KONECRANES®
Lifting Businesses™

TAILOR-MADE MARINE CRANES

KONECRANES-MUNCKLOADER

GANTRY CRANES FOR OPEN BULK & GENERAL CARGO/CONTAINER CARRIERS

The Konecranes-Munckloader gantry cranes travelling along the rails on the ship deck are used to load and unload containers, unit cargo and bulk material. Vessels are typically equipped with two cranes working independently and reaching an unloading capacity of approximately 2,000 tons/h each.

The heavy-duty, high-capacity electrically operated gantry cranes have the following features:

> rigid A-frame type construction
> rack and pinion drives for gantry, trolley, shift trolley and shifting cab movements
> all machinery well protected and located inside structures
> rain protection with fixed roof above crane and sliding roofs above the jibs
> retractable curtains at both sides and at both ends
> jibs swinging in and parked between the main beams enabling jibbing without moving the cranes from the parked position
> hatch cover operation remotely controlled from platform on the crane leg

A wide range of lifting equipment can be attached to the turntable for many cargo-handling functions. The design allows for a variety of cargoes, such as:

> pulp
> ore
> grain
> cement
> paper
> packaged lumber
> coal
> project cargoes
> containers

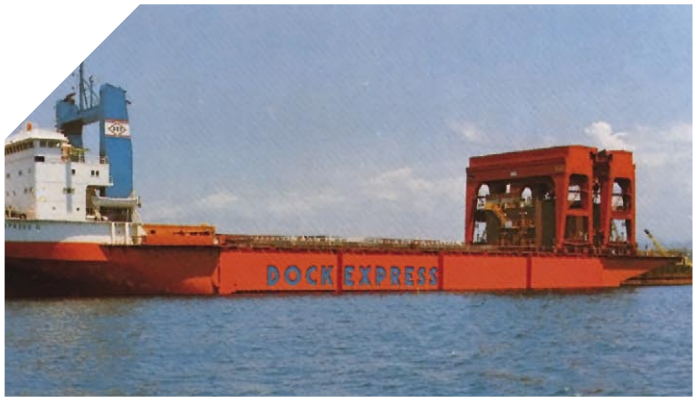
The cranes have the most modern design with regard to safety, operational efficiency, reliability and serviceability. Particular attention is paid to ensuring a long service lifetime in a marine environment.

TYPICAL TECHNICAL DATA:

Outreach from ship's side	8 m
Lifting height	27 m
Hoisting speed with 70/40/20-ton load	24/40/80 m/min
Lowering speed with 70/40/20-ton load	30/45/80 m/min
Trolley speed	90 m/min
Shift trolley speed	20 m/min
Turntable rotating speed	1 rpm
Gantry speed	30 m/min
Hatch cover lifting	100 tons/2 m/min

500-ton gantry crane for CARGO CARRIER

The gantry crane is designed for loading and unloading heavy cargo. Cargo carriers are equipped with two gantry cranes which travel along the rails on the ship deck. The cranes can work independently or together. The maximum load at twin hoist of the two cranes is 1,000 tons. The crane is equipped with a 33-ton auxiliary hoist which can also handle loads from outboard and can help in handling the cargo onboard.



TYPICAL TECHNICAL DATA (CARGO CARRIER):

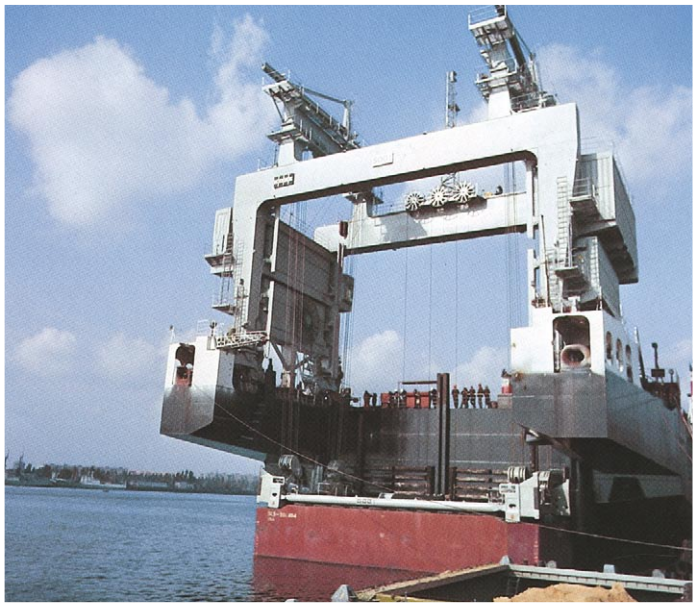
Hoisting capacity		**Speed**
> Main hoist	2 x 250 tons	1.5 m/min
> Aux. hoist	33 tons	4.5 m/min
Lifting height	14 + 9 m	
> Travelling speed		20 m/min

