

# MANTSINEN

# 90

HybriLift®



More load, less energy.





MANTSINEN  
**90 HybriLift®**

Lift your efficiency  
to the next level  
with hydraulic speed  
and precision.



Antwerp, Belgium



Uimaharju, Finland



Güllük, Turkey

**MANTSINEN**  
**HybriLift®**  
Increases Energy  
Efficiency by up to  
**35%**



Ferrol, Spain



# MANTSINEN 90 HybriLift®

2006

HybriLift® testing and development

2008

200 HybriLift® into production and operation

2010

120 HybriLift® into production and operation

2011

160 HybriLift® into production and operation

2012

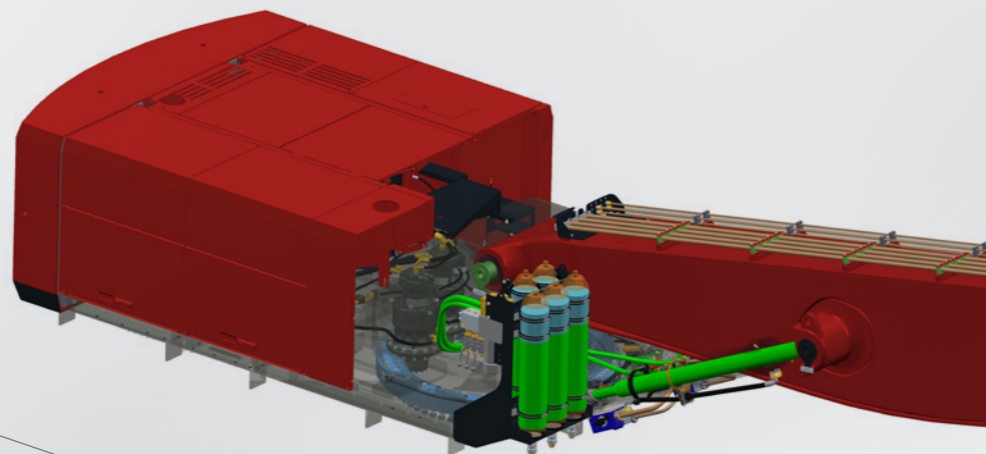
70 and 90 HybriLift® into production and operation

The unique HybriLift® energy storage and recovery system improves energy efficiency by up to 35 %.

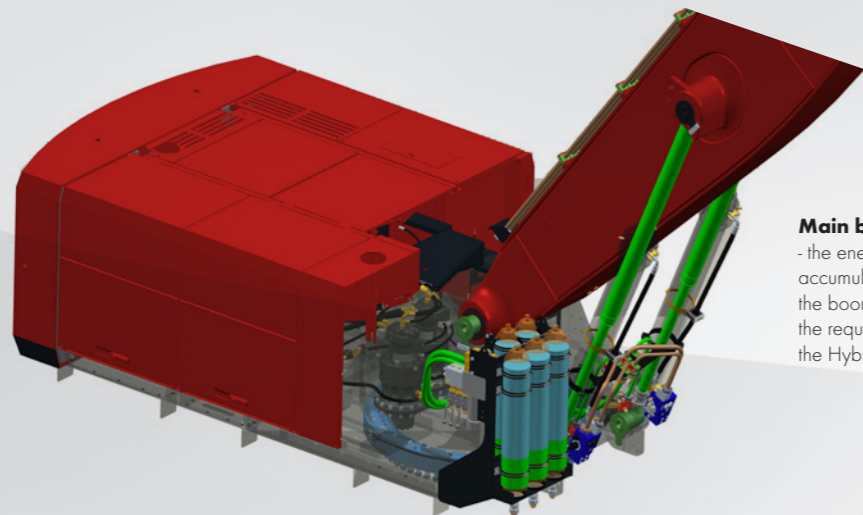
During each working cycle, energy is stored in a hydraulic accumulator system and again recovered to lift the main boom.

Mantsinen HybriLift® system allows using downsized engines and motors with lower emissions.

Mantsinen HybriLift® material handlers and attachments are designed for bulk material and general cargo handling.

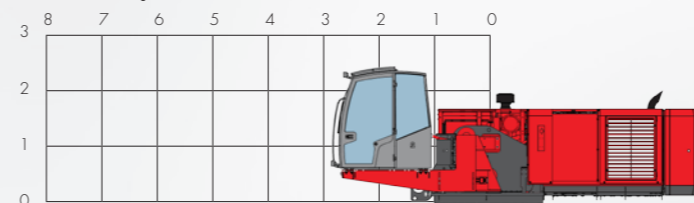


**Main boom down**  
- energy stored in increased nitrogen gas pressure in the accumulators.

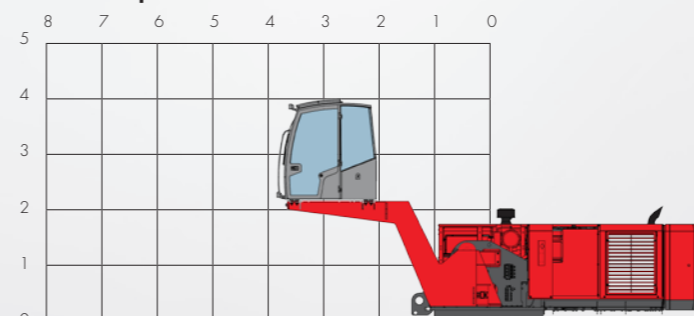


**Main boom up**  
- the energy stored in the accumulators has been used to lift the boom. Approximately 35 % of the required energy comes from the HybriLift system.

