

A large, stylized circular graphic composed of several concentric, overlapping curved bands in shades of gray, creating a sense of motion or a target.

# **4 Steps** to Bring Crane Operations into the Digital Age

How the Evolution of Crane Controls Can Streamline  
& Modernize Your Business



The global crane market is an expanding industry expected to reach [\\$54.36 billion by 2028](#). This growth can largely be attributed to cranes being needed everywhere. Overhead cranes are used across countless verticals and industries – from vehicle manufacturing to aluminum production to the port industry, concrete manufacturing, and more.



**\$54.36 billion by 2028**  
global crane market expected growth



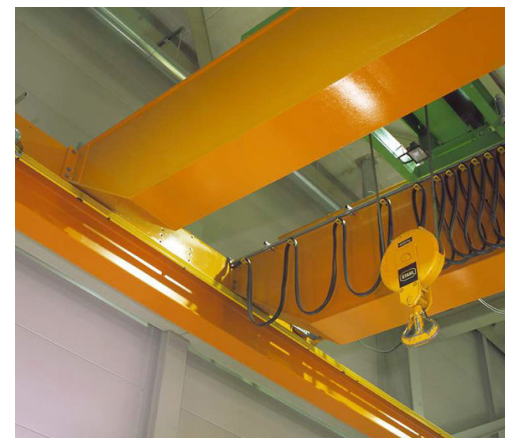
Cranes play a vital role in many warehouse, distribution, and freight transportation operations by easily and efficiently handling large load capacities and area mobility.

While the size and design of a crane can vary depending on its specific application, one truth holds steady: overhead cranes are there to ensure the highest levels of safety and productivity for your business. Maintaining efficient business operations and worker safety can be challenging, which means many companies are more conservative in deploying technological advancements and innovation.

All businesses inevitably reach a point when it is time to leave old, outdated equipment behind and consider an upgrade to enhance operations. And one area you can make a seamlessly minor update but pack a significant business impact is your radio remote solution.

For industries and businesses that utilize overhead crane systems to carry out operations, switching or upgrading to radio remote control systems can provide greater flexibility, enhance worker safety, and improve daily efficiency. These radio remotes can also support modernization and innovation goals in facilities.

Before examining the types of radio remotes that could benefit your business, it's essential to understand the pain points and challenges that outdated radio remote technology and controls present that could hinder your operations.





# One

## Identify Existing Pain Points

The crane industry faces many interesting challenges because it encompasses a wide range of applications. Your crane radio system should be a durable, long-term investment that supports facility functionality and lead time goals. From a usability perspective, an overhead crane is an investment that can last around 20 years, so consider choosing a radio remote system that matches that longevity and is built to be long-lasting. However, if you're currently operating with outdated crane controls, your team is likely experiencing challenges that hinder workplace productivity. These can include:

### **Obsolescence of Older Equipment**

A major challenge and driver for modernization is aging and outdated equipment. There is already a lot of installed equipment in the market, and crane operators and facility managers are increasingly considering modernization and equipment upgrades to increase throughput and efficiency. While equipment upgrades are expensive, uptime and availability are critical.

### **Workplace Turnover & Training**

Within a facility, operators and managers interact most with radio interfaces as they drive and operate cranes. However, the manufacturing industry has a high employee turnover rate, with [one report](#) citing 39%. With high turnover rates, you need to onboard and train new employees as quickly as possible, and the easier the equipment is to learn, the better. Outdated radio controls have clunkier, more complex interfaces to navigate, slowing down the training process.

### **Ergonomics**

Radio remotes need to be ergonomically sound, lightweight, and easy to hold. Many older remote models are larger, with button placement that causes finger strain for operators.



### **Downtime**

If your radio transmitter isn't easily replaced when damaged or malfunctioning, you subject your business to longer periods of downtime. Likewise, you risk downtime if your radio remotes don't have dedicated channels for consistent communication. [One study](#) shows the average manufacturer runs into 800 hours of equipment downtime per year – more than 15 hours per week. [Another report](#) estimates this problem costs industrial manufacturers an estimated \$50 billion annually.

### **Inefficiency**

For radio controls, it's important to understand the total radio usage within a facility before investing in equipment. You don't want to be in a position where you use a different radio remote for each crane. If your current controls don't allow for tandem crane control, your operations are less efficient than they could be, which will cost you revenue in the long term.

### **Safety**

This includes the safety of equipment and personnel. Companies are constrained because they are trying to increase efficiency while grappling with high turnover in the industry. Leveraging automation and better crane controls can help solve some of these gaps, and that's where radio remote controls come in. Radio features like horns and lights as well as being prewired are all beneficial and meet [CMAA regulations](#).

Bringing your cranes into the digital age will enable you to address these pain points, handle greater capacity, see faster operating speeds, reduce downtime, and boost safety among operators.