500-ton gantry crane for LASH-TYPE BARGE CARRIER

The gantry crane is designed for loading and unloading the LASH-type barge carriers, and travels along the rails on the ship deck. The crane is equipped with an automatic loading device, which hoists up or launches the barges aft the ship. The same crane transfers the barges into or from the ship's cargo space.

The automatic locating of barges is controlled by a computer.

The crane handles barges with a length of 18.745 m, a width of 9.5 m and a maximum load of 500 tons. The crane is provided with sea stowage equipment and hydraulically operated guide beams, which keep the barge stable during crane travel. The most recently delivered cranes are also equipped with two container-handling booms.



TECHNICAL DATA (LASH-TYPE BARGE CARRIER):

Hoisting capacity	500 tons
Height of lift above the rail	12 m
Depth of lower below the rail	15 m
Rail span	21.3 m
Speed of lift	
> with full load	4 m/min
> without load	8 m/min
Travelling speed	50 m/min
Loading/unloading capacity	
With crane travel of 200 m	3 barges/hour

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2700-ton Barge Handling System for SEABEE-TYPE BARGE CARRIER

Main parts:

> Lifting platform with an area of approximately 1,000 m2, which lifts two fully loaded barges to the appropriate deck level.
> Hoisting machinery arrangement (2 x 4 units) for raising and lowering the lifting platform.
> Two trolleys travel along the rails on the barges, powered by hydraulic cylinders from the platform, and convey them into the ship.
> Railed crossing beams at the rear edge of each deck connect the trolley rails on the platform and on the decks; the crossing beams are hoisted hydraulically.
> Sea-stowage equipment for the lifting platform.

TECHNICAL DATA:

Lifting platform

> Hoisting capacity	2 x 1,350 tons	
> Hoisting/lowering speed		
with full load		5.7 m/min
without load		12.0 m/min
> Lifting height		21.5 m

Barge transfer trolley:

> Hoisting capacity	1,350 tons	
> Travelling speed		
with full load		5.7 m/min
without load		12.0 m/min

Time needed for loading 26 barges into the ship	13 hours approx.

120-ton crane for BARGE CARRIER

This is an electro-hydraulic single-boom crane, mounted on a ship equipped with cargo hatches and intended to carry heavy cargo.

The crane moves along a 120 m long track on the deck. Travelling motion is transmitted by racks.

The crane can lift loads of 120 tons between the rails and 60 tons outboard. To avoid impacts while loading, the hoisting machinery is equipped with a constant-tension-type passive swell compensator, which functions with up to 60 tons load in ±1 m swell. To ensure safe use of the crane in open water, it is equipped with tugger winches which damp the swinging of the load.

The crane rotates through 360 degrees on a three-row roller bearing. The power needed for the crane is approx. 310 kW and the total power installed is 450 kW.

DESIGN CRITERIA:

Load x outreach	**Speed**
120 tons x 10.5 m	0.25–5 m/min
60 tons x 22 m	0.5–10 m/min
Travelling speed	0.75–15 m/min
Luffing speed	0.5–10 m/min
Slewing speed	0.02–0.5 rpm

SERVICE CONDITIONS:

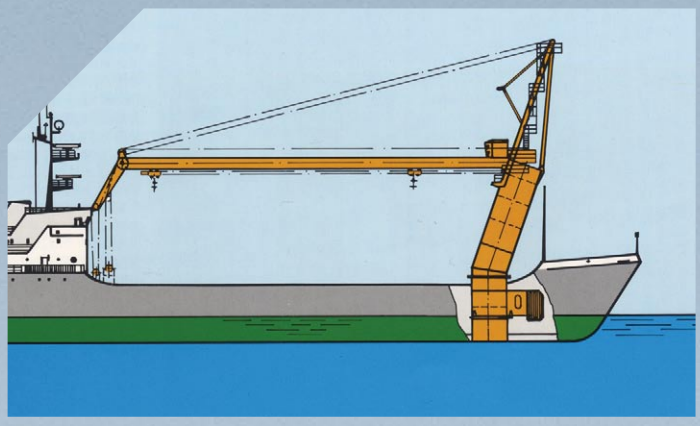
List	3 deg
Trim	1.5 deg
Roll	±3 deg in 10 sec period
Pitch	±1 deg in 7 sec period
Heave	±1 m in 8 sec period
Wind pressure	max 400 N/m²
Temperature	max +34 °C min -25 °C

100-ton crane for CRANE VESSEL

This crane has been designed and manufactured especially for the handling of drilling rigs and modules. The location of the counterweight below deck level and a special fork boom make it possible to move and operate the drilling rigs on a small-sized crane vessel.

The fork boom is equipped with two 50-ton and two 10-ton hooks. For handling small loads and hoisting slings, a 5-ton trolley travels on the boom side. The crane is equipped with two tugger winches which damp the swinging of the load.

The crane rotates through 360 degrees on a three-row roller bearing. All crane machinery is electro-hydraulic. The total power installed is 500 kW.



DESIGN CRITERIA:

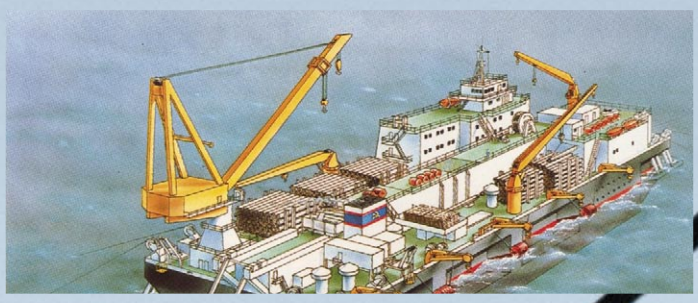
Load x outreach	**Speed**
2 x 50 tons x 22 m	0.3–7 m/min
2 x 10 tons x 40 m	0.7–14 m/min
1 x 5 tons x 40 m	3–28 m/min
Travelling speed of 5-ton trolley	3–28 m/min
Luffing speed (average)	8 m/min
Slewing speed	0.02–0.35 rpm

SERVICE CONDITIONS:

List	4 deg
List + roll	4 deg ±3 deg in ? sec period
Trim	2 deg
Trim + pitch	2 deg ±2 deg in 6 sec period
Wind speed	11 m/sec
Temperature	max +45 °C, min -25 °C

250-ton crane for PIPE LAYING BARGE

This crane is designed and tailor-made for a pipe-laying vessel, and incorporates a 250-ton trolley which travels along the entire length of the boom side. The 250-ton hook is designed for lifting and mounting heavy blocks and modules and for handling the stinger in open water. The fast 30-ton hook is designed for the handling of small loads, e.g. bundles of pipes. The crane is also equipped with two tugger winches, and it rotates through 360 degrees on a three-row bearing, driven by DC motors. The total power installed is 550 kW.



DESIGN CRITERIA:

Load x outreach	**Speed**
250 tons x 40 m	0–3 m/min
30 tons x 64 m	0–24 m/min
Travelling speed of 30-ton trolley	0–50 m/min
Luffing time from 40 m outreach to min outreach without load	5 min
Slewing speed with full load	0–0.35 rpm

SERVICE CONDITIONS:

List	3 deg
Trim	1.5 deg
Roll	±3 deg in 10 sec period
Pitch	±1 deg in 7 sec period
Heave	±1 m in 8 sec period
Wind load	max 400 N/m2
Temperature	max +34 °C min -25 °C

600/1200/1600-ton cranes for CRANE VESSEL

These 600-ton revolving cranes are mounted on catamaran-hulled vessels for offshore work. The cranes incorporate two independent main hooks, each with a capacity of 300 tons; an auxiliary hook of 150 tons; and a trolley with a 20-ton hook that travels along almost the entire length of the box girder boom. The maximum outreach is 69 m and the lifting height is 92 m above the water level. The main hook block can be coupled together by a hoisting beam with one four-prong 600-ton hook.

