horas presenciales
Dónde y Cuándo:	
Dónde	VALÈNCIA
Horario	INTERNET
Observaciones al horario	Tuesday 27 October: 10:00 to 13:00 and 14:30 to 17:30 Wednesday 28 October: 10:00 to 13:00 and 14:30 to 17:30 Thursday 29 October: 10:00 to 13:00 and 14:30 to 17:30 Online, via Teams application.
Lugar de impartición	The course will be taught online, via MICROSOFT TEAMS application
Fecha Inicio	27/10/20
Fecha Fin	29/10/20
Datos de matriculación:	
Inicio de preinscripción	15/09/20
Mínimo de alumnos	2
Máximo de alumnos	50
Precio	550,00 € - Alumni UPV PLUS o AAA UPV 550,00 € - Alumno UPV 750,00 € - Público en general 550,00 € - Personal UPV
Profesorado:	
ANTONINO DAVIU, JOSE ALFONSO	