

FLOATING SOLUTIONS



**E-CRANE**<sup>®</sup>  
EQUILIBRIUM

## ***E-CRANE'S FLOATING BULK HANDLING TERMINALS***

20 years ago, E-Crane® delivered the first barge mounted E-Cranes for offloading barges and small ships. E-Crane® has adapted this concept for offloading ships up to Panamax-class and has more than 30 units successfully operating world-wide. These E-Cranes have been developed in close cooperation with our clients. The concept of a floating bulk handling terminal is well suited for both port operations (ship-to-shore) as well as midstream transfer (barge-to-ship and ship-to-barge).

***THE E-CRANE® ORGANIZATION IS ALWAYS OPEN MINDED WHEN IT COMES TO SOLVING OUR CLIENT'S NEEDS AND REQUIREMENTS. THIS FAMOUS "CAN-DO" ATTITUDE HAS RESULTED IN "CUTTING EDGE"-SOLUTIONS THAT HAVE SUCCESSFULLY SERVED OUR CUSTOMERS WORLD-WIDE.***

***Lieven Bauwens, CEO E-Crane®***

The development of the E-Crane® Floating Bulk Terminal is another logical step in the evolution of this unique material handling concept. Floating transloading terminals address several material handling needs that are present in today's rapidly changing environment. This concept offers the following benefits:

- The complete terminal can be built and tested and then floated to its final destination
- The terminal can be located at the closest possible location to the mine, at the preferred transfer point or near the end user, all with limited local regulatory requirements.
- The complete terminal can be relocated quickly and cost effectively if required.
- The minimum investment combined with a short delivery time provides for an excellent return of investment.
- The option to have a floating buffer storage to smooth out any peaks and valleys between inbound and outbound material deliveries.

***"THE E-CRANE® HAS CUT OUR UNLOADING TIME IN HALF, CUT OUR MAINTENANCE TIME DRAMATICALLY AND JUST GENERALLY SIMPLIFIED OUR LIVES AND REDUCED OUR COSTS SUBSTANTIALLY"***

***Tom Noble, Lowman Power Plant***



# E-Crane Floating Solutions

Transparency & simplicity: our way... Your benefit!

**The floating terminal offloads between 20 and 25 barges (1800 ton/barge) per day. Year after year, close to 6 million tons of Bauxite is transferred in an 8 month time window...**

The Global Materials Services de Venezuela (GMSV) terminal is located near a bauxite unloading facility along the Orinoco River in Venezuela. This floating terminal was developed to improve the bauxite unloading at the existing port in this important region of Venezuela. The previous system of bauxite unloading had several limitations: poor serviceability and availability of the existing unloading equipment as well as interference of barge unloading with ship loading since the existing dock was used by ships as well as barges. The upgraded floating barge unloading terminal is now built around two equilibrium cranes mounted on an ocean going barge.



