



# MATERIAL HANDLING MACHINE SOLUTIONS FOR PORTS



## MANTSINEN MATERIAL HANDLERS FOR PORTS

# WORLD-CLASS MACHINERY FROM THE LAND OF THE THOUSAND LAKES

**The story of Mantsinen began in 1963 when the Mantsinen brothers Veli and Juhani began transporting wood and timber for local companies and municipalities. As the decades have passed by, Mantsinen has grown steadily into a world-renowned name in logistics and material handling.**

The silhouette of a Mantsinen material handler is a common sight at the largest and busiest ports world-wide. The roots of the Mantsinen machines are planted into the thick soil of practical operations.

We have perfected our machinery over the past decades as there were no other suitable machines available to meet our own high demands, which has led to today's turn key solutions offered by the Mantsinen team.

Today, Mantsinen boasts of a wide portfolio of material handlers ranging from 60 to over 400 tons, and a wide variety of attachments. Our products are backed by our extensive service offering, from fully outsourced logistics services to consulting, training, service and spare parts.

### LOADS OF EFFICIENCY

Port operations nowadays are in a constant development stage and under fierce competition, where only the most efficient techniques and solutions survive. Mantsinen's role in this rivalry is to be the frontrunner in efficiency and innovation ensuring your continued success.

With Mantsinen you have the upper hand of improving entire logistics processes – not just loading the goods.



**MANTSINEN  
IN A NUTSHELL**

FOUNDED IN  
**1963**

EMPLOYEES APPROX  
**550**

**MATERIAL HANDLERS**

**LOGISTIC SERVICES**

Dealers all over the world in every continent

Operational sites both in Finland and Russia



# CAN YOU PRONOUNCE YLÄMYLLY?

Mantsinen is a family-owned company. Our material handlers are proudly manufactured in Liperi at our Ylämylly factory, in North Karelia, Eastern Finland. And they are delivered worldwide, thanks to our extensive partner network.

TEST-DRIVE AREA

PRODUCTION FACILITIES

# WITH MORE SUSTAINABLE & SAFER WAYS TO OPERATE

**Safety, wellbeing, continuous learning and transparent operating methods are our ways of operation. We are strongly committed to improving quality systems alongside with environmental, health and safety systems.**

We are continuously improving our integrated operational systems. Here at Mantsinen we are fully committed to the environment and the health and safety aspects in all of our operations. Our values and ISO 45001:2008 occupational health and safety standard guide us in our daily lives. We do what we promise and promise only what we can

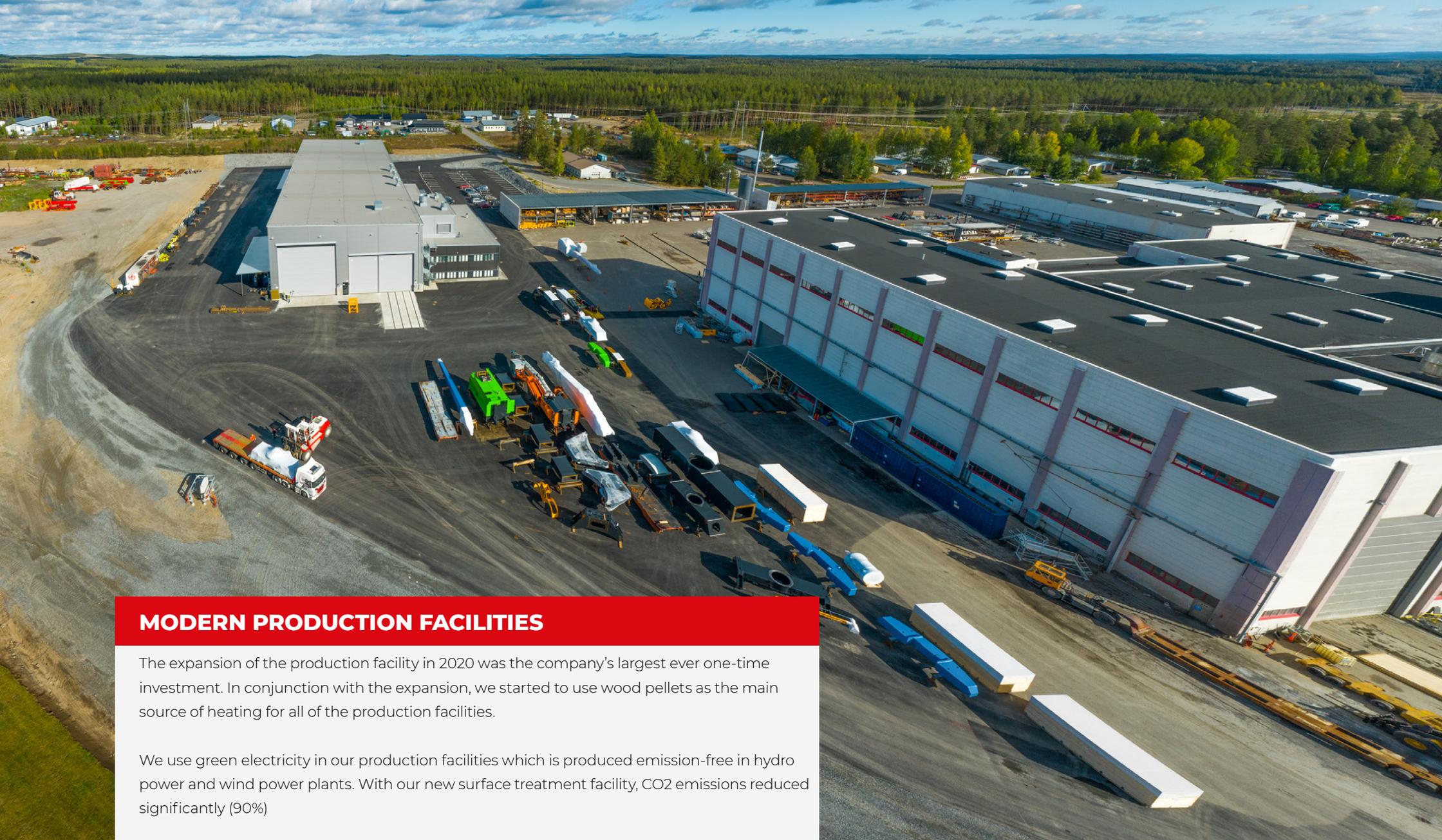
deliver. Continuous improvement and ISO 9001:2015 and 14001:2018 certifications are the cornerstones of our quality management system

## **RESOURCE & CLIMATE**

We aim to create less waste throughout the lifecycle of our products and services. This means less fuel and parts consumed, less damage to cargo, and less waste during the production.

