



SENNEBOGEN – Competence in Ports
Efficient bulk handling

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Service-Company – Family business since 1952

SENNEBOGEN stands for ...

- material handling and lifting technology
- continuity as German manufacturer
- We focus on ...
 - simple and better solutions
 - our flexibility and ability to response fast
 - the direct communication with our partners



4 Individually Orientated Locations



Plant Straubing 1, Corporate Headquarter

- completed in 1959
- total area 44,000 m²
- office & production space 16,000 m²
- approx. 200 employees
- corporate headquarter of the group as well as assembly of OEM base carriers and fabrication of steel components

Service and Spare parts Centre Straubing

- expansion in 2008
- approx. 50 employees
- product support und spare parts centre



Plant Wackersdorf

- completed in 1991
- total area 160,000 m²
- office & production space 25,000 m²
- approx. 200 employees
- assembly of the green line material handling machines with up to 80 t operating weight

4 Individually Orientated Locations



Plant Balatonfüred / Hungary

- integrated in the group in 1996
- total area 120,000 m²
- production space 22,000 m²
- approx. 300 employees
- fabrication of steel components as well as machining of steel structures



Plant Straubing 2, Industrial Park „Hafen“

- completed in 2008
- total area 125,000 m²
- office & production space 20,000 m²
- approx. 350 employees
- research & development, assembly, marketing & sales of cranes, material handling machines and harbour mobile cranes
- focused on large machines, serial production and customized solutions

SENNEBOGEN Academy & Museum

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Sales and Service Partners

- worldwide sales and service network
- experienced and factory trained partners guarantee excellent service and local availability of parts
- 100% family owned subsidiaries in important regions like North America and Singapore



Competence Green Line

- product line from 12 tons to 300 tons operating weight
- highest machine availability of up to 7,000 operating hours per year
- customer oriented requirements – matching solutions
- high reliability due to robust design and quality components



scrap handling
waste / recycling / biomass
timber & forest industry
ports
demolition
agriculture
municipalities



Competence Crane Line

- full product line: telescopic cranes crawler/rubber tired, truck cranes, crawler cranes, HD rope excavators, foundation machines, multicranes
- unique: simple maintenance, high availability, compact dimensions
- economic: low operating costs, high residual values, excellent transportability
- wide variety of applications, even under extreme environmental conditions like cold or hot weather and dusty areas

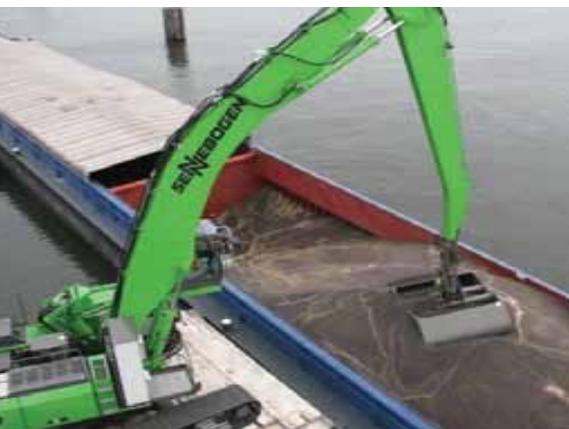


civil engineering
Foundation, construction
lifting industry
mining
demolition
Industry
Ports



Harbours

- Wide variety of special solutions for material loading and handling in harbours
 - **flexible handling** of scrap, bulk materials, lumber and cargo by using different attachments
 - **High loading capacities** through use of powerful yet energy-saving drives (diesel-hydraulic or electro-hydraulic)
 - **All ship sizes** up to Panamax class effectively loaded in harbours for domestic or overseas shipments



What is driving the ports?

- Change in material handling equipment needed
 - Increase in ship sizes (demand for bigger equipment)
 - Increasing demand for versatile material handling (demand for mobile equipment)
 - Need for transshipment from sea traffic to inland water transport
 - Increasing competition between ports



