

**INDUSTRIAL CRANES**  
NUCLEAR CRANES  
PORT CRANES  
HEAVY-DUTY LIFT TRUCKS  
SERVICE  
MACHINE TOOL SERVICE

**WAREHOUSE MANAGEMENT**

**KONECRANES®**  
Lifting Businesses™

**PAPER WAREHOUSES**

# **AUTOMATIC STORAGE AND RETRIEVAL SYSTEM**





# STREAMLINE YOUR STORAGE HANDLING

Konecranes Automatic Storage and Retrieval System provides roll handling tools and automation software for paper handling and warehouse management, including worldwide service support.

### EFFICIENT USE OF SPACE AND TIME

In several critical areas of the mill, automated cranes can help reduce labor costs, optimize storage, track inventory, reduce roll damage, increase productivity and lower the capital expense associated with forklift systems.

### WE HAVE THE TECHNOLOGY TO HELP YOU IMPROVE OPERATION SAFETY AND PRODUCTIVITY

A fully automated crane increases handling speed, stacking paper or tissue rolls much higher in less space than comparable forklift systems, without requiring floor space for aisles.

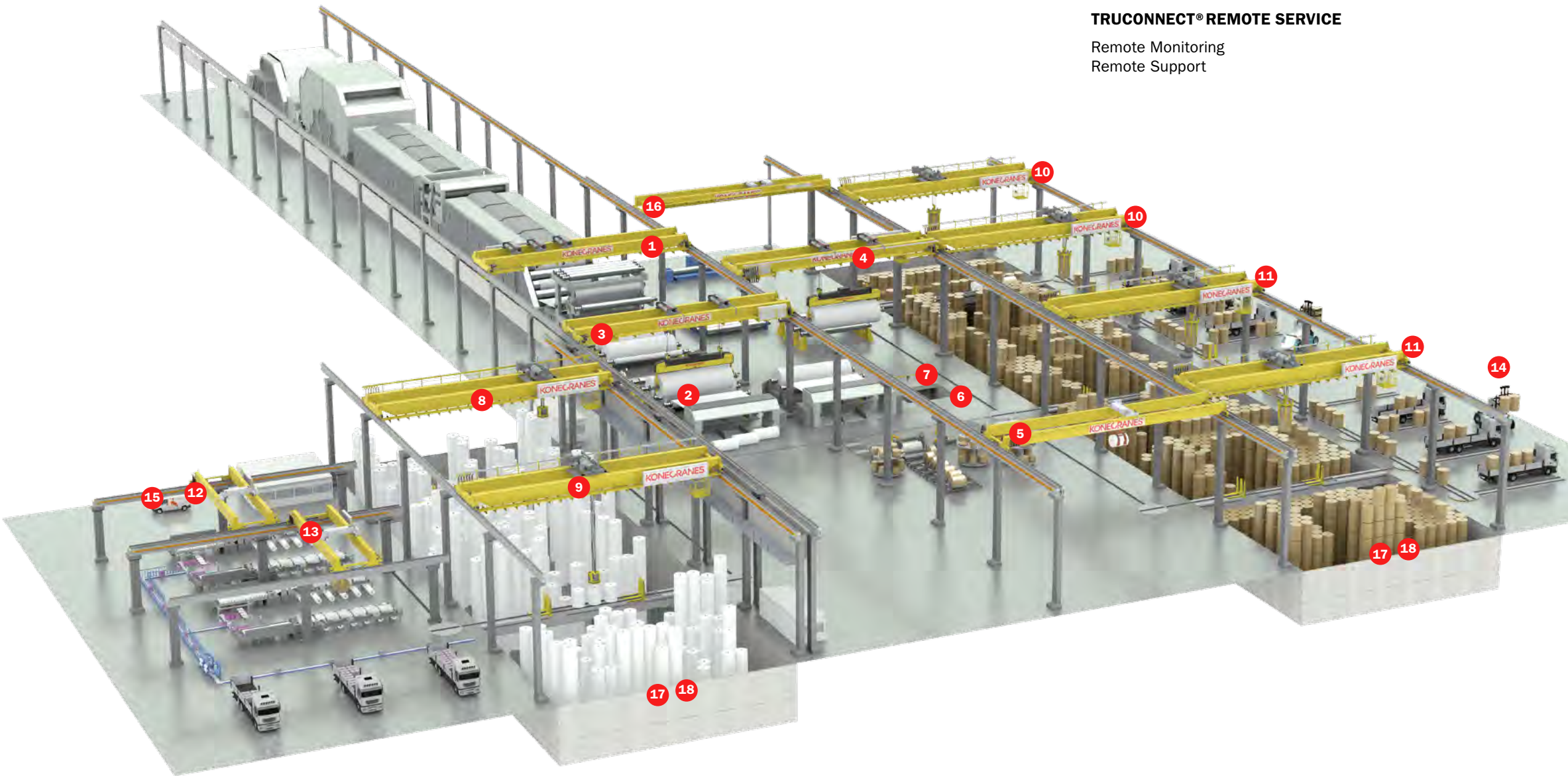
The system accurately tracks the location of each bar-coded roll individually, assuring fresh inventory. And, up to 30 percent of the energy used to lower each load is recaptured by Konecranes DynAReg regenerative braking system. Electricity is fed back into the network and used to run other machinery, lowering overall energy costs and reducing environmental impact. Best of all, mills using ASRS can eliminate the labor and capital cost of forklift systems.

