



MAGNETEK
MATERIAL HANDLING

Benefits of Upgrading Existing Cranes

Since the Industrial Revolution, overhead cranes have been put to use in a variety of diverse applications to move heavy and oversized objects that other material handling methods cannot. As your business changes with the introduction of new products or processes, so do your material handling requirements, and your existing overhead equipment may not be able to meet these demands. From the slow speeds and limited ratings of early cranes, we now find hoisting speeds of over 300 FPM, bridge speeds as high as 1,000 FPM, handling loads from 10 pounds to over 1,000 tons.

Three options exist for equipment improvement – buy a new crane, refurbish a used crane, or upgrade the present crane.

In this paper, we will explore the reasons for up-grading your existing crane and demonstrate how today's technology provides a cost-effective means to make your crane more efficient, productive, and safer.

WHY UPGRADE OR MODERNIZE?

Increased production requirements may demand more capacity, faster operating speeds, better controls, or automation. Reliability may have deteriorated resulting in unscheduled shutdowns and increased production costs. Parts may be obsolete, resulting in high spare parts costs and long lead times. Inspections may show excessive wear or non-compliance with current safety standards or practices.

STRUCTURAL UPGRADES ARE COST-EFFECTIVE

The original equipment manufacturers designed the structural components of their cranes to withstand mechanical forces far in excess of those encountered in normal, everyday operations, and it is not uncommon to find overhead cranes that are more than 80 years old still in operation today. Rather than scrap an outdated crane, which is still structurally sound, it is often more cost-effective to upgrade and modify the unit to meet current operational needs.

Since the structural life of an overhead crane normally is in excess of 30 years, increasing the capacity of the crane and runway or moving the crane to another location and either stretching or shortening the span are options worth considering.

Older trolleys with their large cast iron frames, drums, gear cases, and other heavy components can be replaced with modern compact trolley-hoists, and in many cases, permit an increase in the capacity of the crane due to the reduction in trolley weight alone.

OUR DEDICATION

Magnetek is the premier provider of innovative power control and delivery systems for the overhead material handling industry. Pioneering the use of adjustable frequency and wireless controls on overhead cranes, we offer customers more years of application experience than any company in the industry! With over 135,000 adjustable frequency drives, 100,000 radio remote controls, 260,000 pendant stations and 14,000 brakes working in the field, we have a proven track record in industries such as: aerospace, automotive, steel, aluminum, paper, logging, ship loading, nuclear power plants, locomotive yards, the grain industry and more.



YOUR ONE-STOP SOURCE FOR MATERIAL HANDLING CONTROL SOLUTIONS

MECHANICAL UPGRADES EXTEND LIFE OF CRANE

The useful life of mechanical parts such as wheels, gears, bearings, etc. is in excess of 20 years. However, even the availability of spare parts after 10 to 15 years can be problematic. Upgrading old, worn parts with modern and improved counterparts is just one advantage to modernization.

Technological advancements in engineering can extend the life of a modernized crane. For example, modern precision gearing with much closer tolerances can result in reduced vibration, less gear wear, lower maintenance, and notably quieter operation than gears common in older cranes. Utilizing modern Flux Vector Control and eliminating high-maintenance, inefficient hoist mechanical load brakes can improve performance, reduce wear on brake discs or pads, and allow gearing to run cooler.

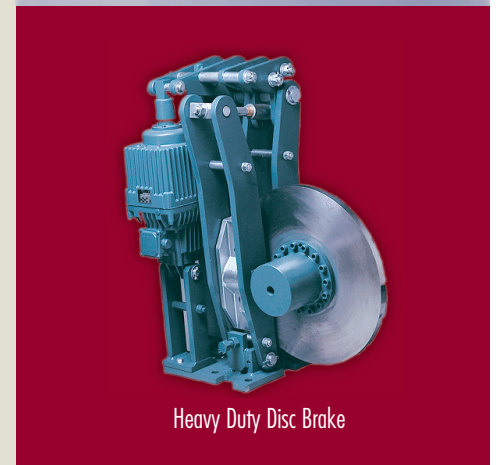
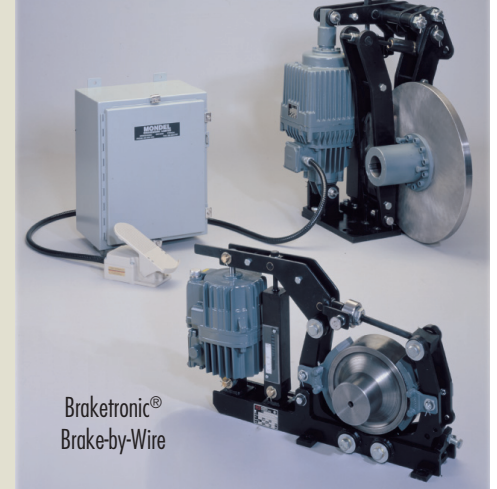
One of the most important crane modernization, retrofit, or repair considerations is the replacement of outdated or unserviceable crane brakes with current modern industrial braking technology.

