

INTELLIGENT CRANES

PAPER & FOREST INDUSTRY

KONECRANES®

Intelligent Cranes: Smart, Intuitive and Connected

Technology is revolutionizing products into intelligent, connected systems. In today's world our cranes are not solely composed of mechanical and electrical parts, they have transformed into intelligent products, reshaping the industry boundaries and lifting businesses to the next level. With a century of experience, we have simplified applications and systems with the combination of sensors, microprocessors, software, and connectivity in myriad ways. Konecranes cranes with added intelligence and connectivity, across industries, help unlock limitless possibilities: increased uptime, reduced costs and improved workforce efficiency, real-time feedback to enable continuous improvement.

Konecranes Intelligent cranes and services offering provides smart, intuitive, and safe user experience across material handling industry.


konecranes.com



PAPER & FOREST INDUSTRY

Book facts

INTELLIGENT CRANES IN
THE PAPER AND FOREST INDUSTRY

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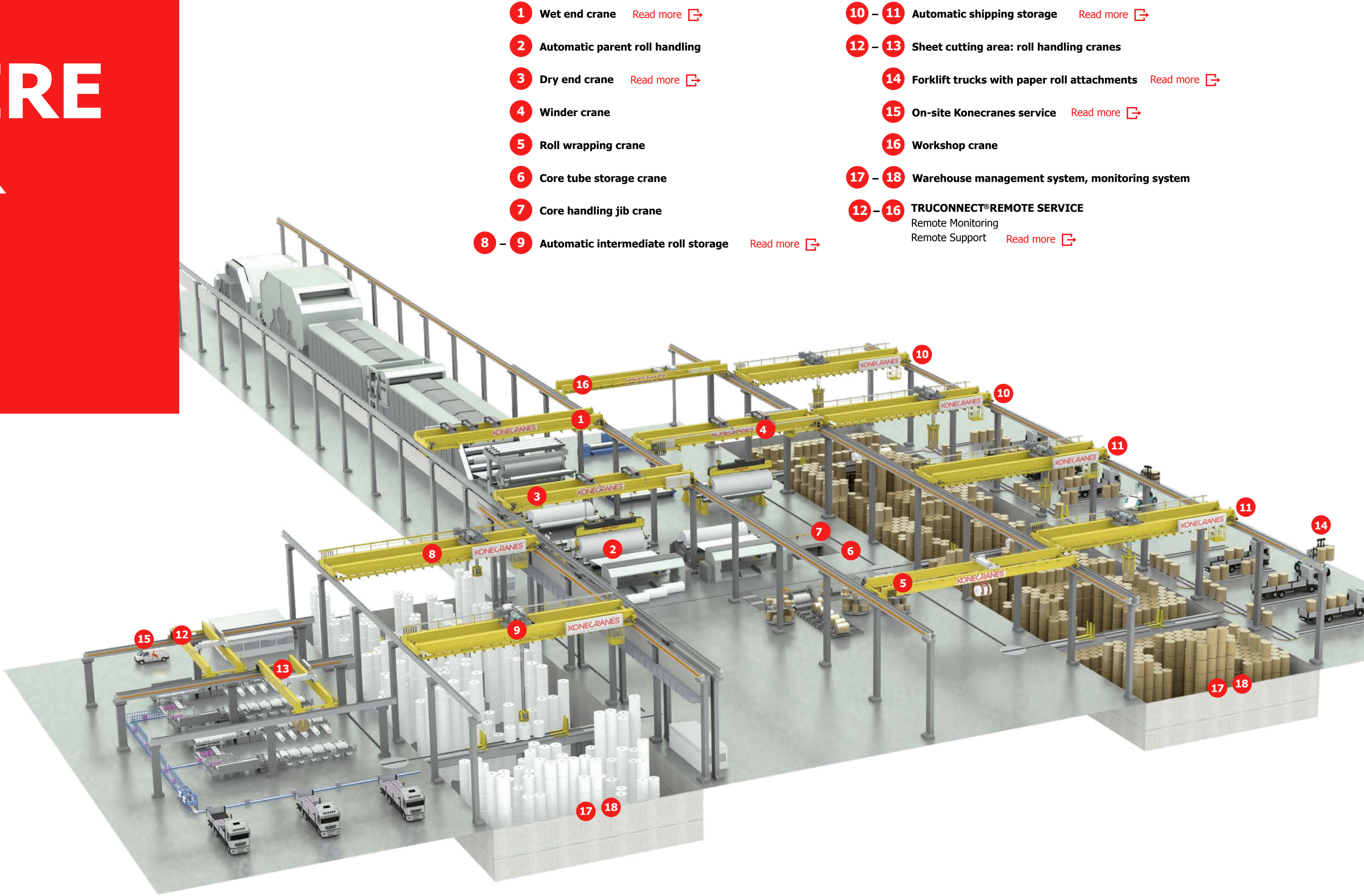
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KONECRANES IS EVERYWHERE IN THE PAPER AND FOREST INDUSTRY

Everywhere you look in the paper and forest industry you'll find Konecranes expertise at work. We offer proven and innovative lifting solutions, a reliable global service network and leading paper industry know-how. Our customers know that when they choose Konecranes, they invest in cutting-edge process productivity for many years to come.



Decades of experience dedicated to you

Konecranes has been meeting the needs of the paper and forest industry for decades. Our expertise allows us to offer lifting equipment and services for every part of your operation – starting with the unloading of raw materials and continuing almost every step of the way to the shipping of your finished paper products. We have end-to-end expertise covering planning, engineering, delivery and commissioning as well as maintenance, modernizations and other services.



Watch
Metsä Fibre Finland
video



We wanted to increase the efficiency of the pulp logistics chain. Two bridge cranes and the unique grippers from Konecranes are an essential part of loading. In a bioproduct mill as large as ours, the logistics and delivery process, and their operational flow, are vitally important, which is why these grippers and the train wagons have been customized for our product dimensions.

KRISTIAN ISAKSSON
Development Manager, Metsä Fibre

Get connected



With evolution everything is possible

Konecranes is committed to continuously developing its equipment and services offering by making innovative use of the latest technology. We research, develop and implement new product enhancements – such as TRUCONNECT Remote Service and Smart Features – that help give our customers exceptional crane performance and fast, reliable data access.

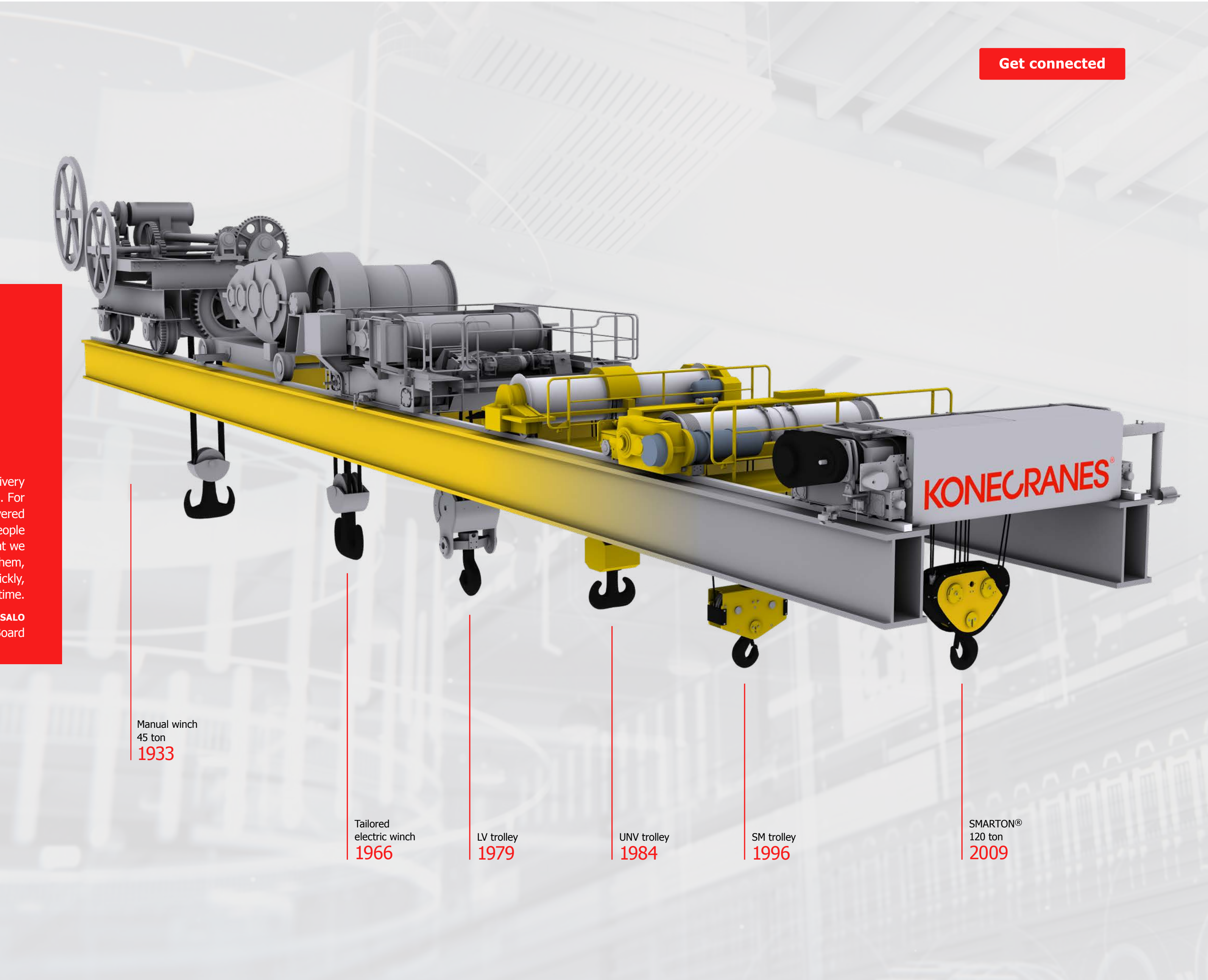


Watch
The Metsä Board
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We had a really tight schedule. The average delivery time for the contractors was down to four months. For Konecranes, that was not an issue, and they delivered the grip on time. We noticed that Konecranes’ people are really professional, the same professionals that we learned to appreciate the last time we worked with them, in 2008. Even our special requests were handled quickly, and production started in September, exactly on time.

TIMO SALO
Project Manager, Metsä Board



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Our future has a history

1936 This manually operated trolley of 45 ton capacity entered production in 1932 at the Helsinki factory. KONE would not begin manufacturing electric hoists until 1936, when it began thinking of itself as a crane company as well as an elevator supplier.

1

2

1963 The first service vehicles were 2CV models built by Citroën. They proved to be much too small. Here two KONE employees pose proudly beside KONE's first proper service car, a 1963 Peugeot.

3

1968 This is a semi-gantry type crane, a typical solution at the time for parent roll handling. Speed control was not highly developed, so short ropes and slow speeds were needed to achieve the required positioning accuracy.