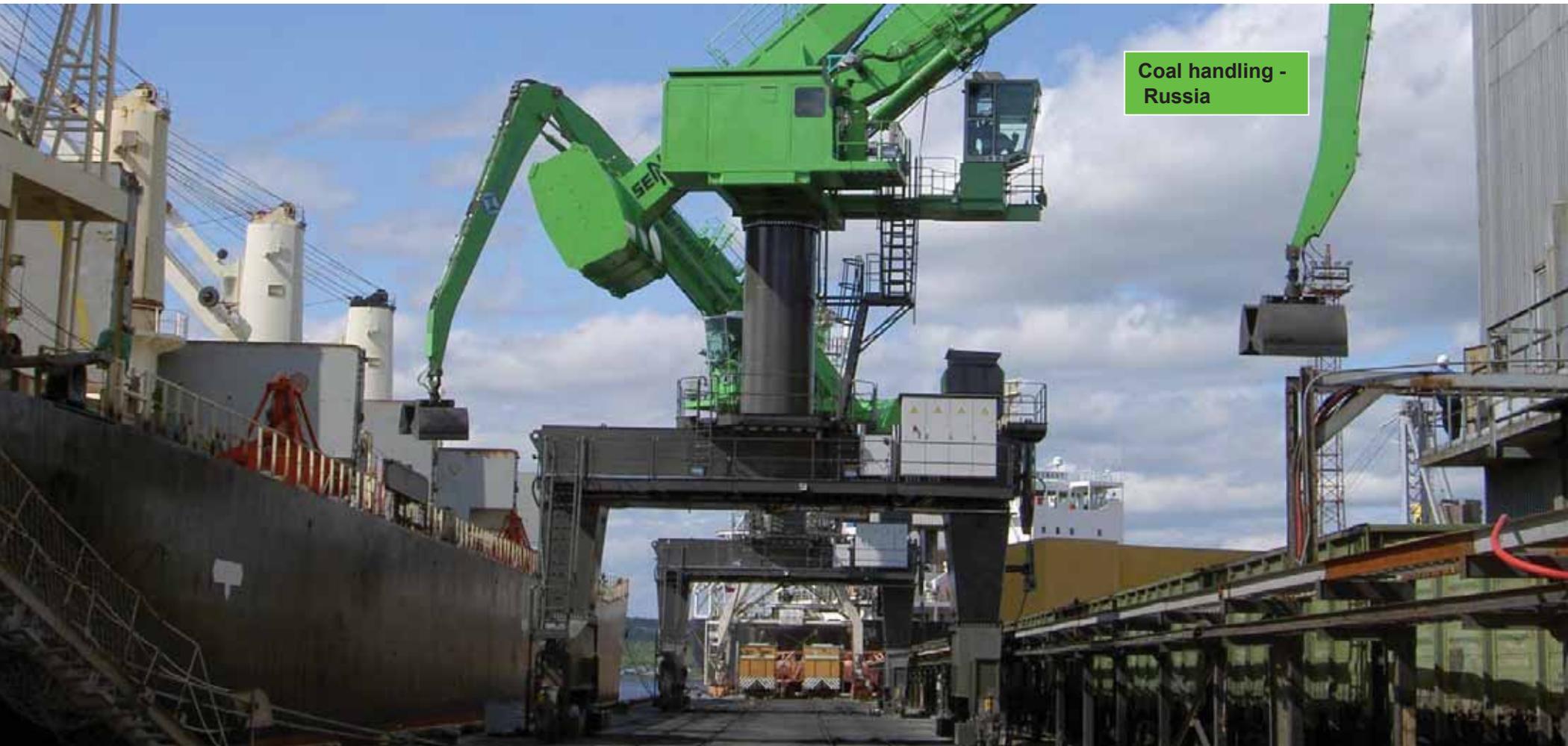
Why use an on-shore material handler when ships are equipped with ship cranes?

- Demurrage cost
 - on board cranes have a comparably low handling capacity
 - Demurrage must be as short as possible
 - demurrage can cost up to 125.000 \$ / per day for a 50.000 dwt ship
 - Effective material handling pays off and reduces stevedoring costs dramatically