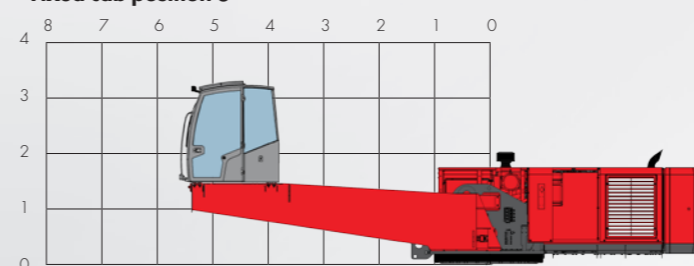
Fixed cab position 1



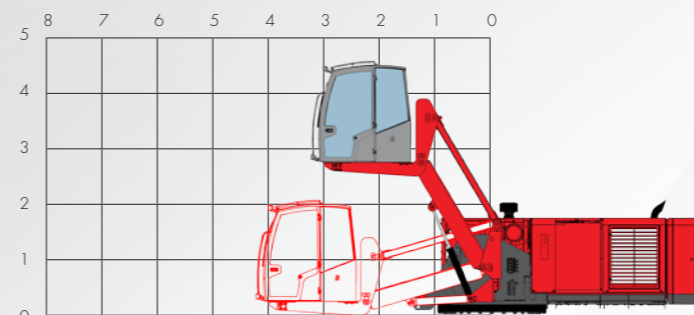
Fixed cab position 2



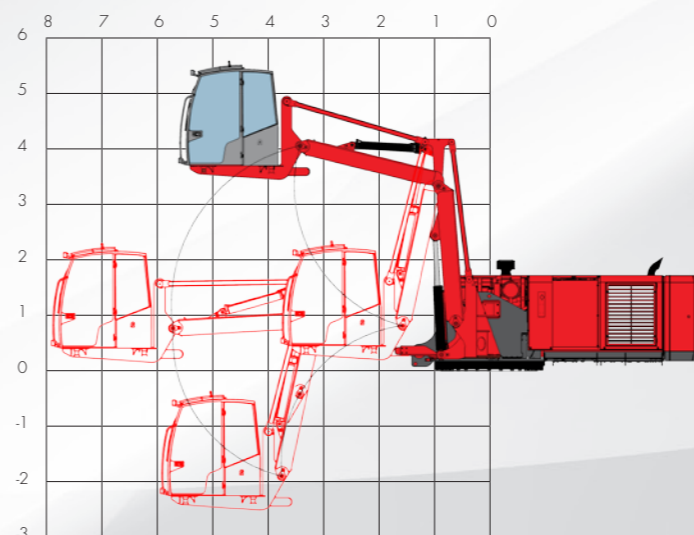
Fixed cab position 3



Cab elevator N1-3000



Cab elevator N2-4000



Maximum visibility.  
Optimum performance.

With Mantsinen material handlers the machine operator has always a clear view on operations. Mantsinen 90 has three fixed cab options and two cab elevator options.

All options feature a spacious operator cab with large windows for an excellent visibility. Large stainless steel cab featuring an instructor seat is available as an option.

Mantsinen Safety and Control Systems provide the operator all relevant machine and load data as well as provide quick adjustments and change of operating mode to Precision or Heavy Lift.



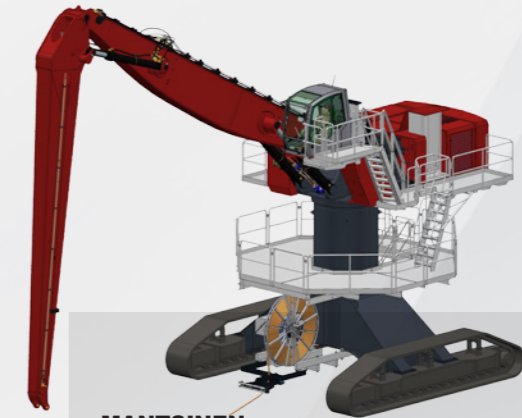
**MANTSINEN**  
Safety System



**MANTSINEN**  
Control System



# MANTSINEN 90 R



MANTSINEN  
**90 ER HybriLift®**

Mantsinen 90 ER HybriLift® runs on an economical electric motor, available with various supply voltages, 380 V to 690 V as standard and other voltages upon request.

Lower operating costs and longer maintenance intervals ensure shorter payback time on investment, while noise and particulate emissions decrease considerably.

With Mantsinen Power Pack an electric machine can be driven totally independently from electric supply.