- Brake performance has improved, and brake linings last longer especially when brakes operate in conjunction with AC adjustable frequency controls or digital DC controls. In many cases, journal bearings in pivot arms have been replaced with self-lubricating composite bearings which are shock resistant, unaffected by dirt or other contaminants, and can operate in corrosive environments. Newer brake designs include features such as automatic adjustment that compensates for lining wear and automatic equalization, which provides balanced braking and assures equal brake pad wear. These features go a long way in reducing maintenance costs and prolonging brake life.
- Old hydraulic brake systems tend to leak and create maintenance and environmental issues. They can be replaced with modern "brake-by-wire" packages with foot pedal operated AC Thruster Brakes that address these issues while still providing operators with the same "feel" they had with hydraulic brakes.
- Complete modern-design "drop-in" brakes are available, which meet the performance and dimension characteristics of the original equipment brakes – often at a cost less than that of a replacement component – with significantly shorter lead times. They can operate with existing brake wheels and avoid costly brake-support modifications.
- Heavy Duty Caliper Disc Brakes with ratings from 50 to 30,000 ft-lbs are available as replacements for existing brakes in high duty cycle, high speed, or high torque stopping AC or DC applications.
- Low cost AC Thruster Brakes are often used to replace aging DC drum brakes. These brakes eliminate the need for AC-DC rectifier panels, and have optional features, such as stepless externally adjustable time delays for both brake setting and release; external torque springs to permit maintenance personnel to "dial-in" just the right amount of stopping torque for traverse motions; and automatic adjustment and automatic equalization to reduce maintenance costs.
- Motor-mounted brake-support bases can also be furnished – greatly simplifying retrofits and avoiding costly brake-support modifications.

CONTROL TECHNOLOGY HAS REVOLUTIONIZED CRANE PERFORMANCE

While technological advancements have significantly improved the structural and mechanical portions of an overhead crane, the process has been more evolutionary than revolutionary. What has changed dramatically, however, is how overhead cranes and hoists are controlled.

Control systems are the most important aspect of an overhead crane or hoist and without them, the machine would not function nor perform in a safe, reliable, efficient manner.



Many older cranes rely on contactors to switch regenerative load currents to resistor banks to dissipate energy. Depending upon the duty, costly contactor tips must be replaced frequently, increasing labor expense. Switching is best done with state-of-the-art AC or DC electronic controls, designed to meet current operational needs. Even owners of cranes with early versions of electronic control may have difficulty obtaining parts such as original printed circuit boards, or the manufacturer may no longer support their particular product.

The present trend toward precision handling of materials has created a demand for simple, dependable, high-performance controls – capable of communicating with computers and various other operator interfaces.

AC CRANE CONTROL MODERNIZATIONS

Perhaps no other technological development in the past 30 years has done more to revolutionize overhead crane design than the AC Variable Frequency Drive (VFD). Today's Variable Frequency Controls and Flux Vector Motor Controls have become the industry standard for crane control. Recent improvements in drive technology, such as a new generation of Insulated Gate Bipolar Transistors (IGBTs), sensor-less vector control, powerful micro-processors with flash memory, and improved algorithms, have allowed the downsizing of the power platforms and the inclusion of many high-performance features.

