

MASTER COR

# SENJEBOGEN



StageV

Crawler material handling machine





1962: rope-driven S833 with elevated operator cab

## What makes up the E-Series

- 65 years of experience in designing and constructing hydraulic material handling machines
- Uncompromisingly high performance in all areas: Focus on material handling
- Technology that can be mastered: Highquality components without over-engineering
- Long service life and high value retention

## Your top benefits

- **Green Efficiency** Save fuel - reduce operating costs Work quietly - protect operator and environment
- **Top-level performance** Durable mechanical systems - stressed parts optimized High speeds - high load capacities
- Maximum ease of use Maxcab comfort cab - work in comfort SENCON - work program selection made easy
- Maximum safety Safe entry and exit - non-slip steps State-of-the-art cameras - entire work area in view
- Maintenance and service made easy SENNEBOGEN control system - easy diagnosis Simple maintenance - clear labeling
- Consultation and support in your area 3 production sites - 2 subsidiaries 150 sales partners - over 350 service stations







Subject to change. Additional options available upon request.

# **BTD** The E-Series. At a glance. Hybrid



### Four ways to save fuel

- Savings of up to 20 %: Work in EcoMode with reduced engine speed
- Idle automation reduces speed to 40 % of operating speed
- Stop automation switches the engine off when not needed
- Optimized engine settings, reduced specific fuel consumption, state-of-the-art exhaust after treatment





### Quiet operation 2

- Consistently quiet operation thanks to decoupled engine mounts and sound proofing in the doors
- Sound pressure level in accordance with 2000/14/EC as much as 2 dB lower than required

## High-capacity cooling **■**

- Constant, reliable performance thanks to large-scale, robust fans and coolers
- Water and oil coolers with top-notch efficiency thanks to axial-piston pump and engine control and on-demand thermostatic control
- Intercooler with mechanical drive





## Powerful hydraulic system 4

- Strong pumps with power reserves
- Top efficiency thanks to large-scale hydraulic valves and lines
- Extra-long change intervals of 4,000 operating hours through initial fill-up with special oil with extended service life when using SENNEBOGEN HydroClean\*

\* Option 5

# The premium cab.



### **Features**

- optimum cab climate with automatic air conditioning system, partial tinted glass
- pleasant and equal temperature dispersion by means of 9 nozzles
- panoramic view
- comfort seat with air suspension
- very quiet through optimized noise insulation
- highest safety & comfort with sliding door, wide door opening
- ergonomically arranged operating controls for fatigue-free and relaxed working
- 12 V, 24 V, and USB charging sockets, hands-free telephone preparation, document box
- various options: electric cool box behind driver's seat, seat air conditioning

### **SENNEBOGEN-Joysticks**

- Joysticks on resonant, seatmounted consoles
- Comfortable grip thanks to ergonomic design
- Shortcuts for direct and sensitive control of all functions
- Quicker access thanks to optimized design of buttons and switches





# **B70** Maintenance and service made easy. Hybrid



# **Optimized for** maintenance

- Fast and easy diagnostis thanks to the clearly labeled electrical distributor
- Easy accessibility to all service points of the machine
- Automatic central lubrication for equipment and slewing gear raceway



## **SENNEBOGEN** HydroClean\*

- Optimal protection of hydraulic components thanks to 3 µm micro-filter
- Cleaner hydraulic oil, longer oil service life



**Central measuring points** 

- Easily accessible
- Inspect the entire hydraulic system quickly



**Clear labeling** 

- All parts labeled with a unique part number
- Easy and reliable spare parts ordering

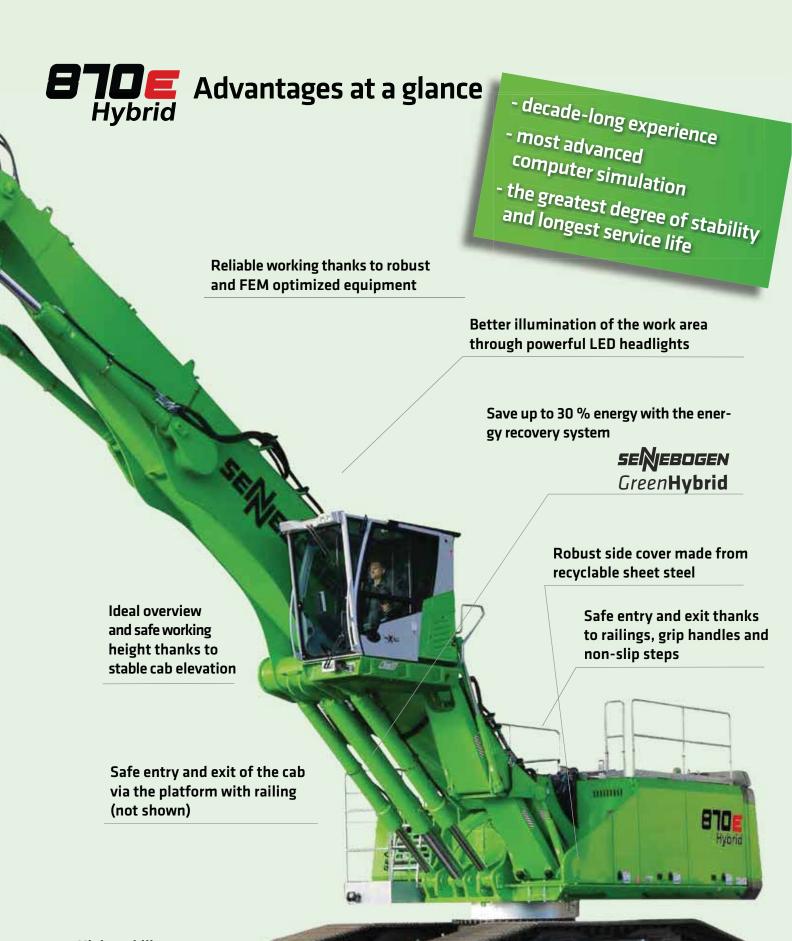
\* Option 7



# **BTDE** Modular design - versatile solutions Hybrid

### **Attachments Equipment options** (others available upon request) Orange peel grab Clamshell grab Magnet plate Timber grab Cabs K18 K20 K22 **K25 B21 B24** K25\* K27\* B24\* Cab elevation Port Port Port Uppercarriage Maxcab E300/260 Diesel-hydraulic drive ιMι Electrohydraulic drive E270 **Maxcab Industry Options** Motorized cable reel Skylift 700/900 Mastercab **Transformer Undercarriage variants** min. 1.0 m max. **3.0 m** 3.0 m тах. max. 3.0 m Mobile E Mobile E R83-450 R90-550 4-point-pedestal **Crawler gantry MP80** MS120 P136-585 ST88-550 crawler crawler





