



Precision Maintenance Skills

*Develop your skills to **double** the life of equipment and components for your business!*

**IOWA CENTRAL
COMMUNITY COLLEGE**

What you'll learn

Precision Maintenance Skills is an intense five day hands-on class for ten to fifteen students with two instructors. Join other craftsmen, supervisors and engineers to gain the skills that will lower the vibration levels and electrical consumption of plant rotating equipment, which will double or even triple equipment and component life!

Simulators are used throughout the course to put the skills to the test. Participants will learn how something as insignificant as a few thousandths of an inch in fit and tolerance or an incorrect key length can make a huge difference in rotating equipment life.

Throughout the course the following subjects will be covered on the In-Line Coupled and V-Belt simulators:

- ◆ How to avoid common assembly errors made in most plants every day.
- ◆ Precision measuring and using the right specifications.
- ◆ Important bearing fits and tolerances and where to locate the dimensions.
- ◆ How to achieve precision alignment without extra downtime.
- ◆ How to avoid common lubrication mistakes.
- ◆ How to avoid common imbalance routinely introduced by mechanics.
- ◆ Thermal growth, vibration, couplings, Angled Soft-Foot Correction, Pipe Strain and their effects.



The results of every change to the simulator is measured providing the positive overall effect on vibration, amps and heat to the bearings. The outcome will prove to participants these techniques work to extend bearing life and improve reliability.



Five workstations with In-Line Simulators and tools available for 2-3 person teams.

Course Outline

- ◆ **Introduction to Precision Maintenance**
 - Simple methods, procedures and standards to affordably improve reliability, cost, uptime and product variability.
- ◆ **Vibration and bearing life**
 - Vibration is the best measure of metal fatigue that causes 90% of premature bearing failure.
- ◆ **Common assembly errors**
 - Easily identified and corrected.
- ◆ **Precision Measuring and Tools**
 - One of the most important things about rotating equipment is to MEASURE and adjust based on findings.
- ◆ **Rough Alignment**
 - What is Soft Foot, Pipe Strain?
- ◆ **Fit and Tolerance**
 - Proper fits and tolerances are necessary to prevent premature failure.
- ◆ **Overview on Bearings**
 - Bearing life is dramatically affected by operating conditions.
- ◆ **Lubrication basics and mistakes to avoid**
 - Use the right lubricant, the right amount and at the right time.
- ◆ **Alignment**
 - Poor alignment can be more detrimental than speed on a bearing.
- ◆ **Thermal Growth of Machines**
 - Normal operating temperatures based on type of material and its molecular makeup.
- ◆ **Balance Standards**
- ◆ **Couplings**
 - Performance is affected by routine maintenance and installation.
- ◆ **Belt drives**
 - The factors affecting desirable belt performance.

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