AC Variable Frequency Drives provide greater reliability; enhance performance; improve production throughput; prolong equipment life; and reduce maintenance costs, parts, and personnel in a variety of ways:

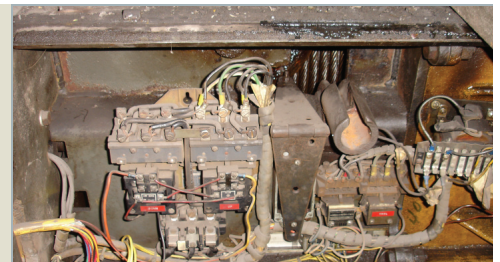
- They reduce the characteristic high starting currents of AC induction motors, thus minimizing the shock effect on both the load and the equipment. Features, such as programmable acceleration and deceleration produce softer stops and starts, assure smooth transitions between speed steps, and greatly reduce brake wear.
- Crane specific software, drive support tools, and serial communication with various peripheral devices provide valuable monitoring, status, performance, and diagnostic information. Features, such as Reverse Plug Simulation, Stall Prevention, Inching Control, Micro-Positioning Control, and "Static Stepless Simulation", are built-in and individually selectable, further enhancing the crane's performance.

No two applications are the same. Variable Frequency Drives provide the crane or hoist user with a variety of operating modes and a wide range of options.

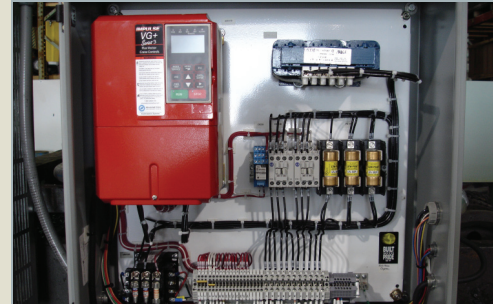
- Most single-speed squirrel cage motors can be controlled by VFDs, including conical-rotor motors used by many European hoist manufacturers. Multiple control modes (two, three, and five step or infinitely variable speed) allow for changing the operation to suit the needs of specific applications or the desires of individual operators. A wider range of selectable speed choices (up to 1000:1) are available to the user compared to the fixed speed ratios provided by typical two-speed motors (2:1, 3:1, or 4:1) or micro-drives (10:1)
- Safety is built into modern Variable Frequency Drives. They include features, which reduce the possibility of lifting an over capacity load, minimize or eliminate dangerous load swing, prevent overheating of the motor, and provide safeguards that limit unauthorized modification of drive parameters or programming unsafe parameters.

APPLICATION-SPECIFIC SOFTWARE ENHANCES PERFORMANCE, SAFETY AND PRODUCTIVITY

Simple, innovative, low-cost, application-specific software options can be added to many VFDs to meet unique application requirements and enhance performance, safety, and production throughput including Sway and Bucket Control, Drive Synchronization, and Footbrake/Static Stepless Simulation.



Old Control Scheme



Upgrade of Above Control Package



IMPULSE®G+ Mini

THE RELIABLE AND COST-EFFECTIVE CRANE CONTROL

Basic Control Capabilities

- CMAA Class A-D Service
- Exclusive Crane & Hoist Software
- Removable Terminal Block with Parameter Backup
- 40:1 Speed Range in V/F
- Three Speed Control Methods
- Non-Rational Auto-Tuning

Advanced Control Capabilities Plus:

- All Basic Control Capabilities Plus:
- 100:1 Speed Range in Open-Loop Vector
- 200% Starting Torque at 0.5 Hz
- Rational Auto-Tuning

HP Range

- ½ through 20 HP in 380-480V
- ¼ through 20HP in 200-240V 3 phase



IMPULSE®G+/VG+

IMPULSE®G+

- CMAA Class A-F Service
- Exclusive Crane & Hoist Software
- 40:1 Speed Range in V/F
- 100:1 Speed Range in Open Loop Vector
- 8 Inputs, 6 Programmable Terminals Standard
- Up to 6 Distinct Speeds

HP Range

- 7 to 346 AMP (1 to 125 HP) in 200-240V
- 2.1 to 590 AMP (1 to 500 HP) in 380-460V

IMPULSE®VG+

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HP Range

- 7 to 346 AMP (1 to 125 HP) in 200-240V
- 2.1 to 590 AMP (1 to 500 HP) in 380-460V

Sway Control improves the accuracy of load placement and reduces material damage caused by incidental contact of swinging loads without the need for external Programmable Logic Controllers (PLCs) or costly height measurement devices.