Future generations deserve a planet which is green and healthy. We do our part in reducing fossil fuel consumption in our own and in our our customers´ processes.





## MODERN PRODUCTION FACILITIES

The expansion of the production facility in 2020 was the company's largest ever one-time investment. In conjunction with the expansion, we started to use wood pellets as the main source of heating for all of the production facilities.

We use green electricity in our production facilities which is produced emission-free in hydro power and wind power plants. With our new surface treatment facility, CO2 emissions reduced significantly (90%)

Inhouse manufacturing of machines and attachments ensures high quality without compromises. All of the critical components are thoroughly Finite element method analyzed based on strain gauge tests in real operation. The minimum lifetime expectancy of our machines is over two million work cycles with maximum load.

# STEADY GROWTH AND DEVELOPMENT



Mantsinen logistic services has handled an equivalent amount of roundwood to wrap the whole Earth with a ten meter high load stack – and this amount is growing each day.

## NOW THERE ARE TWO GROWING BUSINESS UNITS

Mantsinen focuses on the possibilities in sustainability, continuous learning and the new technologies

## FIRST THERE WERE TWO BROTHERS

<b>1963</b>	<b>1970s</b>	<b>1990s</b>
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The Mantsinen brothers start their entrepreneurial career

The founding of the logistics services business

Machine modifications

The expansion into international markets.

### 1998

The first material handler delivered to harbour operations



## NEW STRATEGY

## LOGISTIC SERVICES

## 2000s

## 2020s

## MATERIAL HANDLERS

The expansion and development of the dealer network

- **2017** Mantsinen 300 enters the market
  - **2019** Mantsinen 60 enters the market
  - **2008** The Mantsinen 200 Hybrilift enters the market
- The launch of own design, The Mantsinen material handler product line

# HE AIN'T HEAVY, HE'S MY BROTHER

The operational background of the Mantsinen brothers has been the backbone of the company, giving us a strong customer perspective in the production of hydraulic material handlers.

## THE FIRST MANTSINEN CONVERTED FROM AN ÅKERMAN EXCAVATOR



**OUR BIGGEST MATERIAL  
HANDLER TODAY:  
MANTSINEN 300R  
HYBRILIFT®**

# THE ADVANTAGES OF HYDRAULIC CRANES

# PRODUCTIVE AND PRECISE

**Hydraulic cranes beat traditional harbour cranes in speed and controllability. Usually, improved productivity is reached even with smaller single payload. The attachment is all the time in full control, making grappling and handling fast and efficient.**

## WHEN PRODUCTIVITY MATTERS

Hydraulic 360° free attachment rotation is an essential part of efficient operation. With the available quick coupling, the changing of the attachment from operation to operation only takes minutes.

At the end of the day, only productivity matters, and cargo handling time per vessel

is reduced remarkably with a hydraulic crane. Also capital cost and operation cost per tonnage are very low with high hourly capacity.

## SAFE AND PRECISE OPERATION

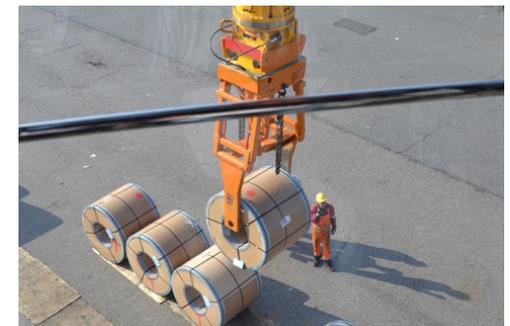
On a hydraulic crane the attachment has a direct connection to the rigid boom, which means that the load is in full control all the time. Advanced hydraulics and control system provide excellent controllability, including attachment rotation. The machine and operation are practically immune against wind conditions.

Attachment manouvers, such as load release, can be executed by the operator through hydraulic control functions.

In most cases, in brake bulk operations, there is no need for additional personnel inside the hold, making the operation faster and safer. A full direct control operation with semiautomatic attachments and direct view into the cargo hold can also provide significant labour cost savings.

## EXTENSIVE RANGE FOR ALL PURPOSES

Mantsinen offers the most extensive range of cranes for heavy duty applications. The range starts with the Mantsinen 60, with 60 tons equipment weight, and extends all the way to the Mantsinen 300, with potential weight of more than 400 tons. Our range covers the full spectrum of needs in ports, terminals and heavy industries.