## FRONT EQUIPMENT

### STICK TIP

Stick tip is a high-tensile cast steel component. The extensive use of cast structures in the front equipment is the backbone of its strength, durability and long service life in the most demanding applications.

### STICK BOX

Stick box is made of two fine-grain steel C-profiles. The design allows the stick to be constructed with no welding seams in high stress areas, making it light and extremely durable. Hydraulic lines are well protected on sides of the stick.

### MAIN BOOM FOOT

Main boom foot is made of cast steel providing an extended service life in one of the most critical structural components of the machine. The upperstructure frame is designed to be extremely rigid resulting in a longer service life.

### MAIN BOOM BOSSES

Main boom bosses are manufactured in high-tensile cast steel. The optimized design ensures evenly distributed stresses throughout the boom box.

## UPPERSTRUCTURE

### ENGINE AND PUMPS

The longitudinally mounted engine and pumps are easily accessible. The sound isolated compartment keeps engine noise at a minimum. Hydraulic pumps are isolated from the engine by a firewall.

### RADIATOR

Radiator and hydraulic oil cooler provide easy access and cleaning. Fan reversing function helps to keep the coolers clean also in dusty environments.

### SWING MECHANISM

The Mantsinen 90 swing mechanism consists of two swing gears and a heavy-duty three-row roller type slewing ring. The internal teeth run in grease bath. The swing mechanism has a separate closed loop circuit pump. This makes the swing extremely smooth and controllable and saves a considerable amount of energy.

### SERVICE WALKWAYS

The wide service walkways provide easy access to all service points.

## UNDERCARRIAGE

### CRAWLER UNDERCARRIAGE

The Mantsinen crawler undercarriage is available in different heights, according to requirements of the work environment. The large diameter pylon makes also high versions extremely rigid. The undercarriage can also be equipped with one or two additional fuel tanks.

### CRAWLER GANTRY

The robust gantry type undercarriage allows trucks or rail cars to pass through for direct loading and unloading. Crawler gantry under-

carriage is available in different heights. One or two additional fuel tanks are available as an option.

### TRACKS

The long and wide undercarriage provides excellent stability and 360° lift capacities throughout all working ranges.

### TRACK SHOES

The Mantsinen designed flat steel track shoes run smoothly on gravel, asphalt and concrete surfaces. Also three-grouser track shoes are available.

## CABIN AND CABIN ELEVATOR

### OPERATOR'S CABIN

The spacious, air conditioned operator cab has large windows and a floor window for excellent visibility. Large stainless steel cabin with an additional instructor seat is available as an option.

### CAB ELEVATOR

The Mantsinen cab elevator N2-4000 features independent vertical and horizontal movement to ensure maximum visibility of loading targets. Optional N1-3000 cab elevator and three raised cab positions are available to meet the application requirements.

## ATTACHMENTS

The machine can be delivered with a wide range of attachments for bulk and general cargo handling. Customized attachments are available on request.

The Mantsinen hydraulic quick coupler ensures simple and safe attachment change in a few minutes.



# MANTSINEN 90 M



## FRONT EQUIPMENT

### STICK TIP

Stick tip is a high-tensile cast steel component. The extensive use of cast structures in the front equipment is the backbone of its strength, durability and long service life in the most demanding applications.

### STICK BOX

Stick box is made of two fine-grain steel C-profiles. The design allows the stick to be constructed with no welding seams in high stress areas, making it light and extremely durable. Hydraulic lines are well protected on sides of the stick.

### MAIN BOOM FOOT

Main boom foot is made of cast steel providing an extended service life in one of the most critical structural components of the machine. The upperstructure frame is designed to be extremely rigid resulting in a longer service life.

### MAIN BOOM BOSSES

Main boom bosses are manufactured in high-tensile cast steel. The optimized design ensures evenly distributed stresses throughout the boom box.

## UPPERSTRUCTURE

### ENGINE AND PUMPS

The longitudinally mounted engine and pumps are easily accessible. The sound isolated compartment keeps engine noise at a minimum. Hydraulic pumps are isolated from the engine by a firewall.

### RADIATOR

Radiator and hydraulic oil cooler provide easy access and cleaning. Fan reversing function helps to keep the coolers clean also in dusty environments.

### SWING MECHANISM

The Mantsinen 90 swing mechanism consists of two swing gears and a heavy-duty three-row roller type slewing ring. The internal teeth run in grease bath. The swing mechanism has a separate closed loop circuit pump. This makes the swing extremely smooth and controllable and saves a considerable amount of energy.

### SERVICE WALKWAYS

The wide service walkways provide easy access to all service points.

## UNDERCARRIAGE

### RUBBER TYRE UNDERCARRIAGE

The four-wheel drive provides a good drawbar pull and facilitates operation on uneven surfaces. The extra wide and large solid rubber tyres reduce ground pressure to a minimum.

Four individually controllable outriggers permit a full 360 degree of lifting. The large 700 x 1 250 mm stabilizer pads are equipped with spherical bearings to adapt to the ground and to reduce surface pressure. The height can be tailored to suit varying applications.