4

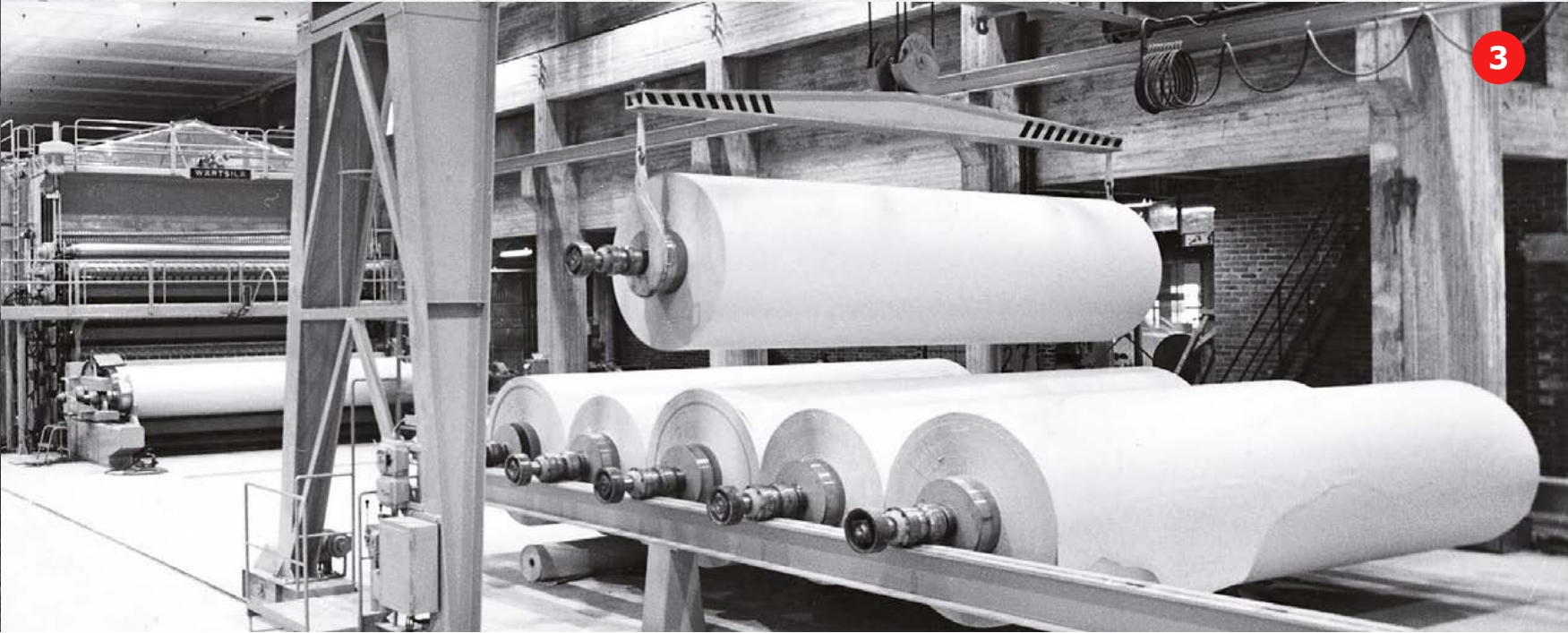
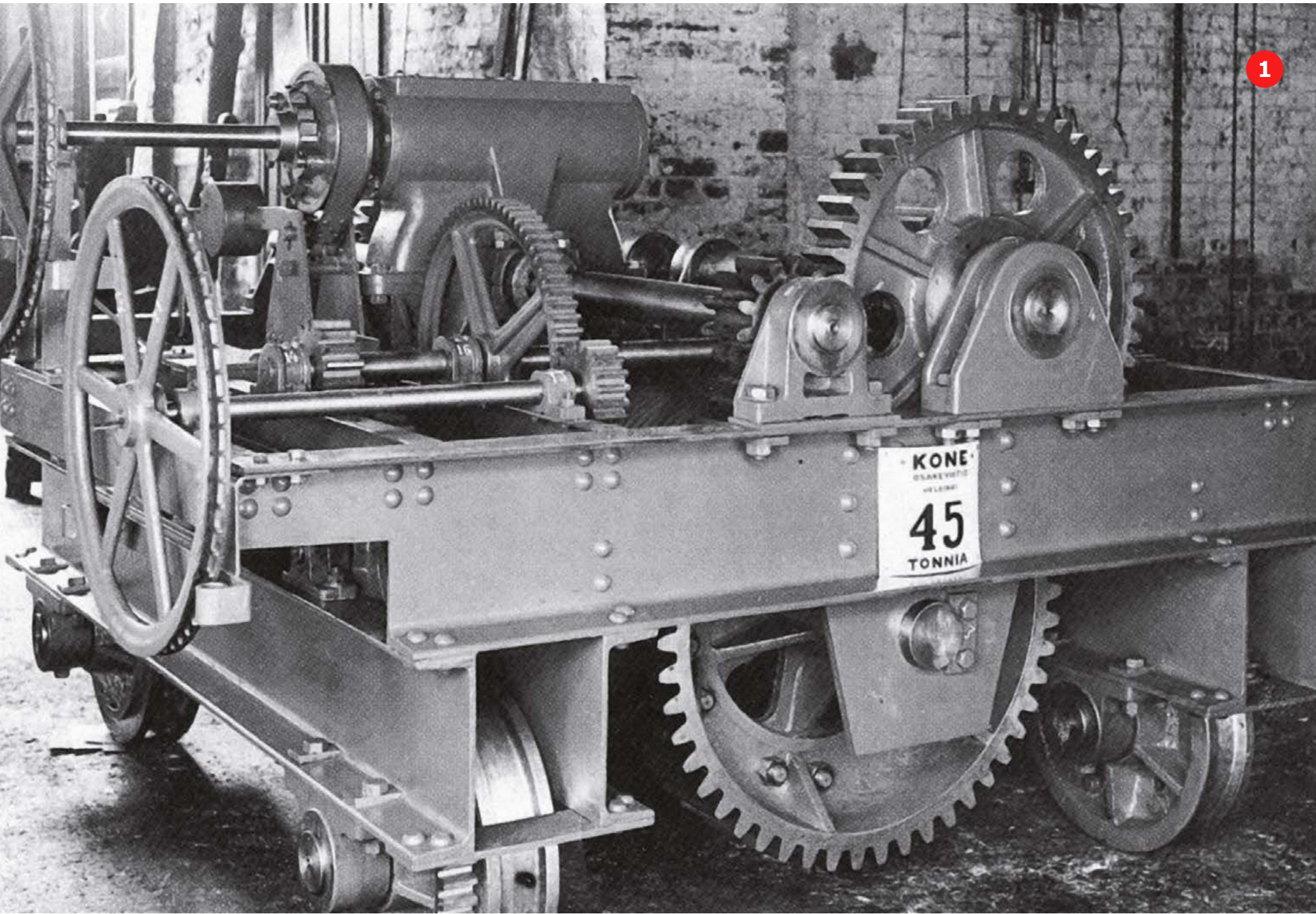
1970 KONE began supplying complete log intake and slashing systems and would become a leading supplier of key wood yard process equipment in the 1970s.

5

6

1994 Iggesund Paperboard was a forerunner in Sweden, investing in a fully-automated paper roll storage system that improved the use of storage space and improved productivity. It also made paper roll handling smoother, reducing damage and deformation of the rolls.

KONE's sale of the crane business. KCI Konecranes started out as an independent company.





**WE SEE THE
FOREST AND
THE TREES**

Good for business and environment

Being a good corporate citizen is important to Konecranes. Our approach to corporate responsibility is clear from our intention to be here for the long run. We are committed to lifting our customers’ businesses responsibly.

For us at Konecranes, corporate responsibility means that business operations are responsible economically, socially and environmentally. These three areas must be taken care of and be in balance for long-term success. Corporate responsibility is part of our everyday business – starting with the company mission and vision, and guided by our policies and Code of Conduct.

We always consider environmental issues throughout the lifecycle of every one of our products. In particular, we ensure the efficient use of materials, recyclability and the conservation of energy. Over 98 percent of the materials used to build a typical Konecranes crane are recyclable. Our equipment can be fitted with energy-saving frequency converter technology, feeding up to 30 percent of braking energy back into the network.



See Konecranes' vision for lifting technology.
We are making it a reality today, with innovations that are lifting businesses all over the world



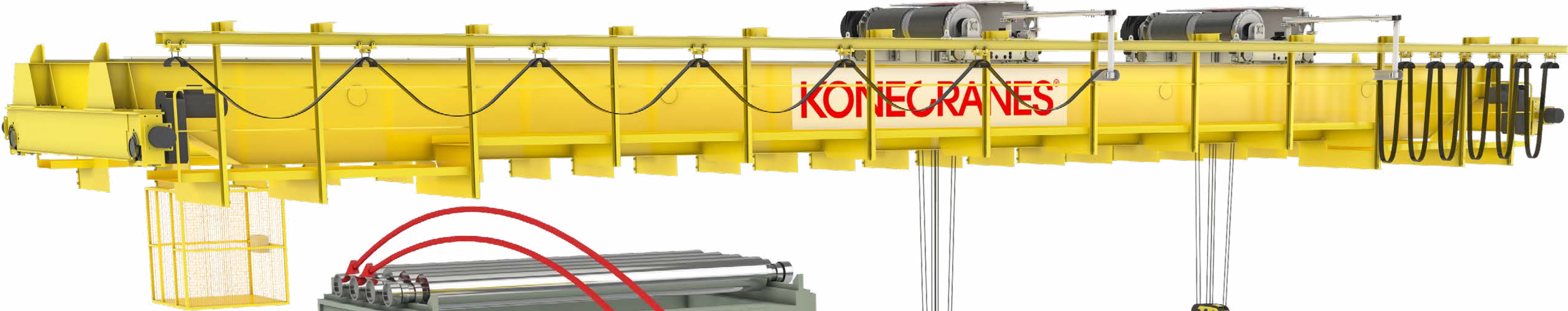
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Designed for efficiency and uptime

We dedicate our unparalleled experience and expertise to help you maximize efficiency and avoid costly problems right from the start.

One of our primary objectives is actually quite simple: to reduce the amount of equipment in your process by developing more efficient and less costly ways of using your equipment.

We replaced some conveyor rails with roll stands. This update reduced construction costs and made roll handling more efficient – any roll could be selected for lifting. Lifting beam hooks with mechanical locking devices and positioning sensors now provide better operational safety in both manual drive mode and semi-automatic drive mode. We also added smart functionalities to the cranes, so more tasks can be carried out with the lifting beam hooks.



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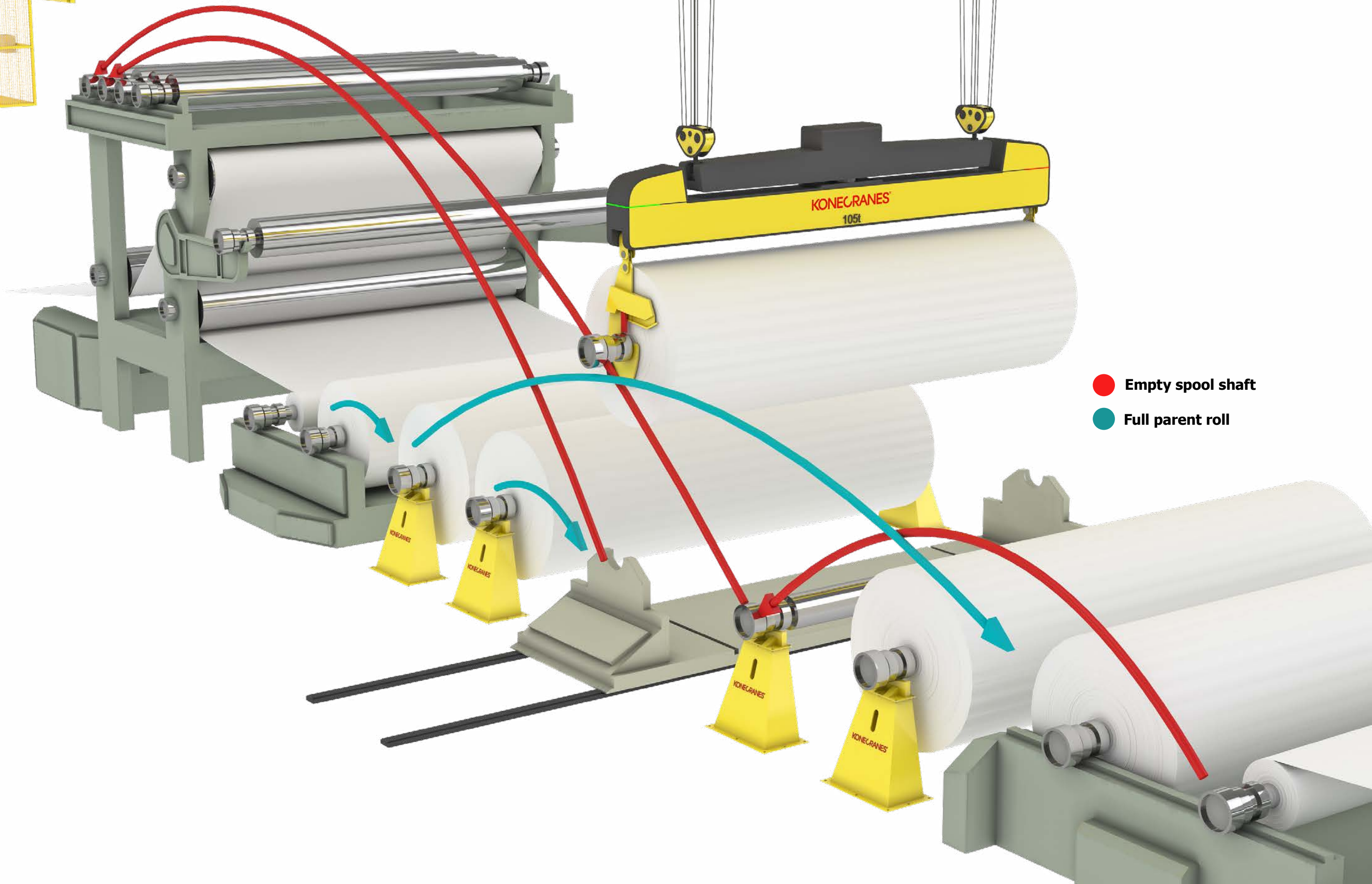


Watch
The OJI Paper
China Video



Konecranes process automation is very advanced. We could even design safety areas in the factory beforehand. We were also impressed with the safety features of the cranes. things like target positioning and various safety features made us choose konecranes as our partner.