High stability



# ETDE Technical data, equipment Hybrid

Model (type) 870

<b>ENGINE</b>	
Power	Stage V: 261 kW at 1800 min <sup>-1</sup> Stage Illa: 268 kW at 1800 min <sup>-1</sup>
Model	Cummins 12 (Stage V) Cummins 11 (Stage IIIa) Direct injection, turbo charged, intercooling, reduced-emission, ECO mode, idle automation, automatic stop/start, fuel preheating
Cooling	Water-cooled, cooling fans change direction
Diesel filter	with water separator and heater
Air filter	Dry filter with integrated pre-separator, automatic dust discharge, main element and safety element, contamination indicator
Fuel tank	1000 l
DEF tank	100 l
Electr. system	24 V
Batteries	2 x 180 Ah, battery disconnect switch
Options	<ul><li>Engine block heater</li><li>Electric fuel pump</li><li>Jump start pole</li></ul>

		7: F:::::F:::
	<b>UPPERC</b>	ARRIAGE
	Design	Torsion-resistant box design, precision crafted, steel bushings for boom mounting Very service-friendly design, engine installed in the longitudinal direction
	Central lubrica- tion	Automatic central lubrication for equipment and live ring track
	Electro	Central electrical distributor, battery disconnect switch
	Cooling system	3-circuit cooling system with high cooling output, thermostatically regulated fan drive for oil cooler and water cooler, fan reversal for cleaning
	Options	<ul> <li>Swing bearing brake via foot pedal</li> <li>LED lighting packages</li> <li>Fire extinguisher</li> <li>Sea climate resistant coating as corrosion protection</li> </ul>

Electric heater for hydraulic tank

Options	<ul><li>SENtrack DS telematic system</li></ul>
	Low temperature package
	Hydraulically-driven magnetic generator
	25 kW / 33 kW

HYDRA	AULIC SYSTEM			
	Load-sensing/ LUDV hydraulic system, hydraulically operated work functions, load limit control			
Pump type	Swash plate-type variable-displacement pistor pump, load pressure-independent flow distribution for simultaneous, independent contro of work functions			
Pump control	Zero-stroke control, on-demand flow control  – the pumps only pump as much oil as will actually be used, pressure purging, load limit control			
Flow rate	2x 475 I/min and 1x 274 I/min for rotary drive in the closed circuit			
Operating pressure	up to 350 bar			
Filtration	High-performance filtration with long change interval			
Hydraulic tank	900 I			
Control system	Proportional, precision hydraulic actuation of work movements, 2 hydraulic servo joysticks for the work functions, additional functions via switches and foot pedals			
Safety	Hydraulic circuits with safety valves, secured emergency lowering of the equipment at engine standstill, pipe fracture safety valves for lift cylinder and stick cylinder			
Options	<ul> <li>Bio-oil - environmentally friendly</li> <li>Tool Control for programming pressure/rate of up to 10 tools</li> <li>Supplementary hydraulic circuit for shear attachment</li> <li>Load moment warning with capacity display</li> <li>Overload safeguard with shutdown</li> <li>60 µm pressure filter for attachments</li> <li>3 µm hydraulic micro-filter - SENNEBOGEN HydroClean</li> </ul>			

ROTARY DRIVE			
Gearbox	Compact planetary gear with bent-axis hy- draulic engine, integrated brake valves		
Parking brake	Spring-loaded multi-disk brake		
Slewing ring	Externally geared slewing ring with 360° protection and pinion lubrication		
Slewing speed	0-5 min¹, variable		





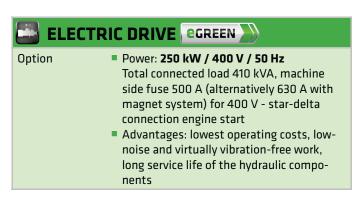
# ETDE Technical data, equipment Hybrid



CAB	
Cab elevation	E270, hydraulically elevating cab
Cab equipment	Sliding door inc. sliding pane, vibration damped, tinted safety glass, front pane can be openend, roof window, windscreen wiper for front pane, radio preparation, air-suspended comfort seat, joystick steering, SENNEBOGEN SENCON control & diagnosis system
Options	<ul> <li>30 ° tiltable cab</li> <li>Cab elevation E300/260, can be elevated and moved forward hydraulically</li> <li>Cab elevation Skylift 700/900</li> <li>Mastercab (Large-capacity port cab)</li> <li>Maxcab Industry</li> <li>Armored-glass windshield</li> <li>Armored-glass sunroof</li> <li>Safety side window and rear window</li> <li>Windscreen wiper for front window/skylight</li> <li>Rolling shade for roof window and windshield</li> <li>FOPS protective roof guard</li> <li>Protective front guard</li> <li>Charcoal filter for circulating and outside air</li> <li>Auxiliary heating</li> <li>Climatic seat</li> <li>Radio</li> <li>Electric cool box</li> </ul>