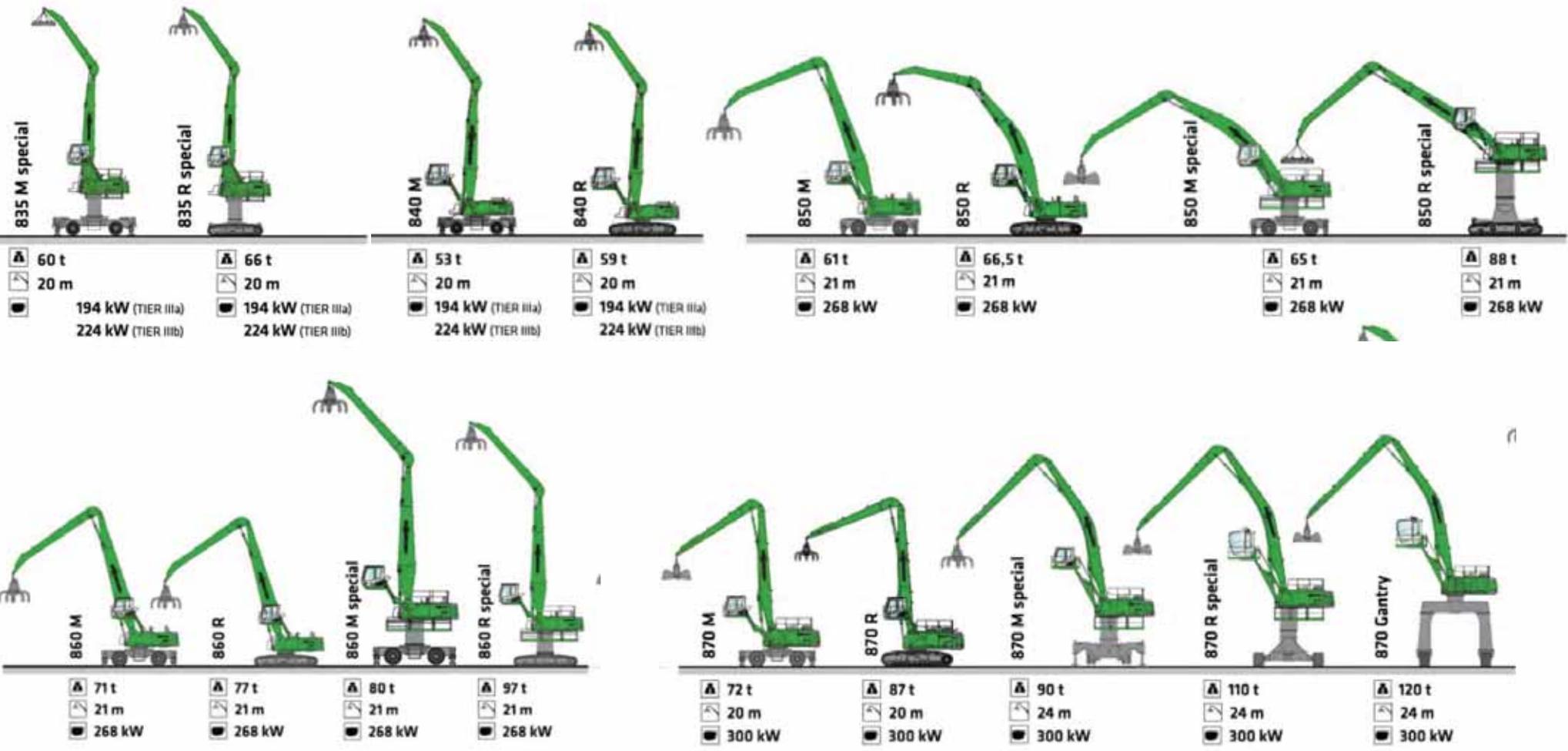


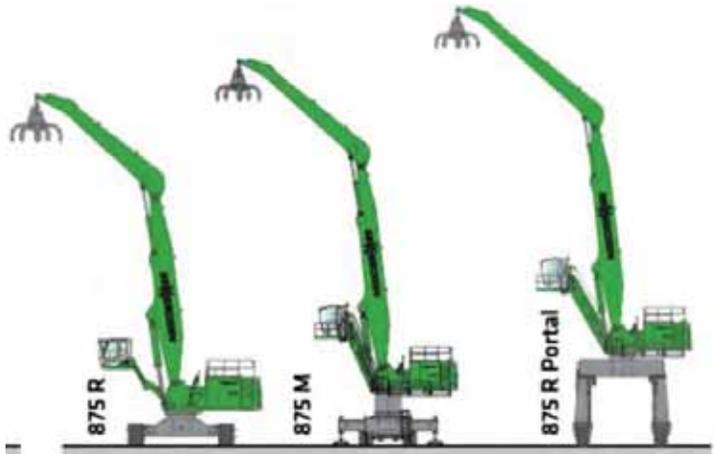
General Cargo Vessel = Bulk Carrier with on board cranes
Synchronous operation

- **Special solutions: no challenge is too big**

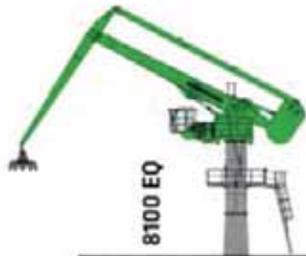


Widest range of Material handling machines for Ports

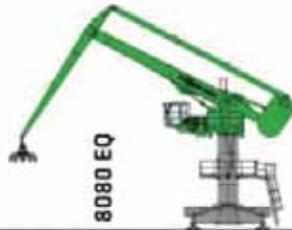




- | | | |
|--|--|--|
| 875 R | 875 M | 875 R Portal |
| ▲ ca. 140 t | ▲ 165 t | ▲ 158 t |
| ▵ 21 m | ▵ 26 m | ▵ 27 m |
| ● 395 kW (TIER IIIa)
391 kW (TIER IIIb) | ● 395 kW (TIER IIIa)
391 kW (TIER IIIb) | ● 395 kW (TIER IIIa)
391 kW (TIER IIIb) |



- 8100 EQ**
- ▲ 4 t x 25 m
 - ▾ 5,3 t x 25 m
 - ▵ 21 m / 23 m / 25 m
 - 119 kW (TIER IIIa)
119 kW (TIER IIIb)
110 kW (Electro)



- 8080 EQ**
- ▲ 3,5 t x 23 m
 - ▾ 4,5 t x 23 m
 - ▵ 21 m / 23 m
 - 119 kW (TIER IIIa)
119 kW (TIER IIIb)
90 kW (Electro)



- 880 EQ**
- ▲ 10 t x 35 m
 - ▾ 11 t x 35 m
 - ▵ 25 m / 30 m / 33 m / 35 m
 - 470 kW (TIER IIIa)
430 kW (Electro)



- 8130 EQ**
- ▲ 5 t x 27 m
 - ▾ 6,3 t x 27 m
 - ▵ 27 m / 30 m
 - 151 kW (TIER IIIa)
164 kW (TIER IIIb)
132 kW (Electro)

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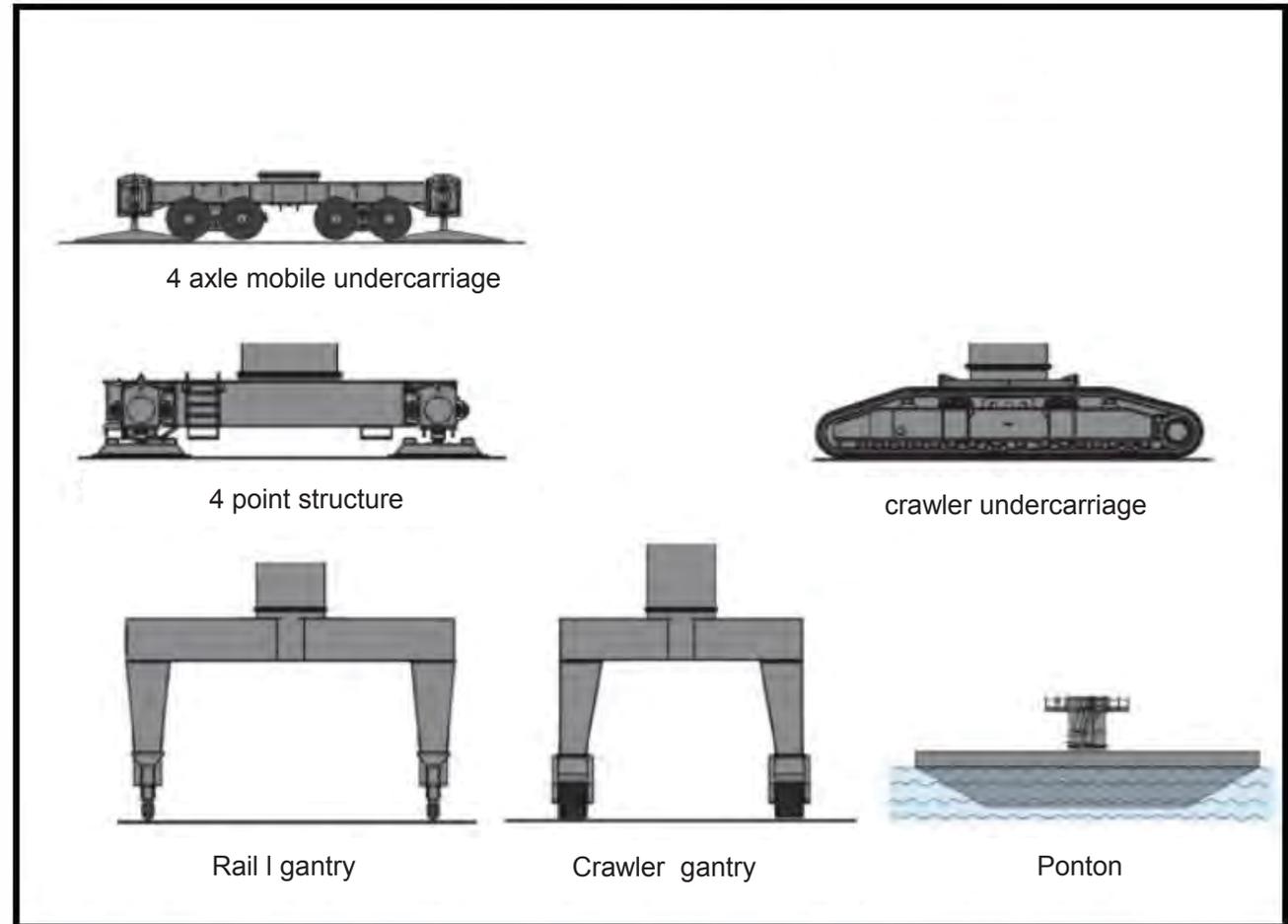