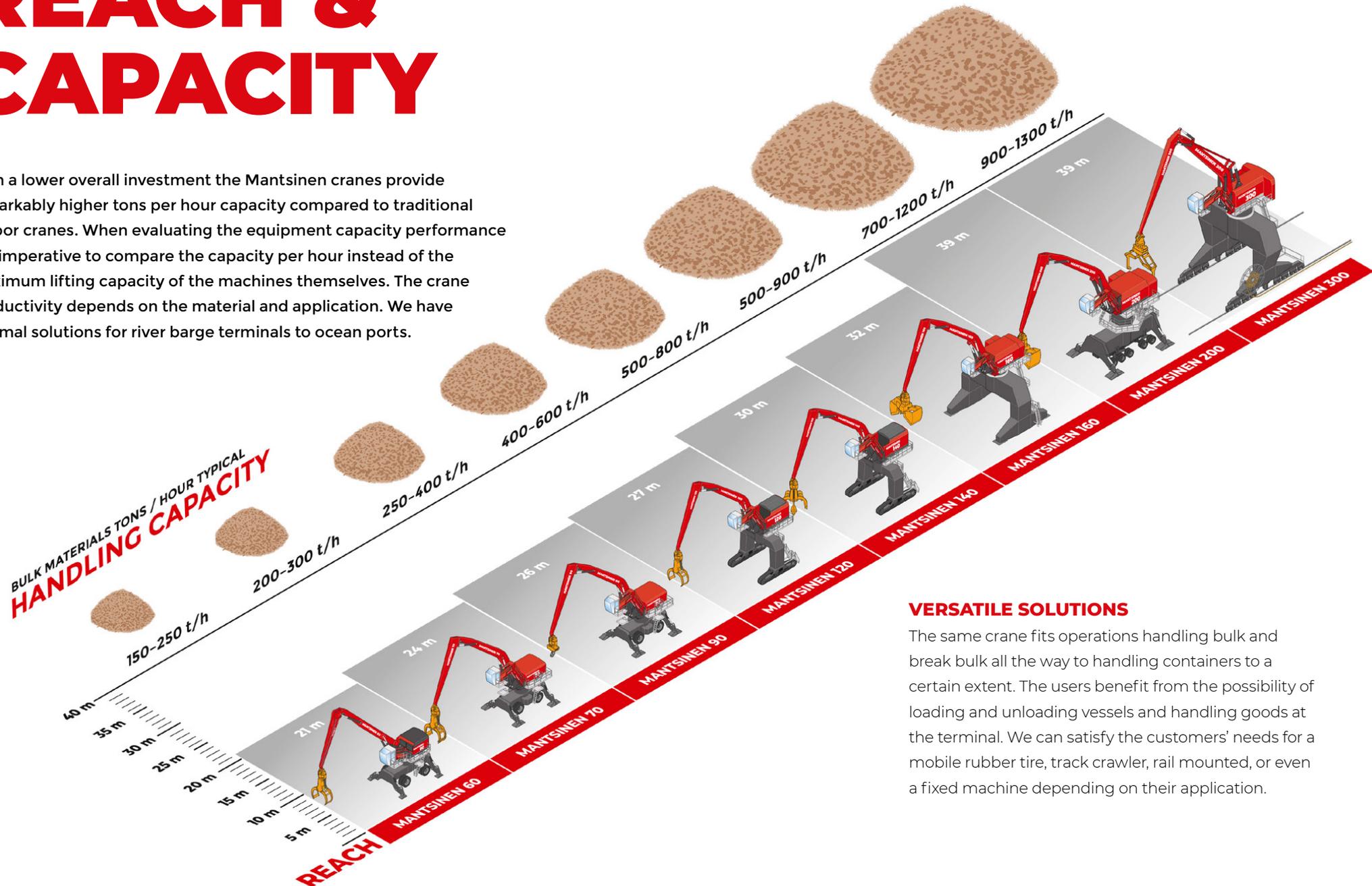


## DID YOU KNOW?

Crane accuracy and load controllability reduce the risk of damaged goods. The load can be positioned precisely, and usually without additional machinery in the hold. This has been noticed **to reduce damage to the goods by 80 percent**, while productivity has doubled compared to the traditional harbour cranes.

# REACH & CAPACITY

With a lower overall investment the Mantsinen cranes provide remarkably higher tons per hour capacity compared to traditional harbor cranes. When evaluating the equipment capacity performance it is imperative to compare the capacity per hour instead of the maximum lifting capacity of the machines themselves. The crane productivity depends on the material and application. We have optimal solutions for river barge terminals to ocean ports.



## VERSATILE SOLUTIONS

The same crane fits operations handling bulk and break bulk all the way to handling containers to a certain extent. The users benefit from the possibility of loading and unloading vessels and handling goods at the terminal. We can satisfy the customers' needs for a mobile rubber tire, track crawler, rail mounted, or even a fixed machine depending on their application.

## THE MASTER OF MATERIAL HANDLING

# ONE MACHINE, MANY OPERATIONS

**Every day Mantsinen machines handle hundreds of thousands of tons of cargo at the ports of the world. They carry out loading and unloading of vessels, wagons, cars, handle cargo to conveyors and form significant load stacks.**

These machines also operate within the Mantsinen Group, which allows for more indepth research into the handling technology and the design of the material handling equipment. This comprehensive understanding and the decades direct experience in own use make Mantsinen machines special: Created for the most demanding operations.

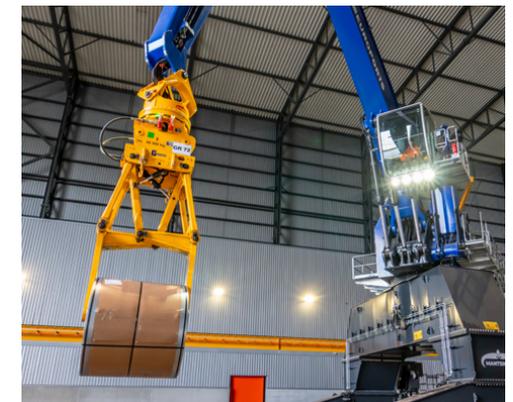
### **ALWAYS THE RIGHT ATTACHMENT FOR THE JOB**

The Mantsinen attachments also serve the versatile tasks of the users. As we design and manufacture attachments ourselves there is always great focus on having the optimal tool for each application and material.

Sometimes, if there is a very well defined load both the crane and the attachment can be optimized for that – like feeding chemicals for a fertilizer company, feeding logs onto trucks, or grain into a silo. Even more often there is a call for multi-purpose attachments typical for a commercial port's daily business. In that case we offer standard

or custom-made buckets, grabs, hooks and spreaders which can be interchanged in a blink of an eye with our robust quick coupling system. Whatever goods you want to handle, we have a solution for your application.