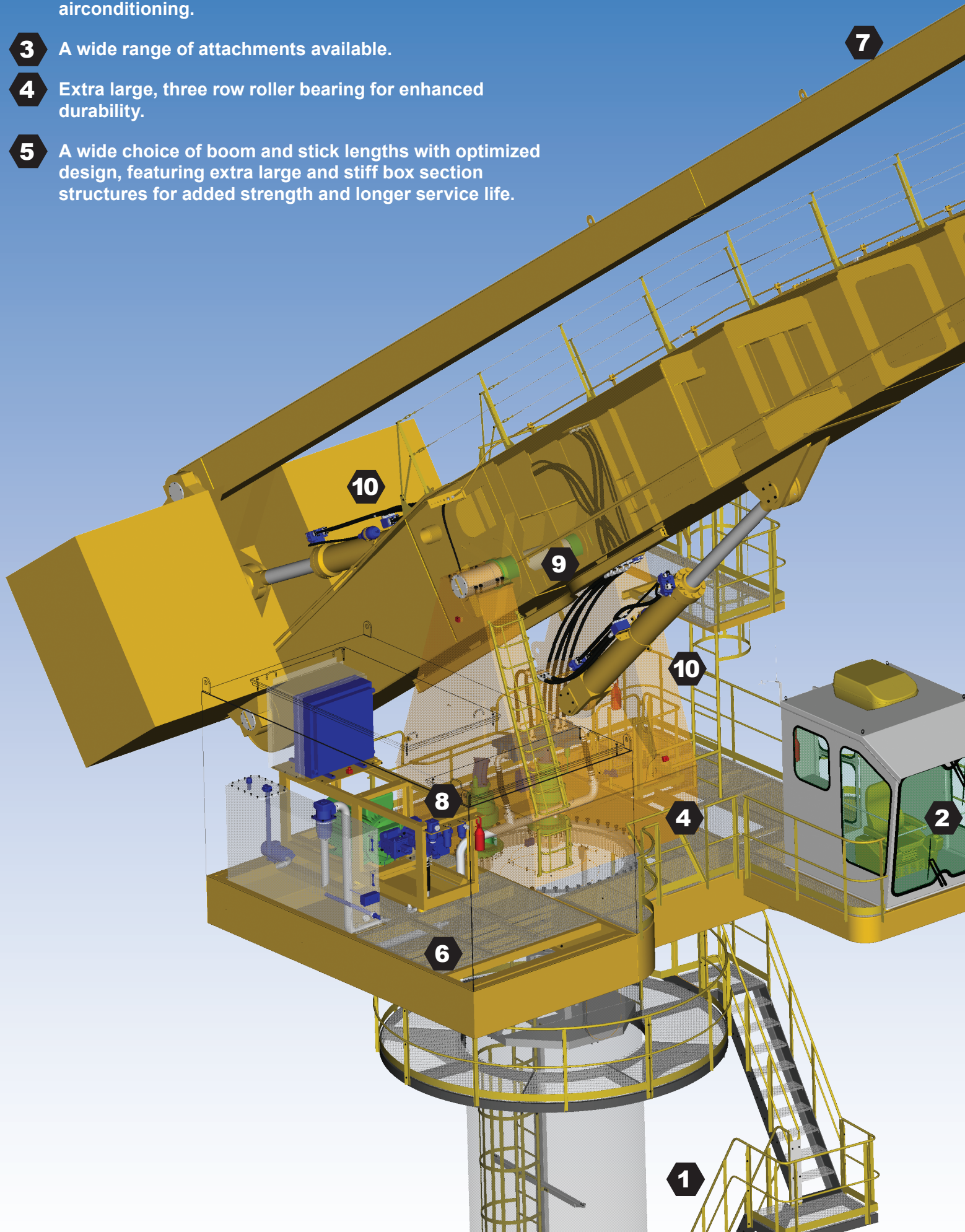
The two E-Cranes unload all the bauxite or the nearby alumina producer (CVG Bauxilum). This material originates from the El Jobal mine located 650 km downriver and is transported by barge.

Equipped with two E-Cranes, one with 15 tons, the larger with 25 tons lift capacity, this installation has a proven bauxite unloading capacity of close to 6 million tons in an 8 month time window (navigation season)! The terminal has been in successful operation since early 2002 and is proof of E-Crane's excellent reliability and ease of operation in an extremely tough environment.

***“WE INVESTIGATED VARIOUS OPTIONS AND EQUIPMENT MANUFACTURERS.  
OUR FIRST CHOICE WAS THE E-CRANE®”***

***Jim Gutsch, Vice President Seaboard Corporation***

- 1** A wide variety of heavy-duty undercarriages (fixed, free-standing, crawler, rail and rubber tire versions available).
- 2** Quiet, comfortable cab with excellent visibility and ergonomic operator control station comes standard with airconditioning.
- 3** A wide range of attachments available.
- 4** Extra large, three row roller bearing for enhanced durability.
- 5** A wide choice of boom and stick lengths with optimized design, featuring extra large and stiff box section structures for added strength and longer service life.