Bucket Control lets you control the various motions of a multi-line clamshell or grapple bucket that utilize two independent open/closing line hoists without the need for a PLC or master/slave arrangement. Features such as "Bucket Position Indication", provide the operator with the open/close status of the bucket while dredging (underwater) or when the bucket just isn't visible; "Speed Matching" maintains the bucket in the open position while lowering; and "Torque Sharing" keeps a full bucket closed while raising.

Drive Synchronization offers increased safety by precisely controlling motion and preventing the operator from making an uneven lift. It can operate a multiple-hoist application either independently or synchronized, synchronize a cable reel to a hoist, synchronize multiple trolleys on a single bridge, or synchronize multiple motions between two or more cranes, without the use of a PLC.

Footbrake/Static Stepless Simulation allows the operator to use a footbrake to either augment or completely control the deceleration and/or stopping of the crane while at the same time providing improved "Reverse-Plugging" response; eliminating current spikes and excess mechanical torque/stress on the drive train; and allowing quick, smooth starting or changing of direction; reducing maintenance costs; and easily interfacing with existing induction masters, footbrakes, and motors. "Static Stepless Simulation" provides the best of all worlds, by combining the intellect, judgment, dexterity, and other positive human traits of the crane operator with the latest in crane control technology and safety.

DC CRANE CONTROL MODERNIZATION

Many find themselves today with aging overhead cranes, originally designed to perform and survive in the tough environments of steel and manufacturing plants but operating with the previous generation of high-maintenance DC motors and controls. There are some 3,000 active cranes running in North America with traditional DC controls that could be retrofitted over time.

Most of these older cranes rely on traditional electromechanical DC Constant Potential (DCCP) systems which use contactors to switch regenerative load currents to resistor banks in order to dissipate the energy. DCCP systems are maintenance intensive due to their many moving and wearing parts which must operate under severe duty and in harsh environments. Rather than scrap an outdated crane, which is still structurally and mechanically sound, it is more economical to upgrade or modernize these cranes with state-of-the art electronic controls, designed to meet current operational needs.

AC is becoming the power source of choice, especially for new installations in paper mills, steel mills, bulk materials handling, shipyards, and many more areas. However, DC motors are both efficient and robust and offer year upon year of service, providing acceptable performance for the most demanding applications. Retaining an existing DC motor and upgrading the crane with solid-state controls is more environmentally friendly and – from a commercial perspective – provides an opportunity to enhance overall system performance and reliability while minimizing the risk to production and the required capital investment, an attractive proposal in today's economic environment.

Three main control options are available for modernizing existing DC Cranes:

Retain existing power source, dc-motors and control wiring and replace traditional contactor control or obsolete static controls with Digital DC Controls.

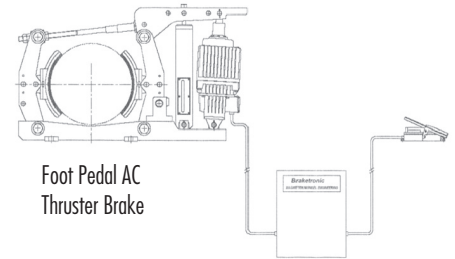
- These microprocessor based, solid-state, four-quadrant DC-to-DC controls are designed for series, shunt, and compound wound motors and are a perfect drop-in replacement for



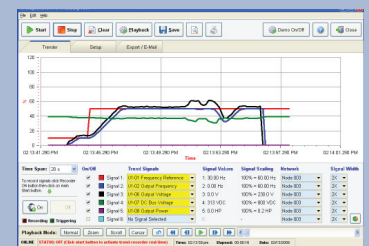
IMPULSE-Link 4.1 WDS

KEEPS YOUR SYSTEM RUNNING

- Monitor drive parameters and drive status
- Upload/download drive parameters
- Modify parameter settings and create new parameter files
- Reset faults remotely
- View and print detailed or compact drive parameters
- Copy and paste information
- Compare drive parameter (PAR) files
- Log fault, alarm and run events from multiple drives (via DataLogger)
- Monitor multiple drives at one time
- Custom default drive settings
- Troubleshoot from a remote location 24/7



Foot Pedal AC Thruster Brake



Drive Trending Tool



OmniPulse™ DDC & OmniPulse™ DSD

OMNIPULSE ADVANTAGES

- Improved motor speed & torque control
- Minimized downtime & improved serviceability
- Reduced ongoing maintenance expenses & energy costs
- Improved safety

traditional contactor control since they easily interface with existing power and control circuitry and use the same connection points while having a smaller footprint. This is the least costly option of the three, since existing motors, brakes, and wiring can often be utilized. In addition, energy savings can be significant, since these Digital DC Controls recover energy from the load and return it to the DC power supply.