### SUPPORTING YOUR ENTIRE PROCESS

We offer inspections and preventive maintenance, as well as modernization and consultation services that can help increase crane reliability, reduce downtime and extend equipment service life.

### EXPERTISE THAT MAKES A DIFFERENCE

By working closely with customers, Konecranes has developed a body of experience in paper industry storage automation and processes. By applying our expertise, advanced technology and service offerings, we can make a difference in the safety and productivity of your operation.



- 1

Wet end crane
- 2

Automatic parent roll handling
- 3

Dry end crane
- 4

Winder crane
- 5

Roll wrapping crane
- 6

Core tube storage crane
- 7

Core handling jib crane
- 8

 – 

9

 Automatic intermediate roll storage
- 10

 – 

11

 Automatic shipping storage
- 12

 – 

13

 Sheet cutting area: roll handling cranes
- 14

 Fork lift trucks with paper roll attachments
- 15

 On-site Konecranes service
- 16

 Workshop crane
- 17

 – 

18

 Warehouse management system, monitoring system
- 1

 – 

6

 AND 

12

 – 

16
- TRUCONNECT® REMOTE SERVICE
- Remote Monitoring
- Remote Support





Metsä Board, Äänekoski board mill, Finland

## STATE-OF-THE-ART TECHNOLOGY

### PROTECTING PEOPLE AS WELL AS PRODUCTS

With ASRS systems, access to the automated area is synchronized with crane operation, so access is only allowed when the crane is set to stand-by state. Separate protected areas can also be set inside the normal operating area of the crane.

The crane is synchronized with the conveyor control system by means of hardwired signals during material pick-up or drop-off. This maximizes the safety of material exchange and both systems can stop the process if there are any unexpected faults or alarms.

In addition, the cranes are equipped with safety features such as overload protection, over-speed protection, limits for crane motion and emergency stop functions. Konecranes automated cranes using safety PLC's are engineered to meet or exceed applicable international and local safety regulations.

### SOFTWARE INTERFACE FOR WAREHOUSE MANAGEMENT

During normal operation, warehouse operators do not directly interface with the crane. The operator or the Manufacturing Execution System (MES/ERP) gives commands to the Konecranes Warehouse Management System (WMS), and the WMS commands the cranes. Integration between the crane and the WMS is done seamlessly with a standard interface.

As the paper and board rolls, tissue rolls, or pulp units are fed into the automation area by conveyors, the WMS has an interface to the conveyor command system for product data interchange. Alternatively, the WMS can command the conveyors. The crane automation has a hardwired interface for a safe handover of each handled unit.

Controlled access to the automation area is an essential safety feature, and in case of unauthorized entrance the crane automation immediately sets the crane to a stand-by status. Access to the area can be requested by “traffic lights” at each possible entrance. After finalizing its current work cycle, the crane automation permits personnel to enter. The cranes can also be operated manually for maintenance.

### APPLETON PAPERS UNITED STATES

## OPTIMIZE SPACE AND REDUCE COSTS WITH AUTOMATION

### EXPANDING WITHOUT MORE BUILDING SPACE

When Appleton Papers wanted to expand its flagship Locks Mill, they needed equipment resources that would make the most of the available space in the Combined Locks location. Since the mill is bordered by a river and a county highway, geography forced the Appleton planning group to examine every possible option to accommodate further growth.

### A WINNING COMBINATION OF PRICE, DELIVERY, EXPERIENCE AND SERVICE

The Konecranes automated vacuum roll storage system allows rolls to be stacked close together and up to 12 meters (40 feet) high. Moreover, no space is required for aisles, conserving available storage space significantly.

Choosing Konecranes was based on a combination of price, delivery efficiency and experience. Service support was also important; Konecranes was able to provide local service and training.

### LESS DAMAGE AND BETTER TRACKING OF ROLLS

Although the system was initially chosen to maximize available space, Appleton has discovered other benefits. Since the system is automated and expandable, it offers the opportunity to do more work with the same number of employees. The capital and overhead cost of forklifts and their maintenance is greatly reduced.

