

Gas Turbine Performance and Condition Evaluation

Course Number

10304

Course Duration

5 days

Audience

This is an entry to intermediate level engineering course designed for engineers, operation and maintenance technicians, managers, field service personnel, and others who are responsible for the purchase, operation, maintenance and condition monitoring and evaluation of gas turbine engines. An enhanced knowledge of the turbo-machinery performance can help to maximize production and revenue, and minimize fuel consumption and costs.

Prerequisites

Students should have operational knowledge of Solar centrifugal gas compressor or generator packages. Successful completion of an Operation and Routine Maintenance course, or equivalent experience, would be an advantage.

Course Description

This course is intended for those desiring an in-depth knowledge of gas turbine performance evaluation, to determine the condition of the equipment. The course builds on a foundation of basic engine theory, thermodynamics, and aerodynamics and expands that knowledge to practical, useful performance and condition evaluation applications. It provides the knowledge required to interpret the performance curves to predict what the turbo-machinery performance should be; measure and calculate what the performance actually is; and compare actual to predicted to evaluate turbo-machinery condition.

In addition to learning how to do the calculations, students will have the use of software tools during the course to do those calculations and track the relative performance of turbo-machinery over time. Hands-on example problems and case-studies will allow the students to practice using the software tools.

Course Objectives

Upon successful completion of this course the student will be able to:

1. Describe how a gas turbine engine works
2. List and describe the parameters that affect engine performance
3. Describe how and why the performance of a gas turbine engine degrades over time
4. Describe how gas turbine parameters are measured in the field to accurately determine engine performance
5. Describe how the controls affect the full-load and part-load performance of the engine
6. Use all of the gas turbine performance curve formats to determine the predicted performance of a new-and-clean engine at sea level and no losses
7. Describe how to use the TT4000 condition monitor to evaluate engine condition
8. Evaluate engine condition by comparing actual performance to predicted performance of a new-and-clean engine

Course Topics

1. How a Gas Turbine Works
2. Parameters That Affect Performance
3. Performance Degradation
4. Measuring Performance
5. Control Functions That Affect Performance
6. Performance Curves
7. HMI Condition Monitoring
8. Performance and Condition Evaluation
9. Evaluation Scenarios

Reference Material

1. Comprehensive Student Workbook
2. Additional Reference Documentation (on CD)