

KONECRANES SERVICE

# Crane service programs





# Comprehensive and systematic asset management

We take a comprehensive, systematic and collaborative approach to managing our customers' assets throughout the equipment lifecycle.

Our crane experts apply a systematic Risk and Recommendation Method and a consultative planning and review process to drive continuous improvement in safety and productivity.

### The power of data

Our digital ecosystem has transformed the delivery of maintenance services and provides transparency for our customers with the connection of data, machines and people.

We're using real-time information to support informed decision-making, optimize maintenance and provide accurate troubleshooting.

Data analytics help us improve our understanding of asset and component behavior and aids in the prediction of component or equipment failure for safer, more reliable and sustainable operations.

### Reducing environmental impact

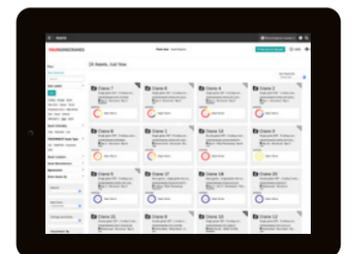
At Konecranes, we consider the environment throughout the lifecycle of a crane. New equipment from Konecranes is designed for maintainability as well as energy and material efficiency. But no matter who made your crane, we can provide service to keep that equipment running safely and reliably.

When carefully maintained a crane can last for decades. A program of regular inspections and maintenance is key to helping prevent breakdowns and keeping equipment and components in use. Utilizing predictive maintenance means maintenance can be carried out based on actual condition and planned around production schedules, and repairs are more targeted and resource efficient.



## Your maintenance information – online, any time

When you have a service agreement with Konecranes you get access to our customer portal—yourKONECRANES.com. The portal lets you quickly and easily see your crane maintenance information, asset condition and usage data, and agreement details.



You get a transparent view of all maintenance activities, TRUCONNECT alerts, and even spend over a selected time interval. Aggregated data can be viewed, analyzed and shared quickly—for a single asset or an entire fleet—helping you make informed maintenance decisions.

# Konecranes Industrial Service & Equipment

We provide industry-leading lifecycle services for all types and makes of industrial cranes and hoists and sustainable lifting solutions covering a full range of industrial applications. Our objective is to improve the safety, productivity and sustainability of our customers' operations.

Our lifecycle services are designed to maximize the productivity of uptime and minimize the cost of downtime, thereby achieving the highest lifecycle value for your equipment.



### WHY KONECRANES?

#### KNOWLEDGE

Our comprehensive technical training and certification programs are backed by a world-class technical support network. We're leveraging the combined data from all the equipment we service around the globe to get insights that guide maintenance recommendations and actions.

#### EXPERIENCE

We are an industry-leading OEM with several decades of experience. We have a vast array of acquired brands and installed base and we own the intellectual property of all the brands we have acquired. Around the world we are servicing hundreds of thousands of assets of all makes and models in a wide range of industries.

# Service programs tailored to your operations

## We provide service for all crane makes and models

While most crane manufacturers provide scheduled maintenance guidelines or recommendations to help equipment perform as expected during standard operation, the most effective service programs are those that are customized to the environment in which the cranes operate.

We tailor the service program to your operations taking into account the equipment, its usage, operating environment, duty class, service history, manufacturer's recommendations and statutory requirements. We'll also address your long-term spare part and advanced services needs over the entire lifespan of an asset.

## Benefits of an effective maintenance program

- The right maintenance program can have a significant impact on the performance and reliability of your cranes.
- Regularly scheduled inspections help identify and address safety issues before they threaten employee safety and affect company revenue.
- A good maintenance program can help minimize the frequency and cost of unplanned downtime.
- Planned and scheduled maintenance work can help minimize excessive labor and parts replacement which also helps reduce environmental impact.
- A maintenance program can help assess whether your cranes are being used properly or as intended, and identify opportunities for operator training.
- Preventive maintenance conducted at regularly scheduled intervals can often be the most effective way to maintain and potentially extend the lifespan of certain cranes.
- Preventive maintenance supports compliance with applicable laws and regulations.
- Predictive Maintenance can further reduce unplanned downtime and maintenance costs, and improve equipment safety, productivity and lifecycle value.