Convert crane to operate on AC power retaining existing shunt-wound dc-motors and control wiring, replacing existing controls with DC Digital Static Drives.

- These drives are microprocessor digital logic controllers, which deliver precise, repeatable AC-in/DC-out control of shunt-wound bridge, trolley, and hoist motors – with reliable, energy-efficient performance – while significantly reducing operating and maintenance costs. This control has performance characteristics and many of the same advanced features of AC Adjustable Frequency Control. It can be an economical drop-in replacement for those cranes already equipped with shunt-wound dc-motors.

Convert crane to operate on AC power with low cost, efficient ac-motors and Variable Frequency Drives.

- Variable Frequency Drives have revolutionized the market for high performance AC Crane Controls – now surpassing the torque control and speed regulation capabilities of DC shunt motor control.

Upgrading an aging DC crane with modern, robust and reliable DC or AC Digital Controls results in increased up-time, improved performance, reduced maintenance costs plus energy savings, which all translate into a significant return on investment.

WHY USE REMOTE CONTROL TO UPGRADE YOUR CRANE?

The trend in the industry today is to operate overhead cranes from the floor rather than from a traveling operator's cab, or in many instances, have an option for controlling the crane from either location. Because of the high cost of labor, it is more economical to remove the operator from the cab and free him up to do other tasks

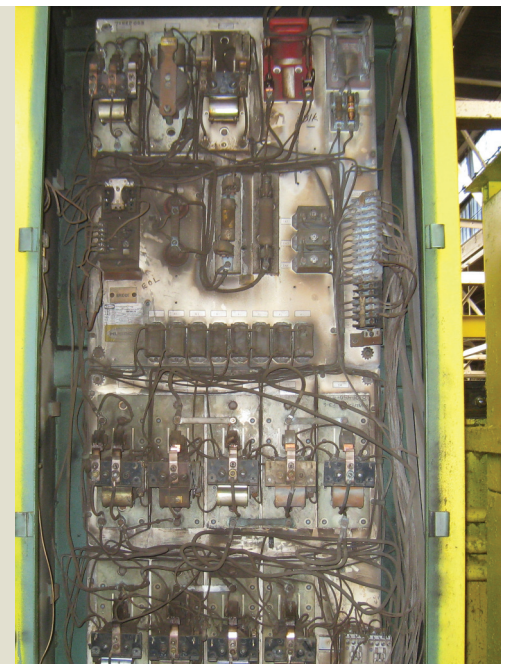
While pendant pushbutton stations suspended from the hoist or on a separate festoon track bring the crane operator closer to the load and eliminate the need for a separate person to "hitch" or "signal", they are often in the wrong place for safe or efficient operation, forcing the crane operator to dodge obstacles or untangle cords. Remote wireless control solves these problems.

Remote wireless control of overhead cranes and hoists has been around for over 50 years, and technology has changed significantly in recent years, allowing remote control manufacturers to bring products to market that are safer, more reliable, ergonomically designed, extremely versatile and flexible, and now affordable for even the smallest crane or hoist application.