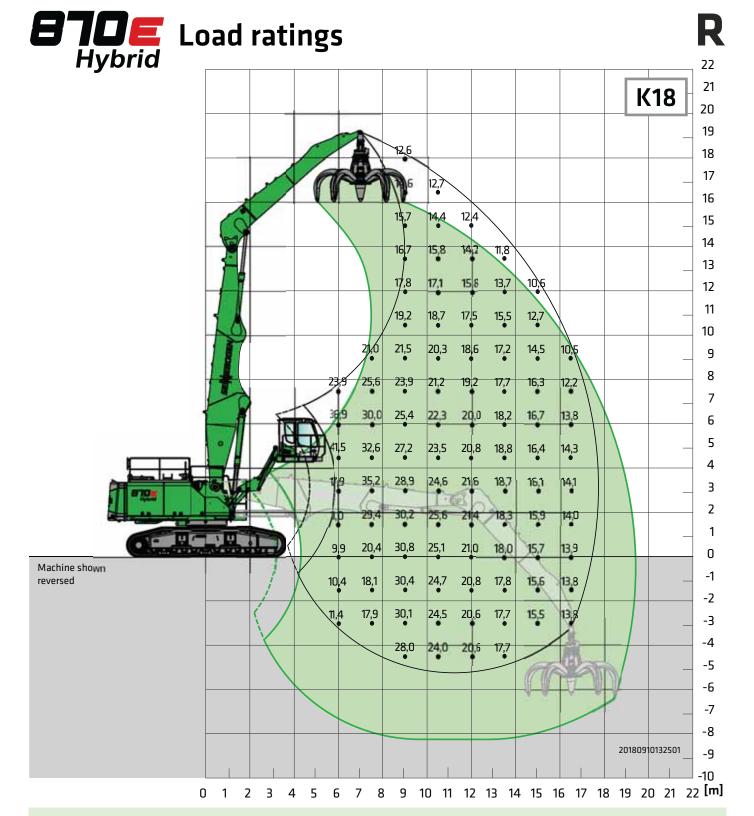
<b>UNDER</b>	CARRIAGE		
Design	Wide-gauge crawler undercarriage in stable, torsionally rigid box construction.		
Drive	Hydraulic travel drive, integrated in the traveling gear frame for each traveling gear side through an axial piston engine via compact planetary gear.		
Parking brake	Spring-loaded, hydraulically ventilated disk brakes. Hydraulic brake valves protect the drive engines when moving downhill.		
Traveling gear	R83-450 telescopic crawler undercarriage with 2.8 – 4.5 m mechanical track adjustment and maintenance-free B8b crawler track (63 links, 7,000 mm long) with 800 mm canted triple grouser shoes.		
Speed	<b>0 - 1.6 km/h</b> Stage I, <b>0 - 3 km/h</b> Stage II		
Options	<ul> <li>Maintenance-free B8b crawler track with 900 mm rounded flat track shoes</li> <li>Maintenance-free B8b crawler track with 900 mm canted triple grouser shoes</li> <li>R90-550 special undercarriage with integrated 2 m pylon</li> <li>P136-585 crawler gantry with 5 m vertical clearance</li> </ul>		

<b>EQUIPMI</b>	ENT
Design	Decade-long experience, most advanced computer simulation, the greatest degree of stability and longest service life, large-scale mounting points and precision-crafted sealed low-maintenance special bushings, quick change couplings for connecting/removing/turning grabs
Cylinders	Hydraulic cylinders with high-quality sealing and guide elements, end position damping, sealed bearing points
Options	<ul> <li>Ball valves in the hydraulic lines for quick and easy grab switching</li> <li>Sea climate resistant coating</li> <li>Sea climate resistant coating of all cylinders, nickel-plated and chrome-plated</li> <li>Equipment floating position</li> <li>Adjustable stroke limiter / stick limiter</li> <li>LED lighting</li> <li>Stick mounted camera</li> </ul>



OPERATING WEIGHT						
Mass	approx. 104,000 kg Basic 870 R machine with K18 equipment and 3000 I orange peel grab					
Note	The operating weight varies depending on the equipment.					

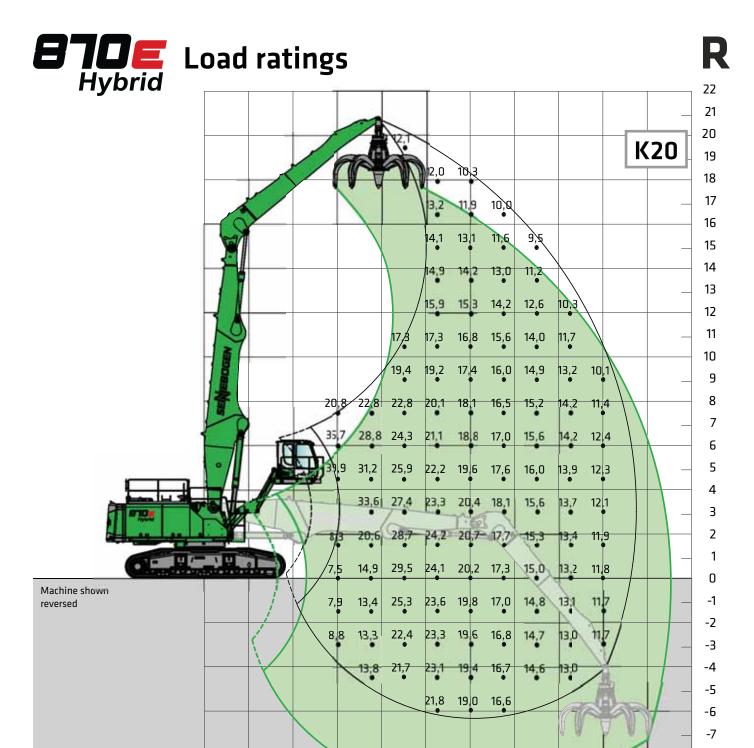
Subject to change. 11



Undercarriage: R83-450 Compact boom: 10.8 m Cab: Maxcab E300/260, can be elevated and moved forward hydraulically

All load ratings are specified in tons (t) and apply at the end of the stick, without attachment, on solid, level ground. Attachments such as grabs, magnets, load hooks, etc. are part of the specified load ratings. The specified values are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. In accordance with EU standard EN 474 / 5, hydraulic material handling machines used for hoisting must be equipped with pipe fracture safety devices on the hoist and stick cylinders and an overload warning device. Load ratings apply to max. gauge and they are 360° slewing.

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Undercarriage: R83-450 Compact boom: 11.8 m Cab: Maxcab E300/260, can be elevated and moved forward hydraulically