Depending on the size of the machine we can handle steel coils up to 30 tons, or fully loaded containers. Our smaller cranes are perfect for smaller scale handling of logs, scrap, or bulk.



### **A MATTER OF MINUTES**

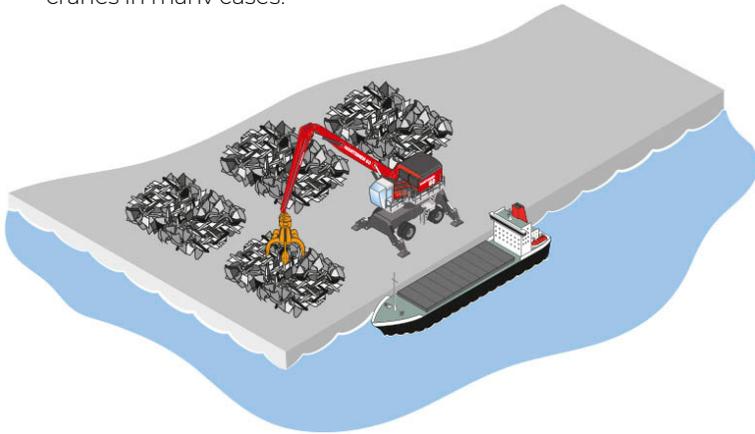
When operations require frequent change of tools, Mantsinen quick coupling device improves productivity by reducing the down-time of your material handler. The attachment can be changed in a few minutes.



# THERE'S A MANTSINEN FOR EVERY PORT

**The wide Mantsinen machine range offers the ideal solution from river ports up to the Panamax size vessels at ocean ports.**

Mantsinen material handlers have several applications in ports and terminals, and they handle various materials from dry bulk to general cargo and containers. With Mantsinen hydraulic harbour cranes, handling capacity can be more than doubled compared to traditional cable cranes in many cases.



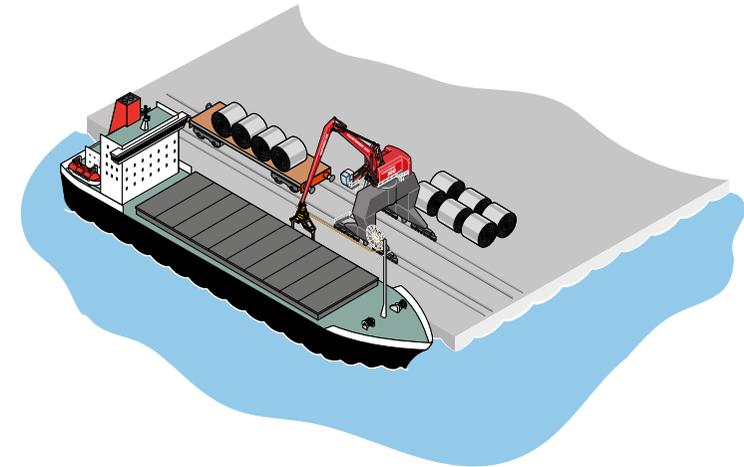
Port activity is full of daily operations for the movement of incoming, outgoing and intermodal cargo, which must be carried out in a short time. A crawler, wheel based, or rail-mounted machine will ensure restricted ground pressures, travel speeds and always excellent cycle speeds.



Our material handlers are all-weather designed, allowing the port to carry out non-stop work. Rigid boom is immune to swinging and wind compared to traditional harbour cranes making the operations fully controllable all the conditions.



We have long experience of 24/7 bulk handling in our own logistic services, so we really know the operational challenges and demands. Special attention has been paid to the control fatigue as part of the design process. Utilizing the experience from our own logistics services Mantsinen is able to combine productivity and durability without any compromises.



A wide range of attachments, boom and stick configurations and cab elevation options allow the machine to be used flexibly for handling any port cargo within the permissible lifting capacity.

# A RIGHT-SIZED MACHINE FOR EACH VESSEL SIZE

						REACH WITH FULLY LOADED CONTAINERS	
Mantsinen model							Mantsinen model
300						<b>6 ROWS</b> 	300
200						<b>4 ROWS</b> 	200
160							
140							
120							
90							
70							
60							
Vessel size	<b>INLAND SHIP</b> Width up to 12 m Max. 4000 DWT	<b>COASTER</b> Width up to 18 m Max. 10 000 DWT	<b>HANDYSIZE</b> Width up to 27 m Max. 35 000 DWT	<b>HANDYMAX</b> Width up to 32 m Max. 55 000 DWT	<b>PANAMAX</b> Width up to 34 m Max 80 000 DWT	<p>The Mantsinen material handlers can be used for loading and unloading of several different vessel sizes. The largest machines are also suitable for handling fully loaded containers.</p>	

# RED MACHINES CREATE ENVIRONMENTAL VALUE

For more than two decades, Mantsinen has paved the way in energy-saving innovations and sustainable solutions.

## BREAK-THROUGH DUALPOWER TECHNOLOGY

Why Choose? Get Both. Mantsinen DualPower is the first ever dual power concept in material handlers. It combines the best features of both electric motors and diesel engines. Resulting in a union of mobility, productivity and advanced environmental friendliness.

The Dualpower technology combines the benefits of an electric machine and the versatility of a diesel machine.

The electric motor offers significantly lower energy and maintenance costs without diesel exhaust emissions and reduced noise emittance. The standard high-performing electric motor and the diesel engine are located side-by-side in the shared engine compartment.

The system is based on a dual motor interface pump gear. The power source can be switched easily with a separation clutch.

## GET ELECTRIC

The electrically powered machines offer a cost effective and ecological alternative to diesel powered machines. They provide the same performance level, with zero exhaust emissions, a low noise level and lower energy and maintenance costs. The E-series machines are available configured for local voltages upon request.



## ENERGY-EFFICIENT, YET EFFICIENT

We believe in increasing productivity by the means of efficiency. We can lower maintenance costs and increase production yields per unit of input. Improvements in operation and process reliability can also **lead to reductions** in equipment downtime, shutdowns or system failures.