## CABIN AND CABIN ELEVATOR

### OPERATOR'S CABIN

The spacious, air conditioned operator cab has large windows and a floor window for excellent visibility. Large stainless steel cabin with an additional instructor seat is available as an option.

### CAB ELEVATOR

The Mantsinen cab elevator N2-4000 features independent vertical and horizontal movement to ensure maximum visibility of loading targets. Optional N1-3000 cab elevator and three raised cab positions are available to meet the application requirements.

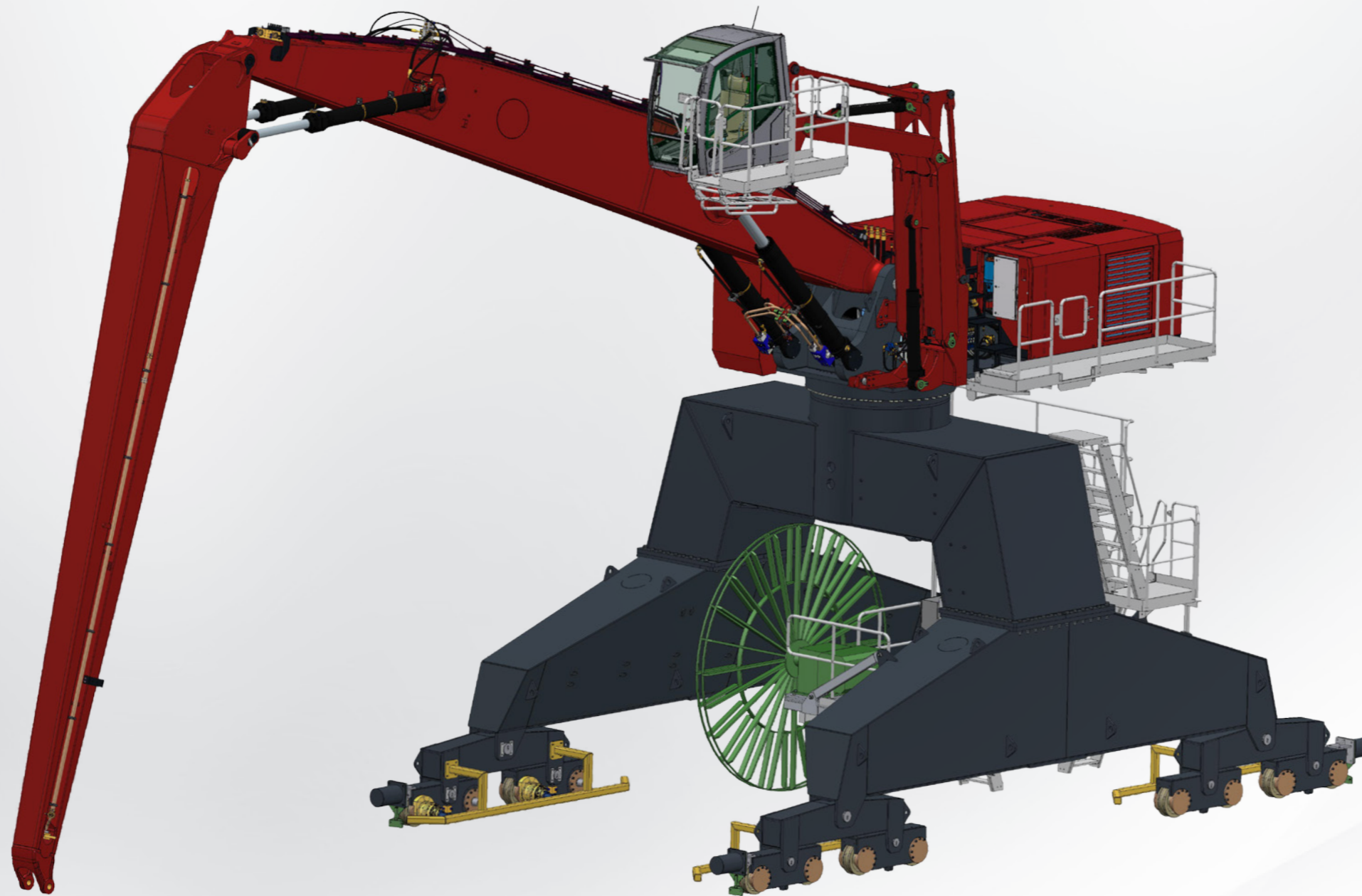
## ATTACHMENTS

The machine can be delivered with a wide range of attachments for bulk and general cargo handling. Customized attachments are available on request.

The Mantsinen hydraulic quick coupler ensures simple and safe attachment change in a few minutes.



# MANTSINEN 90 ES



## FRONT EQUIPMENT

### STICK TIP

Stick tip is a high-tensile cast steel component. The extensive use of cast structures in the front equipment is the backbone of its strength, durability and long service life in the most demanding applications.

### STICK BOX

Stick box is made of two fine-grain steel C-profiles. The design allows the stick to be constructed with no welding seams in high stress areas, making it light and extremely durable. Hydraulic lines are well protected on sides of the stick.