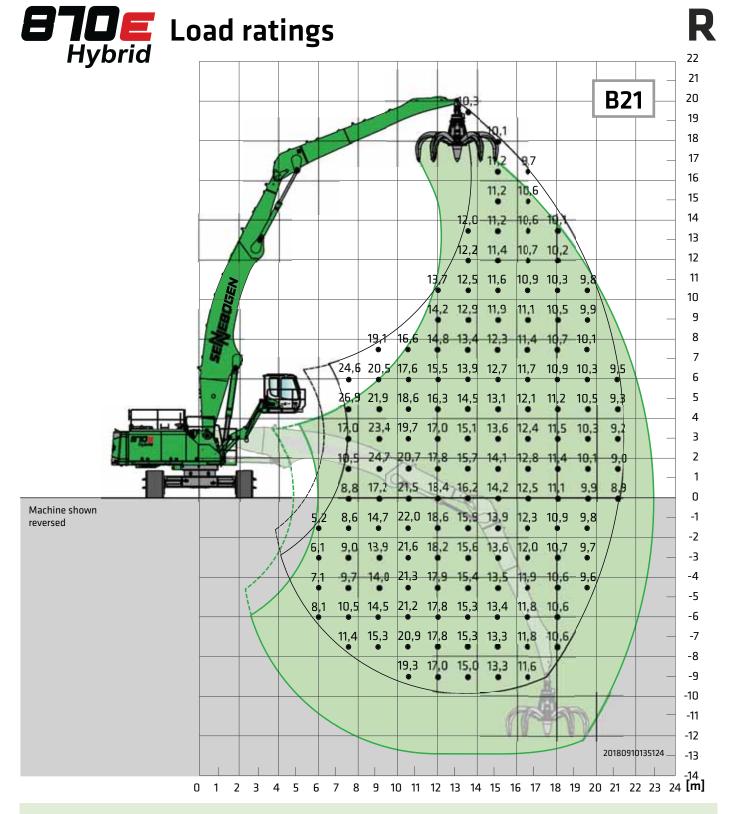
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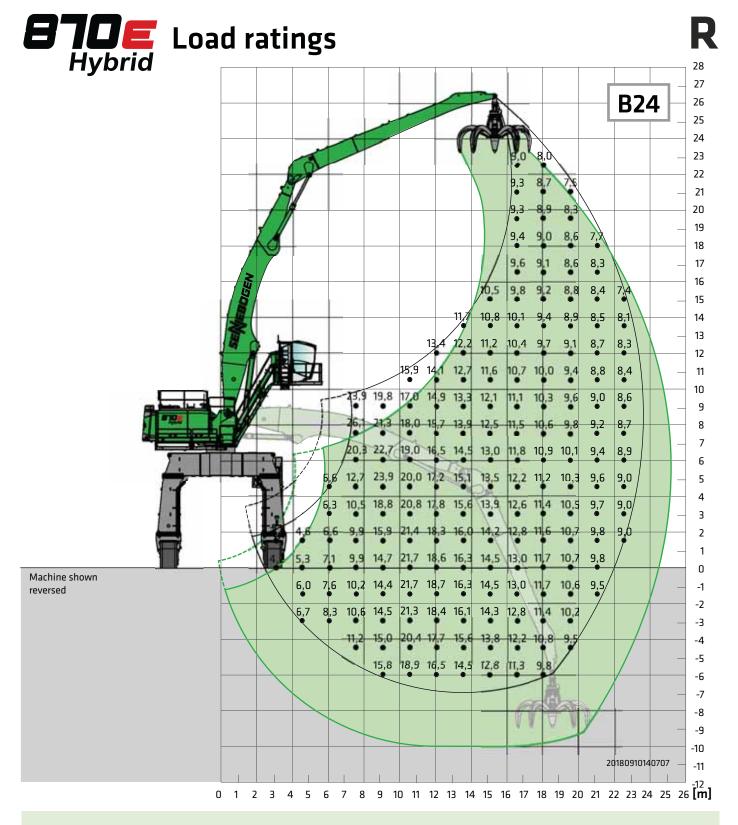
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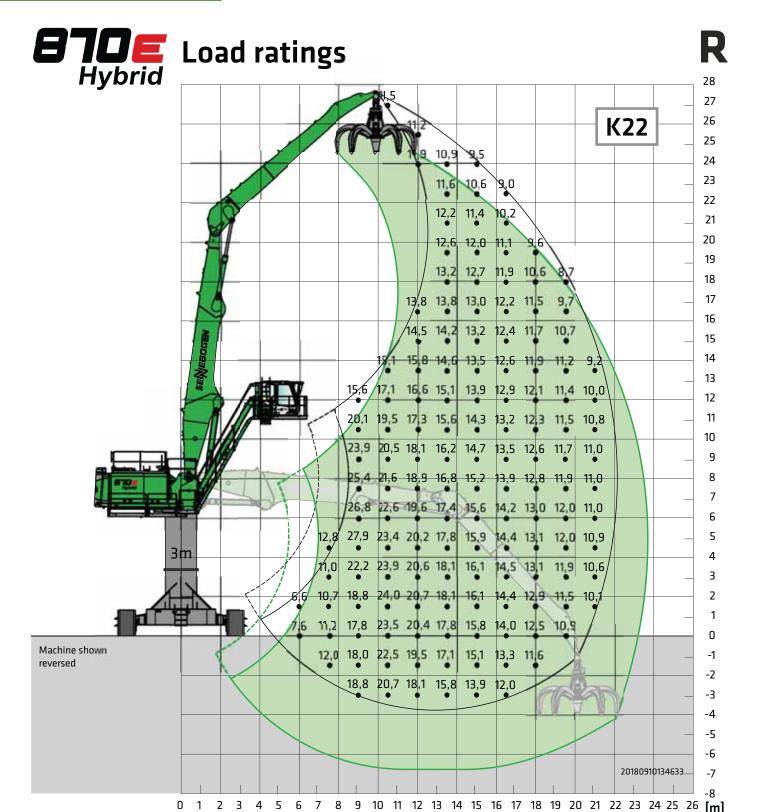
**Undercarriage:** R83-450 **Compact boom:** 13.5 m Banana **Cab:** Maxcab E300/260, can be elevated and moved forward hydraulically