MURAJI NISHI
Construction team General Manager, Oji Paper, China

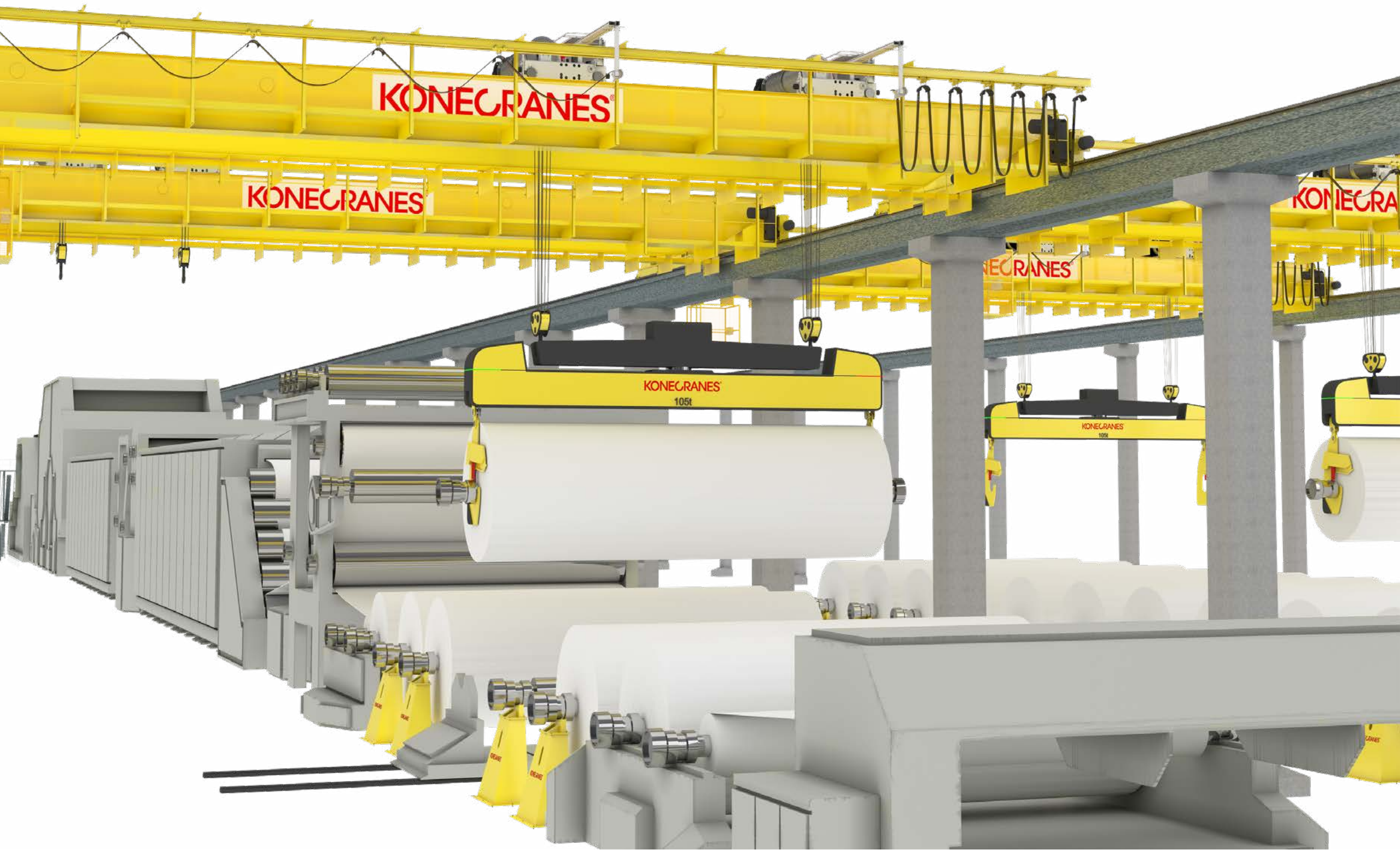


- Empty spool shaft
- Full parent roll



INTELLIGENT CRANES





Smart Features

We have put decades of experience in technology and industry into our Smart Features, which increase safety and productivity of your business. Our cranes and software based Smart Features are designed to improve safety and reduce load cycle times by giving you better means control over material handling in your production process. You can buy Smart Features already installed on new cranes, and you can also add them to your existing cranes. Choose the ones you want, or ask us to recommend a feature package that fits your specific production process. We invite you to explore how Smart Features can benefit your business.



Hook Centering is designed to eliminate side pull during lifting by positioning the bridge and trolley automatically directly over the load. This feature means less wear and tear on your crane's components, faster load cycle times and ease of operation.



Load Floating keeps the load in position after the hoisting movement stops, so the brake is applied less frequently and it wears less than normally. Load Floating allows a faster and smoother restart of the hoisting movement and better control of the load.



Sway Control takes the crane operator's speed command at the controls and brings the load to the required speed while preventing sway caused by acceleration and deceleration. This quite indispensable Smart Feature ensures more precise load positioning and reduces load cycle times.



Active Sway Control is designed to dampen also the existing load sway.



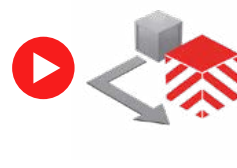
Shock Load Prevention ensures smooth load pick-up. The hoist drive monitors the load. If it is picked up roughly, the hoisting speed is automatically reduced until the load is in the air. This prevents shocks to the load and shocks to the crane, extending the lifetime of the crane's steel structure and mechanical parts.



Slack Rope Prevention is an important safety and productivity feature when lifting devices such as lifting beams are used. When the load is lowered, the hoist drive detects when it touches the floor and stops the movement. The hoist ropes do not slacken. The ropes do not slip out of the hook block. The lifting device does not fall over.



Working Limits can be thought of as temporary "virtual walls" at which the crane stops automatically. Working from the controls, the crane operator sets a limit on trolley, bridge or hoist motions, thus creating a virtual wall. Several Working Limits can be defined according to the task at hand – protecting a temporary walkway or a truck to be loaded, for example. This Smart Feature protects goods, vehicles, etc. that are temporarily in the crane's working area.



Protected Areas are no-go areas which the crane operator cannot override or adjust. Up to 16 rectangular protected areas can be defined, allowing you to protect e.g. valuable production machinery or busy working areas from possible driver error. This Smart Feature increases safety and protects infrastructure.



Extended Speed Range allows higher lifting and lowering speeds when light loads are handled. When the load is less than 20% of the maximum rated load, for example, the hoist can be driven up to twice the maximum rated speed. This Smart Feature significantly reduces load cycle and waiting times and therefore improves efficiency.



Target Positioning allows work cycles to be carried out using only two buttons on the radio controller. Up to 120 target positions and eight home positions can be defined. The operator selects the load's target address and presses the "target positioning" button. As long as the button is pressed, the crane drives itself towards the selected target position. The hoist can automatically raise the load to a defined travel height. When the load reaches the target position, the hoist automatically lowers the load to a pre-defined height. This Smart Feature increases safety and significantly reduces work cycle times.



End Positioning speeds up the set-down phase of the load handling cycle. It is especially useful in work cycles involving stationary machines or structures where the operator must repetitively position loads in exactly the same places. Up to 16 "end positions" can be defined by the operator. When the load is moved into a positioning window around the target and the "end positioning" button is pressed, the crane moves the load to the center of the window. Then the operator takes over manually and lowers the load. This Smart Feature increases safety and reduces work cycle times.



With **Soft Touchdown**, the hook is slowed down and stopped automatically at a predefined elevation. This means a reduced risk of collision and damage for both the load and the machinery.

Hoisting Synchronization supervises and controls both hooks, when lifting a load simultaneously with two hooks, so that they run at exactly the same speed, even where there is imbalanced loading between the hoists. This Smart Feature increases both safety and productivity.

A good investment for your woodyard

The use of a Konecranes woodyard crane generally results in log handling costs significantly lower than those of rubber-tired mobile equipment. As a capital investment, it can pay for itself in a short time. With Konecranes' range of three log-handling crane designs, there is a perfect solution most of production sizes.

THREE CRANE DESIGNS TO FIT YOUR PROCESS

Straight Track



Straight-Track Woodyard Cranes

- Most popular and optimal for future runway expansions and expanding storage space
- Provides optimum truck traffic flow and optimized storage

Rotating



Rotating Portal Woodyard Cranes

- Often fits where straight-track cranes will not fit.
- Provides storage inside and outside the rail



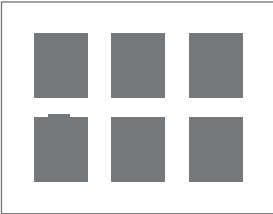
Log Boom Woodyard Cranes

- Still provides fast truck unloading with an even more compact footprint

Storage area gains

A straight-track woodyard crane typically occupies about 4% of the yard space – as compared to the 25% occupied by a storage yard setup for rubber-tired equipment. For a typical 60,000 sq. ft. woodyard, that's 15,000 sq. ft. lost to industrial roadways and other considerations for constant vehicle traffic. A Konecranes woodyard crane could recover over 12,000 sq. ft. of that for usable log storage, not to mention stacking up to 75 ft. vertically to greatly increase the cubic capacity.

PERCENTAGE STORAGE SPACE



Conventional yard layout with rubber tired equipment



Portal crane yard layout

We know cranes

Konecranes is an industry leader in research and development of crane technology, providing state-of-the-art offerings designed to help your lifting operations run as safely and efficiently as possible. We represent a material-handling expertise that is unparalleled in the Woodyard crane market, with features like:

- Diagnostic (PLC) systems for ease of maintenance
- High-efficiency AC control systems and Smart Features like collision avoidance and zone speed control
- Semi-automation and target positioning technology
- Inventory Managment System with accurate load tracking
- Patented reeving system designed to minimize sway and provide accurate load movements



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Watch
The Rex Lumber
Video



Technology package available with the crane really was deciding factor for buying this crane. With the integrated scale system, inventory control should allow us greater degree of control and rotation. The log is the most important part of our process so we have to take care of it. We went to a mill and saw Konecranes crane still in operation after 43 years and has the fastest unloading time within the mill system. We want fast unloading, high degree of reliability and we want something to last.

JARED BANTA
General Manager, Rex Lmber

Vacuum lifter for paper rolls

Konecranes Vacuum Lifter Unit (VLU) delivers reliable automated operation through the combined use of software and hardware. The Vacuum Lifter Unit can adapt to all fine paper and paperboard grades.

Vacuum lifter handling offers unbeatable advantages for storing paper and paperboard rolls. Vertically stacked storage offers excellent utilization of floor space and building volume. The gentle gripping action does not mark or deform paper rolls, reducing waste and resulting in better runnability of the rolls.

The Konecranes vacuum lifter is designed for safer, fully automatic paper roll handling, and it includes many patented functions that increase speed of handling.



