

Course Overview:

This program is aimed at all personnel who are involved in plant maintenance including operators, maintenance technicians, craftsmen and management. Our Objective is to present techniques used in modern plants to measure on an ongoing basis, the rate of deterioration of equipment, analysis and interpretation of such information, and the resultant implementation of predictive maintenance.

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Course Outline:**-INTRODUCTION****-Maintenance Management**

Types of maintenance and objectives; outage requirements, cost and control; fundamentals of predictive maintenance; documentation and trend analysis; scheduling and resource planning; causes and effects of deterioration in power plant equipment; measurement of degradation.

-On-Line Condition Monitoring

Keeping records, regular reporting and analysis; plant performance testing, measuring input and output; applications of thermography on running plant; winding temperature readings and core temperature; bearing temperature readings and lube oil sampling; leakage measurement - liquid or gas; acoustic leak detection; rotor position - axial and radial; turbine extraction steam temperatures and pressures.

-Vibration Monitoring & Analysis

Measuring vibration, types of probe and location; units of measurement, significance of amplitude and frequency; common causes of vibration; vibration signature and interpretation of readings; typical vibration limits and balancing.

-Non-Destructive Examination Techniques

Crack detection, dye-penetrant and magnetic particle; scheduled inspections and overhaul; ultra-sonic testing of boiler tubes; radiography plotting and interpretation of trends; assessing rate of deterioration and eventual failure; significance of creep in headers and pipework; testing turbine components; eddy current testing of heat exchangers.

-Electrical Testing

Types of insulation and effects of aging; causes of deterioration; effects of stray currents; eddy currents; insulation testing and polarization index; dielectric loss and hi-pot test; double testing on transformers and cables; partial discharge testing on generator windings; interpretation of test results.

-Liquid Analysis

Lube oil characteristics and effects of aging; contaminants, sampling and analysis; interpretation of results; transformer insulating oil characteristics; sampling, testing and interpretation; analysis of gas in oil and significance. (55 minutes)

-Applications of Condition Monitoring

-steam turbines, gas turbines and generators

-transformers, boilers and pipe work

-heat exchangers and large motors

-large pumps, fans and compressors

Training Language:

EN / AR

Training Methodology:

- Presentation & Slides
- Audio Visual Aids
- Interactive Discussion
- Participatory Exercise
- Action Learning
- Class Activities
- Case Studies
- Workshops
- Simulation

Who Should Attend:

Technicians, operators and engineers