

Vibration Fundamentals and Data Collection

Course Number

10502

Course Duration

3 Days

Audience

This course is designed for turbo-machinery operators and maintenance personnel who have limited knowledge or experience of turbo-machinery vibration principles but are required to collect vibration data and perform a basic analysis of the possible causes of abnormal vibration readings.

Prerequisites

None

Course Description

This course is a combination of classroom-based instruction on the principles of turbo-machinery vibration and hands-on practical exercises covering the methods used to collect vibration data and perform basic first line analysis.

The first part of the course discusses the basic principles of vibration, the terminology used and how the time domain compares to the frequency domain. The purpose of conducting vibration monitoring is then covered, listing and describing the causes of increased vibration levels on turbo-machinery. This lesson is followed by information covering the different types of vibration monitoring equipment installed on Solar and Turbomach packages. The course then covers the principles and setup of the CSI 2130 and/or VibXpert analyzer (as applicable and available). Practical exercises to collect vibration data from a vibration simulator / rotor kit will allow the students to become familiar with the operation of the analyzers in the field. This is followed with a lesson on how to confirm that the collected data is valid and perform a basic first-line analysis to identify the most common causes of turbo-machinery vibration (unbalance, misalignment, gear problems, bearing problems).

Course Objectives

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

1. Describe the basic principles of machinery vibration
2. Describe the reasons for and principles of vibration monitoring
3. Describe the different types of vibration probes used on Solar and Turbomach turbo-machinery
4. Describe the different types of vibration monitoring equipment used on Solar and Turbomach turbo-machinery
5. Demonstrate the ability to collect vibration survey data using the CSI 2130 and/or VibXpert vibration analyzer
6. Demonstrate the ability to perform basic first line analysis of vibration data

Reference Material

Students receive a set of comprehensive workbooks and job aids. These materials are designed for classroom use and for reference purposes on the job.

Equipment

The CSI 2130 and/or VibXpert vibration analyzer will be available in the class for students to use during the lessons on analyzer functions and the hands-on exercises.

Variations

An alternative to this 3-day Instructor-Led training course is a blended-learning solution. This comprises a series of eLearning modules that cover the theoretical aspects of the course, followed by a 2-day hands-on workshop conducted at a Solar Global Training Center.

The relevant course numbers for this option are as follows:

- 50109** - Fundamentals of Vibration
- 50110** - Purpose of Vibration Monitoring
- 50111** - Vibration Sensors
- 50112** - Vibration Monitoring Systems
- 50113** - Basic Vibration Analysis
- 50114** - Vibration Frequency Charts
- 50115** - Using the Gears Program
- 10421** - Vibration Fundamentals - Hands-On Workshop