Watch
The Metsä Board
Äänekoski Video



We noticed that Konecranes' people are really professional, the same professionals that we learned to appreciate the last time we worked with them, in 2008. Even our special requests were handled quickly, and production started in September, exactly on time.

TIMO SALO
Project Manager, Metsä Board

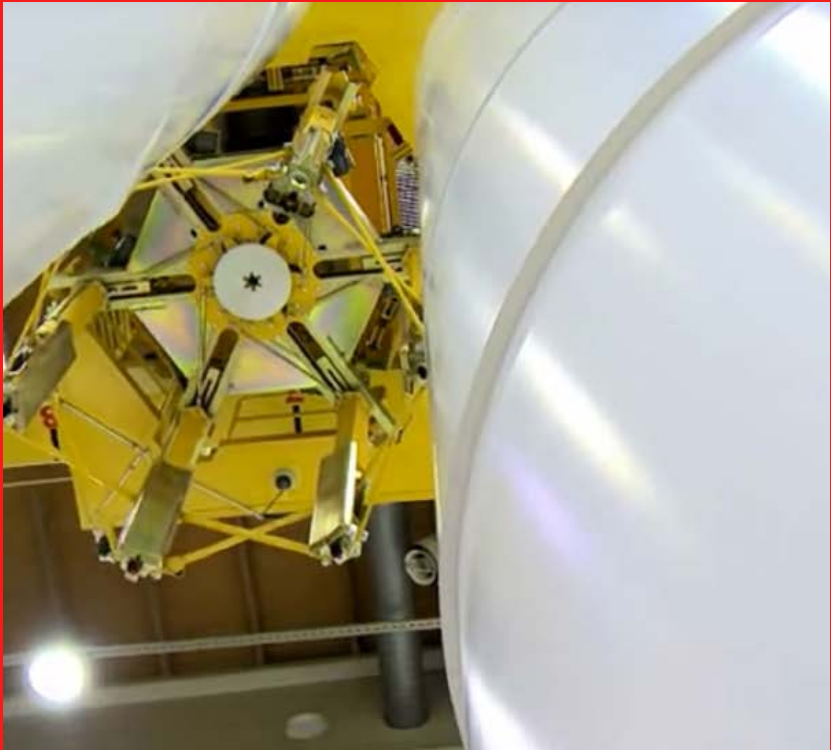


Mechanical gripper for paper rolls

Designed for automatic, safer and gentle handling, the mechanical gripper is a supremely reliable tool for moving different paper grades and roll sizes. It is able to handle both wrapped and unwrapped rolls, large tissue paper parent rolls and hard papers.

Gentle grip with six evenly distributed friction pads significantly reduces deformation of rolls. The fully mechanical, patented construction is lightweight and compact, and can make it possible to utilize storage space effectively.

As a failsafe in case of a power outage, the system has no time limit for holding the rolls. The mechanism stays tight around the rolls without electricity or any external force. Position measuring and anti-collision sensors help to stop movement if a risk is detected. Wireless data transmission with hardwired interlocking reduce the need for data cables.



Watch
the Mechanical Gripper,
Metsä Board Äänekoski
video



We had a really tight schedule. The average delivery time for the contractors was down to four months. For Konecranes, that was not an issue, and they delivered the grip on time.

TIMO SALO
Metsä Board, Äänekoski Finland



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Lift trucks

Konecranes has a relationship with the pulp, paper and wood industries that reaches back to the 1920s. Our offering covers lifting equipment and service for most phases of production. Lift trucks are a very strong part of our offering for these industries.

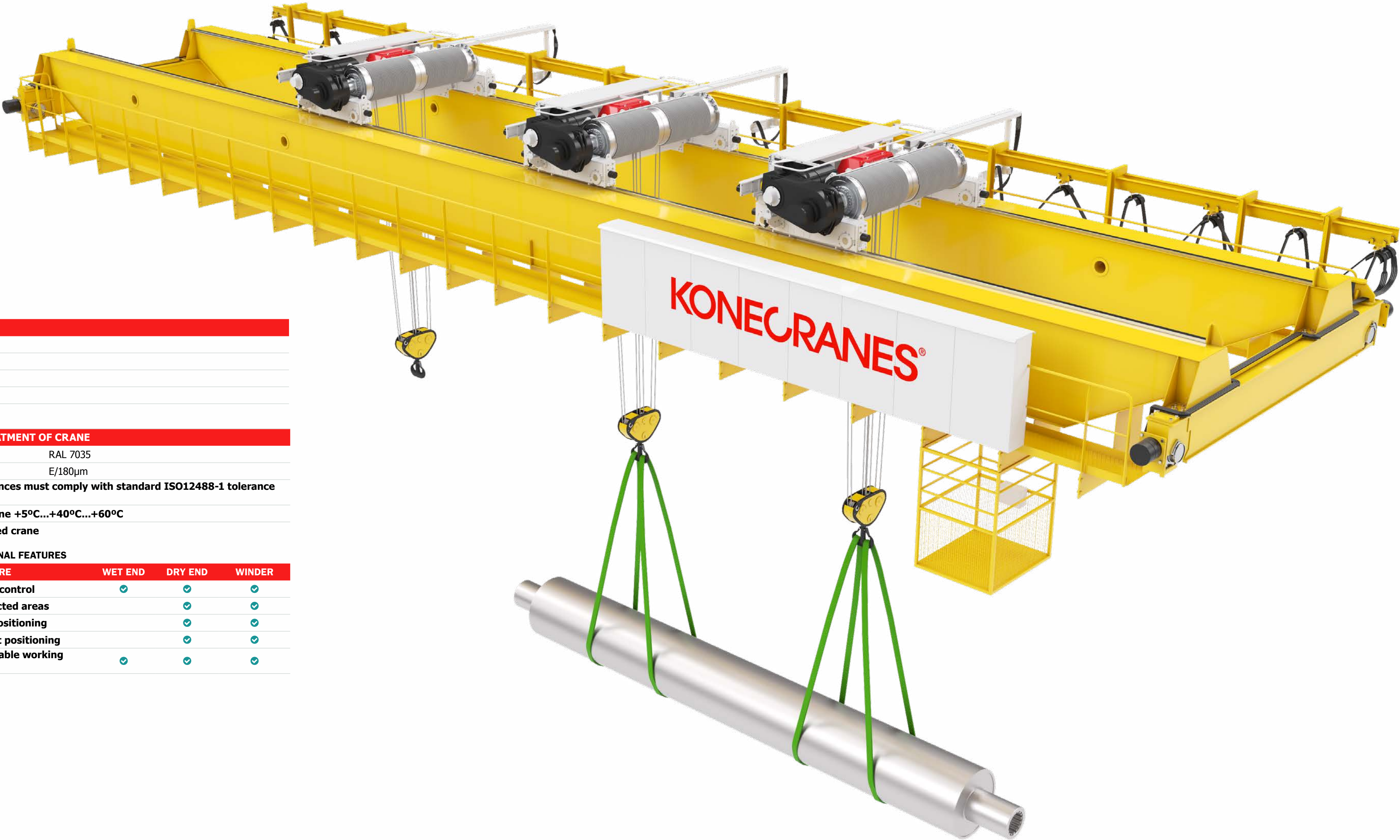
What kind of wood or paper product do you need to handle? We offer a whole range of range of lift trucks, fork and carriage combinations, fork and shaft systems, paper bale clamps, paper roll clamps, and attachments based on a quick-change system. We'll provide the right lift truck and attachments for the work you need to do.

Working closely with leading pulp and paper companies, we have developed a unique system to improve the handling of paper rolls. A programmable microprocessor is at the heart of the system. Sensors collect key operating information, and the information is sent to the display in the cabin. The system reduces damage to the paper rolls with functions such as automatic opening of the paper clamp attachment when the roll touches the ground, and automatic prevention of lift truck movement until the rolls are off the ground.