# A consultative approach to help guide decision making

We don't just drop off a report on the way out. We take time to meet with you one-on-one and share our findings, provide recommendations based on our industry-leading expertise and discuss how each action impacts your operations and the entire health of your business. We do this through our customer reviews—the Safety Review, Visit Review, Service Review and Business Review.

Our proprietary Risk and Recommendation Method (risk types listed at right) is the basis of our inspection and preventive maintenance processes. No matter what service is being performed, the Konecranes Risk and Recommendation Method drives our evaluations and consultative processes, giving you a safety and production advantage.

### SAFETY RISK

Indicates an unsafe condition. Failure to remedy such condition before continued operation of the identified asset may result in personal injury, including death, or property damage.

### PRODUCTION RISK

Indicates an inefficient condition. Failure to remedy such condition before continued operation of the identified asset may result in inefficient asset performance or an interruption in production.

### IMPROVEMENT OPPORTUNITY

Indicates a potential opportunity to improve the safety, productivity, application or useful life of the asset. These suggestions are not necessarily tied to a particular fault.

## Customer reviews

### ON-SITE

#### SAFETY REVIEW

Whenever a safety-related risk is detected, the inspector or technician will carry out this review with you before leaving the site or returning the equipment to operation.

#### VISIT REVIEW

At the completion of each service request, the inspector or technician will perform this review with you on site to share the insights of their inspection or maintenance findings, review the identified risks and improvement opportunities, and obtain decisions on recommended actions.

### WITHIN 2 BUSINESS DAYS

#### SERVICE REVIEW

We will follow up with you to go through open risk/recommendations and quotations, answer your questions or concerns, and document next steps.



### ONCE A YEAR OR AS NEEDED

#### BUSINESS REVIEW

This review is an in-depth look of our service relationship and provides an opportunity for analysis and planning.



**Designed to fit your needs**

Our agreement experts can help you choose the best program for your operations. Each program has a predefined framework of services as well as other services that may be recommended based on your equipment, its usage, operating environment, duty class, service history, manufacturer's recommendations and statutory requirements. You get the benefits of a comprehensive and systematic approach with the right combination of services and delivery frequency.

**CONDITION**  
**Inspection/Routine Maintenance Program**

An Inspection/Routine Maintenance Program covers the compliance inspections you require as well as routine maintenance. This program addresses your safety and compliance requirements and is streamlined with a digital and automated process.

**CARE**  
**Preventive/Predictive Maintenance Program**

The Preventive/Predictive Maintenance Program has been designed to improve equipment safety, productivity and sustainability through the systematic application of preventive maintenance inspections, compliance inspections where applicable, routine maintenance, and TRUCONNECT Remote Monitoring.

**COMMITMENT**  
**Comprehensive Maintenance Program**

If you need a more comprehensive approach with broad scope outsourcing, we can offer a Comprehensive Maintenance Program. In addition to performing the required and recommended inspections and preventive/predictive maintenance, we assume more of the equipment maintenance responsibility including in-scope repairs.

**COMPLETE**  
**Comprehensive Maintenance & Operations Program**

The Comprehensive Maintenance & Operations Program accommodates customers who want to completely outsource their equipment maintenance and operation.

**IDEAL FOR**

Those with light or standard cranes with small to medium installations who want to benefit from the ease of buying from a world-class service provider in a digital, self-service approach.

Those with critical and/or process cranes, standard cranes and light lifting equipment used in production who want to benefit from safe and reliable production processes and the advantages of predictive maintenance.

Those with large installations who want to benefit from outsourced lifting asset management tailored to their industry and application requirements and a partner who will help them reach their safety, productivity and sustainability targets to achieve the highest lifecycle value.

Those with large installations who want to benefit from outsourced lifting asset management and equipment operation and a collaboration to establish material handling and performance objectives for equipment and process to extend lifecycle value and total cost of ownership for the entire operation.