**dDualPower™**  
**BY MANTSINEN**

**HYBRILIFT®**

Increases energy efficiency by up to

**50%**

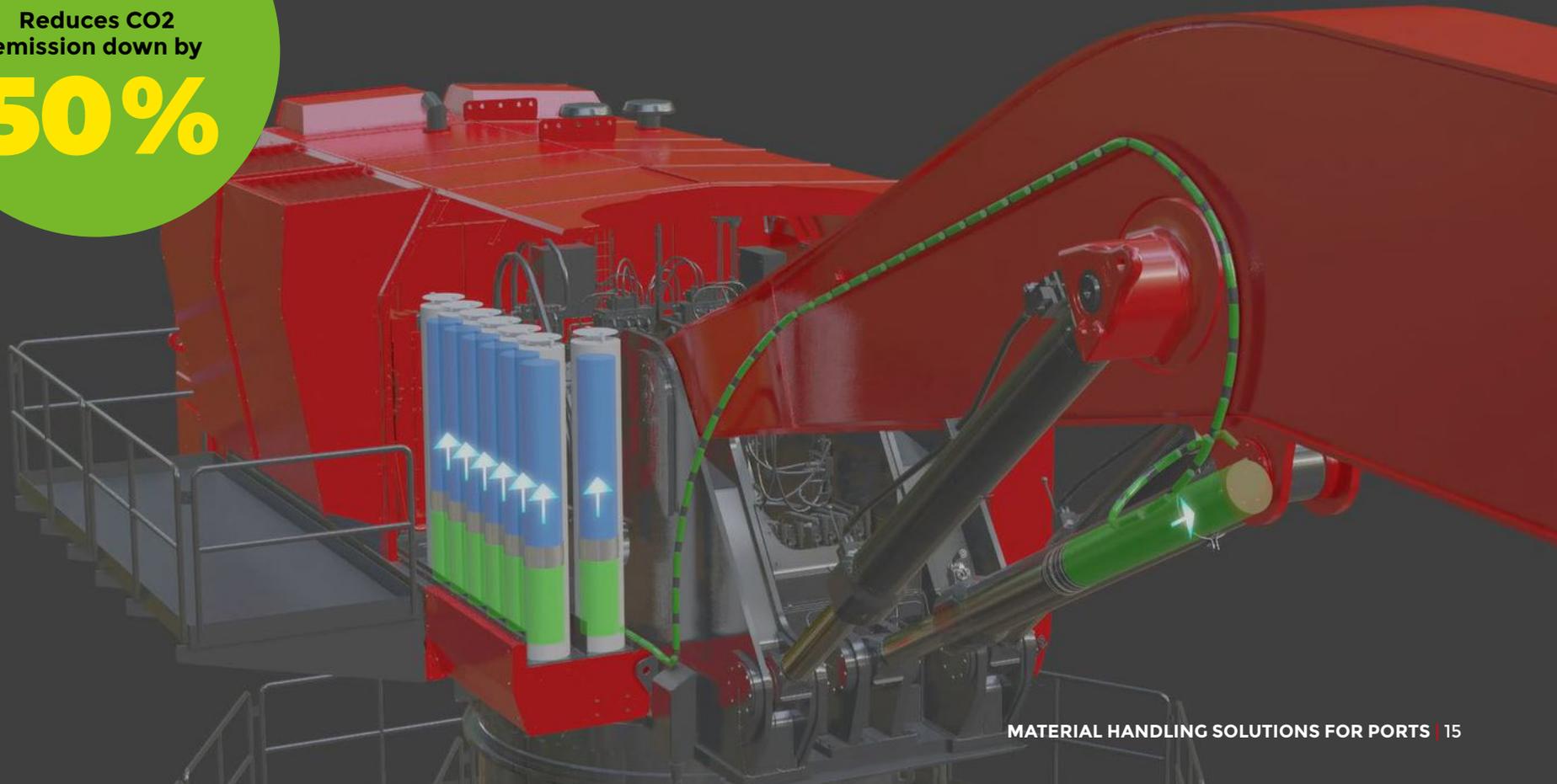
**HYBRILIFT®**

Reduces CO2 emission down by

**50%**

## INNOVATIVE AND UNIQUE STORAGE AND RECOVERY SYSTEM

Mantsinen began the testing and development of the Hybrilift already in 2006. The Mantsinen Hybrilift energy storage and recovery system decreases energy consumption and costs up to 50%. With Hybrilift, the energy created by lowering of the booms is accumulated and reused, which significantly reduces the fuel consumption and emissions. Once the main boom is lowered, oil is pumped from a cylinder to pressure accumulators where the gas pressure increases, and energy is accumulated. This stored energy is used to raise the boom and stick. More load will be lifted with less energy. Mantsinen Hybrilift material handlers have smaller diesel engines or electric motors as their traditional counterparts. This improves fuel economy and lowers emissions, as well as reduces service costs.





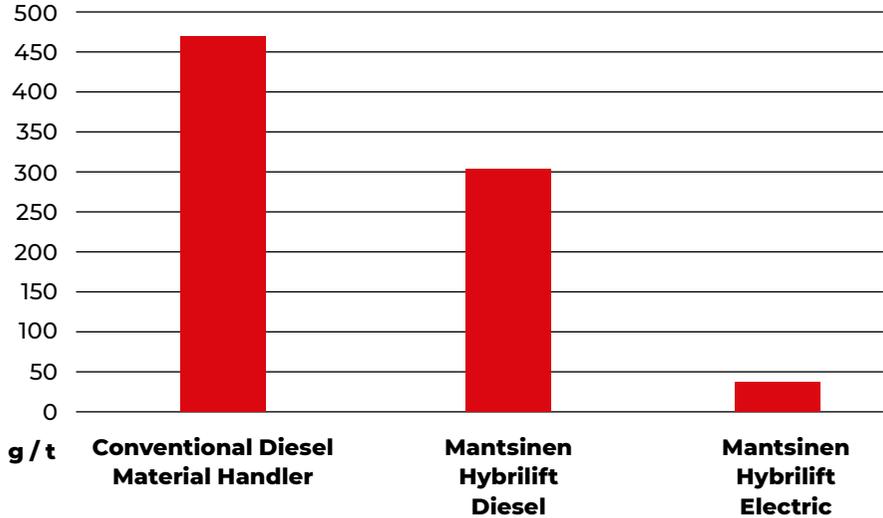
# POSITIVE IMPACT ON THE NATURE

While the emission regulations get stricter, Mantsinen offers ways to meet even the most strict requirements. Here is an example of how we have been able to reduce the CO<sub>2</sub> emissions per handled ton with different engine and machine types in Rauma, Finland.