Get connected

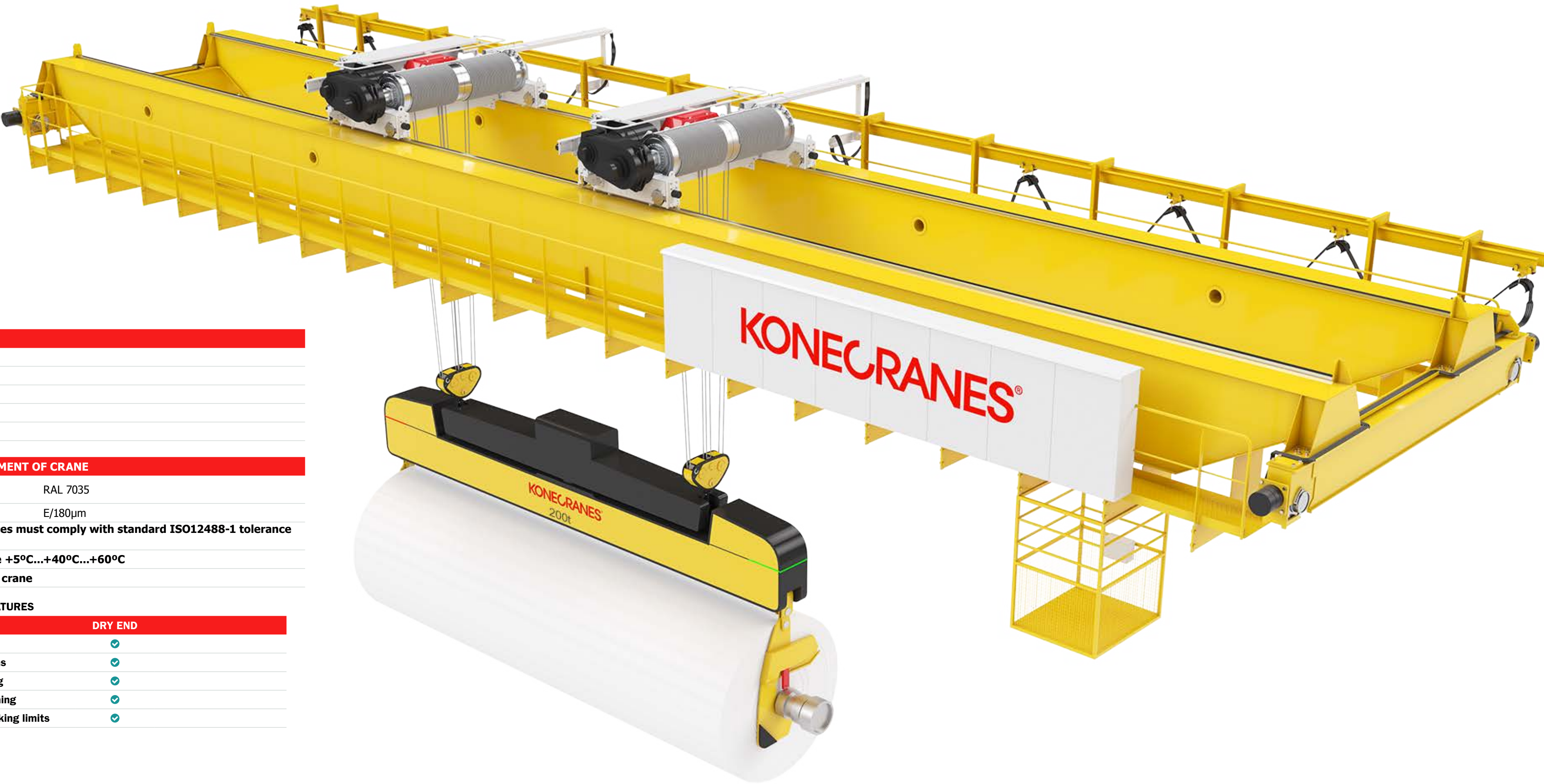
Wet end crane



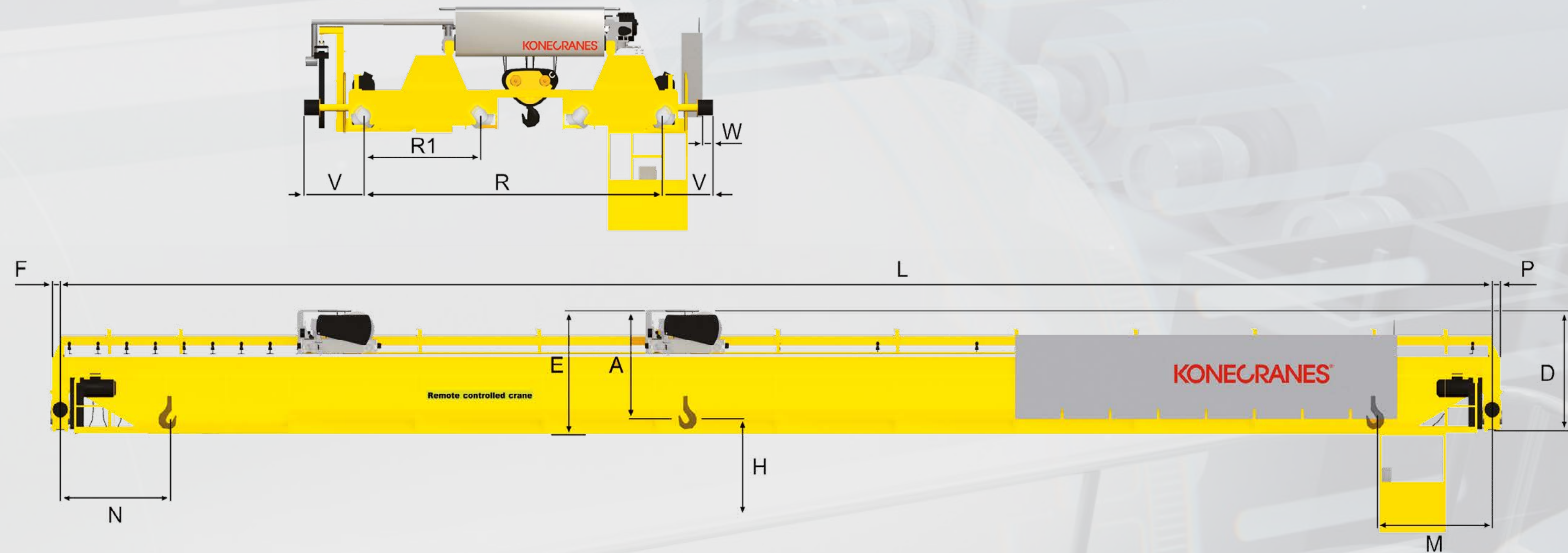
HOIST DATA							
Crane capacity	15...100 t + 15...100 t (+aux. 2 x 5 t)						
Lifting height	10-25 m						
Hoisting speed	0-4-8 m/min						
Traversing speed	0-20 m/min						
Hoist group	M4-M5-M6						
TECHNICAL DATA							
Span	20-40 m according to PM wire width		Bridge color	RAL 7035			
Traveling speed	0-50 m/min stepless		Paint	E/180µm			
Crane group	A6		Runway tolerances must comply with standard ISO12488-1 tolerance class 2				
Crane drive group	FEM M5 (2m)		Indoor use crane +5°C...+40°C...+60°C				
			Radio controlled crane				
STANDARD FEATURES				OPTIONAL FEATURES			
FEATURE	WET END	DRY END	WINDER	FEATURE	WET END	DRY END	WINDER
Sway control	✓	✓	✓	Skew control	✓	✓	✓
Hoisting synchronization	✓	✓	✓	Protected areas		✓	✓
Slack rope prevention		✓	✓	End positioning		✓	✓
Soft touch down		✓	✓	Target positioning		✓	✓
TRUCONNECT connection	✓	✓	✓	Teachable working limits	✓	✓	✓

Get connected

Dry end crane



HOIST DATA			
Load	15...100 t + 15...100 t (+ aux. 2 x 5 t)		
Lifting height	10-25 m		
Hoisting speed	0-4-12		
Traversing speed	0-20		
Hoist group	M5-M6		
TECHNICAL DATA		SURFACE TREATMENT OF CRANE	
Span	20-40 m according to PM wire width	Bridge color	RAL 7035
Traveling speed	0-50 m/min stepless	Paint	E/180µm
Crane group	A6	Runway tolerances must comply with standard ISO12488-1 tolerance class 2	
Crane drive group	FEM M5 (2m)		
		Indoor use crane +5°C...+40°C...+60°C	
		Radio controlled crane	
STANDARD FEATURES		OPTIONAL FEATURES	
FEATURE	DRY END	FEATURE	DRY END
Sway control	✓	Skew control	✓
Hoisting synchronization	✓	Protected areas	✓
Slack rope prevention	✓	End positioning	✓
Soft touch down	✓	Target positioning	✓
TRUCONNECT connection	✓	Teachable working limits	✓



EXAMPLES OF DRY END CRANE DIMENSIONS

PAPER MACHINE WIRE WIDTH EXAMPLES	LOAD	L m	A mm	D mm	E mm	M mm	N mm	V mm	W mm	P mm	H m	R mm	R1 mm	MAX. STATIC WHEEL LOAD kN	TOTAL WEIGHT OF CRANE t	Rail DIN536
3	12.5 t	15	1970	2240	1680	750	1330	380	550	150	30	5000		120	13	A55
		25		2250	1930	750	1330	340	560	155		5450	1600	70	22	A55
		35		2520	2280	750	1730	340	630	155		5580	1600	100	39	A55
4	2*12.5 t	15	1850	2360	1800	800	1270	380	630	150	20	5000		180	15	A55
		25		2520	2280	800	1270	340	540	155		5500	1800	110	24	A55
		35		2900	2530	800	1770	420	630	170		5420	1600	130	41	A55
6	2*25 t	15	2060	2320	1840	870	1210	380	690	165	15 / 20	4860	1300	160	20	A75
		25		2930	2550	870	1210	380	690	165		5100	1300	200	31	A75
		35		3520	2870	870	1600	510	530	210		5540	1600	230	52	A75
7	2*40 t	15	2380	2640	2090	1050	1450	420	600	175	15 / 20	5050	1600	250	26	A75
		25		3350	2680	1050	1450	550	510	200		5250	1600	280	44	A75
		35		3580	2980	1050	1450	510	460	210		5850	2000	320	64	A75
9	2*63 t	15	2900	2550	2640	1050	1460	570	490	225	19	6100	1800	370	40	A100
		25		3380	3400	1050	1460	620	440	225		6100	1800	430	60	A100
		35		3650	3645	1050	1460	690	300	280		6750	2200	470	97	A100
10	2*100 t	15	3430	3450	3440	1170	1610	680	210	280	18	6450	2200	600	59	A120
		25		3950	3920	1170	1610	830	0	335		6900	2500	640	91	A120
		35		4240	4190	1170	1610	830	50	335		6950	2500	690	126	A120
11		35														

Dry end crane dimensions

- Basic defaults for dimensional calculations**
- Bridge traveling speed for all cranes is 40 m/min
 - Trolley traversing speed for all cranes is 25 m/min
 - Crane group classification is A5/M5
 - Crane classification M5/M6 (to be defined according to process data)
 - Minimum wheel base ratio for all cranes is 0.14
 - Steel structure material is S235
 - Maximum allowed vertical deflection with load and trolley is 1/800

Paper roll storage crane

VACUUM LIFTER

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TECHNICAL DATA		HOIST TROLLEY	
Span	Typical 25-30-35 m	Lifting height	20.0 m
Capacity of bridge	7,5-11-15 t	Hoisting speed	60 m/min INVERTER
Bridge traveling speed	120 m/min	Hoisting speed with empty gripper	90 m/min INVERTER + ESR
Bridge traveling motors	2 x 22 kW 60% ED	Hoisting motor	75 kW 60 % ED
Class of traveling machinery	FEM M8	Trolley traversing speed	60 m/min INVERTER
Power supply	3AC 400V 50Hz	Trolley traversing motors	2 x 3.6 kW 60% ED
Control voltage	230V	Class of traversing machinery	EN M8
Ambient temperature	+5°C...+40°C	Weight of trolley	7-8-9 ton
Weight without trolley	33 t Acc. to span	Weight of lifting device	2-3 t

Paper roll storage crane

ROLL GRIPPER
(MECHANICAL)

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TECHNICAL DATA		Typical	HOIST TROLLEY	
Span		25-30-35 m	Lifting height	20.0 m
Capacity of bridge		7,5-11-15 t	Hoisting speed	60 m/min INVERTER
Bridge traveling speed		120 m/min	Hoisting speed with empty gripper	90 m/min INVERTER + ESR
Bridge traveling motors		2 x 22 kW 60% ED	Hoisting motor	75 kW 60 % ED
Class of traveling machinery		FEM M8	Trolley traversing speed	60 m/min INVERTER
Power supply		3AC 400V 50Hz	Trolley traversing motors	2 x 3.6 kW 60% ED
Control voltage		230V	Class of traversing machinery	EN M8
Ambient temperature		+5°C...+40°C	Weight of trolley	7-8-9 ton
Weight without trolley		33 t Acc. to span	Weight of lifting device	2-3 t

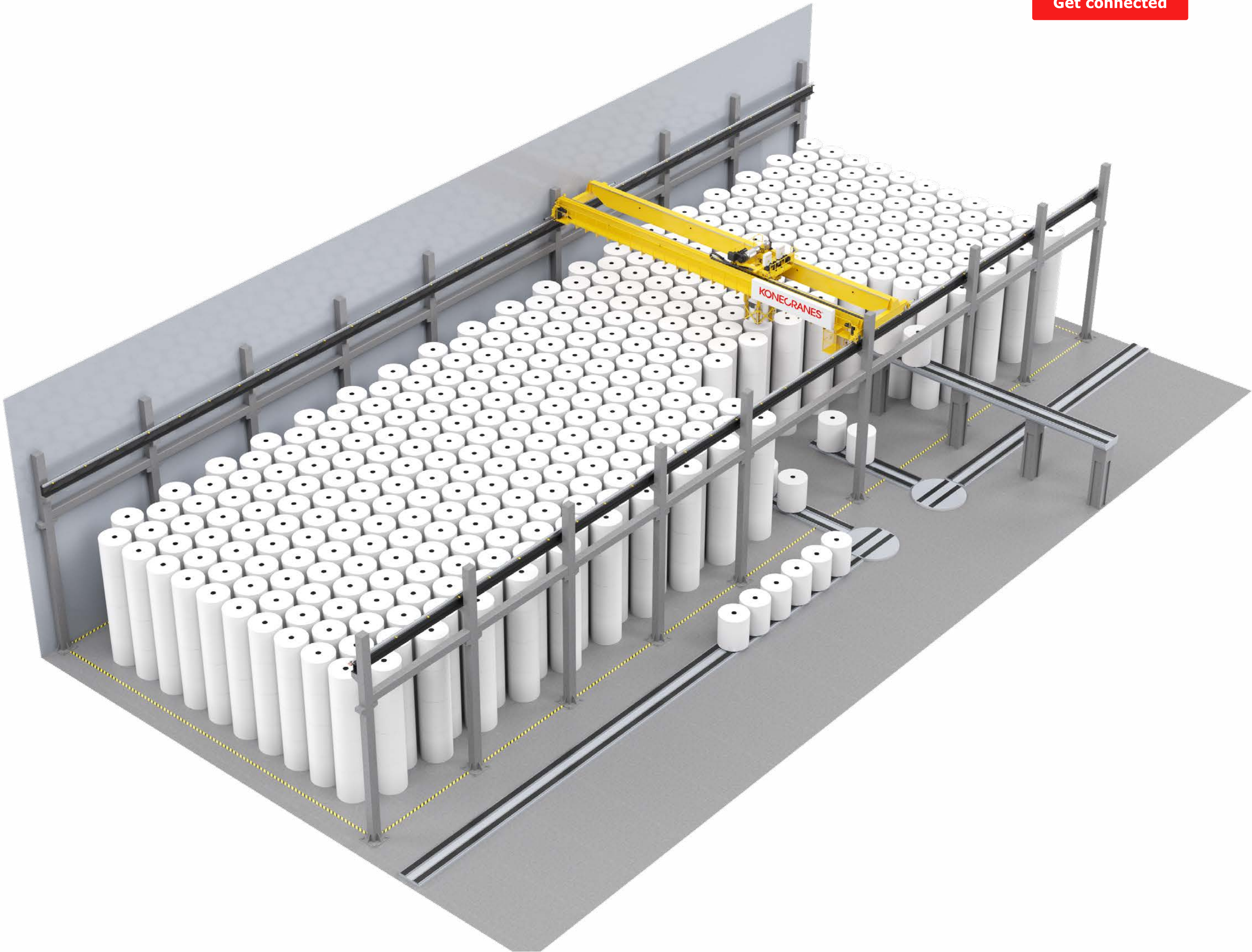
Intermediate storage

TISSUE GRADES, PRINTING PAPERS, PAPERBOARDS

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ROLL DIMENSIONS		Min-max ranges	ESTIMATED WAREHOUSE CAPACITY	
Roll diameter		800-1500 mm / 1500-2400 mm	Building size	33 x 91 m h=17 m
Roll width		600-3300 mm	Storage area capacity	7200 ton
Roll weight		400-10000 kg	Floor loading	29 kN/m²
			Tissue density	300 kg/m³
			Max. tower height	15000 mm
			Theoretical capacity	28000 ton (density 900 kg/m³)
TECHNICAL DATA			TROLLEY	
Span		15-40 m	Hoisting capacity	7-15 t, FEM M8
Capacity of bridge		7-15 t, FEM M8	Lifting height	19 m
Group of traveling machinery		FEM M8	Hoisting speed	60 m/min (30 m/min ESR)
Traveling speed		120 m/min, FREQ.	Traversing speed	60 m/min, FREQ.
Max. ambient temperature		Max. +40/min. +5°C		
TYPICAL HANDLING CAPACITY				
Max size rolls, one-by-one	Input only 30 rolls/hour	Output only 28 rolls/hour	Combined IN 15 r/h + OUT 15 r/h	