Grab stick: 9.8 m



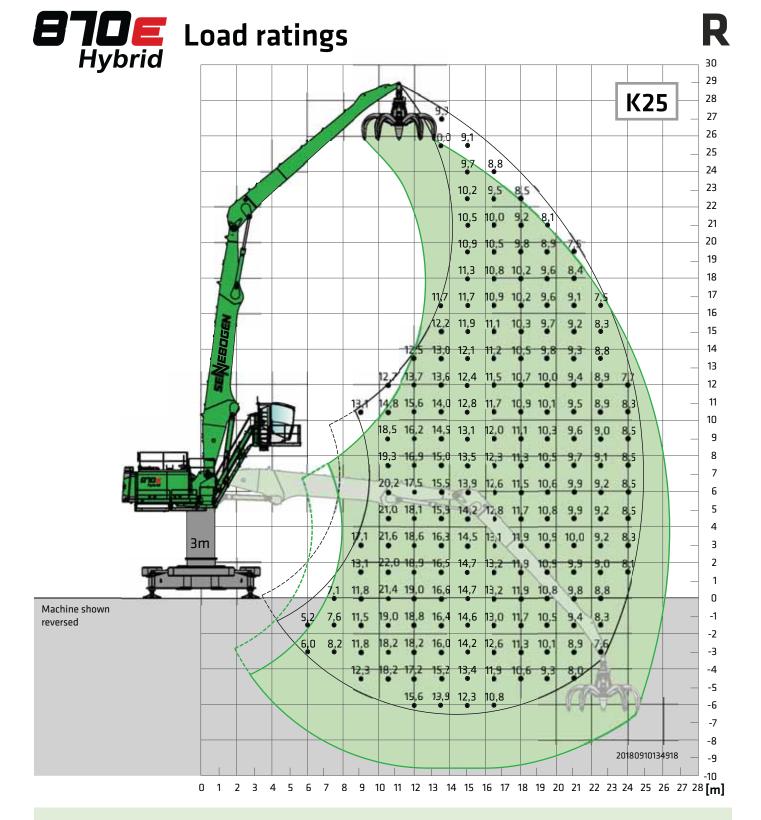
**Undercarriage:** P136-585 **Compact boom:** 13.5 m Banana **Cab:** Mastercab Skylift 700, hydraulically elevating (option)

Grab stick: 12.3 m



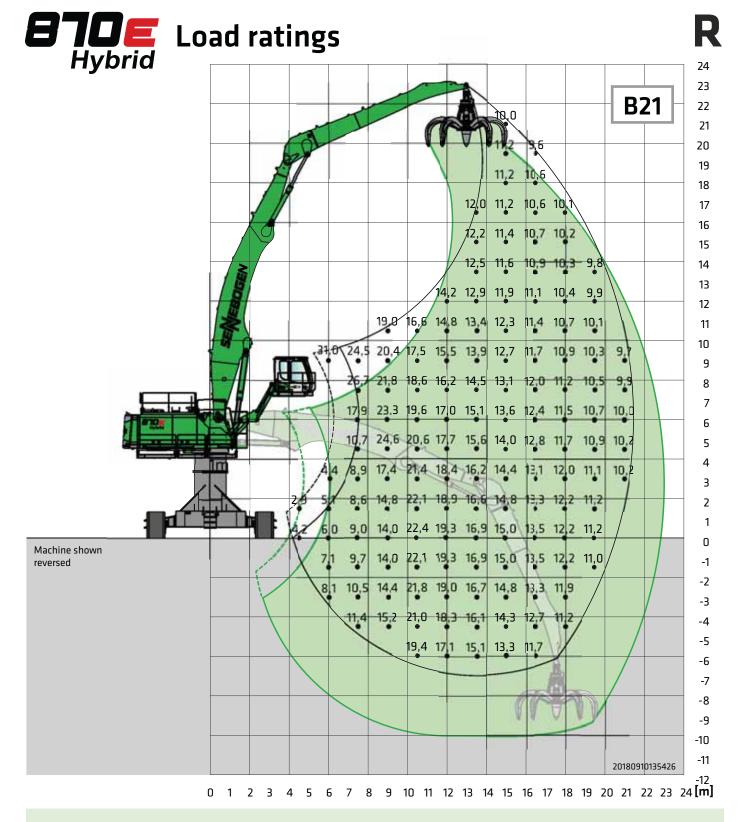
**Undercarriage:** R90-550 **Compact boom:** 12.5 m **Cab:** Maxcab Skylift 900,

**Pylon:** 3.0 m **Grab stick:** 10.8 m hydraulically elevating (option)



**Undercarriage:** ST88-550 **Compact boom:** 14.0 m **Cab:** Mastercab Skylift 700,

**Pylon:** 3.0 m **Grab stick:** 12.3 m hydraulically elevating (option)



Undercarriage: R90-550 Compact boom: 13.5 m Bananna Cab: Maxcab E300/260, can be elevated and moved forward hydraulically 9.8 m

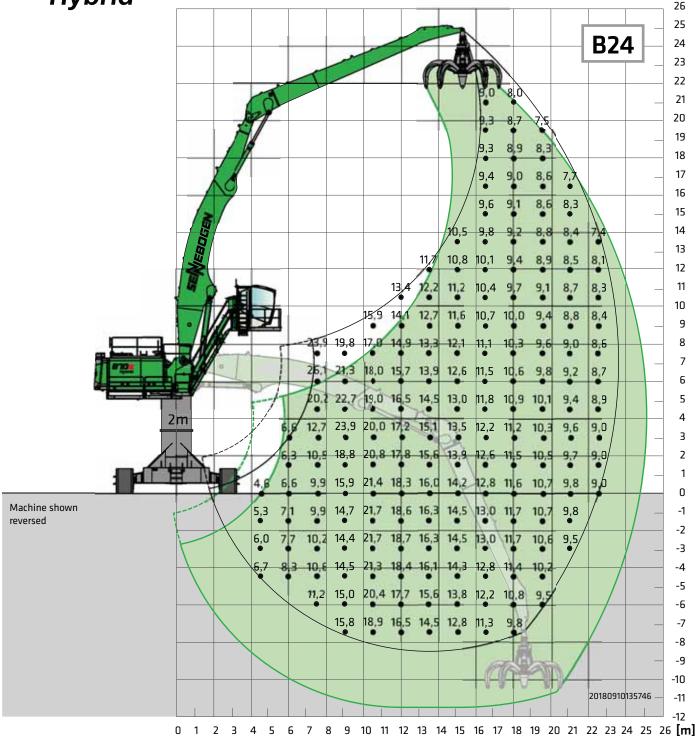
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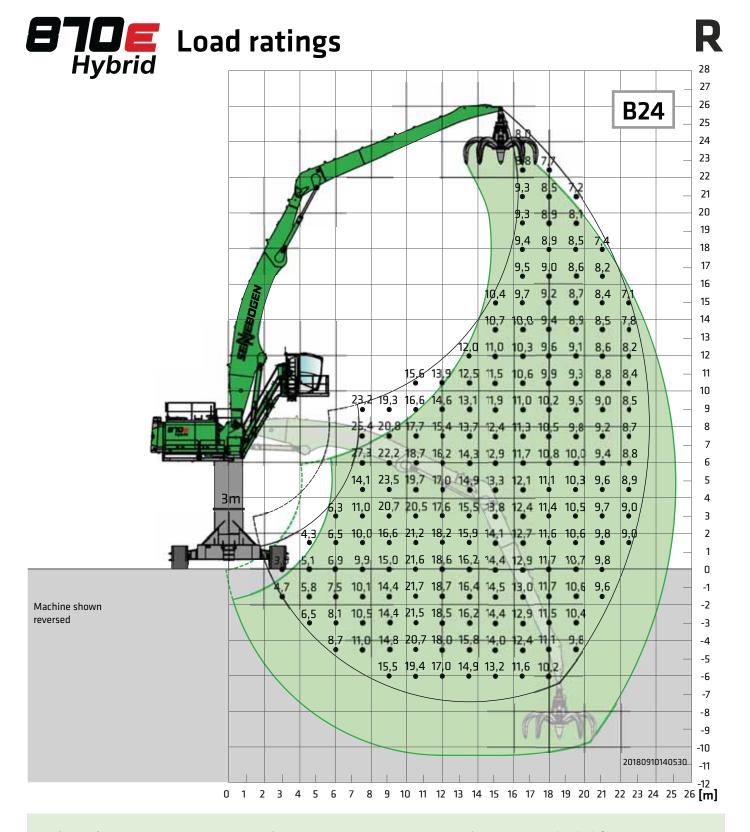
**Undercarriage:** R90-550 **Compact boom:** 13.5 m Banana **Cab:** Mastercab Skylift 700,