Green Line – Technique

-> Modular system based on standard components

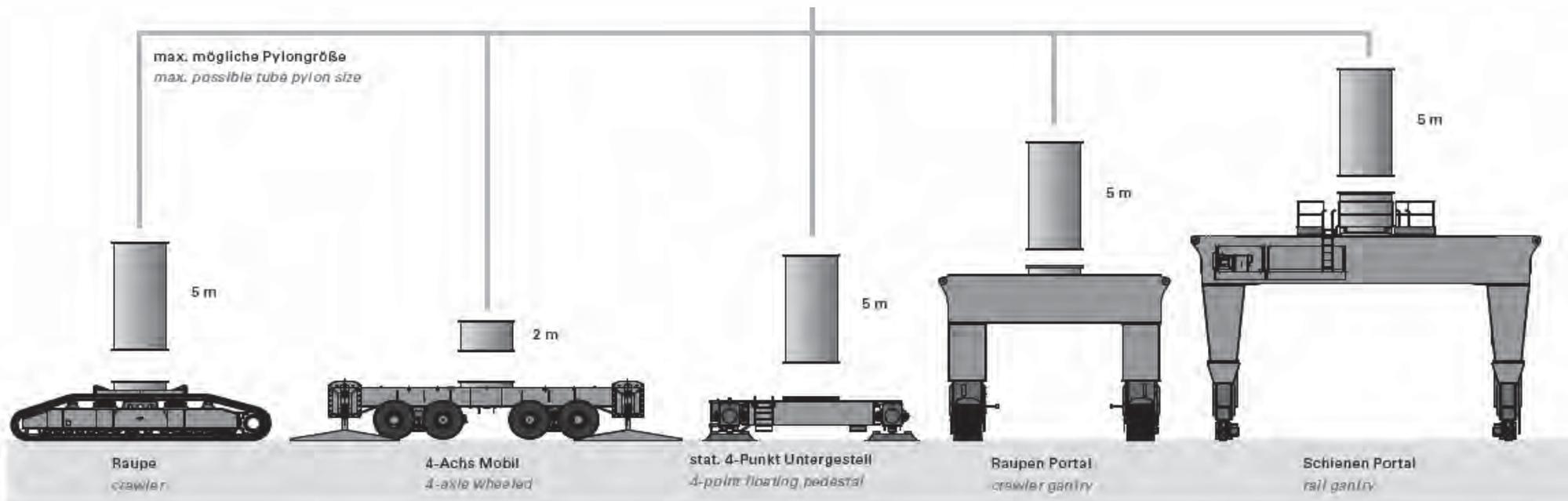
Undercarriages

- Mobile
- Crawler
- Ponton
- Portal
- Stationary
- Gantry



Pylon

- Standard Pylon from 1,0 - 5,0m (w/o 880 EQ)
 - Custom made length on request
 - Optimizes the ship – machine level of the working equipment