# Two

## Make Intentional Investments

To solve core challenges, increase throughput and boost efficiency, it's important to equip your cranes with the latest technologies, features, and capabilities that make sense for your business. In some cases, this might look like replacing your actual crane. In other instances, modernizing your crane operations can look like intentional investments in specific pieces of smaller equipment to work alongside your existing cranes. Here are three places to start.

### 1. Prioritize Safety

Safety is critical in any industrial or manufacturing setting. According to a study from the [U.S. Bureau of Labor Statistics](#), nearly 300 crane-related deaths occurred from 2011 to 2017. Just over half of the fatal injuries involved a worker being struck by an object in motion by a crane. By integrating modern safety features, plants and facilities can bolster crane safety, reduce occupational injuries, and optimize crane operations.

First, consider sensor-based systems. Advanced sensor technologies like load moment indicators, anti-collision systems, and zone monitoring have become commonplace in modern cranes. These systems provide real-time data on load capacity, stability, and potential hazards, ensuring safer operations.

Next, leverage all the data from the sensors to form a predictive maintenance plan. By leveraging operational data, crane operators can detect maintenance issues before they escalate into safety hazards. Predictive maintenance enables proactive maintenance scheduling, reducing the risk of breakdowns, accidents, and downtime.

### 2. Ensure Consistent Communication & Data Transfer

Another consideration for bringing your cranes into the digital age is prioritizing technologies that support data transfer. Energy and data transmission systems play a crucial role in the safe, reliable, and efficient operation of overhead cranes. Because cranes have many different designs and functions, the power and control systems are created to meet specific requirements.

Power and control systems must handle different sizes and weights of goods and move them in specific directions at specific speeds. For facility managers and operators, this means creating the most secure, direct, and clear line of communication is critical, especially for those looking to modernize operations with automation. Traditionally, automation and digital transformation have been strongly associated with WiFi infrastructure, but WiFi can have drawbacks in crane operations, like the potential for outages, cybersecurity risks, inconsistent coverage, and limited range. This unplanned downtime comes with a cost.

To avoid costly disruptions and truly bring your crane into the digital age, consider infrastructure beyond WiFi – for example, hardwired PLi-Fi (Power Line-Fidelity) connection. A solution like this can be easily retrofitted, has nearly no maintenance, and works across conductor types and existing footprints. The result is enhanced security, reliability, and visibility for plant teams.



### 3. Invest in the Right Radio Remote

Radio remote control systems have revolutionized crane operations by offering operators increased flexibility, convenience, and safety. They are commonly used in place of pendant pushbutton stations or fixed control stations and cabs. They're also a quick and easy place to start if you want to modernize an outdated crane. Moreover, these devices contribute significantly to the digital transformation of crane operations by boosting precision control, increasing ergonomics and usability, and integrating with additional safety features.

Radio remotes provide operators with greater freedom of movement, enabling them to control cranes from a safe distance. This improves visibility and accuracy, reducing the risk of collisions or accidents during complex lifting operations. Some modern solutions also have tandem crane control, which makes it possible to control two cranes from one device.



# Three

## Select the Right Remote for Your Business

If you're ready to explore new options for your business to strengthen usability, improve efficiency, and boost employee safety, the remote radio space can feel overwhelming with many viable options. To help narrow down the best solution for your operations, ask yourself these key questions.

### **What does the crane radio remote functionality look like for my business?**

First, consider what the total amount of radio usage will look like within your facility. To avoid needing a radio for every crane, consider a singular radio solution that includes the necessary applications to operate various cranes via one radio remote. By standardizing functions on one radio solution, users can operate two cranes from one device to manage a tandem lift. When moving large loads in a facility, more than one crane is often needed. Crane radio remote systems with tandem functionality modes can connect two cranes to support and move extended loads to different areas. This means a more seamless workflow for crane operators and greater efficiency in moving necessary loads.

### **What does the replacement and repair process look like?**

Radio transmitters drive data transfer and ensure the operation of your overhead cranes, so it is essential to source a radio solution that can be easily replaced when damaged or malfunctioning. Manufacturing facilities are typically fast-paced, harsh environments where accidents can happen, damaging transmitters and needing replacement. This leads to periods of downtime and ultimately reduces operational efficiency. To avoid these challenges, look to a radio remote system that makes crane pairing a seamless process without dropping power or requiring a manual lift to enter a crane into pairing mode.

### **How can a new solution increase safety for my operations?**

Next, you'll want to consider the safety implications of a new radio remote system. As more facility managers and operators move away from pendant controls and pushbutton stations, there is a greater opportunity for prioritizing safety with radio remote systems. Pendant controls require users to work closer to cranes with cables tied to individual loads. However, radio solutions allow users to operate 360 degrees around load areas, increasing general production throughput, boosting visibility, and ensuring the safety of workers.