Unloading three vessels with conventional diesel material handler and Mantsinen diesel Hybrilift together, the total fuel consumption was 1780 litres, and the CO<sub>2</sub> emissions were 4,72 tons.

The same work, done with Mantsinen Hybrilift electric machine, consumed 5224 kWh of electrical energy, and the CO<sub>2</sub> emissions were an equivalent of 0,5 tons.

**CO<sub>2</sub> EMISSIONS AT PORT OPERATION**

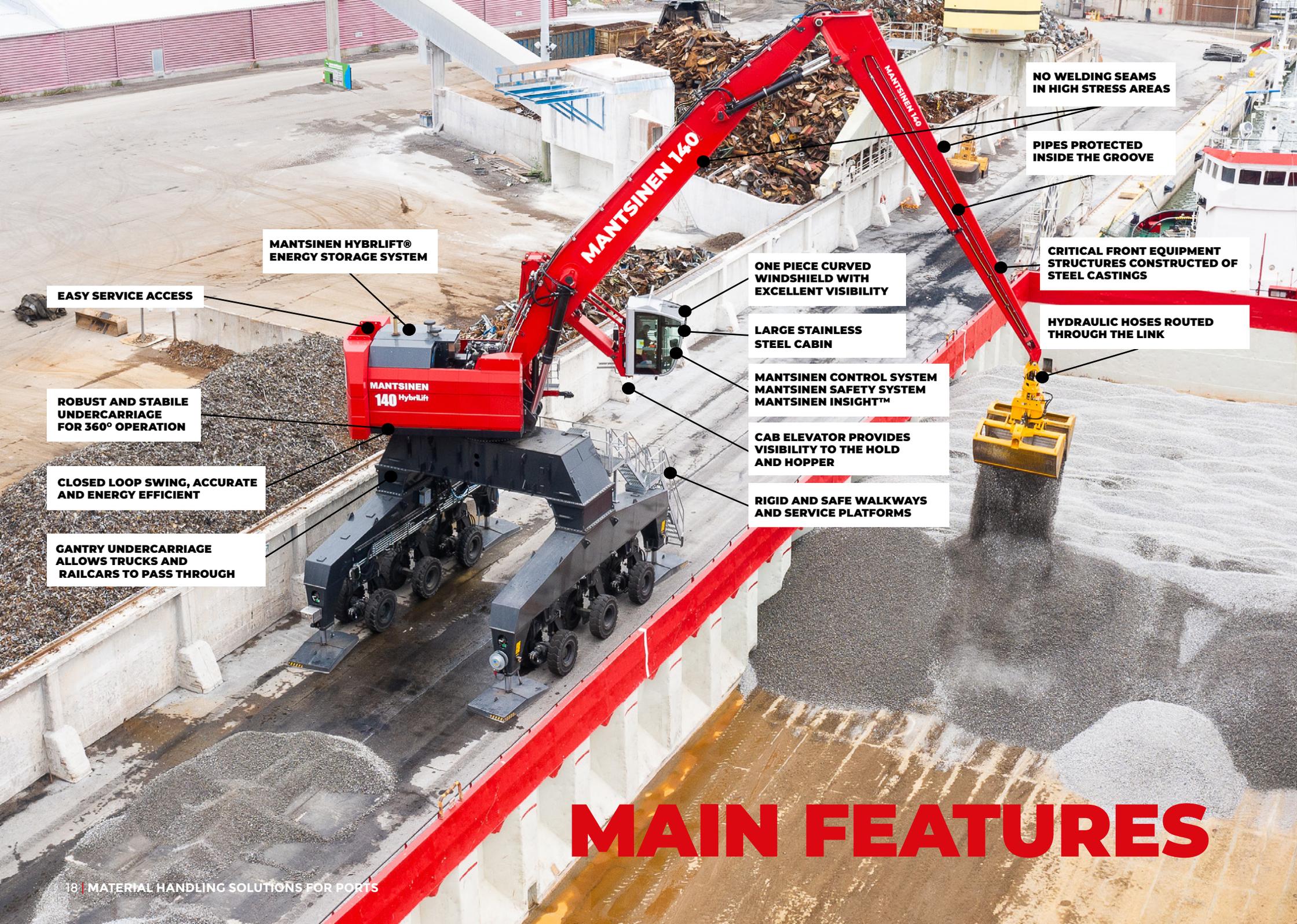


Development of CO<sub>2</sub> reduction in Rauma, Finland

## PERFORMANCE AND EASY MAINTENANCE

Engbergs was the first customer to receive a dual powered Mantsinen 120 with crawler undercarriage. The reason for the machine renewal was that the pulp mill decided to increase its production by 100%. "It seems this material handler with both diesel and electric drive is the right solution for us. We have reduced the emissions enormously", Kjell Engberg sums up.