**BENEFITS**

- Safety and production risks are documented and recommendations for corrective actions are provided
- Recommendations for improving the safety, productivity, application or useful life of the asset are provided
- Where permissible by regulation, can fulfill minimum applicable regulatory inspection requirements, helping you stay compliant
- Can contribute to maintenance planning and decision making with inspection information available on yourKONECRANES.com, at any time and on any device

- Can reduce downtime and increase reliability
- Safety and production risks are documented and recommendations for corrective actions are provided
- Recommendations for improving the safety, productivity, application or useful life of the asset are provided
- Where permissible by regulation, can include frequent and periodic inspections to satisfy regulatory requirements and help you stay compliant
- Can contribute to maintenance planning and decision making with inspection and maintenance information available on yourKONECRANES.com, at any time on any device
- Operating data from TRUCONNECT provides insights into crane usage

- Continuous and collaborative improvement planning helps you meet safety and productivity goals
- Provides systematic application of preventive maintenance inspections and routine maintenance using the Risk and Recommendation Method to help improve operation safety and productivity
- Can contribute to preventive maintenance planning and decision making with maintenance information available on yourKONECRANES.com
- Can facilitate usage insights with data from TRUCONNECT Remote Monitoring

- Provides comprehensive outsourced maintenance and operations with mutually agreed targets.

**SERVICES IN THE PROGRAM**

**REQUIRED**

<p>Country-specific Periodic Inspections</p>	<p><b>OR</b> MAINMAN Assessment (visual inspection and operational and functional test of the equipment, fulfills the requirements of the periodic compliance inspection in the US and Canada)</p>	<p><b>OR</b> MAINMAN Planned Maintenance (visual inspections and maintenance work, such as adjusting and lubricating, with the intent of satisfying manufacturers' maintenance recommendations, includes routine maintenance tasks)</p>	<p>MAINMAN Assessment (visual inspection and operational and functional test of the equipment, fulfills the requirements of the periodic compliance inspection in the US and Canada)</p>	<p><b>OR</b> MAINMAN Planned Maintenance (visual inspections and maintenance work, such as adjusting and lubricating, with the intent of satisfying manufacturers' maintenance recommendations, includes routine maintenance tasks)</p>	<p><b>OR</b> Periodic Compliance Inspections and Routine Maintenance</p>	<p>MAINMAN Assessment (visual inspection and operational and functional test of the equipment, fulfills the requirements of the periodic compliance inspection in the US and Canada)</p>	<p><b>OR</b> MAINMAN Planned Maintenance (visual inspections and maintenance work, such as adjusting and lubricating, with the intent of satisfying manufacturers' maintenance recommendations, includes routine maintenance tasks)</p>	<p><b>OR</b> Periodic Compliance Inspections and Routine Maintenance</p>	<p>MAINMAN Assessment (visual inspection and operational and functional test of the equipment, fulfills the requirements of the periodic compliance inspection in the US and Canada)</p>	<p><b>OR</b> MAINMAN Planned Maintenance (visual inspections and maintenance work, such as adjusting and lubricating, with the intent of satisfying manufacturers' maintenance recommendations, includes routine maintenance tasks)</p>	<p><b>OR</b> Periodic Compliance Inspections and Routine Maintenance</p>
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**REQUIRED FOR PREDICTIVE MAINTENANCE**

- TRUCONNECT Remote Monitoring
- TRUCONNECT Brake Monitoring
- TRUCONNECT Wire Rope Monitoring
- Oil Analysis
- Critical components assessment
- Design Life Analysis

- Pre-authorized repairs
- TRUCONNECT Remote Monitoring
- TRUCONNECT Brake Monitoring
- TRUCONNECT Wire Rope Monitoring
- Oil Analysis
- Critical components assessment
- Design Life Analysis
- Country-specific Frequent Inspection(s)
- CheckApp for Daily Inspections
- Slings and Accessories Inspection
- Pre-authorized Repairs
- Operator Training

