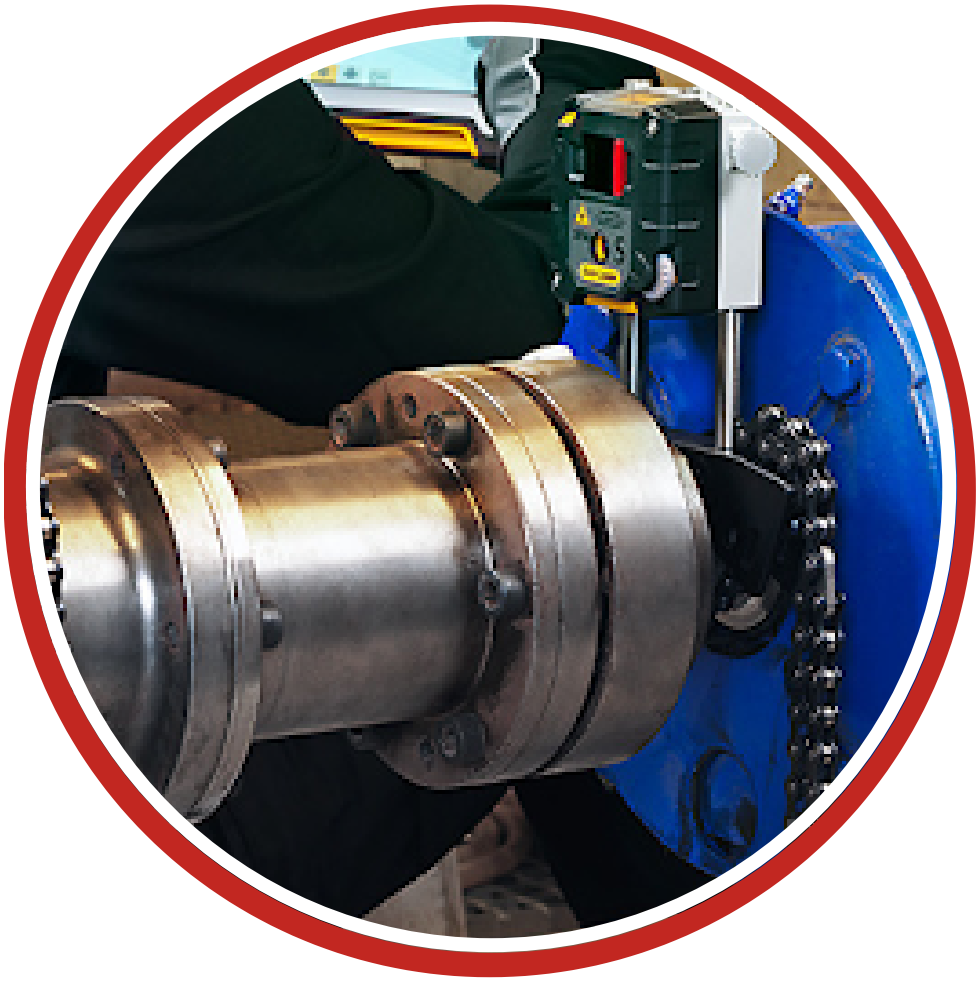
Couplings and Shaft Alignment: Installation, Inspection and Control



Energy Milestones Corporation

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Couplings and Shaft Alignment: Installation, Inspection and Control

Overview

This course will provide an overview of coupling designs and applications for transferring torque and rotation from the driver shaft to the rotating machine, such as a pump, compressor, or turbine. The course will emphasise the importance of proper installation, maintenance, and failure analysis of couplings. The topics are specially designed for engineers and technicians who have had limited exposure to couplings and need to upgrade their technical knowledge about coupling characteristics and various operating loads. The focus in the training workshop will be on problem detection, root cause analysis and failure prevention.
This course will provide an integral training in knowledge and experience of shaft alignment to solve misalignment problems in rotating machinery. Emphasis will be on the ways to analyse, identify and correct the root causes of misalignment, unbalancing and vibration in order to achieve smooth operation and improved machine performance

Course Objectives

At the end of this course, the participants will be able to:

- Guidelines for good coupling installation
- Solving common coupling problems and failure prevention
- Vibration monitoring related to coupling health and machinery performance
- Methods and practices for efficient alignment of rotating machines
- Use of classical reverse dial methodology and modern laser optic technique

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Course Content

1. Couplings: Types, Application & Operation
   - Classification & Application of Couplings
   - Characteristics of Rigid Couplings
   - Characteristics of Flexible Couplings
   - Selection of Parameters of Couplings for Pumps & Compressors and Turbines
   - Advantages & Disadvantages of Different Types

2. Couplings: Installation, Maintenance & Troubleshooting
   - Installation Best Practices & Safety Issues
   - Coupling Inspection in Operation
   - Vibration Monitoring and Analysis
   - Preventive Maintenance & Condition Monitoring
   - Failure Prevention & Troubleshooting

3. Shaft Alignment Basics
   - Need for Shaft Alignment
   - Effects of Shaft Misalignment
   - Types of Misalignment: Offset and Angularity
   - Measuring Techniques
   - Rim and Face Alignment Method: TIR Determination

4. Alignment Measurement Methods
   - Reverse Dial Methodology
   - Correcting Misalignment: Foundation and Soft Foot
   - Thermal Growth Determination
   - Laser Optic Technique
   - Misalignment Detected by Vibration Monitoring

5. Effect of Misalignment on Bearings & Seals
   - Effect of Misalignment of Bearings
   - Vibration Monitoring Results as Indication of Misalignment
   - Effect of Misalignment on Seals of Pumps and Compressors

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Course Content

5. Effect of Misalignment on Bearings & Seals
   - Leakage Control & Prevention
   - Summary and Conclusions

Targeted Audience

- Professionals dealing with the operation and maintenance of rotating equipment
- New technicians who wish to improve their knowledge and skills
- Those who are involved in condition monitoring and vibration analysis
- Maintenance technicians who are in charge of correcting the machinery problems
- Engineers and maintenance planners are involved in the machine's condition monitoring

Course Methodology

Facilitated by an experienced professional trainer, this training course will be conducted as a highly interactive workshop session. A variety of training methodologies and facilitation techniques will be employed before and during the course, as applicable. These methods are aimed at enhancing individual and group interaction while maximising learning. Some of these methods are:

- Online Pre-post Test
- Colourful Visual Aids
- Gamification
- Self-Assessment Instruments
- Simulations
- Case Studies
- Videos
- Group Exercises & Discussions
- Role plays
- Indoor & Outdoor games