**Pylon:** 2.0 m **Grab stick:** 12.3 m

All load ratings are specified in tons (t) and apply at the end of the stick, without attachment, on solid, level ground. Attachments such as grabs, magnets, load hooks, etc. are part of the specified load ratings. The specified values are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. In accordance with EU standard EN 474 / 5, hydraulic material handling machines used for hoisting must be equipped with pipe fracture safety devices on the hoist and stick cylinders and an overload warning device. Load ratings

hydraulically elevating (option)

apply to max. gauge and they are 360° slewing.



Undercarriage: R90-550 Compact boom: 13.5 m Banana Cab: Mastercab Skylift 700,

**Pylon:** 3.0 m **Grab stick:** 12.3 m

All load ratings are specified in tons (t) and apply at the end of the stick, without attachment, on solid, level ground. Attachments such as grabs, magnets, load hooks, etc. are part of the specified load ratings. The specified values are 75% of the static tipping load or 87% of the hydraulic lifting force in accordance with ISO 10567, and apply at the required operating temperature in the Green Hybrid system. In accordance with EU standard EN 474 / 5, hydraulic material handling machines used for hoisting must be equipped with pipe fracture safety devices on the hoist and stick cylinders and an overload warning device. Load ratings apply to max. gauge and they are 360° slewing.

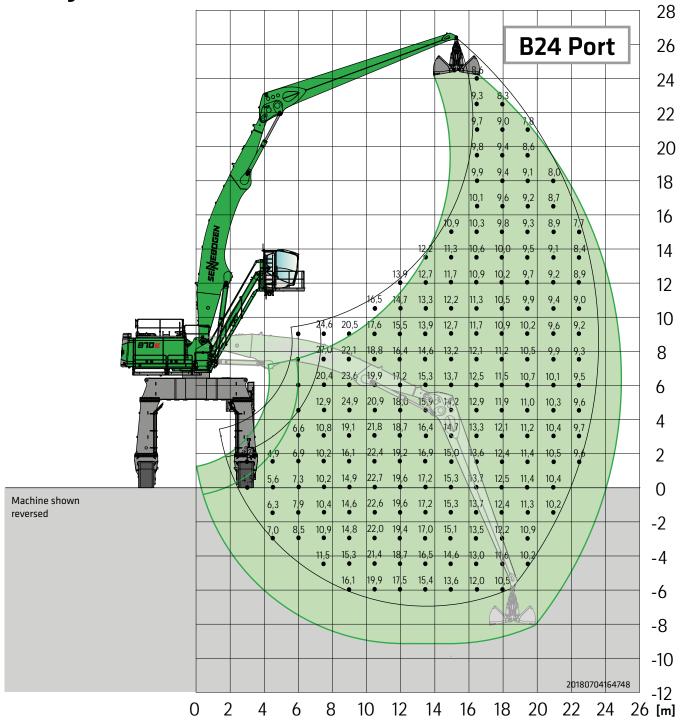
hydraulically elevating (option)



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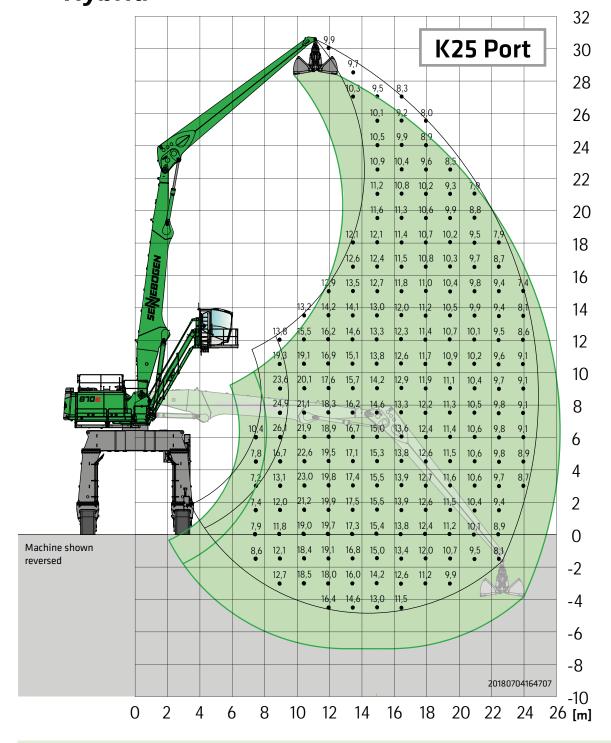
**Undercarriage:** P136-585 **Compact boom:** 13.5 m Banana **Cab:** Mastercab Skylift 900,

Grab stick: 12.3 m

hydraulically elevating (option)