- Pre-authorized repairs
- Equipment operation
- TRUCONNECT Remote Monitoring
- TRUCONNECT Brake Monitoring
- TRUCONNECT Wire Rope Monitoring
- Oil Analysis
- Critical components assessment
- Design Life Analysis
- Country-specific Frequent Inspection(s)
- CheckApp for Daily Inspections
- Slings and Accessories Inspection
- Pre-authorized Repairs
- Operator Training
- Wearing Parts Replacement

**RECOMMENDED**

- Country-specific Frequent Inspection(s)
- CheckApp for Daily Inspections
- Slings and Accessories Inspection
- Operator Training
- Routine Maintenance
- Pre-authorized Repairs
- Operator Training

**RECOMMENDED**

- Wearing Parts Replacement
- Site agreement when applicable
- Site agreement



# Smart, data-driven maintenance

**Preventive maintenance**—our MAINMAN Planned Maintenance—utilizes visual inspections and maintenance work to help satisfy manufacturers’ maintenance recommendations. This type of maintenance is based on time and usage and helps maintain equipment performance and availability. Statutory and manufacturers’ requirements usually cover basic preventive maintenance.

**Predictive maintenance** goes a step further by utilizing condition monitoring, advanced inspections and data analytics to help us make informed component-specific predictions and prioritize recommendations and actions. This means maintenance can be carried out based on actual condition and

planned around production schedules, making repairs more targeted and resource efficient. Predictive maintenance also supports the planning of retrofits, overhauls, modernizations or outright replacements when needed.

Recommendations to repair or replace components are driven by a combination of preventive and predictive maintenance activities. When Pre-authorized Repairs are agreed in advance, Konecranes can proactively perform work, saving both time and money. These recommendations are shared throughout our customer consultation process and equipment and component-level remaining-life dashboards and graphs are displayed on yourKONECRANES.com\*.

## OPTIMIZE SAFETY, PRODUCTIVITY AND MAINTENANCE ACTIVITIES

**TRUCONNECT Remote Monitoring provides the visibility you need to fully understand the day-to-day use of your cranes and is a key element of predictive maintenance. Remote monitoring is used to collect equipment condition and usage data which combined with your inspection and maintenance information enables a comprehensive view and analysis of equipment condition, maintenance and operation.**

### Services that enable Predictive Maintenance

To incorporate predictive maintenance elements into your service program, certain services when applicable, must be added. It is the combination of these products, the use of analytics and our consultation process that makes predictive maintenance possible.

SERVICES	DESCRIPTION
<b>TRUCONNECT Remote Monitoring</b>	Collects condition, usage and operating data from control systems and sensors on an asset and provides alerts of certain anomalies. The data is used in maintenance planning and in predicting possible component or equipment failure.
<b>TRUCONNECT Brake Monitoring</b>	Uses a condition monitoring device to collect the status of brake air gap, mechanical and electrical faults from the electromagnetic disc brakes. The service provides visibility into current brake condition, estimates remaining service life and indicates brake faults.
<b>Oil Analysis</b>	Assists in deciding the optimal oil change timing for hoisting, traveling and traversing gears. Can also provide useful information regarding the condition of internal gear components and trends in oil condition may reveal defects such as slowly accumulated fatigue on gear teeth.
<b>Gear Case Inspection and/or Advanced Gear Case Inspection</b>	A Gear Case Inspection is a visual inspection to assess the internal gear case components. In an Advanced Gear Case Inspection, the gear case is disassembled and the internal components are tested using non-destructive testing (NDT) techniques. This inspection can reveal faint or small deficiencies that cannot be seen with the unassisted eye.
<b>Coupling Inspection</b>	Can help uncover issues that may lead to coupling failure.
<b>RopeQ Magnetic Rope Inspection</b>	Assesses the condition of a wire rope including internal wires, strands and core that are not readily visible in a visual inspection.
<b>Hook/Hook Shank Inspection</b>	Designed to look for wear and cracks that could lead to failure in any of the internal components of the bottom block.
<b>Design Life Analysis</b>	Calculates the remaining design life of crane structures and machineries based on usage history and the standards used in their design.