### MAIN BOOM FOOT

Main boom foot is made of cast steel providing an extended service life in one of the most critical structural components of the machine. The upperstructure frame is designed to be extremely rigid resulting in a longer service life.

### MAIN BOOM BOSSES

Main boom bosses are manufactured in high-tensile cast steel. The optimized design ensures evenly distributed stresses throughout the boom box.

## UPPERSTRUCTURE

### ELECTRIC MOTOR

The longitudinally mounted electric motor is easily accessible from both sides. The sound isolated compartment keeps engine noise at a minimum.

### OIL COOLER

Hydraulic oil cooler is easily accessible for cleaning. Fan reversing function helps to keep the oil cooler clean also in dusty environments.

### SWING MECHANISM

The Mantsinen 90 swing mechanism consists of two swing gears and a heavy-duty three-row roller type slewing ring. The internal teeth run in grease bath. The swing mechanism has a separate closed loop circuit pump. This makes the swing extremely smooth and controllable and saves a considerable amount of energy.

### SERVICE WALKWAYS

The wide service walkways provide easy access to all service points.

## UNDERCARRIAGE

### RAIL MOUNTED UNDERCARRIAGE

The configuration of the rail mounted undercarriage can be adapted to existing rails. Gantry undercarriage allow one or two railroad wagons to pass through. Cable reels are available to meet requirements of drive distance and speed.

### BOGIES

Mantsinen 90 ES is available with 2, 3, 4 or 6 wheel bogies according to rail and quay carrying capacities. The distance between the bogies can also be chosen according to application.

### WHEELS

Wheel diameter can be optimized to match the loads of the machine and bogie design. There are  $\varnothing 400$  mm and  $\varnothing 630$  mm wheels available.



## MANTSINEN 90 EF HybriLift®

Mantsinen 90 EF HybriLift® is a stationary version, which will be customized upon request.

Lower operating costs and longer maintenance intervals ensure shorter payback time on investment, while noise and particulate emissions decrease considerably.

Electrically powered machines are available with various supply voltages, 380 V to 690 V as standard and other voltages upon request.

## CABIN AND CABIN ELEVATOR

### OPERATOR'S CABIN

The spacious, air conditioned operator cab has large windows and a floor window for excellent visibility. Large stainless steel cabin with an additional instructor seat is available as an option.

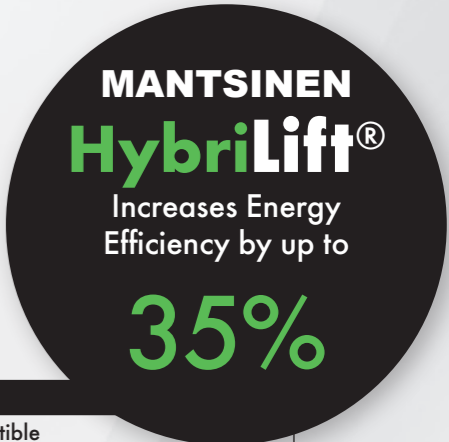
### CAB ELEVATOR

The Mantsinen cab elevator N2-4000 features independent vertical and horizontal movement to ensure maximum visibility of loading targets. Optional N1-3000 cab elevator and three raised cab positions are available to meet the application requirements.

## ATTACHMENTS

The machine can be delivered with a wide range of attachments for bulk and general cargo handling. Customized attachments are available on request.

The Mantsinen hydraulic quick coupler ensures simple and safe attachment change in a few minutes.



