

OFF-SET MACHINERY BASICS

Proper installation, maintenance, and alignment of belt and chain drives

Description: OSM-201 OFF SET MACHINERY BASICS—BELT AND CHAIN DRIVEN EQUIPMENT

When working with belt or chain drives it is critical to understand component wear characteristics, proper installation procedures, alignment, proper tensioning, sheave and sprocket inspections are critical. It's not just achieving the expected life of the belt or chain but also the life of the bearings on the driver and driven machinery. Too much or even too little attention to ten-

sion or alignment can result in rapid and expensive bearing failures. This class covers everything about these drives in detail and offers the mechanic a "stress free" environment to accomplish "hands on" work on actual adjustment, inspection, and alignment. What better way to learn than by doing. The attendee will learn about basic mechanical applications, failures, life expectancy and maintenance of shafts, bearings, chains, sprockets, bushings, belts (V-belt, synchronous belt, timing belt), sheaves and other off set machine components.



Types of Drives

- Direct driven machines (straight line)
- Off-set machines (belts and chains)

Bearing Life and Protection

- Short history of anti-friction bearings
- Why anti-friction bearings did not sell
- Theoretical life of an anti-friction bearing
- Bearing life varies as the cube of the load
- Bearing die by spalling
- Davis Law of Spalling
- Bearing configuration
 - Open
 - Shielded
 - Sealed
- Bearing numbering and sizes
- Hands-on exercise

History of Belt Power Transmission

- Flat belts-how they work
- Correction of wandering
- V-Belts-how they work
- V-Belt videos
- Cross section identification
- Classical A,B,C,D,E
- Fractional HP belts
- Narrow-V belts 3V,5V,8V
- Hands-on exercise
- Cogged belts
- Banded belts

V-Belt Inspection

- Sheave wear
- Sheave inspection
- Eyeballing sheave wear
- Use of correct inspection tool

Storage of V-Belts

- Storage video
- Temperature and humidity specs

Belt Guards

- Heat resistance of V-belts
- Adequate ventilation
- Inspection plates

V-Belt Inspection

- V-belt installation check list
- Checking replacement sheaves
- Temperature and humidity specs

V-Belt Tensioning

- Force-deflection method
- Force-deflection video
- Force deflection hands-on exercise
- Tension finder method
- Tension finder video
- Forced frequency method
- Forced frequency video
- Percent elongation method
- Percent elongation hands-on

Belt Alignment

- Straight edge alignment
- 4-point string alignment
- Laser alignment (Belt Hog)

Synchronous Belts

- Trapezoidal belts
- Curvilinear belts
- Drive design
- Drive alignment
- Synchronous applications

Strobe Light Inspection

- Checking bushing perpendicularity
- Slow motion study
- Determining RPM

Resonance of Belts

- Object with natural frequency
- Forcing frequency
- Lack of damping

Chains and Sprockets

- Roller chain video
- Lubrication
- Measuring sprocket wear
- Sprocket troubleshooting
- Chain tensioning
- Measuring chain wear
- Hands-on gauge construction
- Alignment using straight edge

CLASSROOM ACTIVITIES

In order to make this remote class convey a sense of real hands-on activities certain tools, components, work books, and class exercise sheets are set to attendees at their location. A lot of the class is interactive between instructor and attendees because of this approach. In addition, real equipment is available at the MTI class room that will be used by our instructors to let the attendee witness the actual work involved. MTI uses industrial video to bring field work into the classroom. Real mechanics are shown accomplishing tasks in plant or facility locations. When you leave this course you will be well grounded on off-set machinery and how to service it. Our approach is not just another showing of power point slides but rather an interactive class where attendees are called upon for answers and can ask for hands-on steps to be repeated with closer video to see it work.

DURATION, ATTENDANCE and TIMES

One day duration (8 hours) and up to 12 students may attend. Minimum of 6 students.