Whiting SERVICES

Modernize Your Tired, Outdated Crane

White Paper

Whiting SERVICES

Contents

Whiting SERVICES

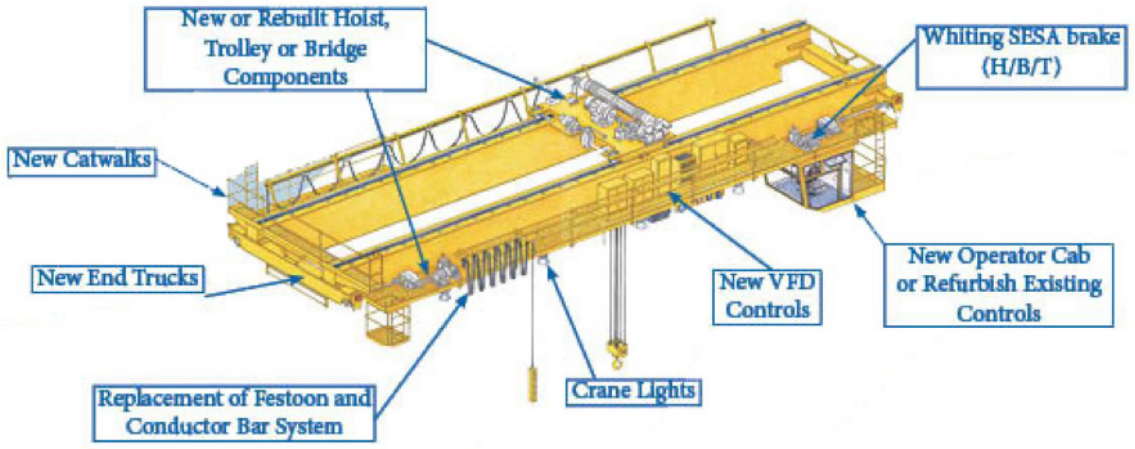
What Does it Mean to “Modernize” your Crane?

Many overhead cranes have been in service for longer than their original intended design life, or have been used at a higher duty cycle than intended. Does this sound a little too familiar? If so, chances are that your crane is actually costing you money – in efficiency, in safety, in functionality, and in downtime. When one of these situations occurs in your plant, you have choices; ignore the problem until the crane fails (not safe), replace the entire crane (costly & timely), or modernize the crane. Modernizing the crane can prolong the useful service life, make it safer to operate, and provide increased efficiency.

Modernization takes on many forms, but essentially it involves altering or making an enhancement to the original design of the equipment. These changes could be mechanical, electrical or structural in nature. Examples include, a controls upgrade, an increase in duty cycle or lifting capacity, addition of safety features, automating the movement of the crane, zone detecting, operating methods, etc. A modernization is typically more cost effective than replacement of the entire crane and delivers most of the same great advantages while extending useful life for capital depreciation.

Another problem with older cranes could be obsolete components. Over time, both mechanical and electrical components can be difficult to source and be expensive. Retrofitting with new, standard components often solves this problem. Whiting Services Inc. is here to help you identify and provide solutions for all crane makes, and parts are produced locally in their U.S. facility outside of Chicago.

Shown here are just a few of the ways WSI can update your crane.



Common modernization techniques

Whiting SERVICES

Mechanical Modernization

Have you experienced gearbox, braking system or other hardware failures? Replacing these items with new, state-of-the-art components that function more efficiently and provide a safer work environment is the smart choice. Our engineers will pinpoint the root cause of these failures, then design a solution to fit your current production needs.

Trolley deck before modernization

Gearing technology has dramatically changed with new materials, hardness techniques, and new designs to produce a longer lasting product. No longer should you use thin rim gears that can lead to cumulative fatigue in your drive train. Producing an integral, one piece, pinion to shaft gear is now the design of choice.

New trolley deck after modernization

Maybe your bridge wheels wear quicker than you'd like? An engineering evaluation may point to new wheels made from stronger material or with a higher hardness. Does your current production require picking higher capacity loads with the crane? A review of the crane's original design may indicate that by upgrading certain mechanical components, higher capacity picks can be accomplished with the existing crane. Today's computer-aided design tools allow manufacturers to build the same capacity hoist with a lower "dead load" weight. Often, replacing the old "boat anchor" hoist with a new design can save enough weight (2000 - 3000#). Couple that with structural modifications and you can achieve the desired new lifting capacity.

Whiting SERVICES

Electrical Modernization

In the past 15 - 20 years, great strides have been made in crane control technology. With the advent of VFD (variable frequency drives) your old contactor panels, resistor banks, static stepless, or even DC control systems are rendered obsolete. VFDs provide for safer, smoother, programmable, and flexible control of the crane. Many of the inherent abuses seen by the improper operation of a crane can be minimized with VFD technology. VFD drives work well with PLC control to automate certain functions of your lifting processes.