INTERMEDIATE STORAGE – OPTIONAL FEATURES
Skew control
Protected Areas
Target Positioning
Anticollision on cranes
Active Sway Control
Web cameras on crane
Air conditioning of electrical cubicles
Chemical filtering for electrical cubicles
Radio control for maintenance
Access control for crane working area
Conveyor interface
Conveyor control
Roll end straightness measuring
Secondary power supply for vacuum lifter (when applicable)
Global technical support via Konecranes service
Remote diagnostics and reporting
VPN connection for WMS server



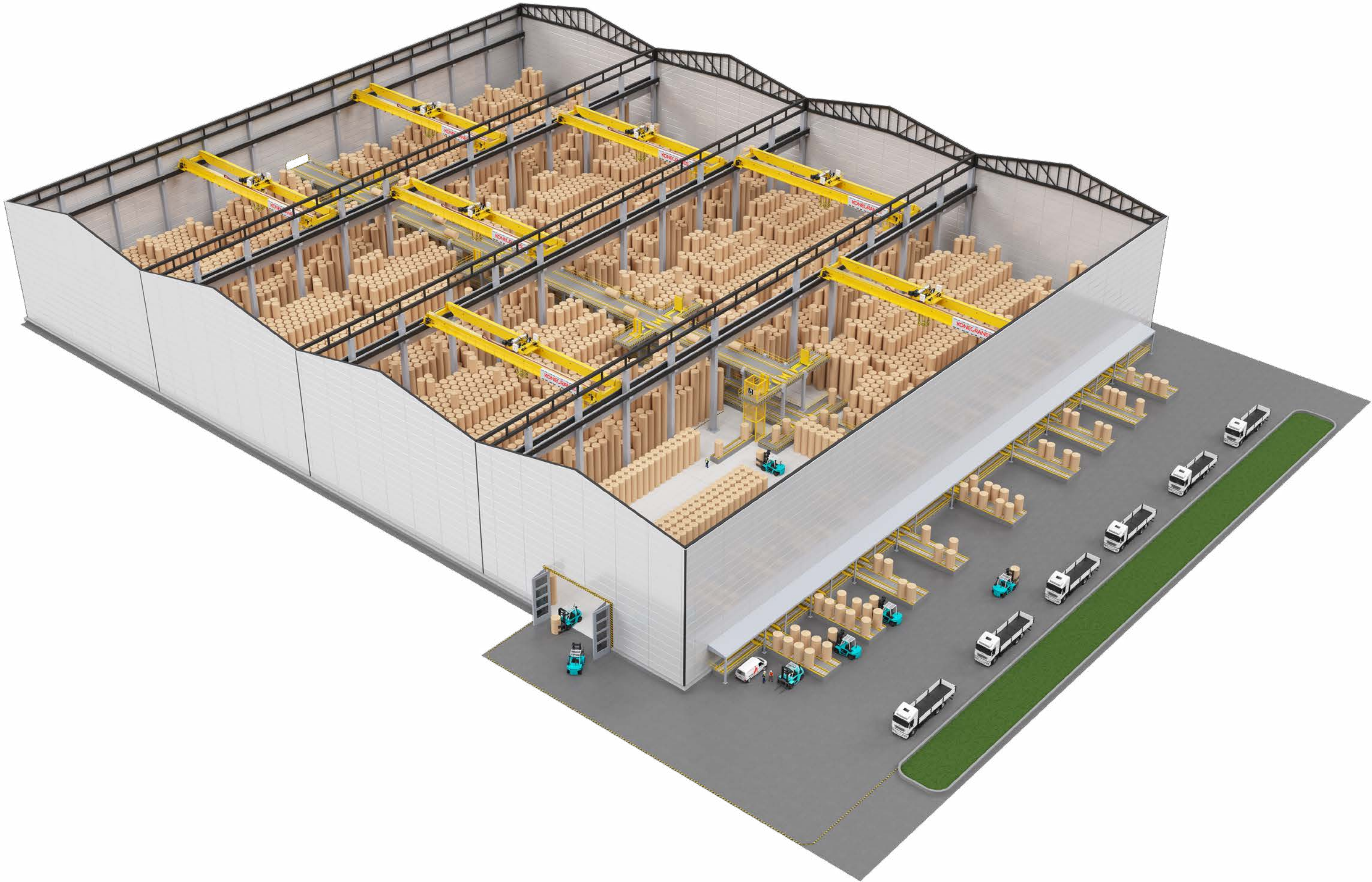
Shipping storage I

80,000 ton

Get connected

ROLL DIMENSIONS		ESTIMATED WAREHOUSE CAPACITY	
Roll diameter	1000–1500 mm	Storage area capacity	4 x 963 stacks
Roll width	850–3200 mm	Max. roll diameter	1500 mm
Roll weight	4600 kg	Max. tower height	14000 mm
Roll weight, avg.	1000 kg	Theoretical capacity	4 x 19060 ton (density 800 kg/m³)
Floor loading	74 kN/m²		
TECHNICAL DATA		TROLLEY	
Span	33.5 m	Building size	4x35m x 120 m H= 22,5 m
Capacity of bridge	7.7 t, FEM M8	Hoisting capacity	4.6 t, FEM M8
Group of travelling machinery	FEM M8	Lifting height	14.5 m
Traveling speed	120 m/min, FREQ.	Hoisting speed	60 m/min (90m/min ESR)
Traveling motor	2 x 22 kW ED 60%	Hoisting motor	117 kW ED 60%
Power supply	380 V, 50 Hz	Traversing speed	60 m/min, FREQ.
Bridge weight	39 t	Traversing motor	2 x 3.6 kW ED 60%
Max. ambient temperature	Max. +40°C	Trolley weight	6.8 t
		Mechanical gripper	3.1 t

SHIPPING STORAGE – OPTIONAL FEATURES
Skew control
Protected Areas
End Positioning
Target Positioning
Anticollision on cranes
Active Sway Control
Web cameras on crane
Web camera with display on radio
Air conditioning of electrical cubicles
Chemical filtering for electrical cubicles
Radio control for maintenance
Access control for crane working area
Remote diagnostics and reporting
VPN connection for WMS server and maintenance
Conveyor interface
Conveyor control
Roll end straightness measuring
Secondary power supply for vacuum lifter
Walkway lights on crane



Shipping storage II

30,000 ton

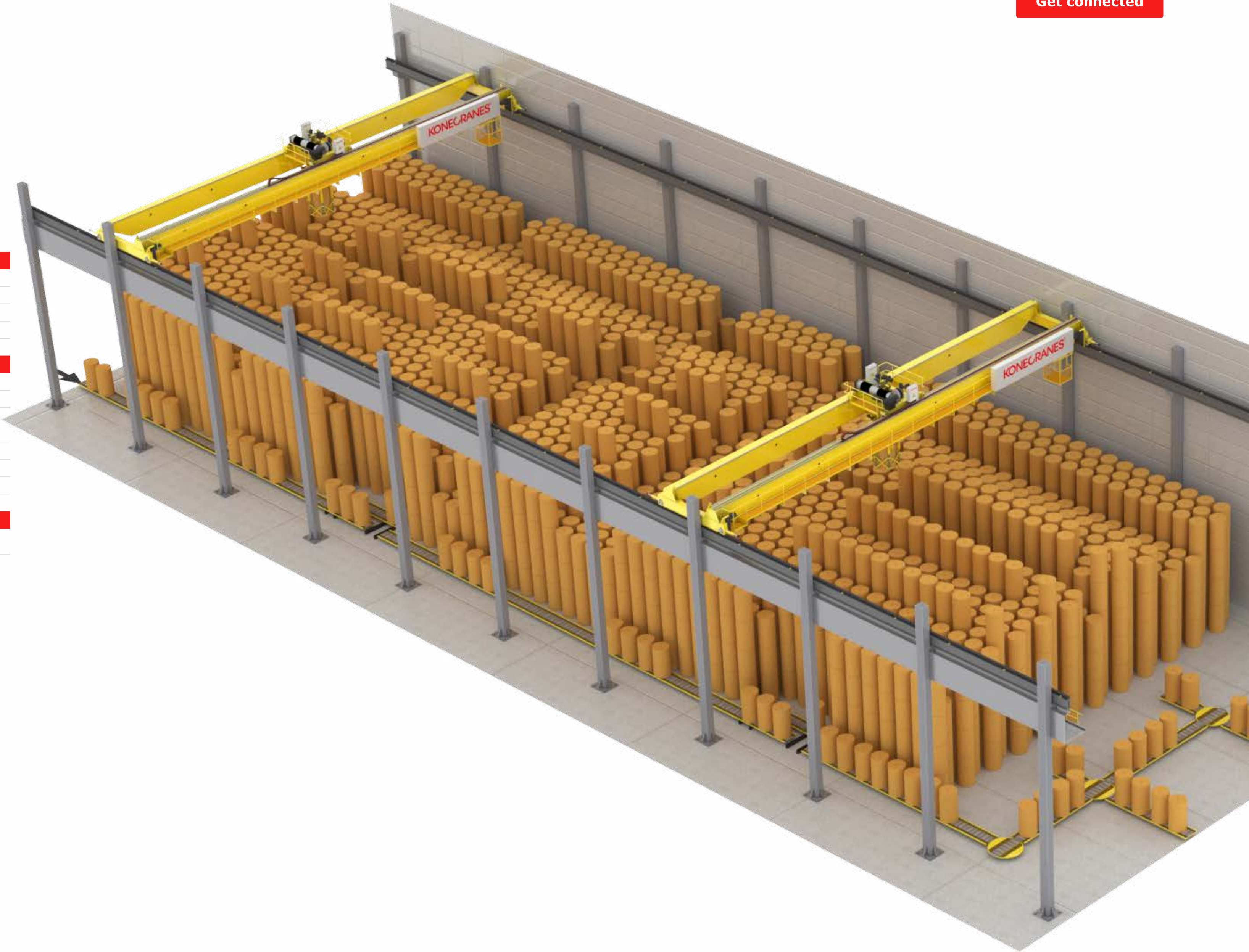
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ROLL DIMENSIONS	Typical	ESTIMATED WAREHOUSE CAPACITY	
Roll diameter	1200–1500 mm	Building size	40 x 90 m h=20 m
Roll weight	max 6000 kg	Storage area capacity	4 x 963 stacks
Floor loading (typical)	10+0 kN/m²	Max. roll diameter	1500 mm
		Max. tower height	14000 mm
		Theoretical capacity	4 x 19060 ton (density 800 kg/m²)