# TECHNICAL SPECIFICATIONS

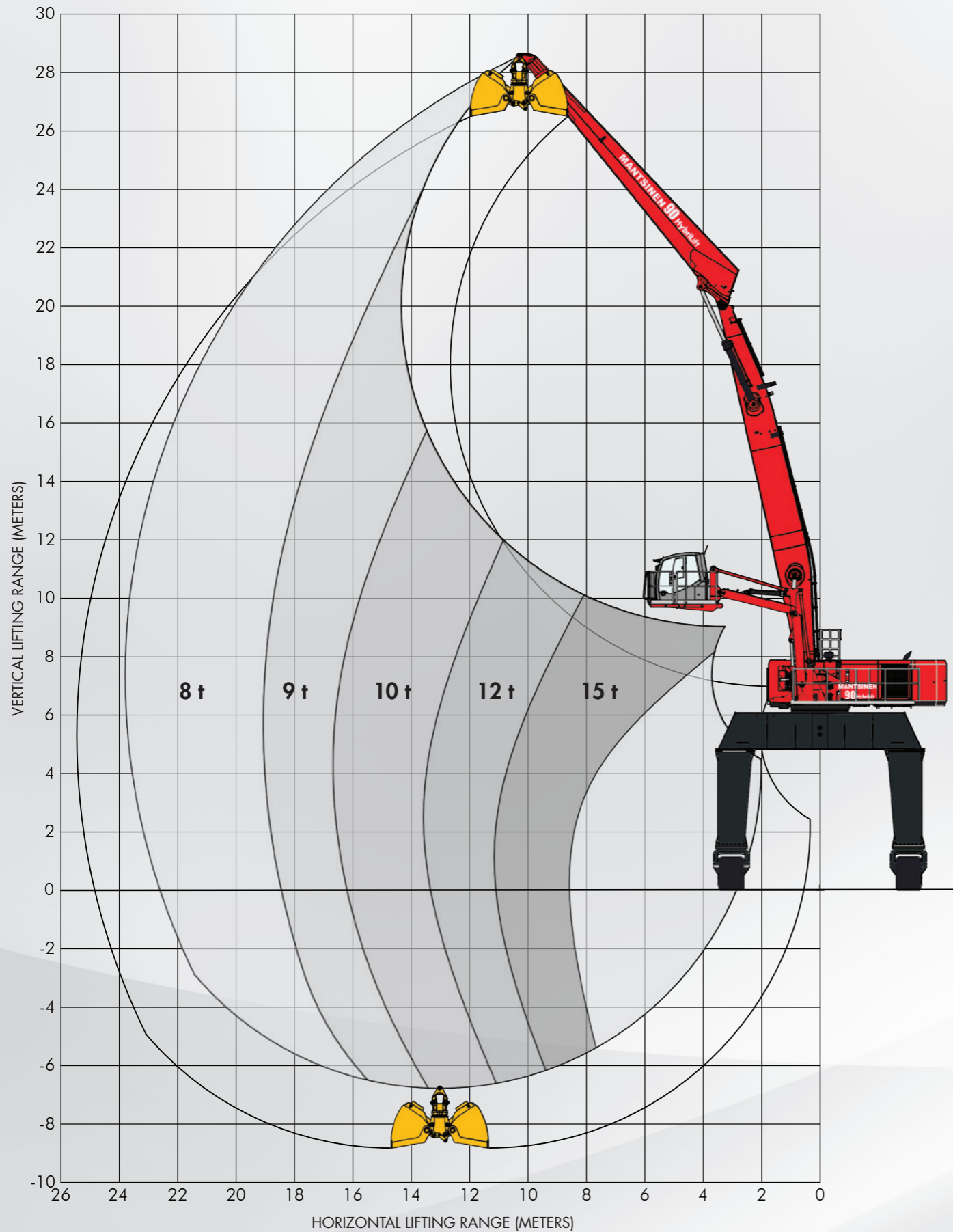
Front equipment	
Max. horizontal reach	26 m (Boom 14 m + Stick 12 m)
Main boom lengths, straight and curved	10 m / 11 m / 12 m / 13 m / 14 m
Stick lengths	8 m / 9 m / 10 m / 11 m / 12 m
Diesel Engine	
Volvo TAD1171VE Stage IV / Tier 4 f	265 kW / 1800 r/min, 1785 Nm / 1250 r/min, displacement 10,84 l
Volvo TAD1141VE Stage II / Tier 2	265 kW / 1800 r/min, 1785 Nm / 1250 r/min, displacement 10,84 l
Number of cylinders	6
Electric system	24 VDC, Batteries 2 x 220 Ah / 12V
Electric motor with soft starter	
Motor type	200 kW 50 Hz IEC cast iron motor 1500 rpm, IE3
Voltages	380 to 690 V as standard, other voltages upon request
Hydraulic system	
HybriLift® energy recovery system	80 kW equivalence to engine power
Oil flow, equipment and drive	2 x 430 l/min
Operating pressure	330 bar
Operating pressure, drive and Heavy Lift mode	350 bar
Oil flow swing closed loop system	400 l/min
Swing pressure, max.	270 bar
Max. swing speed	5,3 r/min
Swing torque	240 kNm
Undercarriage with rubber tyres 90 M / 90 EM	
Weight without attachments	90 to 100 t depending on configuration
Heights	2,1 m / 3 m / 3,6 m / 4,3 m / 4,8 m
Wheelbase	4 300 mm
Tyres	4 pcs 26.5-66 solid rubber
Service brakes	Wet multiple-disc brake
Parking brake	Automatic wet multiple-disc brake
Drive speed	Max 10 km/h
Stabilizer pads	700 x 1 250 mm, with spherical bearings
Undercarriage with tracks 90 R / 90 ER	
Weight without attachments	90 to 110 t depending on configuration
Standard undercarriage height	2,5 m
Undercarriage height with pylon	4,0 m / 4,7 m / 5,2 m / 7,0 m
Undercarriage height with gantry	4,0 m / 6,5 m / 7,0 m / 8,0 m / 8,7 m
Load carrying track length	6 210 mm, Gantry 6 820 mm
Track shoes	550 mm three-grouser / 670 mm flat / 850 mm flat
Travel speed	Max 4,0 km/h
Undercarriage mounted on rails 90 S / 90 ES	
	According to customer specification.
Undercarriage, fixed 90 F / 90 EF	
	According to customer specification.
Refill capacities	
Hydraulic oil reservoir	800 l
Fuel tank	870 l
AdBlue tank	70 l

