

Training Title

ELECTRICAL MOTOR CURRENT SIGNATURE ANALYSIS

Training Duration

5 days

Training Venue and Dates

REF EE014	Electrical Motor Current Signature Analysis	5	04-08 Aug 2025	\$5,500	Dubai, UAE
--------------	------------------------------------------------	---	----------------	---------	------------

In any of the 4 or 5-star hotels. The exact venue will be informed once finalized

Training Fees

- \$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch

Training Certificate

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

Language: English

TRAINING OVERVIEW

TRAINING DESCRIPTION

This course will cover mainly AC motors ranging from low voltage to medium voltage induction motors. The motor is not given its due importance in the industry generally and some of the motors are being rewound after one or two failures and another without considering the loss of efficiency due to Motor efficiencies are not measured or tracked. Reliability is not given due consideration. This course will have in-depth discussions on Motor Management.

TRAINING OBJECTIVES

- **Fault Detection:** Identifies faults like rotor, stator, or bearing issues.
- **Performance Monitoring:** Assesses motor efficiency and operational behavior.
- **Predictive Maintenance:** Helps predict failures before they occur, reducing downtime.
- **Energy Efficiency:** Detects inefficiencies and optimizes energy use.
- **Non-Destructive Testing:** Allows continuous monitoring without motor disassembly.
- **Cost-Effective:** Provides an affordable way to monitor motor health.
- **Prolongs Motor Life:** Detects issues early, reducing the need for costly repairs or replacements.

DMCT/OL/9/18(Rev3Dt:23/9/18)

WHO SHOULD ATTEND

The technicians and maintenance staff will be able to comprehend the construction, operations, and function of a major electrical power distribution system. This will enable them to carry out effective maintenance, installation, and selection activities.

This training course is suitable for a wide range of professionals but will greatly benefit:

- ❖ Electrical Engineers
- ❖ Electrical Supervisors
- ❖ Maintenance Technicians
- ❖ Managers in charge of Electrical Installations
- ❖ Project Engineers

TRAINING METHODOLOGY

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your questions and to share in the development of the right answers using your analysis and experiences. Tests of the multiple-choice type will be made available daily to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% of Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions

TRAINING OUTCOME

COURSE OUTLINE

- Identify the components in the winding system; factors that determine Resistance(R), Inductance(L), Capacitance(C), and Impedance(I/F)
- Describe how changes in R, L, Z, and I/F affect the winding system.
- Explain the Lenz Law, Ohms Law, and Faraday's Law
- Use the basic MCATM instruments to manually measure R, L, Z, Fi, and I/F
- List the different types of AC Motors, identify their components, and describe the purpose of each component.
- Determine Motor Shaft Speed based on Measured Values of Voltage, Current, Nameplate Speed and Rated Power
- List the main types of failures associated with AC Motors
- Describe the various techniques available to identify electrical failures in winding systems.

DMCT/OL/9/18(Rev3Dt:23/9/18)

- Explain the various measurements used in MCATM
- Evaluate a motor's winding condition based on MCATM measurements.
- Explain the process for correcting MCATM readings caused by "Rotor Position."
- Explain the purpose of the ALL-TEST PRO 31TM (AT31TM) and ALL-TEST PRO 5TM (AT5TM); and describe their features.
- Obtain data from a 3-phase AC motor using the AT31TM and the AT5TM (on the AUTO and manual modes)
- Evaluate the condition of an AC Motor based on the measurements taken with the AT31TM and AT5TM
- Demonstrate the ability to enter data and evaluate the condition of an AC Motor using the Condition.
- Discuss the effects of Resonance in a mechanical system and what it will do to the electrical spectrum.
- Explain how to determine which gear is at fault when gear problems are diagnosed in the electrical spectrum.
- List the motor electrical faults that can be automatically analyzed with ESA.
- Define what is meant by pole pass frequency (PPF)
- Evaluate the condition of a squirrel cage rotor using the ESA spectrum and rotor severity.
- Demonstrate the ability to upload data stored in the AT5TM onto the MCATM software and generate a machinery report.
- Explain the 4 Primary Maintenance Philosophies
- Describe the 3 phases of Predictive Maintenance
- List the 6 most common de-energized motor diagnostic techniques and the 5 most common energized diagnostic techniques. Describe the motor fault that each of the techniques identifies.
- Describe the 4 stages of rolling element bearing failure and explain how to determine which stage a defective bearing is in
- Explain the operation of the different types of AC Electric Motors
- Determine Motor Shaft Speed based on Measured Values of Voltage, Current, Nameplate Speed and Rated Power
- Describe how electrical signature analysis (ESA) collects its signal.
- Demonstrate how to change the resolution of the high-frequency and the low-frequency spectrum.
- Explain the importance of sidebands in the FFT and discuss their meaning Demonstrate how to enter machine information in the ESA Software
- Demonstrate how to verify running speed is correct.
- Perform an automatic analysis.
- List what mechanical faults can be automatically analyzed with ESA.
- Discuss the relationship of Dynamic Load to bearing life.
- Explain the difference between Static and Dynamic Eccentricity

DMCT/OL/9/18(Rev3Dt:23/9/18)

- Define what is meant by Stator Electric Faults
- Explain the main purpose of the ALL-TEST PRO Energized IITM (ATPOL IITM) and briefly describe its features.
- Use the ATPOL IITM to obtain data from a 3-phase AC Motor in the Remotely, Local and Manual Modes
- Demonstrate the ability to upload data stored in the ATPOL IITM into the ESA software and generate a machinery report.

NOTE:

Pre & Post Tests will be conducted.

Case Studies, Group Exercises, Group Discussions, Last Day Reviews & Assessments will be carried out.



www.definettraining.com

DMCT/OL/9/18(Rev3Dt:23/9/18)

P.O BOX 45304
ABU DHABI, U.A.E

T +971 2 6264455
F +971 2 6275344

www.definettraining.com