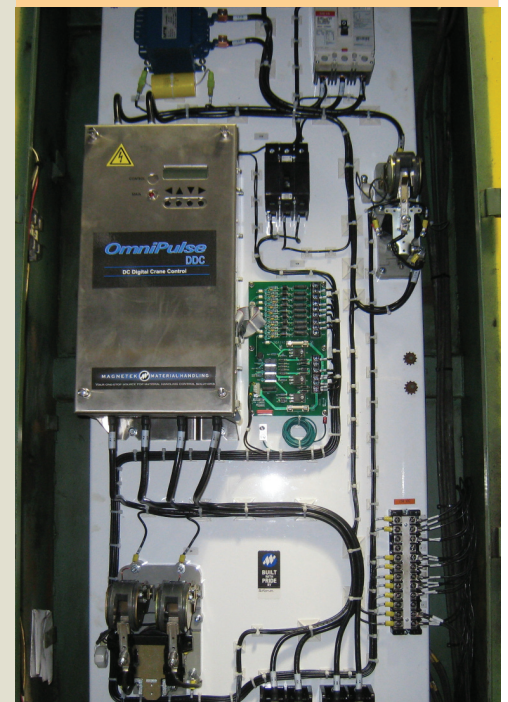
Remote control can be transmitted by either Radio Frequency (RF) signals or by infrared light. The use of RF signals is the decidedly more popular option in the U.S., where it accounts for approximately 98% of remote control transmissions. Infrared systems, which are similar to those used for TV remote controls, have inherent problems, such as short operating ranges; frequent line-of-sight dropouts and interference from dust, bright light, and sunshine; and relegation by the leading US manufacturers to down-load/up-load functions.

Modern Radio Remote Controls employ state-of-the-art technologies such as Graphic Displays and various types of wireless communication including Synthesized Frequencies, Time Multiple Sharing and Frequency Hopping Spread Spectrum (FHSS).

- Graphic Displays are now available on many systems offering system diagnostics including battery life, signal strength, and warning symbols; and two-way RF for applications requiring feedback of crane parameters, alarms, and command confirmation.



OLD DC Crane Control



UPDATED DC Crane Control



Radio Products

FLEXIBLE. DURABLE. POWERFUL.

- Ergonomic, lightweight designs
- Rugged, chemically resistant cases
- Programming flexibility and customizability
- Graphic displays with system diagnostics
- Wide selection of RF ranges and frequency options
- Maximized power efficiency

- The use of electronically Synthesized Frequencies eliminates fragile crystals and permits easy reconfiguration of transmitters.
- Time Multiple Sharing allows up to four systems to share the same channel without interference.
- Frequency-Hopping Spread Spectrum (FHSS) allows the system to communicate relatively interference free by sending RF messages over multiple frequencies many times a second, seeking the clearest channel, thus avoiding the risk of interference on a single frequency. Spread Spectrum technology also offers the opportunity for applications that require transmitting and receiving over long distances, up to 3,000+ feet.

The flexibility in programming inherent with these technologies means operators can customize output configurations, frequency channels, and security codes via a PDA or laptop computer or self-configure systems through infrared or other communication links. Consequently, one spare transmitter can be easily reconfigured by the user for application on a multitude of systems without opening the case and flipping dip switches.

These technologies, when used with the latest microprocessor technology, such as I-Chips, flash memory, and surface-mounted printed circuit boards, combine to provide the ultimate in reliability, flexibility, versatility, safety, and performance for the remote control crane user.

WHY MODERNIZING WITH AUTOMATION?

Technological advancements in control products and engineering have enabled us to convert outdated manually controlled overhead cranes, hoists, and monorail systems into modern production tools with an extended life cycle.

The automated material handling system, for example, offers a wide range of benefits including space savings, lower building costs, improved productivity, more efficient material flow, accurate positioning, fewer personnel required, safer operations, reductions in inventory, increased reliability, reduced operating costs, and better return on investment (ROI).

In addition to improving production and reducing costs, the trend in automation is also to focus on broader issues such as increasing quality and flexibility in the manufacturing process.

Highly developed solid-state logic and computer-regulated control systems define what automation is today. Flexibility and networking capabilities of Programmable Logic Controllers (PLCs) and other computers allow easy integration of related systems. They can be linked to production management computer systems, thereby providing better inventory control, improved process control, and feed-back of important management data on the operation.

Existing overhead cranes are routinely interfaced with automatic guided vehicles, conveyors, stacker cranes, and monorails for increased efficiency.

The ability to integrate standard components such as Variable Frequency Drives with their built-in innovative electronic control functions has revolutionized the industry and driven down the cost of automated systems. Variable Frequency Drives not only provide speed control but can aid in positioning.