**10**

**9**

**10**

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**4**

**2**

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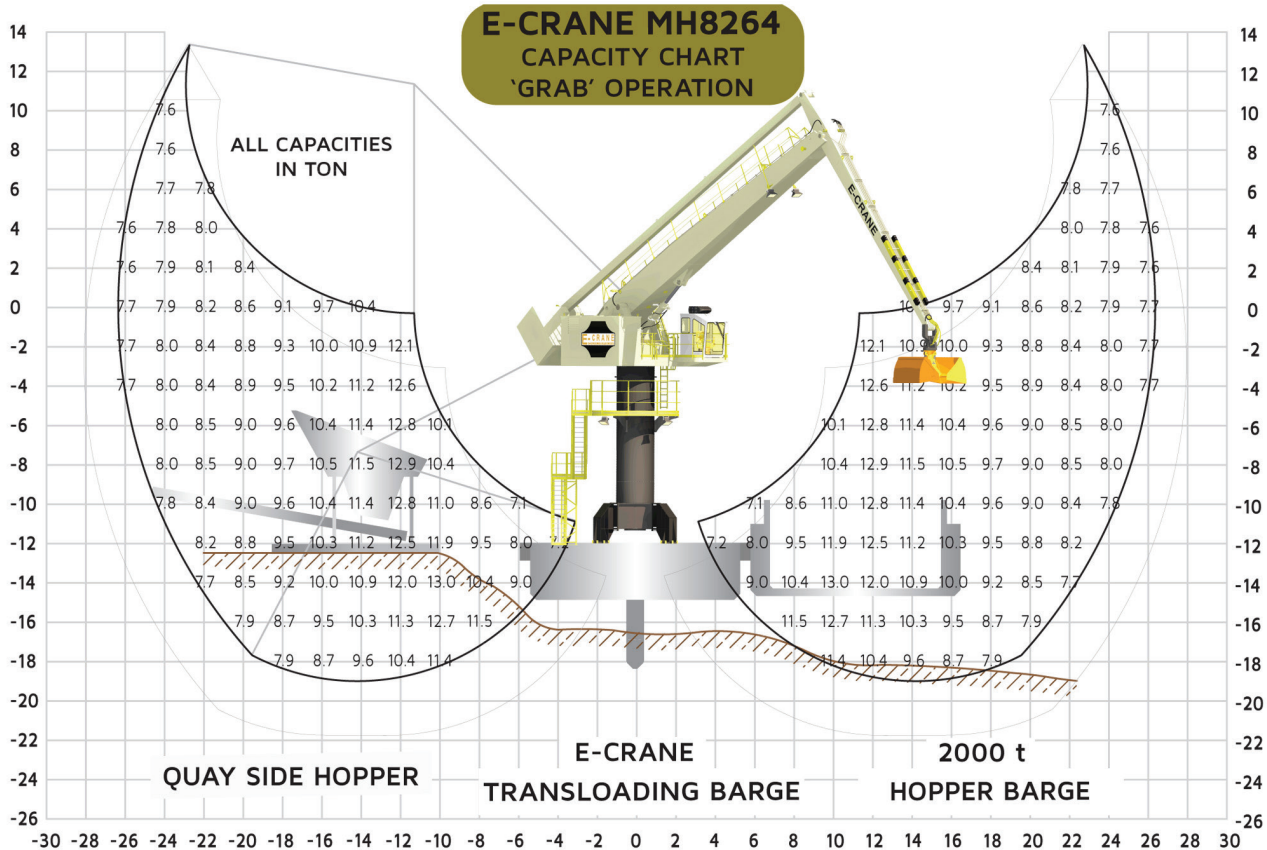
# E-Crane Floating Solutions

Superior Efficiency & Productivity... Now Within Reach!

5

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- 6 Fully enclosed power module with excellent access to all service points providing simplified maintenance thus saving time and money.
  - 7 Maintenance free mechanical link between stick and the moving counterweight assures crane remains in a near balanced condition throughout its operating range - forever!
  - 8 Hydraulic pumps only circulate fluid when called for by the operator providing increased energy efficiency and reduced heat in the hydraulic system.
  - 9 Oversized pins and bushings in combination with our central lubrication system: minimizing bearing pressures and maximizing bushing and pin life.
  - 10 Two identical large-bore cylinders, featuring oversized spherical bearings and through-hardened steel bushings to ensure optimum service life.