From a safety perspective, look for radio remotes that comply with Crane Manufacturers Association of America (CMAA) regulations. Consider any add-ons that might benefit your business, like lamps, horns, or other audible/visible indicators that signal a crane is in use. Some solutions provide your crane with startup protection, featuring pin codes that allow you to type in the correct code needed for operation, which increases safety.





### **What do I need to consider when selecting a radio remote provider?**

Another question to ask before upgrading or switching to a new radio remote solution is what to look for in a long-term remote provider. Prioritize vendors that can provide you with a complete and tailored solution. While some partners try to sell you what they have, others showcase their robust portfolio of remote solutions that meet your facility's needs. A true radio partner will provide data, power, and control across all your crane applications, making upgrading your equipment seamless. There's no one-size-fits-all when it comes to manufacturing, so find a partner that understands your business, pain points, and goals for modern crane operations.

### **What crane control innovations could benefit my business?**

#### *Adaptive Frequency Schemes*

Moving away from the traditional fixed solutions has given way to more innovation in frequency scheme management, including auto-channel selection at commissioning and startup. The commissioning system is used when an operator turns on a radio to connect to the crane the first time. This solution allows the radio to immediately scan all the available free channels, and select a channel for all subsequent operations. The startup system is similar, but the channel scanning begins each time the cranes turn on.

#### *Improved Ergonomic Design*

Having traditionally used crane pendant control systems, the industry is moving more toward handheld remote controls. These handheld controls provide operators greater flexibility and ease of maintenance, but ergonomics still play a significant role in employee satisfaction. Because various groups of operators use these radio remotes, suppliers are beginning to consider lighter, more compact handheld remotes that offer shorter finger reach for everyday usage. Better ergonomic design means fewer over-use injuries.

#### *Enhanced Safety Features*

One of the most pressing driving forces of innovation in the crane space is the need for greater safety. Moving away from pendant controls and pushbutton stations increases safety by putting greater distance between the operator and the load itself and allowing for 360-degree visibility. Many safety features are starting to be worked into the radio remote control design as a signal to all employees across a manufacturing facility that a crane is in use. These features include lamps, horns, simpler screen interfaces, and more.



## What types of radio remotes are available for me?

There are many different types of radio controls – from small, garage-door-type styles to customizable belly box controls. Choosing a transmitter style boils down to personal preference. Some operators prefer a handheld radio similar to a pendant-style, and some look for something with joysticks and levers. Consider the ergonomics, button placement, and how long you need to hold it to control your equipment.



### Protean Series

- Economical Protean™ Radio Remote Controls provide safe and reliable operation for many types of electrical machinery and crane controls. These radios have internal antennas for a 330-foot (100-meter) range and many advanced security and reliability features.



### Airmark

- Airmark by Conductix-Wampfler is an all-in-one, cost-conscious radio solution suitable for auxiliary hoists, tandem hoists, and bridges. It's easily programmed without a power cycle or access to the receiver. It comes pre-installed with an indicator horn, light, and antenna and features a flexible transmitter for three motions, two speeds. It also has an automatic channel selection and pin code startup option.



### Advanced Series

- The Jay Radio Advanced line features an integrated screen with real-time, complete system overview, SIL3/PLe Emergency Stop, unique ID code that ensures radios on the same frequency don't interfere with each other, and access limitations.
- The Advanced Series is available in many different configurations, including standard pushbutton configurations with 2 to 12 buttons, as well as belly box configurations with joysticks or proportional levers. Many models are available with ATEX certification.



# Four

## Choose Your Radio Remote Partner

Sourcing a provider who offers a full suite of radio remote control systems is a primary step in innovating your crane operations. Accurately communicating your facility's needs will help your provider understand what crane radio remote system you are looking for based on how frequently your radio will be used, what functions you need, and what features your operators are looking for. Armed with that information, your radio remote partner can outfit your facility with the best solution for you, and you can begin to reap the benefits of crane modernization.

Conductix-Wampfler is the worldwide leader in electrifying cranes. We offer standardized solutions for all types of cranes and can handle customized needs as well. Ultimately, we focus on being a complete solution provider for data, power, and control across applications. This includes:

- Conductor Rails
- Cable Festoon Systems
- Energy Guiding Chain
- Spring-Driven or Motor-Driven Cable Reels
- Slip Rings
- Rubber or Cellular Bumpers
- Radio Remote Controls

In terms of radio remote controls, Conductix-Wampfler has offered ergonomic, economical, and high-quality devices since the mid-1990s. We carry a wide range of models to suit the unique needs of demanding industrial users.

Ready to bring your cranes into the digital age, boost safety, and drive throughput? Our team of experts is prepared to create a tailored solution to solve your pain points.

Email us at [US.ProductManagement@conductix.com](mailto:US.ProductManagement@conductix.com) to start a conversation.



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