\*Remaining theoretical life estimates and methodology may vary by equipment make and model

# Safety is smart and digital

## CheckApp for Daily Inspections

Daily inspections play a key role in the safety and productivity of your operations. These inspections are the crane operator's own assessment of the condition of an asset and environment for safe use and should be performed daily or before each shift. A daily inspection helps operators spot obvious damage, excessive wear or other deficiencies and lets them know that the crane is working correctly before a load is lifted.

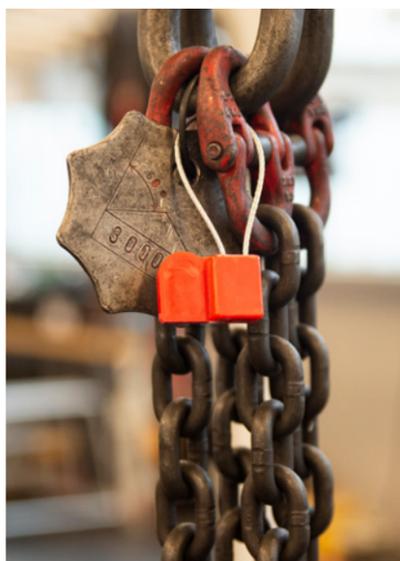
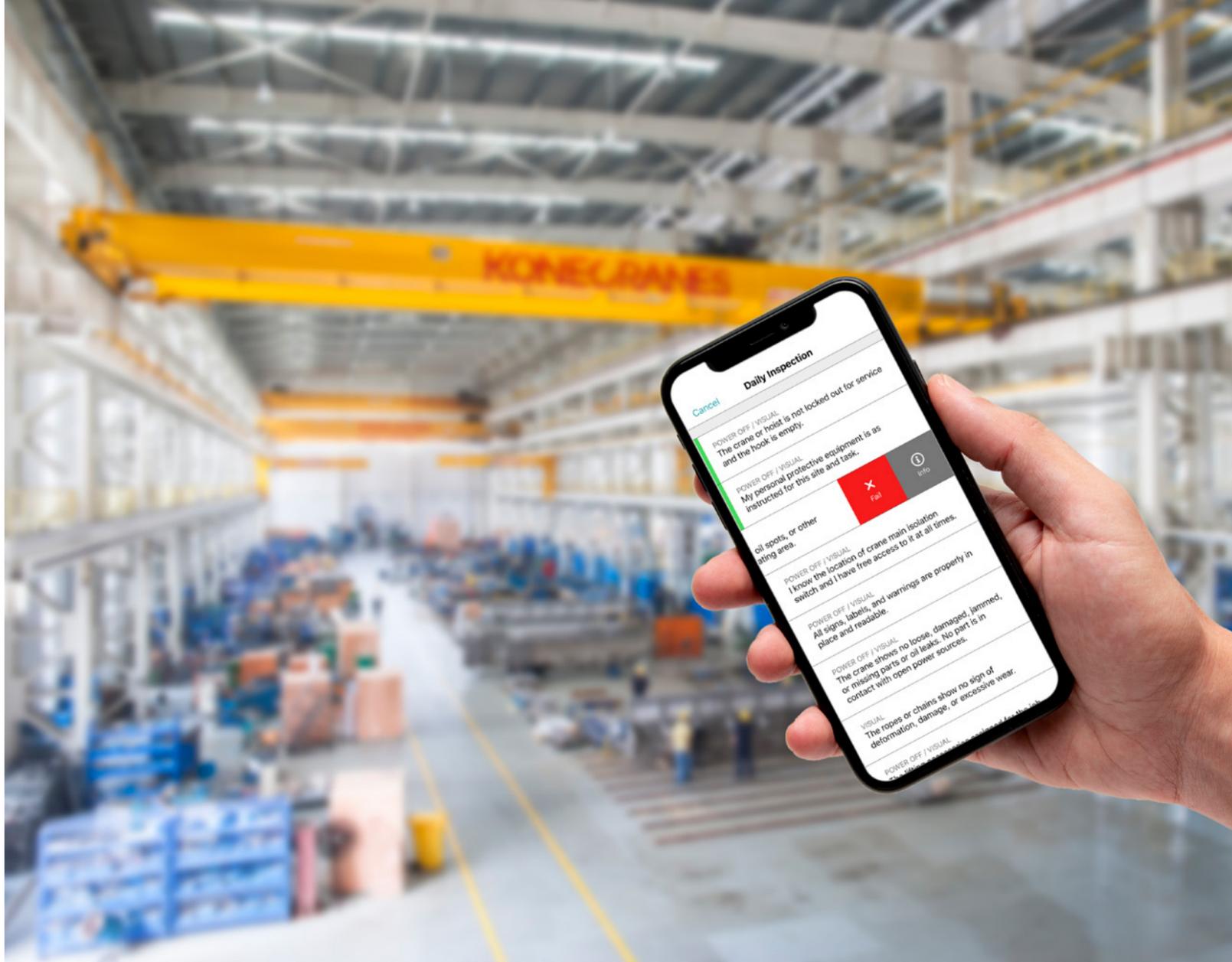
**Daily inspections are a statutory requirement in several countries and good practice to follow for the safe use of lifting equipment.**

