

$Response = \frac{Force}{Dynamic\ Stiffness}$

Vibration is the Response of the system to a Force controlled by the Dynamic Stiffness

MD

## Duration

5 days (35 hours)

## Delivery

Classroom or remote

## Audience

- Engineers who interpret machine vibration and position data to determine machine condition
- Engineers involved in the design, acceptance testing, and maintenance of rotating machinery
- Engineers who want to learn about machinery vibration diagnostic

## Objectives

- Explain how the fundamentals of machine design and behavior are reflected in the vibration measurements
- Reduce machine vibration data into usable plot formats. Explain which plot formats are best to use in the different stages of machine diagnostics
- Describe the causes, effects and indicators of the typical machine malfunctions; including recognition of problems such as unbalance, misalignment, rubs, shaft cracks and fluid induced instabilities

## Program

### Day 1

- Introduction to Condition Monitoring and Diagnostics
- How to interpret phase measurements
- How to interpret steady state data formats
- Fundamental synchronous rotor response

### Day 2

- How to interpret Startup and shutdown plots
- Plot interpretation workshop
- Single plane balance response

### Day 3

- Multiplane balance response
- How to detect and identify rubs and looseness

- How to evaluate preloads and radial position measurements

### Day 4

- Understanding different vibration types and resonances
- How to identify fluid induced instabilities
- How to handle an isotropic systems

### Day 5

- How to detect and identify shaft cracks
- Knowledge review

## Learning path

### Recommended Prerequisites

- Fundamentals of vibration measurements

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### Next steps

- Machinery diagnostics courses

### Benefits



Provides the fundamentals needed to make confident operational