Upper carriage

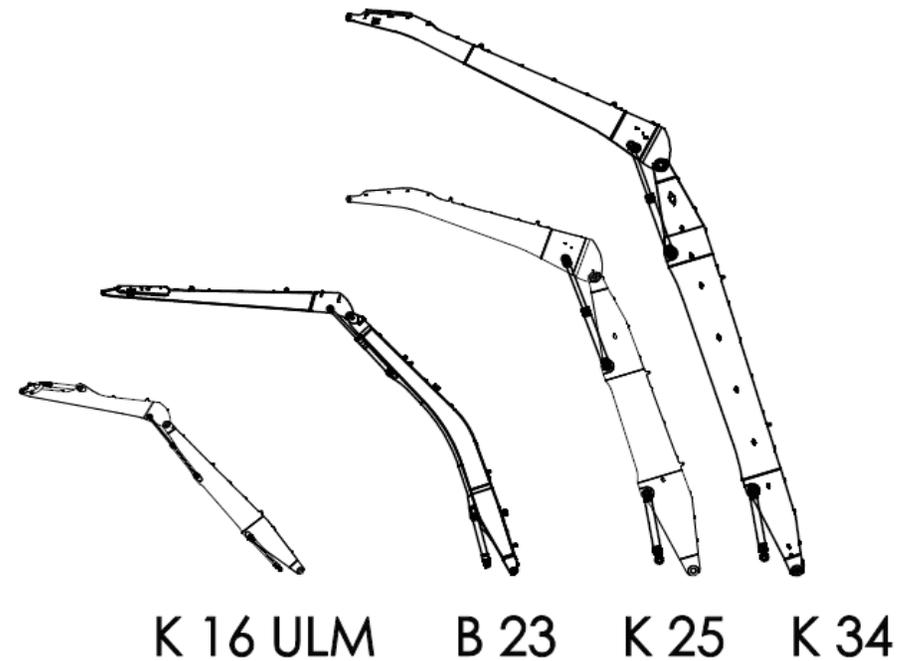
- Diesel engine
- Electric engine



Implement

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- boom
 - Standard
 - Banana
- Stick
 - Standard
 - ULM
- Customized length
 - e.g.: for the 870C are 13 booms and 10 sticks designed!
- Customized kinematics
 - Transport or clearance height

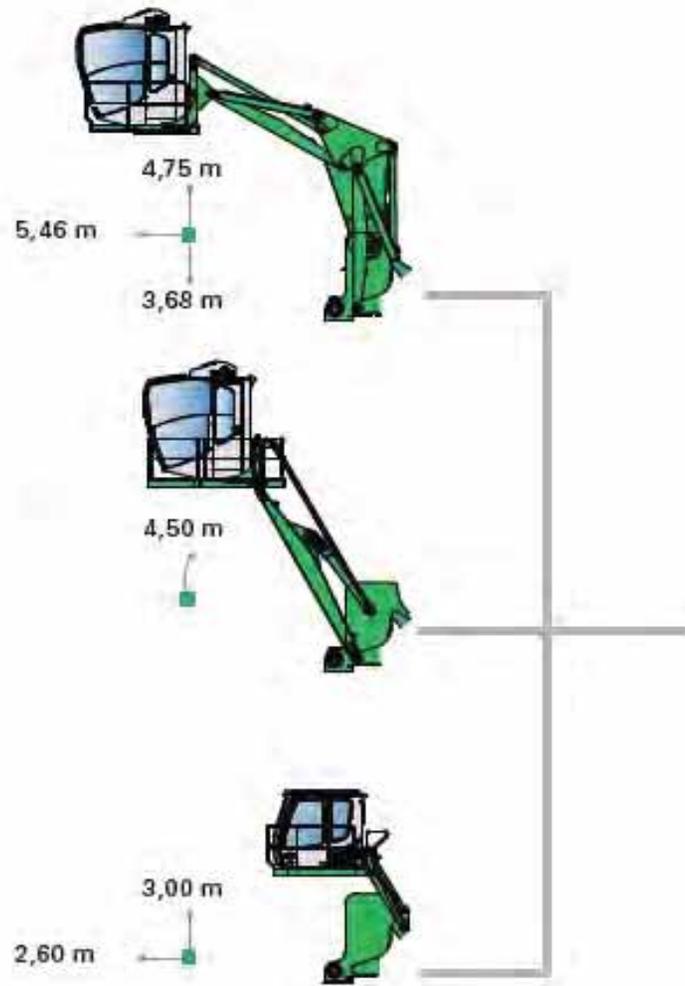


170.3
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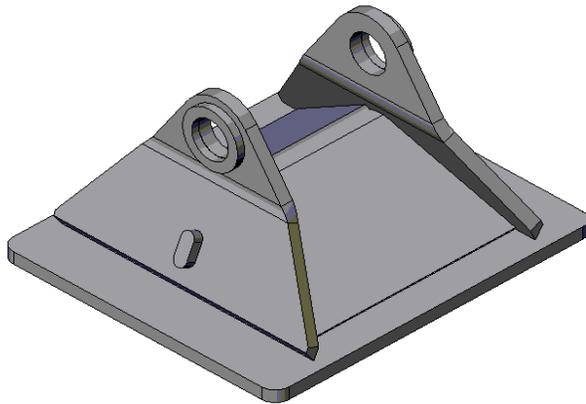
Elevation