# **ETDE** Load ratings Hybrid



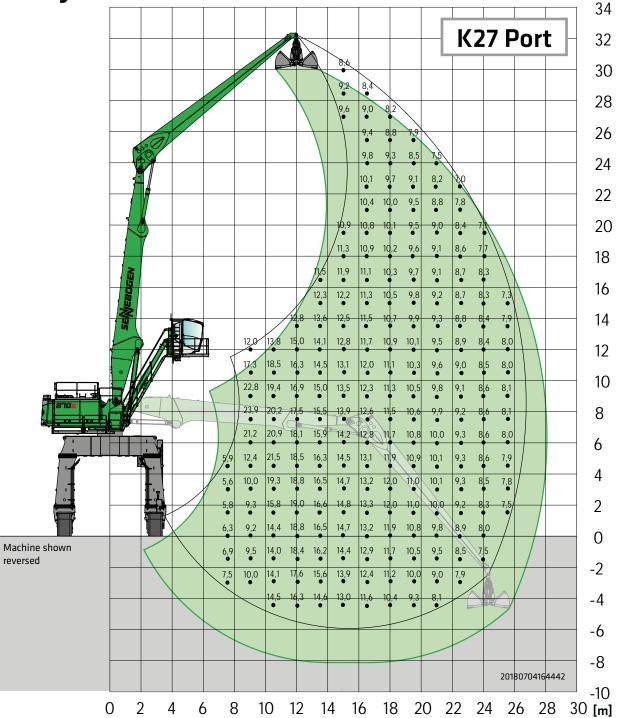


**Undercarriage:** P136-585 **Compact boom:** 14.5 m **Cab:** Mastercab Skylift 900,

Grab stick: 12.3 m

hydraulically elevating (option)



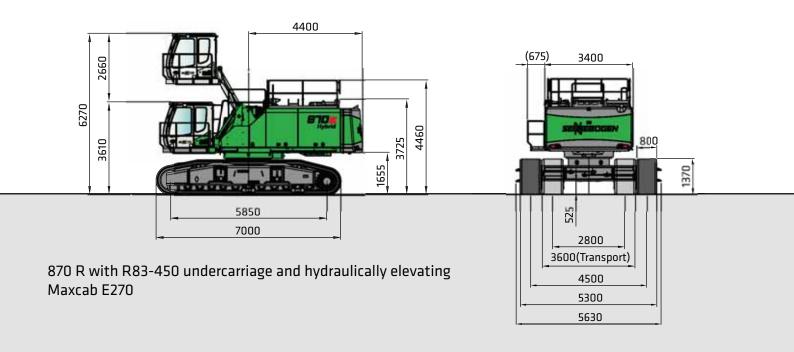


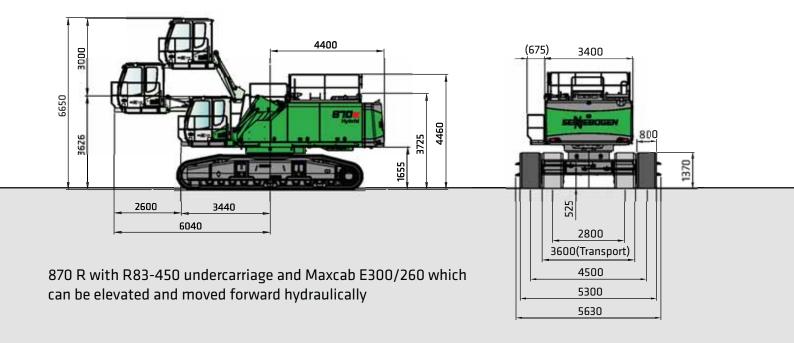
**Undercarriage:** P136-585 **Compact boom:** 15.5 m **Cab:** Mastercab Skylift 900,

Grab stick: 13.3 m

hydraulically elevating (option)