TECHNICAL DATA	TROLLEY		
Span	28 m	Hoisting capacity	4.6 t, FEM M8
Capacity of bridge	9 t, FEM M8	Lifting height	14.5 m
Group of traveling machinery	FEM M8	Hoisting speed	60 m/min (90m/min ESR)
Traveling speed	120 m/min, FREQ.	Hoisting motor	117 kW ED 60%
Traveling motor	2 x 22 kW	Traversing speed	60 m/min, FREQ.
Max. ambient temperature	Max. +40/min. +5C	Traversing motor	2 x 3.6 kW ED 60%
		Trolley weight	6.8 t
		Mechanical gripper	3.1 t

TYPICAL HANDLING CAPACITY (cranes)			
Max size rolls one by one	Input 30 rolls per hour (customisable)	Output 30 rolls per hour (customisable)	
Set handling (e.g. P=1500, B=800 mm rolls) in + out	input only 100 rolls/hour	output only 100 rolls/hour	combined 200 rolls/hours

SHIPPING STORAGE – OPTIONAL FEATURES
Skew control
Protected Areas
Target Positioning
Anticollision on cranes
Active Sway Control
Air conditioning of electrical cubicles
Chemical filtering for electrical cubicles
Radio control for maintenance
Access control for crane working area
Conveyor interface
Conveyor control
Roll end straightness measuring
Global technical support via Konecranes service
Web cameras on crane / remote service
Remote diagnostics and reporting
VPN connection for WMS server and maintenance



Straight-track portal woodyard crane

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Trolley data	T-1	T-2	T-3
CMAA Class	E	F	F
Capacity lift (under grapple) (t)	13	27	36
Grapple size (sqm)	2	6	6
Hoist full load speed (m/min)	24	15	42
Trolley speed (m/min)	48	78	150

Crane data	S-1	S-2	S-3	S-4	S-5
Structural design standard	EN 13001-1	EN 13001-1	EN 13001-1	EN 13001-1	EN 13001-1
Machinery CMAA class	E	F	F	F	F
Span (m)	31	35	44	50	59
Capacity lift (ton)	14	27	27	36	36
Lift under grapple (max available, m)	14	17	21	21	21
Standard trolley pairing	T-1	T-2	T-2	T-3	T-3
Gantry Speed (m/min)	180	102	102	150	150



Log boom woodyard crane

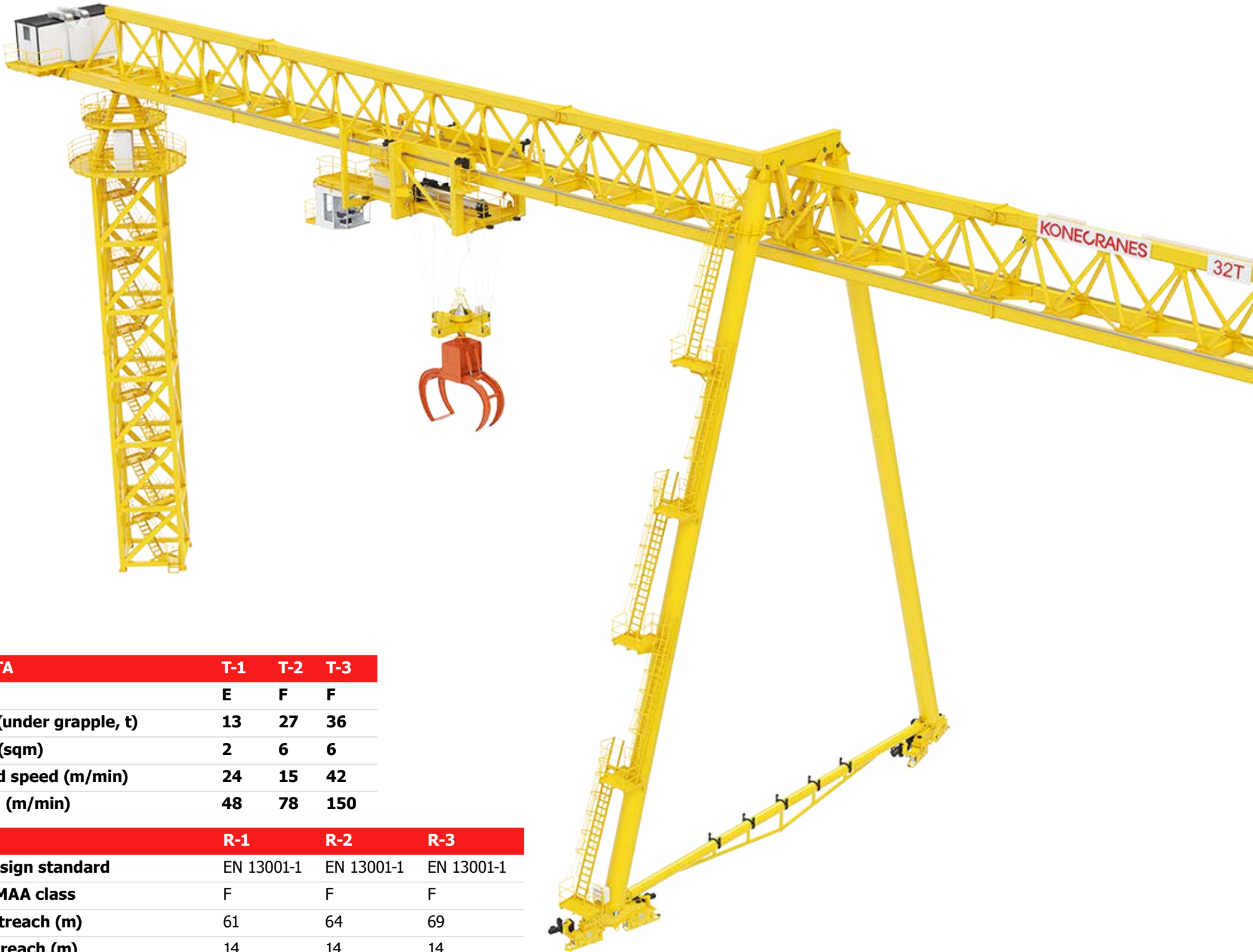


CRANE DATA	LB-1	LB-2	LB-3
Structural design standard	EN 13001-1	EN 13001-1	EN 13001-1
Machinery CMAA class	F	F	F
Maximum outreach (m)	56	53	50
Minimum outreach (m)	34	30	27
Rail radius	27	24	21
Capacity (ton)	14	29	32
Lift under grapple (m)	20	20	20
Gantry Speed (m/min)	115	115	120

*Note: Log Boom design utilizes 45 m/min flying trolley design.

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Rotating portal woodyard crane



TROLLEY DATA	T-1	T-2	T-3
CMAA Class	E	F	F
Capacity lift (under grapple, t)	13	27	36
Grapple size (sqm)	2	6	6
Hoist full load speed (m/min)	24	15	42
Trolley speed (m/min)	48	78	150
CRANE DATA	R-1	R-2	R-3
Structural design standard	EN 13001-1	EN 13001-1	EN 13001-1
Machinery CMAA class	F	F	F
Maximum outreach (m)	61	64	69
Minimum outreach (m)	14	14	14
Rail radius	43	49	49
Capacity (ton)	14	29	29
Lift under grapple (m)	14	17	21
Standard trolley pairing	T-1	T-2	T-3
Gantry Speed (m/min)	150	150	150

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Fork lift truck



LIFTING DATA			DRIVING DATA		
Lifting capacity / load center (up to 7 000 mm /standard mast)	kg / mm	16 000 / 1 200	Drive speed forward, unloaded/ at rated load	km/h	30 / 30
Lifting speed, unloaded/ at rated load	m/s	0,4 / 0,35	Drive speed reverse, unloaded/ at rated load	km/h	30 / 30
Lowering speed, unloaded/ at rated load	m/s	0,4 / 0,4	Incline (driving ability) at rated load at 0 km/h/at 2 km/h	%	28 / 22
			Towing (power ability) at rated load at 0 km/h/at 2 km/h	kN	107 / 85

ENGINE (ELECTRONIC CONTROLLED)		TRANSMISSION (ELECTRONIC CONTROLLED)	
Engine make/ model name	Volvo TAD-871-VE	Transmission make / model name	ZF 4WG-191-A
Emission approval EU / US	Stage 4 / Tier 4f	Monitoring/ reverse protection / CanBus	yes / yes / yes
Monitoring/ emission controlled/ CanBus	yes / yes / yes	Clutch, type	Torque converter
Fuel / type of engine/ intercooler	Diesel / 4-stroke / yes	Transmission type / type of shift gear	Softshift -Powershift / Automatic
Power ISO 3046 / max speed	185 kW / 2 200 rpm	No. of gears, forward/reverse	3 / 3
Torque ISO 3046 / at speed	1 160 Nm / 1 500 rpm	SERVICE WEIGHT / AXLE PRESSURE	
Displacement/ No. of cylinders/ type	7,7, L / 6 / inline	Service weight	21 800 kg
Fuel consumption, normal driving	7 – 10 L/h	Axle pressure front, unloaded / at rated load	10 100 kg / 35 200 kg
Alternator, type / power	AC / 3 080 W / 110 Amp	Axle pressure rear, unloaded / at rated load	
Starting battery, voltage / capacity)	2 x 12 V / 140 Ah		

DRIVE AXLE & STEER SYSTEM		STEER AXLE & STEER SYSTEM	
Drive axle make / model name	Kessler D81	Steer axle make / type	Konecranes / double acting single cylinder
Drive axle type / drive axle width	Differential + hub reduction / 2 500 mm	Steering system	Hydraulic servo assisted / power steering
Service brake system, type / affected wheels	Oil cooled w Disc Brakes / drive wheels Dry		
Parking brake system, type / affected wheels	disc brake / spring release/ drive wheels		

WHEELS		HYDRAULIC SYSTEM	
Number of wheels, front+rear / Type (*driven)	4*+2 / pneumatic	Hydraulic pump make/ model name	Parker & Hannifin/ P2-series
Tire pressure front/ rear	1,0 MPa / 1,0 MPa	Hydraulic system / pump type	Load sensing system / variable piston pump
Tire dimensions (Ply rating) front/ rear	12.00 x 20” (PR 20) / 12.00 x 20” (PR 20)	Power-on-demand/ Low energy	yes / yes
Rim dimension front/ rear	8.00 x 20” Inch / 8.00 x 20” Inch	Hydraulic oil pressure mast	23 MPa

TANK VOLUMES		LIFTING EQUIPMENT	
Diesel tank volume	243 L	Lift mast make / model	Konecranes / Duplex standard
Hydraulic tank volume	272 L	Lift mast type / design	2-stage / free visibility
		Fork carriage make/ model	Konecranes / integral double forks
		Fork carriage type	Hydraulic side shift & fork positioning

OTHERS		NORMS & STANDARDS	
Noise level (inside Cab / Lm) DIN 45635	66 dB(A)	Machine Directive in Europe 2006/42/ EC	Yes
Noise level (inside Cab/ LpAZ) EN 12053	72 dB(A)	Stability of Industrial Trucks ISO 1074	Yes
Noise level (outside at 7 m/ Lwa) 2005/88/EC	109 dB(A)	Safety of Industrial Trucks EN ISO 3691-1	Yes