With serial communication, VFDs provide reliable digital linkage among various crane system peripherals, including Modbus, Modbus Plus, Profibus, and Ethernet. Radio Frequency as a communications tool adds another dimension that simplifies wiring and adds flexibility to the system. Technology exists to do remote diagnostics and provide direct feedback to the operator, maintenance department, or crane service provider. In addition, using sophisticated wireless transmitter/transceivers, the crane operator can obtain data feedback such as load weights, order-picking information, processing instruction, etc. The application possibilities are only limited by our imagination.



FEATURE-RICH RADIO TRANSMITTER

- Graphic display with system diagnostics including battery life, signal strength, and warning symbols
- Available two-way RF for applications requiring feedback of crane parameters, alarms, and command confirmation
- Available high power RF for long range or harsh environments
- Frequency options including 72MHz, 400MHz, 900MHz, and 2.4GHz



AUTOMATED DRY-DOCK BOAT STORAGE/RETRIEVAL SYSTEM

MAGNETEK'S SOLUTIONS

- Provided Magnetek's automated bridge crane control system
- Delivered an 11% increase in boat storage capacity
- Increased lifting height and weight capacity
- Eliminated the use of traditional forklifts to move and lift boats

OPTIMIZE PERFORMANCE THROUGH INNOVATIVE LOW-COST AUTOMATION SOLUTIONS

While many operations would benefit from employing automated cranes regulated by programmable controllers or other computers, not every application requires this degree of sophistication. Many existing operations can be enhanced by utilizing application-specific software such as Bucket, Sway, Motor Synchronization, and Static Stepless Simulation Control which can be simply added to Variable Frequency Drives.

Other systems such as auto-dispatch, distance detection and collision avoidance systems, skew control, and zone control use simple relay logic and limit switches or involve stand-alone accessory packages. These concepts, whether part of a complete automation system or as stand-alone systems, should be considered as part of any modernization plan and can offer immediate, tangible improvements in productivity, safety, and/or performance and deliver a rapid return on investment:

Auto-Dispatch systems are often used on cranes and monorails traveling over long distances or in hazardous environments. They increase productivity by decreasing travel times, and by providing accurate and automatic positioning. Due to the automatic speed control and positioning, cranes with auto-dispatch systems are more reliable and efficient than human-operated cranes or monorails.

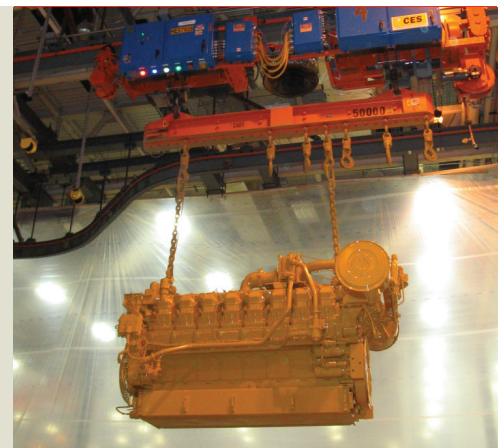
Distance Detection and Collision Avoidance systems prevent crane to crane, or crane to object collisions. This means reduced maintenance costs and increased operator safety. These systems use either infrared sensors or low-cost lasers and have their own stand-alone control packages which can be easily integrated with existing crane controls.

Skewing of the crane can cause excessive wheel wear and stress, especially to the wheel flanges. It can also produce horizontal forces at right angles to the rail which can result in unusual stresses to the crane runway beams and building structure. Not only does crane skew inhibit the smooth operation of a bridge crane, it also makes it more difficult to spot loads accurately in both manually operated and automated applications. In the past, crane builders limited skew by using taper tread drive wheels, extra wide wheel bases, side guide rollers, or a combination thereof with varying degrees of success. However, crane skew can be significantly reduced electronically by using a combination of low-slip motors and individual motor drives on each end truck controlled by separate Variable Frequency Crane Controls. For example, when an external controller is used, if the east end of the crane bridge is detected to be traveling ahead of the west end, the east end motor will be driven slower to allow the west end to catch up.

Zone Control, Anti-Collision Path Protection, and Boundary Protection systems restrict the operating areas of a crane due to obstructions, hazardous environments, or other cranes. They can employ a variety of devices such as limit switches, infrared sensors, lasers, and other positioning devices. A Programmable Logic Controller is commonly used for these systems.

Here is one example that illustrates how automation can make manufacturing operations more efficient, productive and safer.