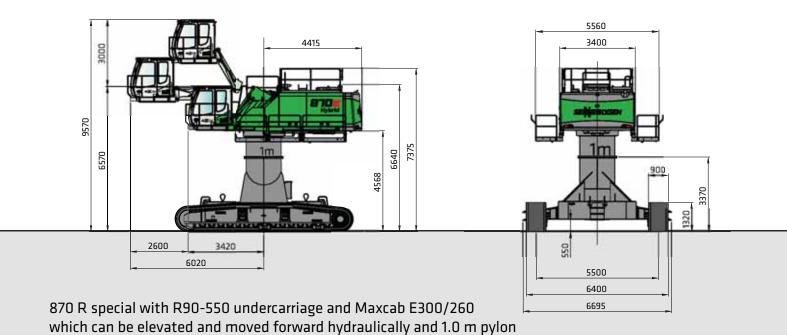


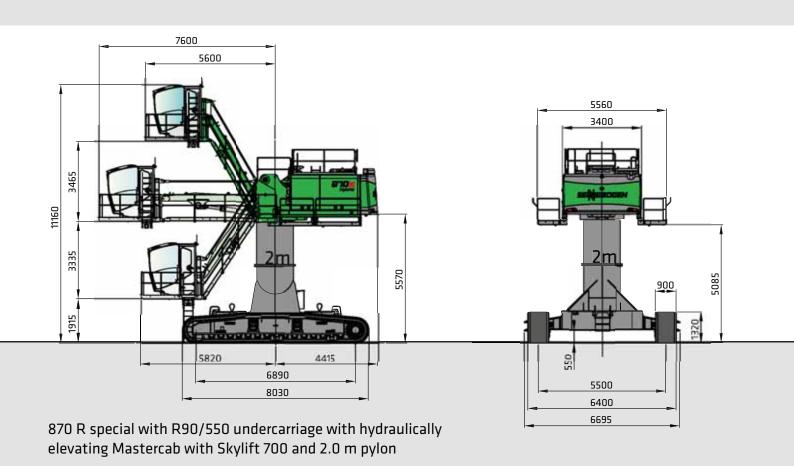




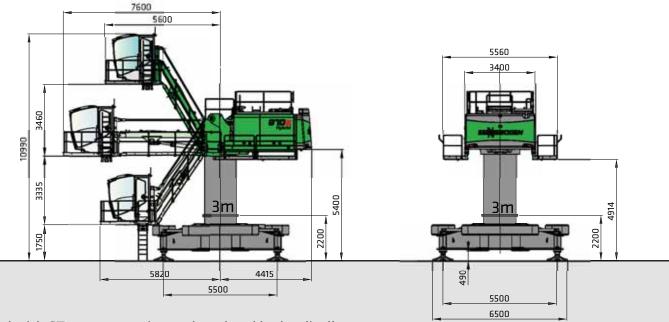




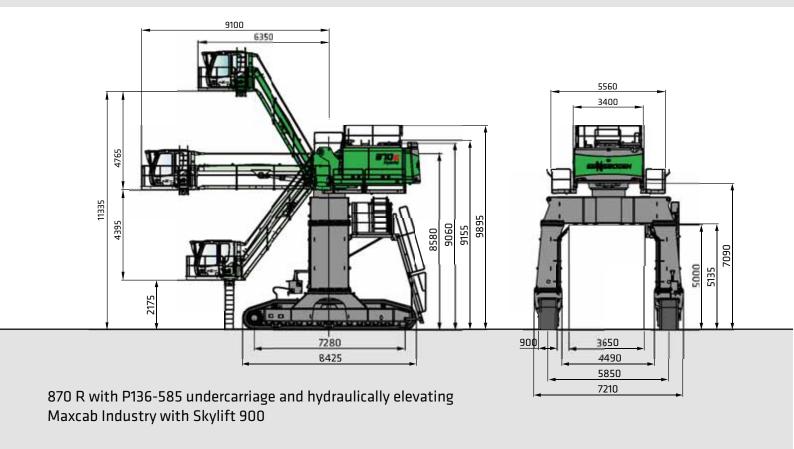






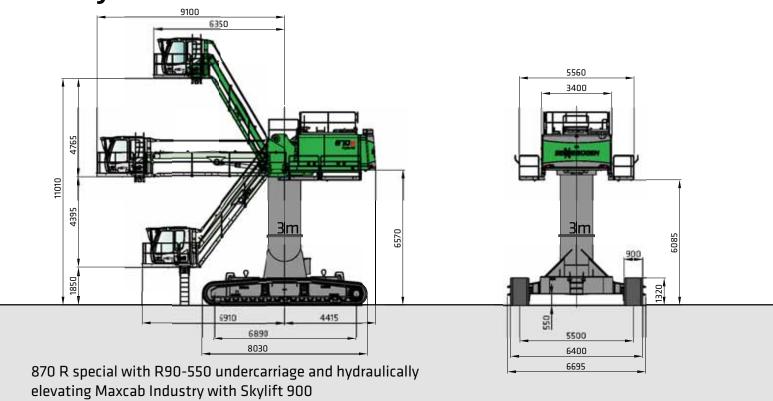


870 special with ST88-550 4-point-pedestal and hydraulically elevating Mastercab with Skylift 700 and 3.0 m pylon



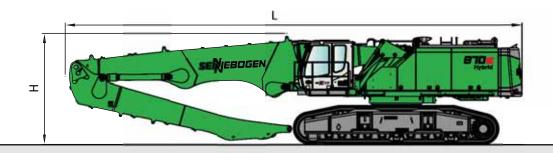












	Compact boom	Grab stick	Transport length (L)	Transport height (H)
K18	10.8 m	7.8 m	15.85 m	4.10 m
K20	11.8 m	8.8 m	16.9 m	4.10 m
K22	12.5 m	10.8 m	18.0 m	4.10 m
K25	14.0 m	12.3 m	19.4 m*	4.10 m
B21	13.5 m	9.8 m	18.3 m*	4.10 m
B24	13.5 m	12.3 m	18.8 m*	4.10 m
K25 Port	14.0 m	12.3 m	19.4 m*	4.10 m
K27 Port	15.0 m	13.3 m	20.5 m*	4.10 m
B24 Port	13.5 m	12.3 m	18.8 m*	4.10 m

<sup>\*</sup> stick removed.





### SGM orange peel grab (4 shells)



Design / size	Crah canacity	Weight <sup>1</sup> Shell profile		max. piled density
Design / size	Grab capacity			
		НО	G	
SGM	1	kg	kg	t/m³
800.50-4	800	2245	2490	
1000.50-4	1000	2345	2585	2.0
1500.50-4	1500	2475	2830	
2000.50-4	2000	2660	3075	

SGM orange peel grab (5 shells)



Desire / size	Weight <sup>1</sup>		max.	
Design / size	Grab capacity	Shell p	rofile <sup>2</sup>	piled density
		НО	G	
SGM	1	kg	kg	t/m³
800.50	800	2580	2740	
1000.50	1000	2710	2870	
1500.50	1500	2860	3100	
2000.50	2000	3060	3370	2.0
2500.50	2500	3130	3615	
3000.50	3000	3250	3875	
3500.50	3500	3420	4140	

SGZ clamshell grab



Design / size	Grab capacity	Weight <sup>1</sup>	max. piled density
SGZ	1	kg	t/m³
2500.60	2500	2850	2.6
3000.60	3000	3030	
3500.60	3500	3320	2.0
4000.60	4000	3420	

### Magnet plates



Type series / model	Power	Dead weight	Pull-off strength	Lifting capacity in kg		
woкo	kW	kg	kN	Slab (safety factor 2)		
S-RLB 15	11.7	2400	380	19000		
S-RLB 17	17.8	3300	640	32000		
S-RLB 19	22.0	5090	790	39500		
Recommended magnetic generator: 20 - 25 kW						

<sup>\*)</sup> Available upon request 1) Weight information without grab suspension, stick bolts, hose system

<sup>&</sup>lt;sup>2</sup>) Half-open shells: shell sheet steel width 400 mm, 500 mm for 1,250 l capacity and higher

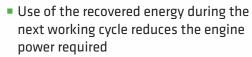


# **ETDE** SENNEBOGEN Green Hybrid Energy Recovery System **Energy Recovery System**



## Save 30 % energy with the Green Hybrid system

A combination of hydraulic cylinders at the boom and nitrogen piston accumulators with gas recover energy during the work procedure



Hydraulic oil



### Safety

- Use of standard hydraulic components
- Energy storage in the enclosed rear section

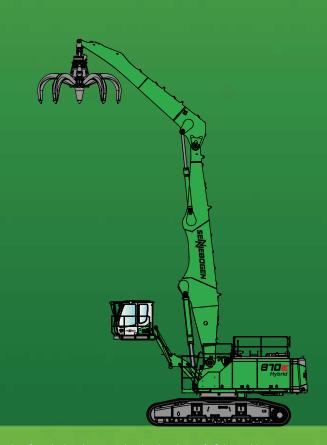
### **Reduced operating costs**

- High quality components for long service life and reliability
- Proven concept: been used successfully since 2013
- High system efficiency already very effective in small lifting movements









This catalog describes machine models, scopes of equipment of individual models, and configuration options (standard equipment and optional equipment) of the machines delivered by SENNEBOGEN Maschinenfabrik GmbH. Machine illustrations can contain optional equipment and supplemental equipment. Actual equipment may vary depending on the country to which the machines are delivered, especially in regard to standard and optional equipment and tolerances.

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