- 270
- 300/260
- Skylift 1

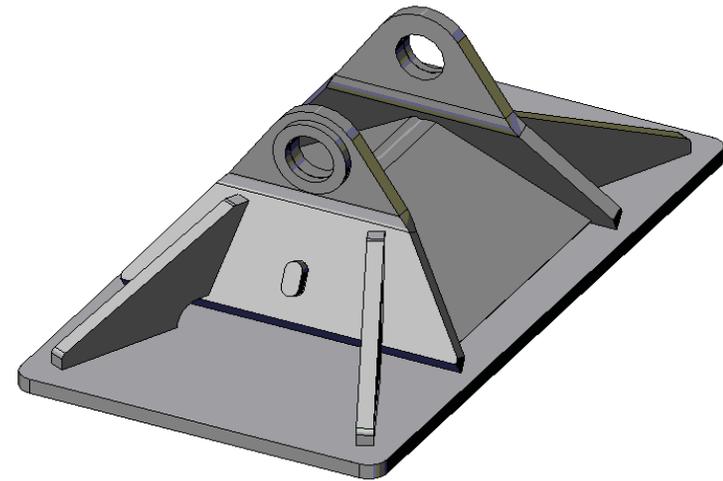


Ground Pressure

- Possibilities to reduce ground pressure
 - E.g.: 870 outigger pads



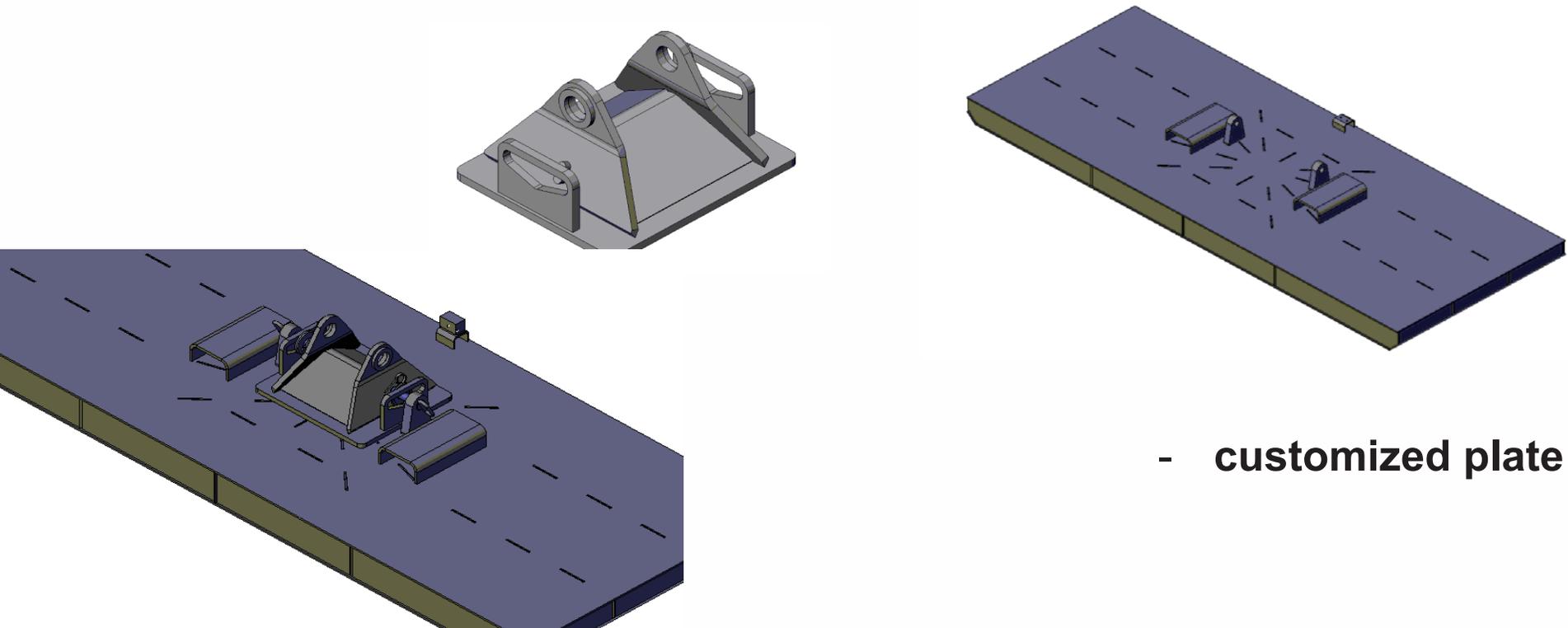
- **Standard size 700 x 600 mm**



- **enlarged: 1100 x 600 mm**

Ground Pressure

- Possibilities to reduce ground pressure with additional plates
 - E.g.: 870 outigger pads



- customized plate

Ground Pressure

- e.g.: 870 customized plates for Forth Ports
- 4100 x 1600 mm



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References, Application examples

Application examples

- 870 mobile with large outrigger pads, general cargo handling



Application examples

Forth Ports PLC (Scotland)

- 870M
- Multitool
- Stevenel attachment for pulp handling

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1. Automatic taking



2. Lift and swing



3. Automatic release

Unloading of logs

SENNEBOGEN 870 electric on rail portal in Uruguay

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Possible additional equipment for electric driven machines:



- Transformer
- Cable/Cable drum
- Power supply in general



Application examples

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- 880 Classic, unloading of bleacher in Finland



Application examples

- 880 EQ, coal handling in Turkey



Application examples

- 880 EQ in Turkey – unloading scrap (300t/hour)

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Application examples

- 880 Classic, handling of animal feed



Application examples

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- 880 EQ, water construction and fixation of shore in Abu Dhabi



Application examples

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- 880 Classic, **unique** – can be used on land and water; water construction in Venecia / Italy



Application examples

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- 880 EQ, handling of steel beams in England



Application examples

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- 870 special, handling of wood chips in England



Application examples

- 870 mobile, star-undercarriage, Skylift Cabin, wooden pallets handling



Application examples

- 870 rail gantry with pylon, Skylift Cabin, bulk handling, electric drives



Application examples

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- 870M special, loading of fertilizer in Belgium



