Turbo Machinery Monitoring And Problem Analysis

Training Program

Introduction:

This course is for experienced mechanical equipment engineers to develop and expand their capabilities in monitoring and problem analysis of turbo machinery. This course focuses on defining the systems and subsystems that form the turbo machinery, the potential problems with these systems and subsystems, monitoring techniques for early detection, and methods to analyze the monitored variables to detect potential problems or reconstruct reasons for failures. Case studies are used throughout the course.

Who Should Attend?

Experienced mechanical and facilities engineers and senior technicians who require an in depth understanding of monitoring and troubleshooting turbo machinery

Course Objectives:

By the end of this course participants will know

- How to evaluate turbine performance during startup and operation
- How to identify turbo machinery system components

- How to define and using appropriate monitoring techniques and tools
- How to utilize effective operation and shutdown procedures
- How to analyze common turbo machinery problems, such as vibration and surge
- How to solve instrumentation and control problems
- To understand the interrelationships of turbine drivers, couplings/gearboxes, and end users

Course Outline:

- Gas turbine machinery general description
- Operating principles of gas turbines
- Key performance variables and means to monitor
- Major components of axial flow compressors: rotors, blades, shafts, combustion chambers, nozzles, etc.
- Auxiliary systems: lube oil, seal oil, fuel, start up, etc.
- Evaluation of turbine performance parameters during start up and running
- Running and shutdown procedures
- Troubleshooting control systems for gas turbines: start up, speed and temperature controls, vibration
- Principles of operation and general components of compressors: rotors, seals, diaphragms, etc
- Operating characteristics curves
- Surging phenomenon
- Choking phenomenon
- Compressor instrumentation: various control loops antisurge control loops
- Compressor interlock and trip systems
- Gas turbine and compressor systems start up procedures
- Normal operation monitoring of parameters
- Logging of monitoring checks
- Vibration monitoring
- Troubleshooting