**NO WELDING SEAMS  
IN HIGH STRESS AREAS**

**PIPES PROTECTED  
INSIDE THE GROOVE**

**CRITICAL FRONT EQUIPMENT  
STRUCTURES CONSTRUCTED OF  
STEEL CASTINGS**

**HYDRAULIC HOSES ROUTED  
THROUGH THE LINK**

**ONE PIECE CURVED  
WINDSHIELD WITH  
EXCELLENT VISIBILITY**

**LARGE STAINLESS  
STEEL CABIN**

**MANTSINEN CONTROL SYSTEM  
MANTSINEN SAFETY SYSTEM  
MANTSINEN INSIGHT™**

**CAB ELEVATOR PROVIDES  
VISIBILITY TO THE HOLD  
AND HOPPER**

**RIGID AND SAFE WALKWAYS  
AND SERVICE PLATFORMS**

**MANTSINEN HYBRILIFT®  
ENERGY STORAGE SYSTEM**

**EASY SERVICE ACCESS**

**ROBUST AND STABLE  
UNDERCARRIAGE  
FOR 360° OPERATION**

**CLOSED LOOP SWING, ACCURATE  
AND ENERGY EFFICIENT**

**GANTRY UNDERCARRIAGE  
ALLOWS TRUCKS AND  
RAILCARS TO PASS THROUGH**

# MAIN FEATURES

# COMPLETE AND PROFESSIONAL CUSTOMER SUPPORT

Material handling machines and mobile harbour cranes are used in environments where machine reliability must be guaranteed. Mantsinen team and our service network ensure that Mantsinen machines have maximum up-time. Our objective is to improve the safety, productivity and sustainability of our customer's operations. With Mantsinen Insight™ you will improve your performance and remain at the leading edge of your business.

We secure high utilisation ratio by ensuring wide spare part selection. Together with our reliable global dealer network we deliver spare parts quickly and directly. Original Mantsinen spare parts ensure a long life-cycle and lower service costs for the Mantsinen machines.



# LEAD BY DATA.

## MANTSINEN INSIGHT™



**MANTSINEN INSIGHT™** provides comprehensive information from individual material handling machines to a complete fleet. By following over 150 outputs per machine we will ensure that you keep track of your operations, on-site and remotely - wherever you are. With Insight, you will improve your performance and remain at the leading edge of your business.

**MANTSINEN INSIGHT™** enables data storing automatically with access to operational and service information. Insight offers data storage, making the machine's history easily available when needed. In addition to remote machine monitoring, Insight enables a connection to the machine control system as standard. These features combined with the onboard diagnostics ensure the best possible support for all machine-related needs.



**MACHINE HISTORY**



**RESALE**



**SERVICE HISTORY**



**PRODUCTIVITY IMPROVEMENT**



**MACHINE REPORTS**



**IMMEDIATE DATA**

## MANTSINEN ACADEMY

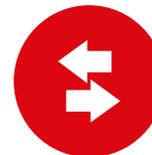
# KNOW MORE. PERFORM BETTER.

**MANTSINEN ACADEMY** is a training concept for our customers and dealers to learn more about Mantsinen material handling products and solutions. The Academy consists of an interactive training tool, online webinars, and on-site training sessions. It provides information and practical education how to achieve added value. Our goal is to help you perform at your best. Get the most out of your potential, and learn how to operate more productively, safely and conveniently.

**Academy training tool** is an interesting and interactive solution for operators, service personnel and our dealer network. Interactive tests after every lesson ensure your learning and offer unified training.

**Academy webinar trainings** are used to support both training tool and on-site trainings. Webinars are quick and easy to organize for each target group.

**Academy on-site trainings** are small group trainings and customized for specific needs. The content, methods and duration of the training are determined together with the customer or dealer. On-site trainings can be boosted with a Mantsinen simulator and your business will not be interrupted during the training. The simulator is a safe environment to learn how to use a material handling machine.



**SUPPORT**



**SAFETY**



**EFFICIENCY**



**PRODUCTIVITY**



**PROFICIENCY**



**ENVIRONMENT**

# DELIVERY CONCEPTS

## PLUG AND PLAY DELIVERY CONCEPT

Each custom made Mantsinen material handling machine is not only optimized to the specific operation, but also the delivery concept can be tailored to suit each customer's unique needs.