SERVICE FOR THE LIFE OF EVERY CRANE



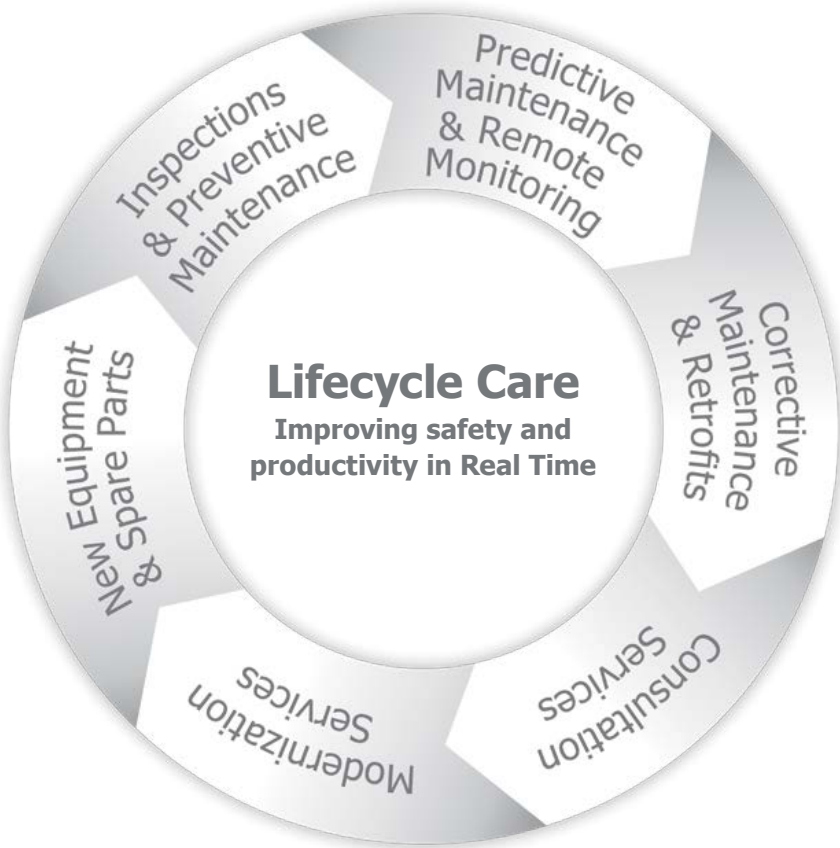
Konecranes lifecycle care

Konecranes 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 in addition to minimizing the cost of downtime. We believe merely keeping your cranes running is not sufficient. Our aim is to help you achieve the highest level of productivity during every shift. We aim to deliver measurable improvements in safety and productivity that can be reported and reviewed, demonstrating a return on investment to you.

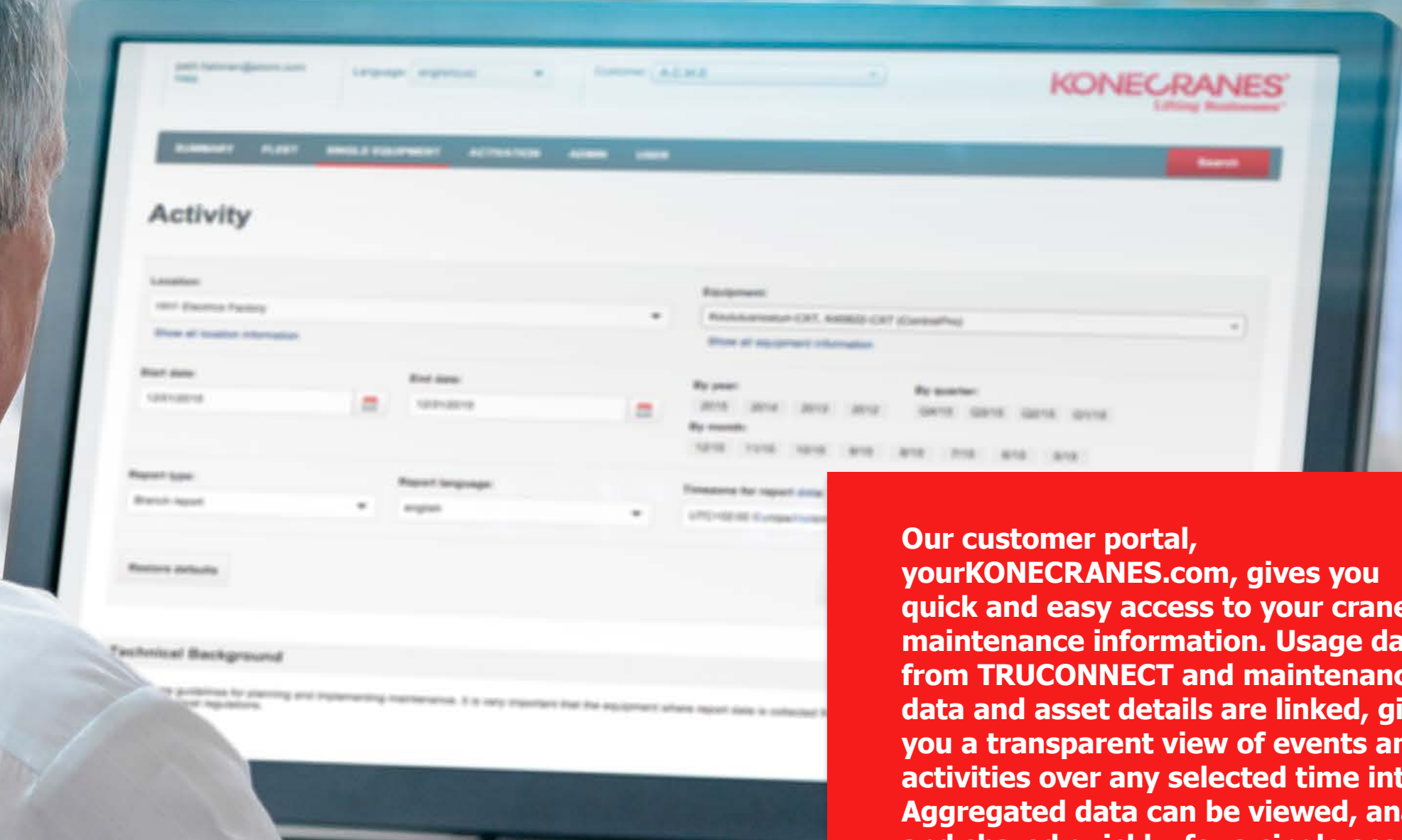

Our crane experts apply a systematic risk and recommendation method of evaluation and a consultative planning and review process to drive continuous improvement in safety and productivity.

- Inspections and preventive maintenance** identify risks and improvement opportunities, and support compliance with regulations and standards.
- Predictive maintenance and remote monitoring** utilizes condition monitoring, advanced inspections, and data analytics to predict component or equipment failure.
- Corrective maintenance and retrofits** address safety and productivity issues and capitalize on improvement opportunities.
- Consultation services** guide decision making and uncover critical issues, using advanced technology and trained specialists when a deeper look at a crane and its components is required.
- Modernization services** prolong the economic service life of equipment and achieve increased capacity, speed, duty or load control.
- New equipment** provides new or replacement equipment.

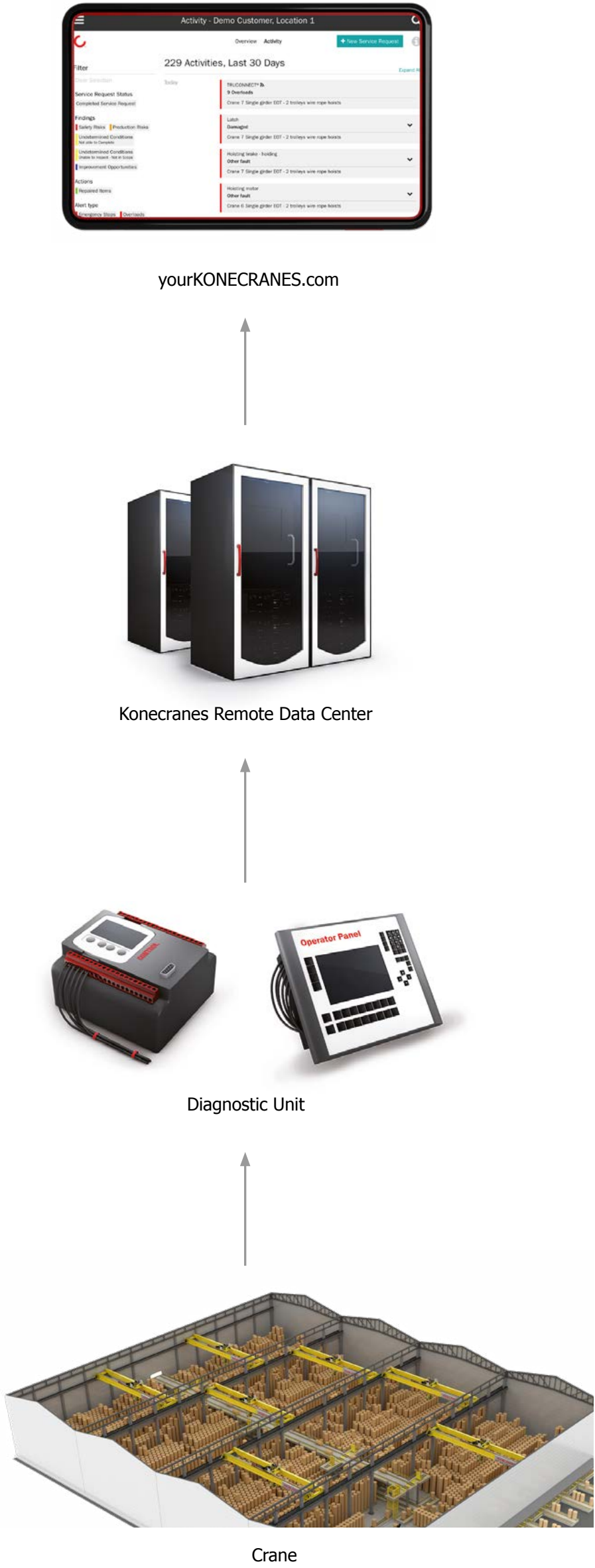


Watch Konecranes Lifecycle Care video.

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Our customer portal, **yourKONECRANES.com**, gives you quick and easy access to your crane maintenance information. Usage data from TRUCONNECT and maintenance data and asset details are linked, giving you a transparent view of events and activities over any selected time interval. Aggregated data can be viewed, analyzed and shared quickly, for a single asset or an entire fleet. Insights can be drawn by observing anomalies, patterns and trends, helping you make informed, fact-based, maintenance decisions.



Plan future actions with better information

TRUCONNECT® is a suite of remote service products and applications to support maintenance operations and drive improvements in safety and productivity. It is an important building block in delivering Lifecycle Care in Real Time.

Improved safety and optimized crane maintenance
TRUCONNECT Remote Monitoring uses sensors to collect data – such as running time, motor starts, work cycles and emergency stops. Brake and inverter monitoring is also available. This data and other crane usage information is visible on the yourKONECRANES.com customer portal.

Remote Monitoring provides asset usage and operating information that is used to assess crane condition. Notification of hoist overloads, emergency stops and over-temperature occurrences are sent through text or email alerts, allowing for prompt response.

Remote Monitoring also gives you an estimation of the remaining design working period (DWP) of selected components, such as hoist brakes and structures.

Global network of crane know-how
TRUCONNECT Remote Support provides 24/7 access to a global network of crane experts and specialists, offering problem solving and troubleshooting to help reduce unplanned downtime. In controlled circumstances, two-way communication with the machines and their operators can be established in order to expedite corrective action. Remote Support is ideally suited for extremely remote locations.



Konecranes lifting equipment can help you save hours each day in roll change time.



Why choose Konecranes?

FOR PROVEN RESULTS

Konecranes provides its customers with well-engineered, high-quality lifting equipment and proven results. Our equipment is designed to increase your safety and productivity as well as reduce your operating costs. Our deep understanding of the paper and forest industry allows us to offer you just the right solutions.

FOR RELIABILITY

Konecranes offers quick and responsive service thanks to our global service network of more than 600 locations. With our transparent, reliable and honest service we comply with our core value: “Don’t let the customer down.”

FOR FINANCE

Konecranes is on a mission to provide you with the lowest total cost of ownership of lifting equipment.

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 and machine tools of all makes.

**LEARN MORE ABOUT
OUR OTHER INDUSTRY OFFERINGS**

Looking to buy a crane? Try our new crane advisor

Consult our Crane Advisor, an online tool that offers recommendations based on your specific lifting-application needs. The quick, four-step process will tell us what you need so that we can help match the right crane for you. Simply click and submit, and promptly, Crane Advisor will provide you with a personalized online recommendation.


Visit crane advisor



PAPER & FOREST INDUSTRY

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INTELLIGENT CRANES IN THE PAPER AND FOREST INDUSTRY

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