Due to the eccentric position of the crane, weight has to be reduced to a minimum, and so the counterweight has been omitted. Instead, the total crane movement is taken up by a tower-and-pintle slewing system. All hoisting and travelling winches, as well as the slewing gear, are driven by DC motors with a total output of 2,020 kW. The total power installed is approx. 2,300 kW.

The 1,200-ton revolving crane, designed by Gusto Engineering BV, is mounted on the stern of a self-propelled crane vessel and is equipped with two 600-ton main hooks which can be operated separately, a 300-ton auxiliary hook, tugger winches and a trolley with a 30-ton hook, which can travel along the length of the box girder crane boom.

As the vessel has an active ballast system and a minimum draught was required, the weight of the crane is minimised by omitting the counterweight and by using high tensile steel.

The crane moment is taken by a well-proven bogie-and-counterbogie system.

The hoisting, travelling and derrick winches, as well as the slewing gear, are driven by DC motors with a total power of 3,400 kW.

DESIGN CRITERIA:

Load x outreach	**Speed**
2 x 300 tons x 39 m	0–3 m/min
1 x 150 tons x 69 m	0–6 m/min
1 x 20 tons x 67 m	0–30 m/min

> Travelling speed of the 20-ton trolley: up to 30 m/min.
> Slewing speed with full load 0–0.25 rpm
> Boom hoist time with full load from 39 m to 26 m outreach: approx. 12 min. Without load from boom rest to 25 m outreach: approx. 20 min.

Roll	±2 deg in 5 sec
Pitch	±1 deg in 5 sec
Heave	±1 m in 5 sec
Static loading in plane of boom	5 deg
Static loading perpendicular to plane of boom	5 deg

Calculated wind thrust 400 N/m²

> All environmental loads simultaneous for lifts up to 600 tons and fully revolving.
> The cranes have been designed by Gusto Engineering BV.

DESIGN CRITERIA:

Load x outreach	**Speed**
2 x 600 tons x 39.5 m	0–3 m/min
1 x 300 tons x 71.5 m	0–6 m/min
1 x 30 tons x 70 m	0–30 m/min

> Travelling speed of the 20-ton trolley: up to 30 m/min.
> Slewing speed with full load 0–0,2 rpm
> Boom hoist time with full load from max outreach to min outreach of 23 m: approx. 20 min.

Roll	±2.29 deg in 8.5 sec
Pitch	±1.77 deg in 8.5 sec
Heave	±1.6 m in 8.5 sec
Wind load	400 N/m²

The 1,600-ton revolving crane is mounted on the stern of a self-propelled crane vessel. The crane, designed by Gusto Engineering BV, is equipped with two 800-ton main hooks which can be operated separately, a 400-ton auxiliary hook, and a trolley with a 30-ton hook, which can travel along the length of the box girder crane boom.

To lift the maximum load of 1,600 tons, the two main blocks can be used independently, allowing an angle with the vertical up to a maximum 15 degrees, or they can be coupled together with a hoisting beam and a 1,600-ton hook.

As the vessel has an active ballast system and a minimum draught was required, the weight of the crane is minimised by omitting the counterweight and by using high tensile steel.

The crane moment is taken by a well-proven bogie-and-counterbogie system.

The hoisting, travelling and derrick winches, as well as the slewing gear, are driven by DC motors with a total power of 4,300 kW.

DESIGN CRITERIA:

Load x outreach	**Speed**
2 x 800 tons x 48.5 m	0–3 m/min
1 x 400 tons x 86 m	0–6 m/min
1 x 30 tons x 67 m	0–30 m/min

- Travelling speed of the 30-ton trolley: up to 30 m/min.
- Slewing speed with full load 0–0,3 rpm
- Boom hoist time with full load from max outreach to min outreach of 23 m: approx. 40 min.

Roll	±2 deg in 7.5 sec
Pitch	±1.8 deg in 7 sec
Heave	±1 m in 7 sec
Static loading in plane of the boom	7 deg
Static loading perpendicular to plane of the boom	5 deg
Wind load	400 N/m²

Environmental loads simultaneous for lifts up to 1,600 tons fully revolving.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