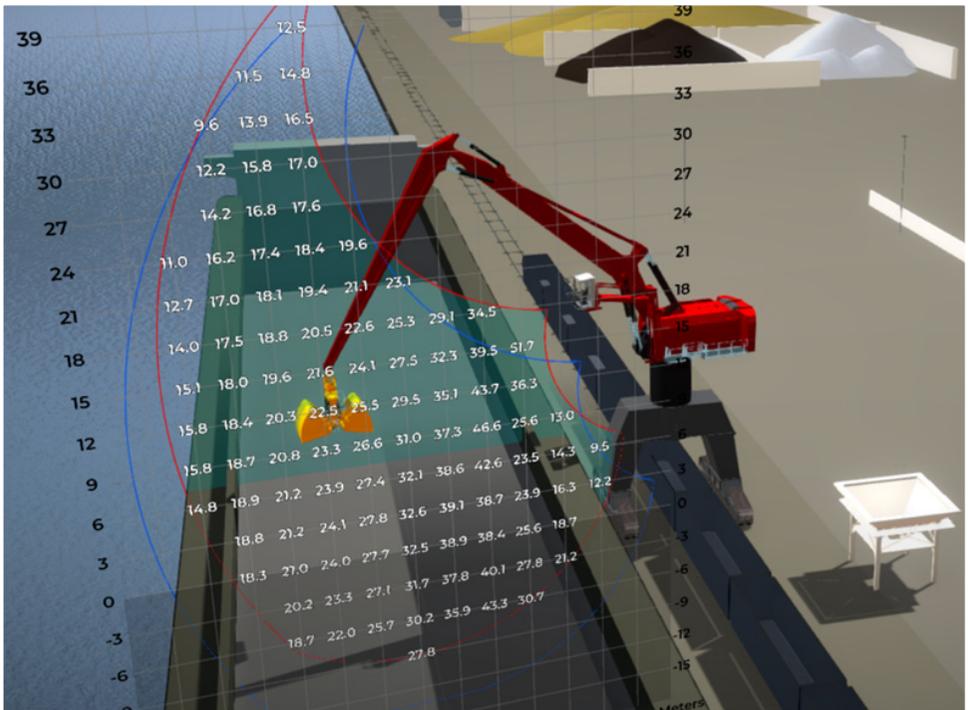
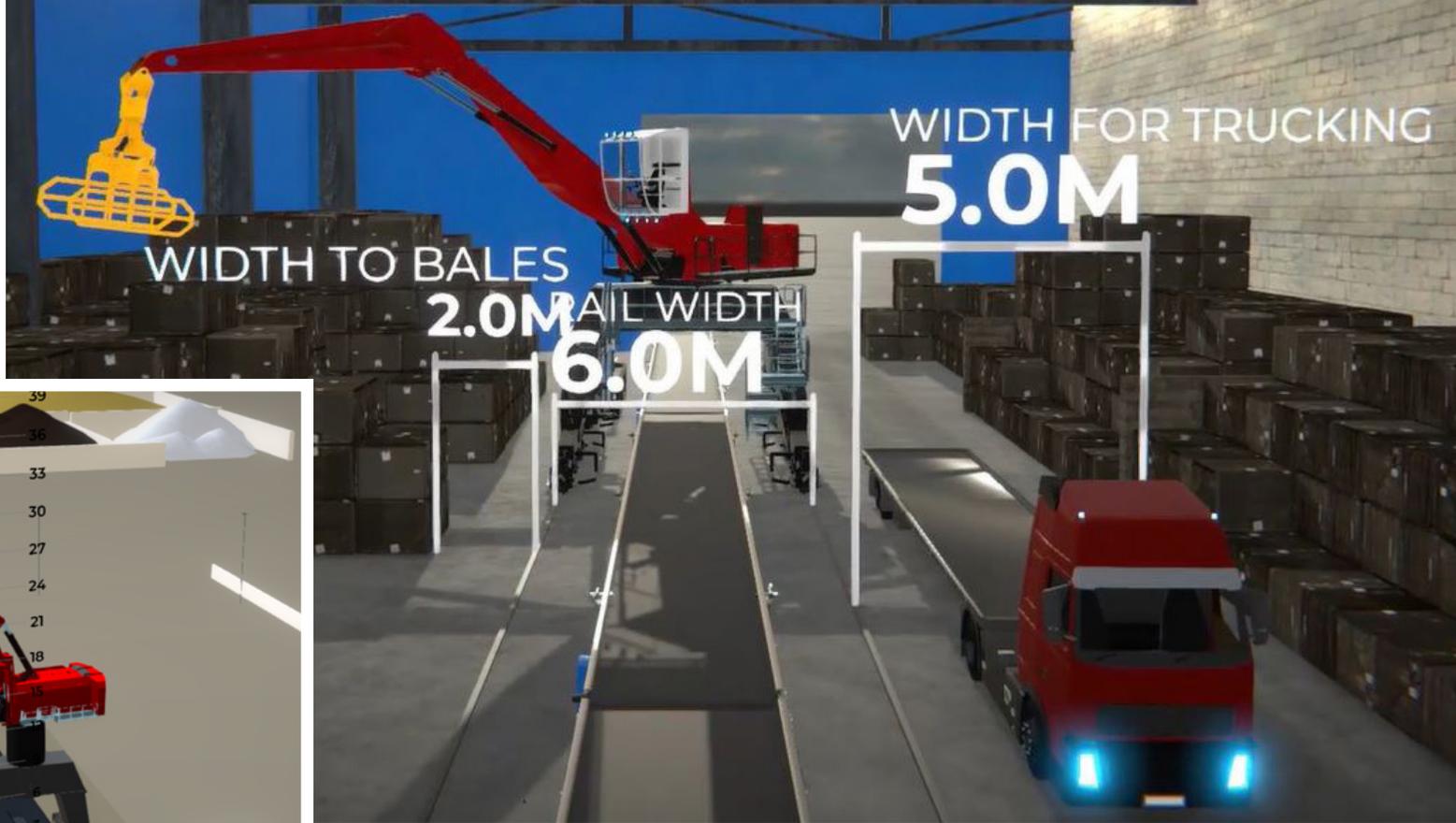
Depending on the machine's operating location, availability of offloading berths, space availability at the terminal, etc. Mantsinen can tailor the shipping concept to optimize costs and minimize disruptions to the customer's operations.

One of the proven concepts is the fully assembled machine delivery. By delivering the machines complete we are able to minimize disruptions to the local operations and significantly reduce the risks and hazards associated with moving and lifting of the heavy machine components at the terminal. Fully assembled machines are built indoors away from the weather elements using overhead travelling cranes which ensures fast and safe mode of assembly, as well as modern and comfortable working environment.

All machines delivered fully assembled go through a full functional testing before they are shipped from the factory, which allows a true plug-and-play delivery minimizing interruptions to the terminal's normal operations. Only final fine-tuning and training is left to be performed by Mantsinen commissioning engineers cutting the installation time at the site to a minimum.

After handover, our engineers will not leave your site until the crane is working to your operators' satisfaction. A happy operator is a safe and efficient operator.





# CONFIGURATOR AND SIMULATION SERVICES

The Mantsinen Machine Configurator is a Tool used to select and optimize the right machine for the right job. With the Configurator we can show, which machine size will be the most optimal to the customer's operational needs and varying applications. It is a true game changer in versatility for creating for example load charts, showcasing the maximum reach, capacity dimensions of the machine, among other things. This information makes it easy to choose the correct machine for your exact needs.

As an example, when you have a vessel and environmental details available, it is possible to enter the exact information into the program and configure, and simulate a machine that suits the application. We promise to configure your application in 15 minutes!

If you are interested in a real time machine configuration, we serve you globally together with our dealer network.



## **THE STRONGEST LINK IN THE GLOBAL LOGISTICS CHAIN**

Mantsinen provides more efficiency, speed and capacity for our customers in global logistics chain, operating with heavy and basic industry raw materials and semi-finished products. We are the hands-on frontrunner in material handling.

## **MANTSINEN GROUP LTD OY**

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