Konecranes CheckApp for Daily Inspections is an easy-to-use app for crane users to quickly and easily record their findings when performing their inspections. The app features 15 checkpoints that can be marked as pass or fail with a simple swipe. A record of all daily inspections performed is then available on the yourKONECRANES customer portal.

## Digital inspection records for compliance and planning

The yourKONECRANES portal makes it easy to manage your team's usage of CheckApp and view inspection findings. The portal provides an audit trail of daily inspections and the information can also help you recognize potential asset-specific safety or production risk issues and identify workplace improvement opportunities and operator training needs.

CheckApp is a subscription service that requires a service agreement with Konecranes. You can add CheckApp to any number of assets and you get an unlimited number of inspection app users.



## Slings and Accessories Inspection

No matter what you are lifting – you are probably using a number of different load lifting attachments in your daily operations. The safe use of lifting attachments requires regular inspections to make sure they are working properly, and an identification tag can help you keep track of the equipment and their inspection information.

The Slings and Accessories Inspection combines a professional inspection of your non-maintainable load lifting attachments and accessories with radio frequency identification (RFID) tags to record

accessory inspection data. A smartphone app helps you quickly and reliably identify attachments.

## Easy accessory fleet management

The Slings and Accessories Inspection combined with our yourKONECRANES customer portal gives you a comprehensive system to manage your attachments. The customer portal gives you quick access to all relevant attachment information and an archive of inspection data to help you centrally manage your equipment. It also provides a record for regulatory requirements which can help you stay compliant.

The Slings and Accessories Inspection app is used to read the data from the RFID tag and to identify the devices in the database as well as to check if the attachment is safe to use.



## Train your people for safety and compliance

One of the easiest and most cost-effective ways to improve safety and productivity, while reducing maintenance costs, is crane operator training.

Crane accidents can cause injuries to operators, workers on the job site and even people nearby. The majority of crane accidents are caused by human error which may result in safety risks and uncontrollable downtime. Accidents can be minimized or prevented through proper training and crane usage.

Crane Operator Training is designed for crane operators and the supervisory personnel responsible for the daily operation and safe performance of cranes. The training gives participants the working knowledge to assist in reducing operator errors that may lead to unnecessary downtime.

Crane operator training is ideal for newly hired personnel, seasonal workers or for refresher training and can be conducted on site.

**Konecranes is a world-leading group of Lifting Businesses, serving a broad range of customers, including manufacturing and process industries, shipyards, ports and terminals. Konecranes provides productivity enhancing lifting solutions as well as services for lifting equipment of all makes. In 2022, Group sales totaled EUR 3.4 billion. The Group has approximately 16,500 employees in around 50 countries. Konecranes shares are listed on the Nasdaq Helsinki (symbol: KCR).**

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### **Check out the downtime calculator**

Preventive maintenance can reduce downtime and increase reliability. If one of your cranes goes down, how much is it really costing you?