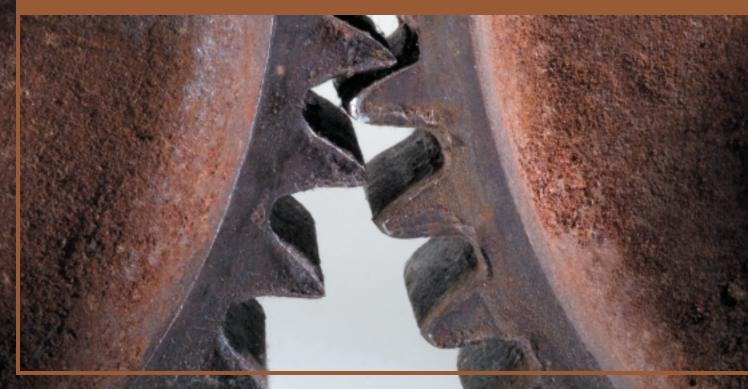


GUIDELINES FOR AN EFFECTIVE

# overhead crane maintenance program

Whiting Corp. shares tips on how to keep crane gears rolling

BY JAMES BURFORD



Industries such as steel mills, metal fabricating shops, paper mills, and power plants all rely on overhead cranes for various applications. But when a crane malfunctions or breaks down, the consequences, both in terms of lost productivity and crane repairs, can prove costly. Everyone knows the best way to fix a problem is to prevent it from happening in the first place. With that idea in mind, Whiting Corporation has developed an effective overhead crane maintenance program not only for the cranes they produce, but for other overhead cranes as well. Whether your facility has one overhead crane or 40, this program highlights the necessary components that make up an overhead crane inspection.

Greg Ciecierski, branch manager of Whiting Services, Inc., and Stuart Lipsteuer, director of marketing and customer development at Whiting Corporation, say the maintenance program outlined here has evolved with the Occupational Health and Safety Administration standards and regulations over the years. "Safety is always key," Lipsteuer said. "It's absolutely paramount."





Whiting's overhead crane manufacturing plant.

### before the inspection

#### TIMEFRAME

Safety and reliability is the objective.
Annual crane inspections must meet
OSHA and ANSI B-30 requirements.

#### PREPARATION

- Most of the daily inspection is the crane operator's responsibility. At the start of inspection, the operator should listen for any noises that could indicate a condition that could limit the crane's operation.
- Check the limit switches on the hoist, bridge, and trolley as a first step.

#### DURING THE INSPECTION

 Always lock out the crane runway disconnect before a visual inspection.
Even with the main line control and disconnect in the open position, however, branch circuits might be present and hazardous. Be careful.

The inspection process must include the following parts of an overhead crane.

- Hoist In checking the hoist, check the overall gearing system, bearing covers, couplings, equalizer and/or running sheaves, along with the movement of the equalizer sheave.
- Trolley The operation of the trolley is critical to the proper functioning of the crane. Check the gear case oil level, and look for excessive oil on the bridge, catwalk, girders, trolley, or floor. In addition, inspect the condition of sheaves in upper sheave nest, load girts, and trucks. Furthermore, check the gear drive wheel flanges, grease fittings, lube condition and level.
- Drum When looking at the drum, measure the rope diameter against original equipment records, inspect the sharpness and depth of grooves, and verify the tightness of the rope anchor.
- Load Block When inspecting the load block, look for broken wires in addition to visually checking for corrosion and any deterioration in the condition of the rope. A thorough inspection includes a check for damage in sheave nest area, kinks or unusual wear in the rope, and ease

- of hook rotation. This inspection insures that hooks with latches are in working order. Check for gouges, cracks, or wear on the hook, along with the tightness of nuts, thrust bearing integrity, and throat opening of the hook. Remember nameplate benchmarks should be checked against current measurements.
- Bridge On the bridge the inspection process must include the end trucks, the condition of the idler, along with the drive wheel flange and tread. During the inspection, make a random check for any loose endtruck-to-girder bolts to be sure there aren't any loose bolts on the motor supports and/or walk platform. Check the gearbox oil levels and seals, grease fittings, lube condition, and level. Lastly, check the bridge rail for cracked welds to be sure it is properly secured to the top of the bridge.
- Wheels On the wheels, when wear is apparent, record benchmark measurements to compare against those measurements taken during the next inspection. Check the idler and drive wheel flanges and operation of wheel bearings. Make sure the wheel grease bearings are kept full. Always check the rail sweeps for proper clearance, verify the crane alignment is acceptable, and insure the crane stops equally on both sides at the end stops.
- Festoon System The proper functioning of the festoon system insures power is distributed to the trolley as it moves in a longitudinal motion. While inspecting the system, check the power and control cables for frays and ease of movement, and that the strain chain is properly fastened to each carrier and the tow arm. Make sure it is connected with the junction box.
- Electrical System On the electrical system, check that enclosure doors close properly, and that the wiring does not include any faulty connections or poor insulation. Verify relays and overloads are operating, along with contact tips for pitting, and double check that the pendant label is legible. Check the pendant station case for any cracks,

- the condition of the pendant drop cable, and make sure the strain cable is properly attached.
- Bumpers Check to be sure bumpers are secured by checking attachment method of safety cables. To assure the bumpers are operating properly, check that spring-activated, rubber, and hydraulic bumpers are resilient.
- Runway Check the rail for straightness and any indications of or a lack of excessive wear and end stop integrity. The condition of the collector shoes should always be monitored in addition to the runway conductors for straightness and damage at the connection point.
- Brakes The brakes on the hoist, trolley, and bridge should be examined for brake tolerances, pads, and the general condition of the shoes. When disc brakes are used check for activation when the motor power is interrupted.
- Cab Operations Normal cab operations are dependent upon the condition of the cab controllers and the hydraulic foot brake. As in any safe operation, the accessibility of a fire extinguisher is important. While reviewing the cab operations, review any warning devices or status light in addition to inspecting the condition of any below-the-hook devices. If the crane is radio controlled, check the general condition of the transmitter and the antenna. Furthermore, examine the panel and transfer switch.

## after the inspection

- To remain attentive to detail and accuracy, fill out the inspection report sooner rather than later.
- During the inspection process, faulty items or those that need closer attention must be promptly reported to a supervisor.

In today's business environment, the inspection reports assist maintenance in ordering and maintaining an inventory of long lead-time components. Furthermore, the reports serve as the basis for management reports regarding the appropriation of funding for continuing plant operations. **CW**