3



## Material Handler Capacity

Grab Operation (ISO 10567).....max 13 t

## Main Dimensions

Boom Length .....16,0 m + 4,5 m  
Stick Length .....11,6 m + 2,5 m  
Main Pivot Height (typical) .....11 m above deck

## Weight

Crane Upper (Incl. Counterweight) .....79 t

## Working Area

Max. Outreach .....26,4 m  
Min. Outreach .....3,1 m  
Lifting Height .....32,3 m

## Transloading Capacity (Grab Operation)

Crane Cycles .....Up to 120 cycles/hour  
Best Daily Production .....Up to 6.500 t/day  
Peak Performance .....500 t/hour

## Design Conditions

Max Heel/Trim .....3°/2°  
Ambient Working Temperature .....-25 to 45°C  
Max. Windspeed .....20 m/s (operating conditions)  
.....63 m/s (parked & stowed position)

## Component Selection

### Main Electrical Motor

Nominal Output .....132 kW/180 hp – 50 Hz/60 Hz  
Main Power Supply .....400/480 VAC, 3 phase

### Load Sensing Hydraulic System

Main Implement Pumps .....190 cc, 384 l/min  
Swing Pump .....Closed-loop, 113 l/min  
Capacity Hydraulic Tank .....1.400 liter

### Hydraulic Cylinders

2 Identical Cylinders .....Bore 220 mm/Stroke 1.508 mm

### Swing Bearing

Cross Roller Bearing .....Internal gear

## Forces & Moments (reaction @ swing bearing)

**Standard Operations (sheltered water) acc. to LRS  
Load Combination Case 1  
(Hoisting Factor: 1.365 / Duty Factor: 1.200)**

Overturning Moment .....2.630 kNm  
Vertical Force .....1.290 kN  
Horizontal Force .....70 kN

### Open Sea Operations

Forces and moments are determined by the detailed design parameters of the barge in combination with the dynamic hoisting factor.