A Midwest manufacturer of construction machinery was able to increase efficiency and manufacturing flexibility by replacing an outdated manual paint line system for painting large diesel engines, with a state-of-the-art automated monorail system. The new system consisted of multiple carriers running through various "Load", "Wash", "Dry", "Paint", "Cure", "Cool-down", and "Unload" stations. Individual carriers were controlled by Variable Frequency Drives, which provided controlled acceleration, deceleration, and slow-down. Radio Remote Control provided communication links between each carrier, each process ground station, and the master monitoring station. The automated system was able to increase daily production by nearly 50%; eliminate idle time, rework, and excess inventory.



AUTOMATED ENGINE PAINT LINE MONORAIL SYSTEM

MAGNETEK'S SOLUTION

- Magnetek Engineered a customized system that increased efficiency and manufacturing flexibility, expanded production capacity and reduced lead times for the end user
- Automated a paint line for 600HP to 7300HP diesel engines
- Increased line's daily production output over 10%
- Replaced an outdated paint line in a small window of time with a manufacturing system to set new standards for quality, safety and speed in the industry



AUTOMATED WHEEL AND STRUT PAINT LINE MONORAIL SYSTEM

MAGNETEK'S SOLUTION

- Engineered a customized system that automated and integrated nine carriers from two lines through a single process line consisting of two paint booths, two ovens and a wash booth
- Automated the painting delivery system of the wheels and struts
- Provided application expertise to achieve maximum performance to fulfill Lean Manufacturing principles
- Increased efficiency by combining two separate lines that share the same process

CHOOSING AN AUTOMATION PARTNER

The decision to incorporate automation into overhead cranes and hoists in manufacturing applications is often intimidating. Consideration must be given to increased capital expenditures, lead times on equipment acquisition, "debugging" and setup periods, and operator training.

When choosing a supplier, designer, or integrator of an automated material handling system, the importance of partnering with an experienced designer of material handling control systems cannot be overemphasized. Choosing the right systems provider is the first step in assuring a successful modernization project. Material handling automation requires a team of skilled engineering specialists, fully qualified in their field and trained in crane applications.

Choose a supplier with real material handling experience that can provide turn-key service, from project evaluation, project management, installation services, and field start-up, to operator training and system support. Request customer testimonials and evaluate their installation and system experience in detail.

CONCLUSION

Overhead cranes represent a significant investment in capital. The Material Handling Institute (MHI) reports that "Companies spend billions of dollars annually on material handling and logistics, representing anywhere from 20 to 30% of their overall cost of doing business."

Therefore, rebuilding and modernizing these assets with new modern parts and electric controls is economically prudent, since doing so protects and prolongs the life of these investments, while saving as much as 30 to 40% of the cost of new equipment.

A crane modernization program may include capacity up-rates, new speed and motion controls, new brakes and other mechanical components, radio remote controls, independent traveling pendant pushbutton systems, cab-to-floor conversions, new festoon systems and mainline conductor systems, safety overload switches, warning devices, and anti-collision devices that adhere to all required safety standards.

Just a few years ago, cranes relied solely on contactors and static controls for their operation. Today, AC and DC drives are the preferred method of control – but modern cranes utilize not only VFD technology but automation as well – providing users with a wide variety of options to increase productivity, improve reliability and safety, enhance performance, and prolong equipment life, while affording many opportunities to increase profits and obtain a significant return on investment.

All are good reasons to consider upgrading your material handling equipment.



MAGNETEK'S UNBEATABLE SERVICE, TESTING, AND SUPPORT

All Magnetek Material Handling products are backed with:

- On-site technical support
- Emergency control replacement
- Field start-up service available
- Complete application and engineering support
- Factory-certified dynamic performance testing available with every job
- On-site and in-house training programs

Our highly trained team of service technicians offers superior aftermarket support. We're always on call—available to you 24/7, 365 days per year. Our team is unsurpassed at providing you with service and support—where and when you need it.



MAGNETEK
MATERIAL HANDLING

N49 W13650 Campbell Drive
Menomonee Falls, WI 53051
Toll-Free Phone 800.288.8178
Toll-Free Fax 800.298.3503
Phone 262.783.3500
Fax 262.783.3510

www.magnetekmh.com

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Engineered Lifting Systems, LLC