Application examples

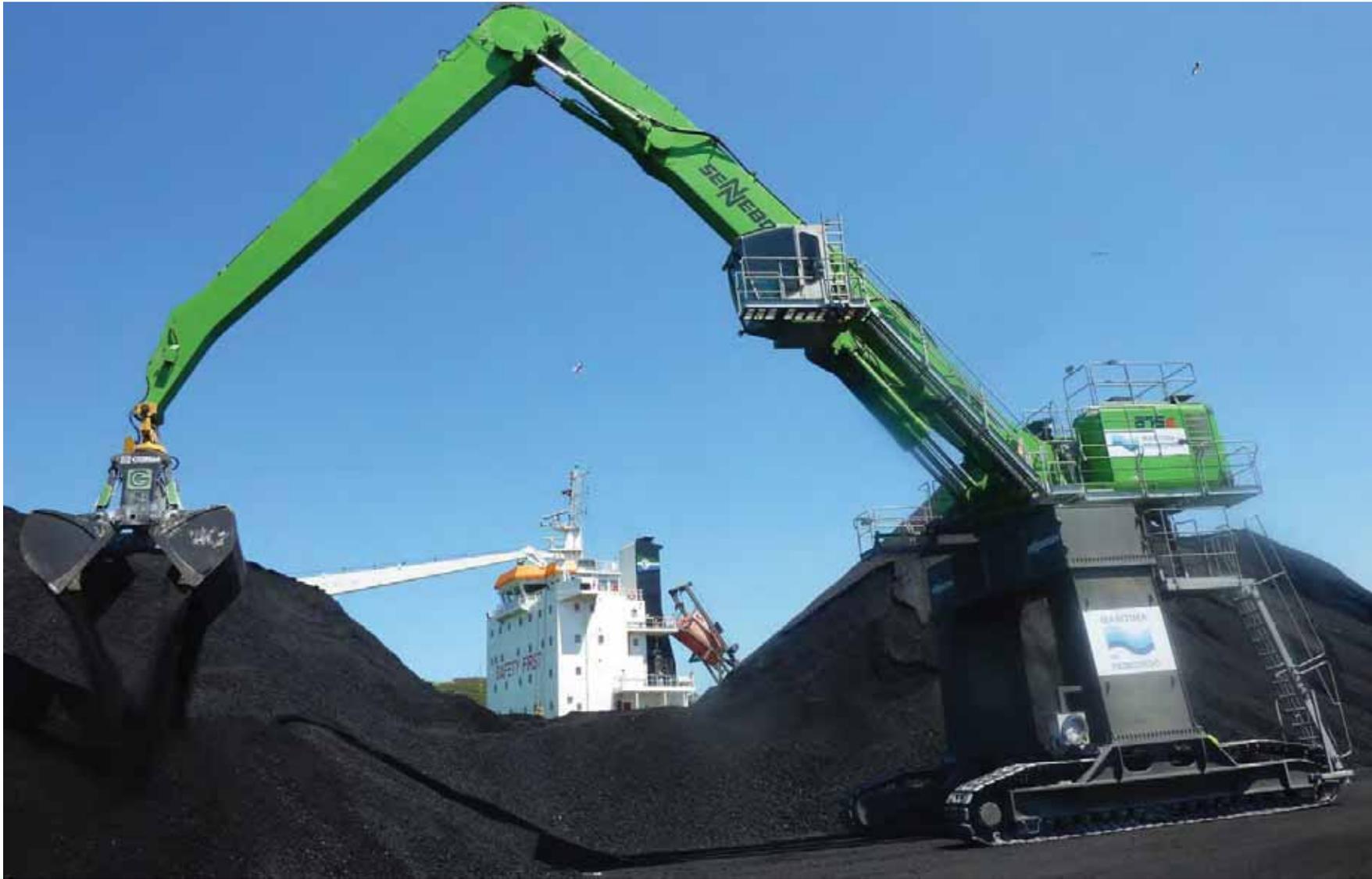
- 860 M in Denmark, bulk handling with clamshell grab



Application examples

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- 875 crawler gantry, coal handling in Spain



Application examples

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- 875 electric crawler gantry, coal handling in Turkey