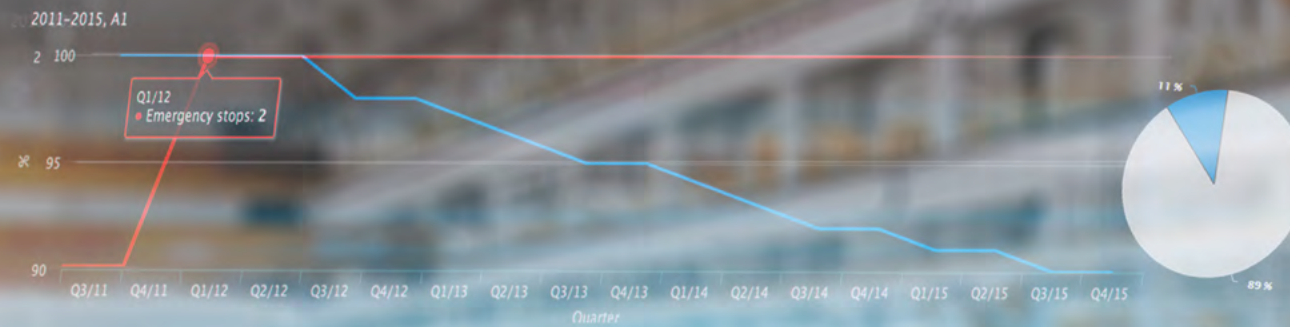
Rolls are less likely to be deformed and damaged when handled by a vacuum lifter instead of a truck clamp. Lost or stale paper is no longer an issue, since the storage management software continually tracks the location of each roll.

“To store the amount of product we were going to need, we would have ended up easily tripling our building space with any other type of storage,” says John Cummings, Engineering Superintendent. “The additional building space alone would have cost the same as the crane. The added value features were automation, fewer employees moving rolls manually and more accurate roll tracking.”



Appleton Papers, USA in use since 1998.



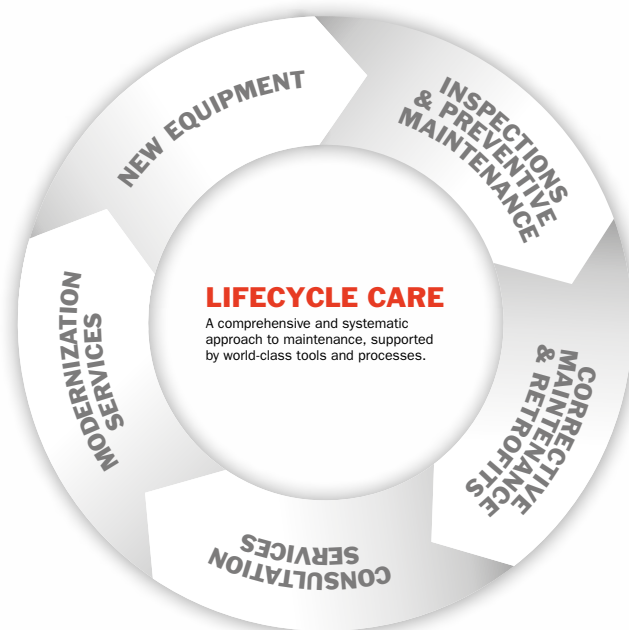


## SERVICE TO FIT YOUR NEEDS

We provide specialized maintenance services and spare parts for all types and makes of industrial cranes, hoists, machine tools and port equipment from a single piece of equipment to entire operations. Our objective is to improve the safety and productivity of our customers' operations.

### OUR APPROACH TO CRANE MAINTENANCE

Lifecycle Care is a systematic, consistent, comprehensive and professional approach to maintenance, supported by world-class tools and processes. Highest lifecycle value results from maximizing the productivity of uptime and minimizing the cost of downtime. We believe merely keeping your cranes running is not sufficient. We must also help you achieve the highest productivity during every shift.



### PREVENTIVE MAINTENANCE FOR IMPROVING SAFETY AND PRODUCTIVITY

An active preventive maintenance program is recommended for your lifting equipment. We can create a maintenance plan based on your equipment, operating environment, manufacturer recommendations and statutory requirements. The CARE Preventive Maintenance Program is our most popular service offering and includes preventive maintenance inspections and routine maintenance. If you need less, the CONDITION Inspection Program will help you comply with local statutory requirements and support your in-house maintenance.

### GET INSIGHTS INTO MAINTENANCE OPERATIONS

TRUCONNECT Remote Monitoring provides you with crane usage and operating information that is accessible on demand in the yourKONECRANES.com customer portal. TRUCONNECT data includes safety-related issues, such as over-temperatures, attempted overloads and emergency stops. It also includes operating statistics, such as work cycles and running hours, and estimates of remaining Design Working Period of selected components such as the hoist and hoist brake. Safety alerts are delivered automatically by email or text to designated contact personnel.





INDUSTRIAL  
CRANES



NUCLEAR  
CRANES



PORT  
CRANES



HEAVY-DUTY  
LIFT TRUCKS




SERVICE



MACHINE  
TOOL  
SERVICE



Konecranes is a world-leading group of Lifting Businesses™ offering lifting equipment and services that improve productivity in a wide variety of industries. The company is listed on Nasdaq Helsinki Ltd (symbol: KCR1V). With approximately 12,000 employees at 600 locations in nearly 50 countries we have the resources, technology and determination to deliver on the promise of Lifting Businesses™.

© 2016 Konecranes. All rights reserved. 'Konecranes', 'Lifting Businesses',  and 'TRUCONNECT' are either registered trademarks or trademarks of Konecranes Global Corporation.



SCA, Mannheim, Germany 2015