VFD Technology Solutions

- •Reduction of shock loading
- •Reduction of brake and drive train wear
- •Load positioning control
- •Load swing control
- •Load summing
- •Extended speed range for hoisting
- •Converting from DC to AC motors
- •Acceleration and deceleration speed control
- •Overspread protection
- •Full or partial automating crane movements (may require addition of PLC)

Damaged and improperly installed controls before modernization

Additional potential electrical modernizations

- •Collision avoidance systems
- •Refurbishment of crane cab controls
- •Removal of operator cabs and replaced with radio controls
- •Crane lighting
- •Production zone lighting
- •Upgrading to new festoon or conductor bar technology
- •Radio control systems
- •No-fly zone control
- •Automated operations

Controls after modernization

When your crane is upgraded to VFD technology, Whiting strongly recommends adding an independent grounding method on the crane runway, along with festooning on the bridge. The “4th bar” grounding system provides a positive and consistent path for grounding the electrical system, while the festoon system provides an uninterrupted path for current flow from the VFD drives to the motors. The grounding system serves two purposes – it brings your system up to OSHA / NEC codes and also provides protection for the VFD drives. We also strongly recommend that the runway conductor system contains dual collector shoes. This provides greater assurance that the collectors will remain in contact with the conductor bar, therefore providing constant current to the drives.

Structural Modernization

As mentioned earlier, sometimes there is a need to increase the lifting capacity of the crane. Along with upgrading mechanical components, the structural members of a crane can be reinforced or changed to allow for higher capacity loading. Whiting’s Professional Engineers are trained to evaluate the entire crane structure to assure a safe working environment.

If you have a profile / structural beam type bridge, stiffeners can be added to the webbing as a means to handle a higher capacity lift. When box girders are present, additional platting can be installed as a means to increase the crane’s lifting capacity.

Of course we cannot overlook the impact that an increased lifting capacity will have on the crane runway. The runway structure can be reinforced, as mentioned, to support the increase weight of the crane and working load. WSI can also inspect your rail with our TrackRunner™ Robot to determine if the rail itself needs repair.

Where to Start?

Whether it is a mechanical, electrical or structural modification that is needed, the best place to start is with a thorough, concise inspection of your equipment with WSI's CHIP (Crane Health Inspection Program) program. The CHIP report provides a snapshot of the crane's overall health and condition. From there, and as a team, we can make informed decisions on how to proceed so you can get the most from your existing equipment.

WSI modernization trailer

Sometimes after performing our CHIP inspection, it is discovered that modernizing the crane is NOT the best course of action. If significant mechanical, electrical or structural defects are uncovered, the cost of repairing them along with the modernization cost, could be prohibitive. If this is the case you are still in good hands, as Whiting has the team to design and build that new crane for you.

You can trust the company that pioneered overhead crane design and has been in business here in America through its entire existence to guide you through the modernization process. Our team of field Sales Engineers and Professional Engineers will listen to your concerns and applications, and offer you various solutions to choose from. Once you make the decision to execute a modernization, our expert team of field technicians are there to perform the work in a safe and timely manner.

For more information on modernizing your overhead crane, please visit our modernization page at http://www.whitingcorp.com/services/modernizations/.

About Whiting Services Inc

Whiting Services Inc specializes in the maintenance and inspection of not only Whiting overhead cranes and railcar maintenance equipment, but of similar equipment made by other manufacturers as well. For all the products Whiting manufactures, and for all other brands of similar equipment, Whiting and Whiting Services provide complete engineering, sales, support, parts and maintenance and inspection services to our customers along every step of the way.

About Whiting Corporation

Whiting overhead cranes serve a variety of industries including steel mills, automotive plants, foundries, fossil fuel plants, metal service centers, refuse facilities, hydro-electric plants and nuclear power plants. Additionally, Whiting is a trusted name for railcar maintenance and lifting equipment for the freight and commuter railroad industries, municipal transit authorities, railcar builders and independent maintenance shops.

Our state-of-the-art manufacturing facility houses the Whiting corporate offices, as well as almost 170,000 square feet devoted to manufacturing. Our facility is a fully-equipped, integrated manufacturing facility with a complete machine shop for material preparation, fabrication, machining and component assembly and testing. We are ISO 9001:2015 certified, committed to 10 CFR 50 Appendix B & NQA-1 and understand and comply with 10 CFR 21. We are a proud U.S. manufacturer.

Whiting Corporation
26000 S. Whiting Way
Monee, IL 60449-8060

Website: whitingservices.com
Phone: (800) 336-7900
Email: Sales@whitingservices.com