

# Centrifugal Compressor Performance and Condition Evaluation

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## Course Number

10305

## 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 Solar Turbines centrifugal compressors. An enhance knowledge of centrifugal compressors can help to maximize production and revenue, and minimize fuel consumptions and costs.

## Prerequisites

Students should have operational knowledge of Solar centrifugal gas compressors and packages. Prior knowledge of how centrifugal compressors operate is required. Successful completion of Operation and Routine Maintenance and Gas Compression Principles and Applications courses, or equivalent experience, would be an advantage.

## Course Description

This course is intended for those desiring an in-depth knowledge of Solar Turbines centrifugal compressor performance evaluation, to determine the condition of the equipment. The course builds on a foundation of natural gas properties, 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 centrifugal compressor performance should be, measure and calculate what the performance actually is, and compare actual to predicted to evaluate centrifugal compressor condition.

In addition to learning how to do the calculations, students will have the use of software tools to do those calculations and track the relative performance of their centrifugal compressor 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 and calculate the physical and thermodynamic properties of natural gas mixtures
2. Use all of the gas compressor performance curve formats to determine the predicted performance of a new-and-clean compressor
3. Describe how changing gas composition, suction pressure or suction temperature affects the gas compressor curve and surge control line
4. Measure and calculate all of the performance parameters necessary to identify the actual gas compressor performance
5. Compare actual to predicted performance to determine and evaluate compressor condition
6. Describe how to use the TT4000 condition monitor to evaluate gas compressor condition

## Course Topics

1. Thermodynamic Properties of Natural Gas Mixtures
2. Centrifugal Compressor Performance Curves
3. Effects of Variables on Curves and Surge Control
4. Measuring Centrifugal Compressor Performance
5. Analyzing Compressor Performance Data
6. TT4000 Gas Compressor Condition Monitoring

## Reference Material

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