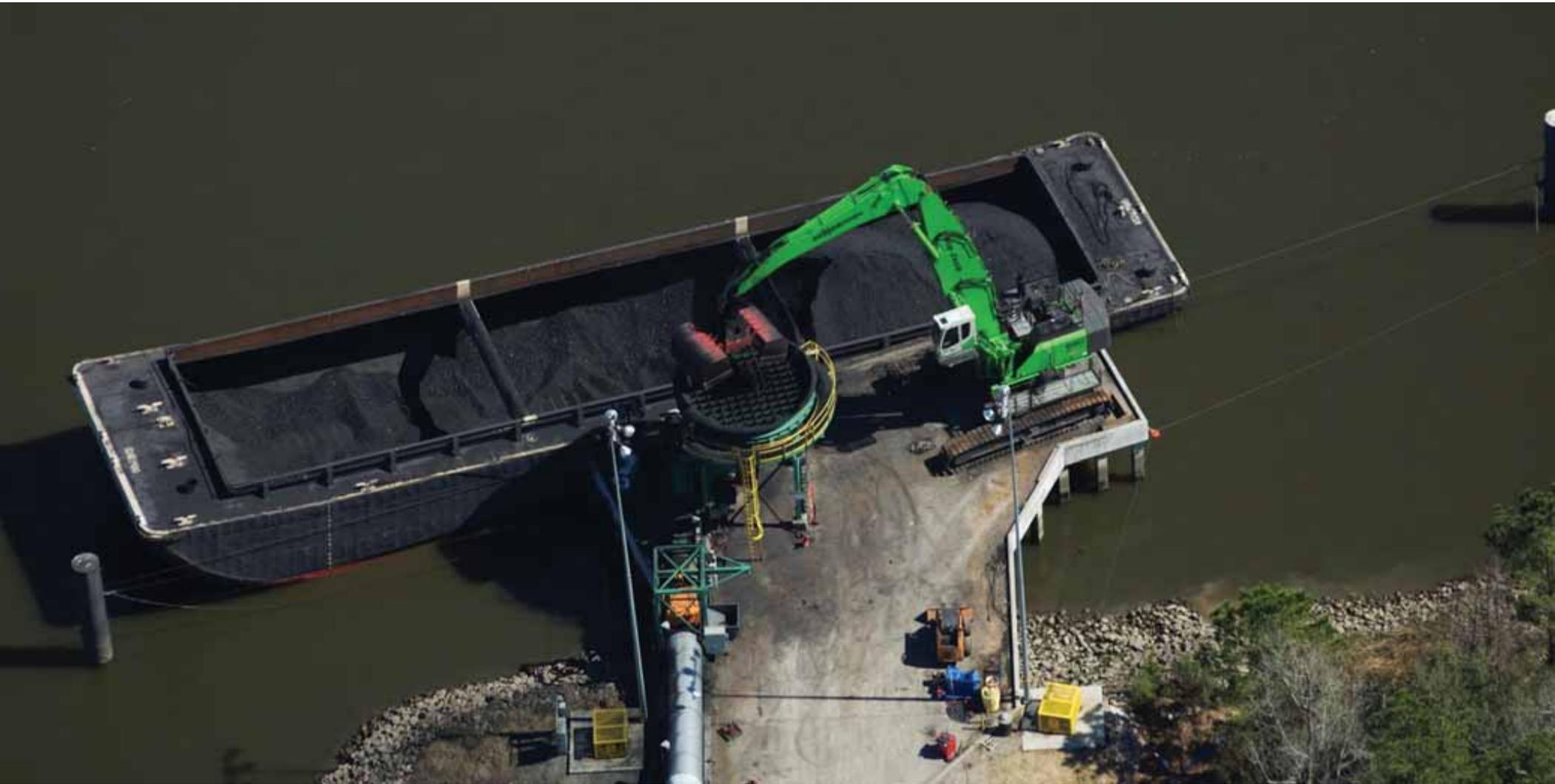
Application examples

- 870 stationary, ship-mounted for dredging applications



Application examples

- 880 classic: heavy-duty bulk handling (scrap, coal -> 650t/hour, iron ore)



Application examples

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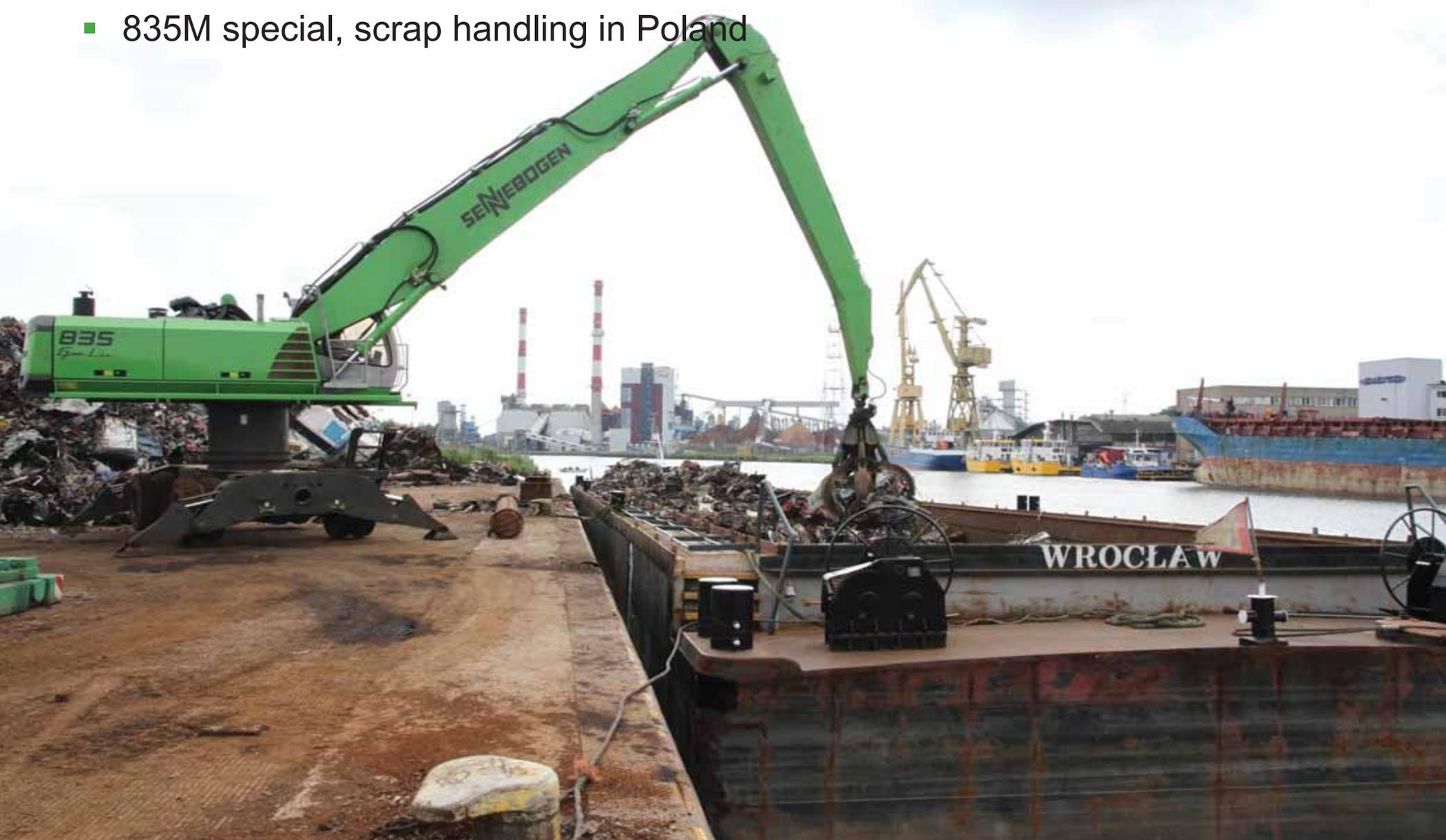
- 880 EQ: crawler undercarriage with pylon; unloading coal-> 550t/hour



Application examples

- 835M special, scrap handling in Poland

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SENNEBOGEN in Ports – one step further.
Thank you.

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