Operator's cabin	
<ul style="list-style-type: none"> <li>• Heating and air conditioning</li> <li>• Ergonomic air-cushioned seat                             <ul style="list-style-type: none"> <li>- Adjustable armrests</li> <li>- Seat belt and seat heating</li> <li>- Adjustable lumbar support</li> <li>- Adjustable headrest</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Radio with CD, MP3-compatible</li> <li>• Floor and roof window</li> <li>• Tinted window glasses</li> <li>• Windshield wiper with intermittent function, washer</li> <li>• Roof window wiper</li> <li>• Sun shades</li> </ul>
Mantsinen Control System	
<ul style="list-style-type: none"> <li>• Ergonomic, adjustable multi-function joysticks</li> <li>• Drive and steering by one grip joystick</li> <li>• All front equipment and attachment functions proportional</li> <li>• Function speeds and ramps adjustable</li> <li>• Electric end cushion boom, stick and cab elevator</li> <li>• Precision mode</li> <li>• Heavy lift mode</li> </ul>	<ul style="list-style-type: none"> <li>• Colour display 5.7" user interface                             <ul style="list-style-type: none"> <li>- Operating data and gauges</li> <li>- Warning signals, illuminated pop up type symbols</li> <li>- Acoustic signal for critical alarms</li> <li>- Settings</li> <li>- Diagnostics</li> <li>- Log function</li> <li>- Instant power consumption</li> <li>- Periodic fuel or electric power consumption</li> </ul> </li> </ul>
Mantsinen Safety System	
<ul style="list-style-type: none"> <li>• Overload and stability control with motion cut</li> <li>• Cab collision prevention with motion cut</li> <li>• Can Open CAN-bus technology</li> <li>• Adjustable operation limitations</li> </ul>	<ul style="list-style-type: none"> <li>• Colour display 5.7" user interface                             <ul style="list-style-type: none"> <li>- Animated machine operation</li> <li>- Load, reach and height information</li> <li>- Attachment menu</li> </ul> </li> </ul>
Standard equipment	
<ul style="list-style-type: none"> <li>• Load control valves on boom and stick cylinders including hose rupture valves</li> <li>• Thermostat controlled fans</li> <li>• Full flow filters</li> <li>• By-pass fine filter 3 µm with water absorption</li> <li>• Second pressure adjustment for attachments</li> </ul>	<ul style="list-style-type: none"> <li>• Central lubrication system for front equipment and slewing ring</li> <li>• LED working lights, 4 underneath the cabin and 4 on stick</li> <li>• Outrigger piston rod protection</li> <li>• Acoustic travel alarm</li> <li>• Signal horn</li> </ul>
Options	
<ul style="list-style-type: none"> <li>• Fixed cab positions</li> <li>• Cab elevator N1-3000</li> <li>• Cab elevator N2-4000</li> <li>• Large crane cabin with an instructor seat</li> <li>• Operator seat BE-GE 3000                             <ul style="list-style-type: none"> <li>- Airvent function</li> <li>- Air-cushioned</li> <li>- Centralized control panel</li> </ul> </li> <li>• Camera under stick</li> <li>• Rear view camera</li> <li>• Beacon light travel alarm</li> <li>• Loudspeaker</li> <li>• Mantsinen Control System remote access</li> <li>• Automatic clamshell bucket levelling while closing</li> </ul>	<ul style="list-style-type: none"> <li>• Biodegradable hydraulic oil</li> <li>• Large by-pass fine filter with water absorption</li> <li>• Second and third hydraulic function for attachment</li> <li>• Additional filters for attachment hydraulic lines</li> <li>• Engine preheating</li> <li>• Hydraulic oil preheating</li> <li>• Cab preheating</li> <li>• Magnet generator 20/30 kW</li> <li>• Additional fuel tanks, depending on configuration</li> <li>• Electric re-fuelling pump</li> <li>• Central lubrication system for mobile undercarriage</li> <li>• Heavy Duty tracks</li> </ul>

