

Vibration Training Planning

For planning purposes, the following guidelines should be used.

Course length (days)	Course
1	Overview for Managers and Supervisors
1	Overview for data collectors
3	Introduction to Vibration Monitoring
5	Vibration Monitoring
TBD	Specific equipment and software training.

Basic vibration concepts and principles can be taught as an overview, an introduction or a full monitoring course. The depth and breadth of coverage increases with the length of the course. A general list of objectives appears on the next page.

Length of training on specific equipment and software will depend on the equipment, software and coverage desired. These should be determined in consultation with the instructor and the client. As a rough guideline, usually one day for each will provide reasonable competency.

In addition to training, the following services are available:

1. Program setup — including database development, path design, procedure and work instruction development, report development and on-the-job training. Usually one to ten days depending on the size of the database.
2. Program mentoring — Mentoring includes program setup plus follow-up visits to fine-tune the program. Its goal is to maximize chances for a successful program. Follow-up visits at one month, three months, six months, twelve months and annually thereafter are recommended.

Vibration Objectives

At the completion of this course, the student who actively participates will:

- 1. Understand the Theory of Vibration, including at answers to the following questions:**
 - 1.1. What is vibration?
 - 1.2. What causes vibration?
 - 1.3. How is vibration measured?
 - 1.4. What are the Time and Frequency Domains?
 - 1.5. What is Fourier theory and why is it important?
 - 1.6. What is an FFT and why is it important?
 - 1.7. What are impacts and shock waves?

- 2. Have used Vibration Test equipment and answered the following questions:**
 - 2.1. How can we collect the signals?
 - 2.2. What sensors do we use to pick up the signals?
 - 2.3. How do we attach the sensors?
 - 2.4. How do we set up the data logger to get usable data?
 - 2.5. What are some other vibration-like technologies?

- 3. Understand the Application of Vibration Monitoring and Analysis, including the answers to the following:**
 - 3.1. What are vibration sources in machinery?
 - 3.2. What are some of the common causes of vibration in machinery?
 - 3.3. How about for specific machine types?
 - 3.4. What do we do with the readings we get?
 - 3.5. How do we do analysis?

- 4. Have practiced Practical application issues, including the following:**
 - 4.1. How does a typical machine respond?
 - 4.2. Where on the machine do we take the data?
 - 4.3. How do we diagnose a problem?

- 5. Understand what Predictive Maintenance is, including the following:**

- 5.1. What is predictive maintenance?
- 5.2. How does it differ from preventive maintenance?
- 5.3. How do we use trending?
- 5.4. What detailed analysis do we need?

6. Have discussed Program development, including the following:

- 6.1. How do we select which machines to monitor?
- 6.2. How do we select the correct technology?
- 6.3. What procedures and work instructions are needed?
- 6.4. Why do we need to do a payback analysis? How do we do it?

7. Have used specific vibration data collection equipment furnished by the client including the following:

- 7.1. How do I setup the instrument?
- 7.2. How do I set up path for data collection?
- 7.3. How do I collect data on a path?
- 7.4. How do I upload the data to the PC?
- 7.5. How do I use the instrument to collect off-path data?
- 7.6. How do I use the instrument for simple analysis?
- 7.7. How do I maintain the instrument?

8. Have used specific vibration monitoring software furnished by the client including the following:

- 8.1. How should a machinery database be organized?
- 8.2. How do I setup plant machinery in the database?
- 8.3. How do I setup measurement tasks for the machinery?
- 8.4. How do I add transducers to the database?
- 8.5. How do I setup a path for data collection?
- 8.6. How do I transfer the path to the data collector?
- 8.7. How do I retrieve the data from the data collector?
- 8.8. How do I view the results of the data collection?
- 8.9. How do I generate reports from the data?