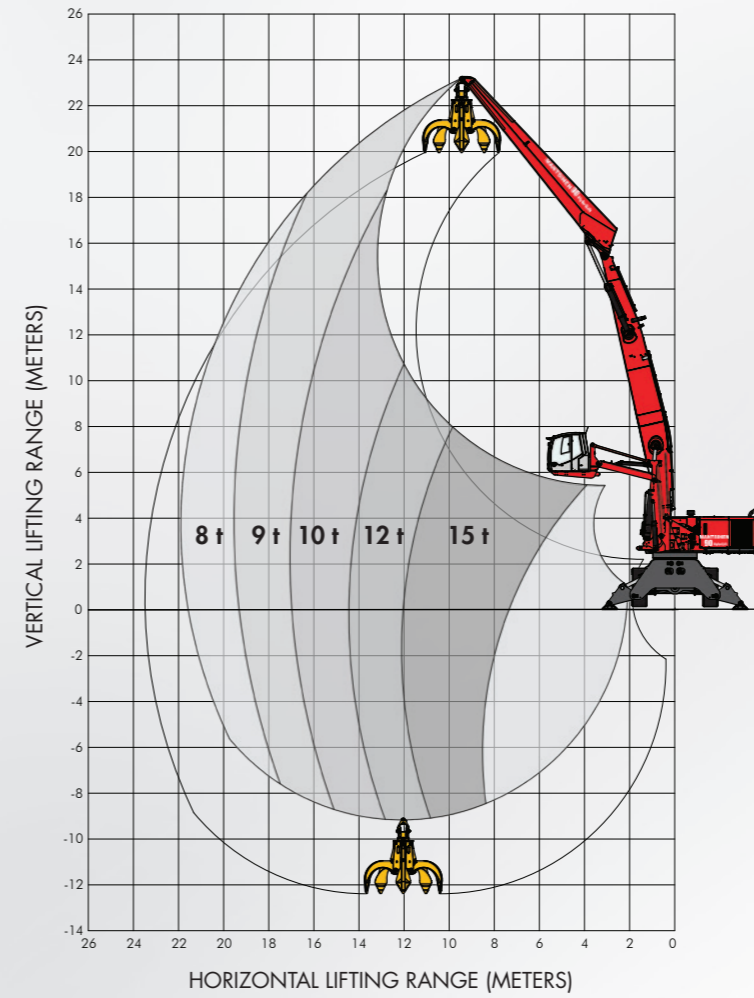


# MANTSINEN 90 HybriLift®

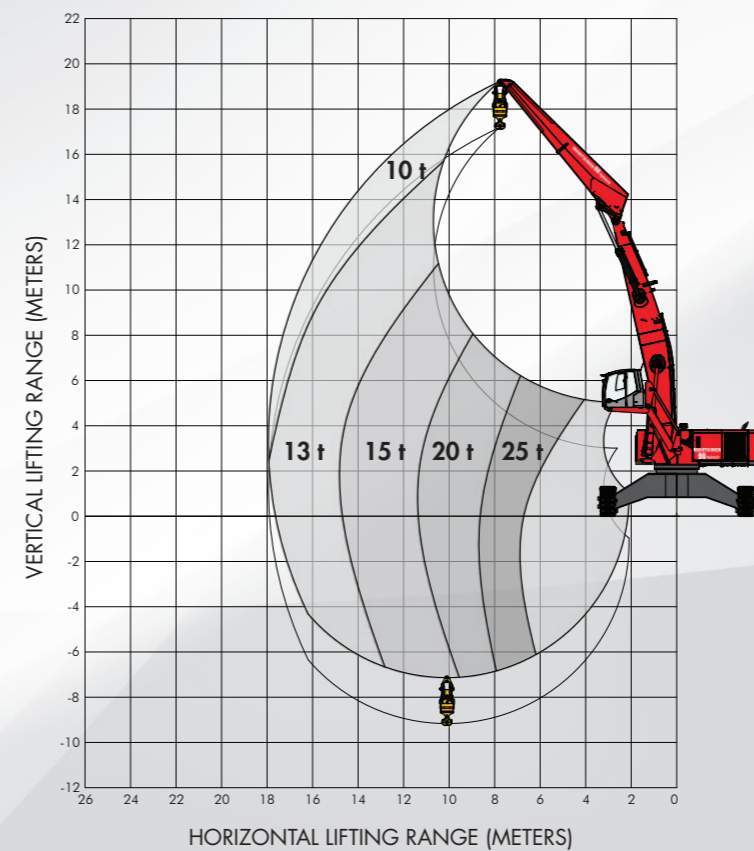
Lifting capacity range with 13 m curved main boom and 11 m stick



Lifting capacity range with 12 m curved main boom and 10 m stick



**HEAVY LIFT**  
Lifting capacity range with 10 m curved main boom and 8 m stick



## ATTACHMENTS

Mantsinen offers a wide variety of attachments to optimise production in any application. With Mantsinen hydraulic quick coupling system changing attachments is quick and safe. It only takes a few minutes to change from one attachment to another. Customised attachments are available on request.



Quick Coupling



Clamshell Buckets



Orange Peel Grabs



Roundwood Grapples



Lifting Hooks



Sawn Timber Spreader



Big Bag Spreader



Pulp Bale Spreader



Pallet Fork



Customized Tools



# More load, less energy.

## MANTSINEN 90 IN ACTION

For more information, images  
and videos visit our website  
[mantsinen.com](http://mantsinen.com)



**YOUR DEALER:**

**ISO 9001  
ISO 14001  
OHSAS 18001**

*We are committed to improve our integrated operational system continuously. We take care of environment and health&safety issues in all our operations.*

ISO 9001 ISO 14001  
OHSAS 18001



**DNV**  
CERTIFIED  
ORGANISATION



**Mantsinen Group Ltd Oy** Välikankaantie 3, FI-80400 Ylämylly, FINLAND  
Tel. +358 20 755 1230 | [info@mantsinen.com](mailto:info@mantsinen.com) | [www.mantsinen.com](http://www.mantsinen.com)