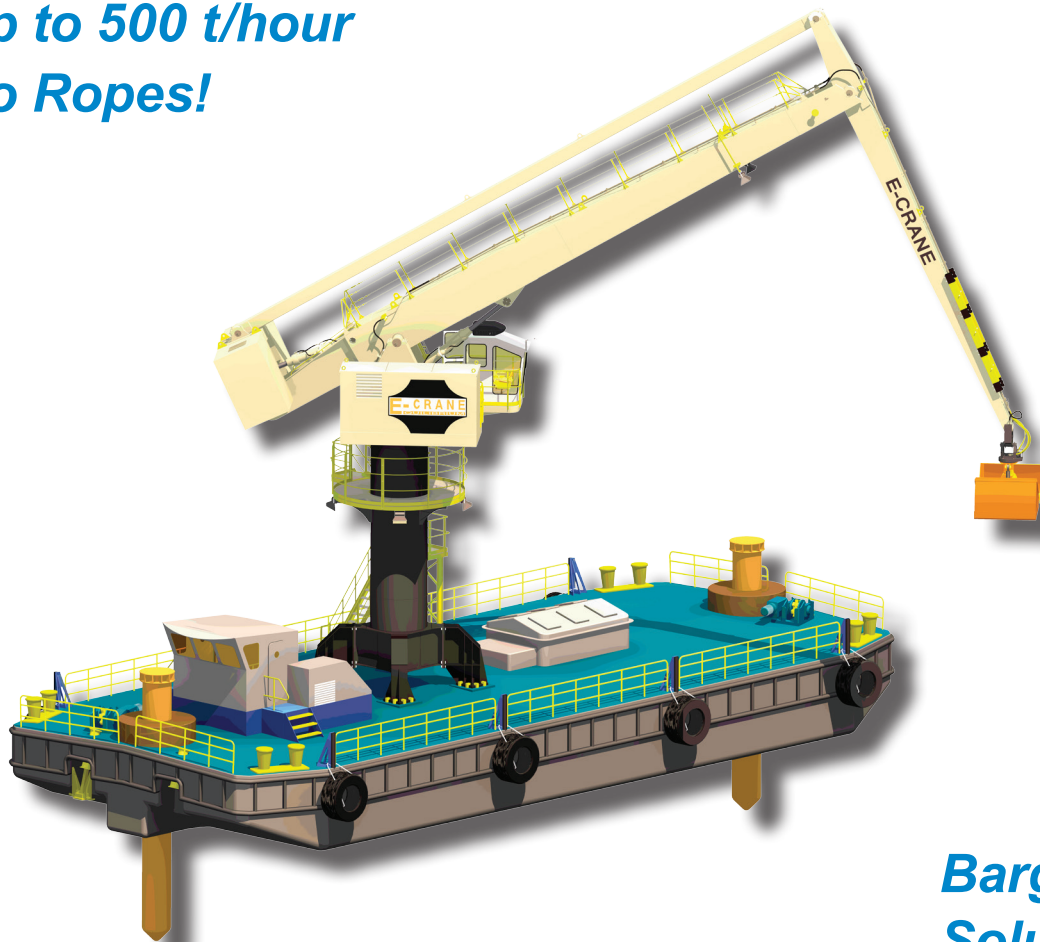


# SERIES

# E-Crane Floating Solutions

Custom Engineered to Meet Customer Requirements!

**Up to 500 t/hour**  
**No Ropes!**



**Barge-to-Shore**  
**Solution**

## E-Crane's Superior Crane Balance:

- Provides excellent stability
- Reduces barge dimensions
- Results in unmatched energy efficiency
- Combines superior productivity with long-term reliability

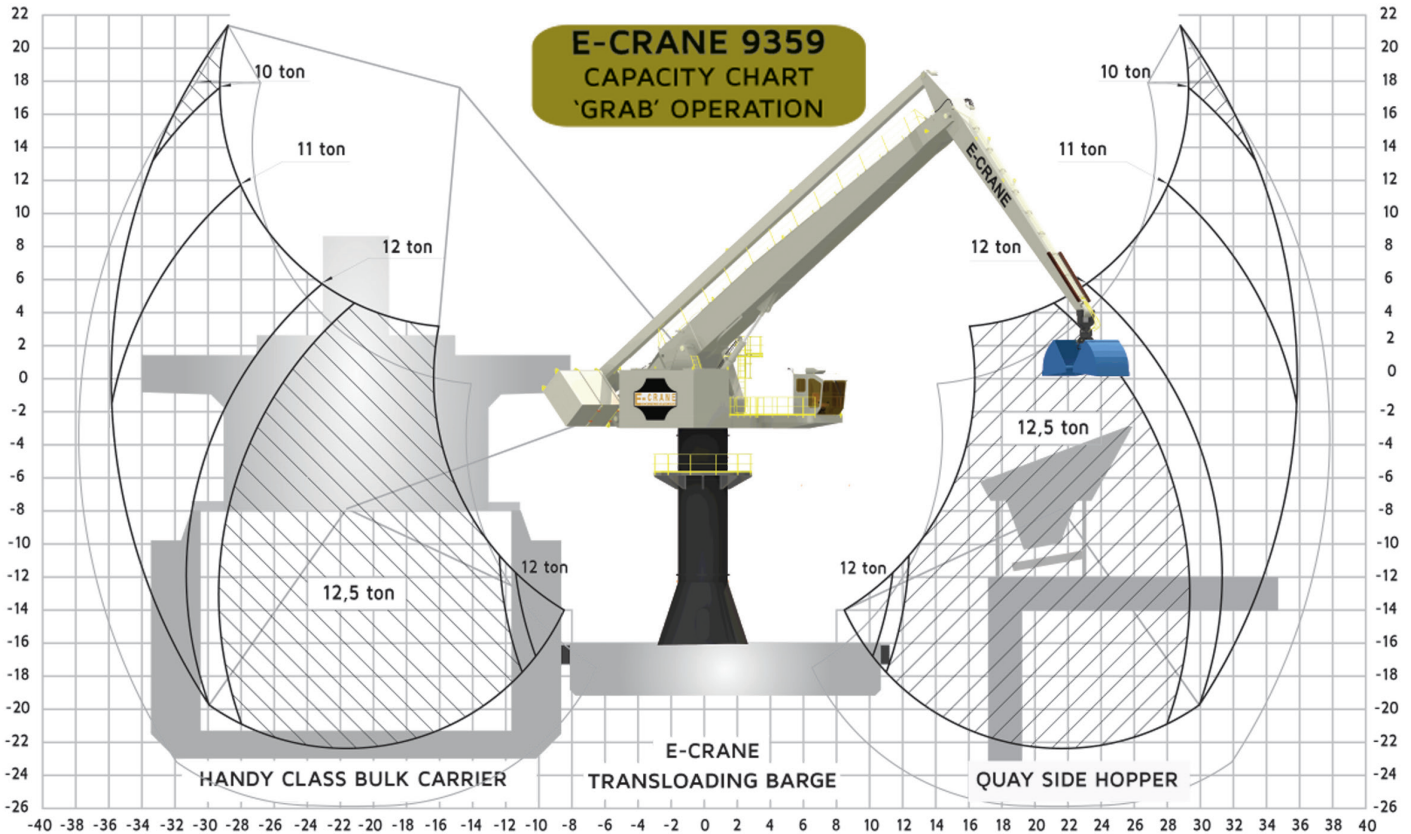
## Rigid Connection with Grab for:

- High placement accuracy
- Work underneath coamings
- Optimal grab weight
- Best grab opening & closing speed



**VOLGA, SUCCESSFUL IN OPERATION SINCE 2013**

The MH900 series balanced material handler has been installed onto a floating terminal in the port of Kazan for the Russian company Volga Shipping. It is being used for gravel and sand unloading.



## Crane Capacity

Grab Operation .....max 12,5 t  
Hook Operation .....max 13,5 t

## Main Dimensions

Boom Length .....23,0 m + 7,0 m  
Stick Length .....14,5 m + 3,0 m  
Main Pivot Height (typical) .....16 m above deck

## Weight

Crane Upper (Incl. Counterweight) .....179 t

## Working Area

Max. Outreach .....35,9 m  
Min. Outreach .....8,5 m  
Lifting Height .....43,7 m

## Transloading Capacity (Grab Operation)

Crane Cycles .....Up to 80 cycles/hour  
Best Daily Production .....Up to 13.500 t/day  
Peak Performance .....1.000 t/hour

## Crane Design Conditions

Max Heel/Trim .....3°/2°  
Ambient Working Temperature .....-25 to 45°C  
Max. Windspeed .....20 m/s (operating conditions)  
.....63 m/s (parked & stowed position)

## Component Selection

### Main Electrical Motor

Nominal Output .....250 kW/335 hp – 50 Hz/60 Hz  
Main Power Supply .....400/480 VAC, 3 phase

### Load Sensing Hydraulic System

Main Implement Pumps .....2x 246 cc, 2x 400 l/min  
Swing Pump .....Closed-loop, 293 l/min  
Capacity Hydraulic Tank .....1.850 liter

### Hydraulic Cylinders

2 Identical Cylinders .....Bore 280 mm/Stroke 2.450 mm

### Swing Bearing

3-Row Roller Bearing .....Internal gear

## Forces & Moments

### (reaction @ swing bearing)

**Standard Operations (sheltered water) acc. to LRS  
Load Combination Case 1  
(Hoisting Factor: 1.365 / Duty Factor: 1.200)**

Overturning Moment .....4.250 kNm  
Vertical Force .....2.350 kN  
Horizontal Force .....290 kN  
Crane Swing Torque .....750 kNm

### Open Sea Operations

Forces and moments are determined by the detailed design parameters of the barge in combination with the dynamic hoisting factor.

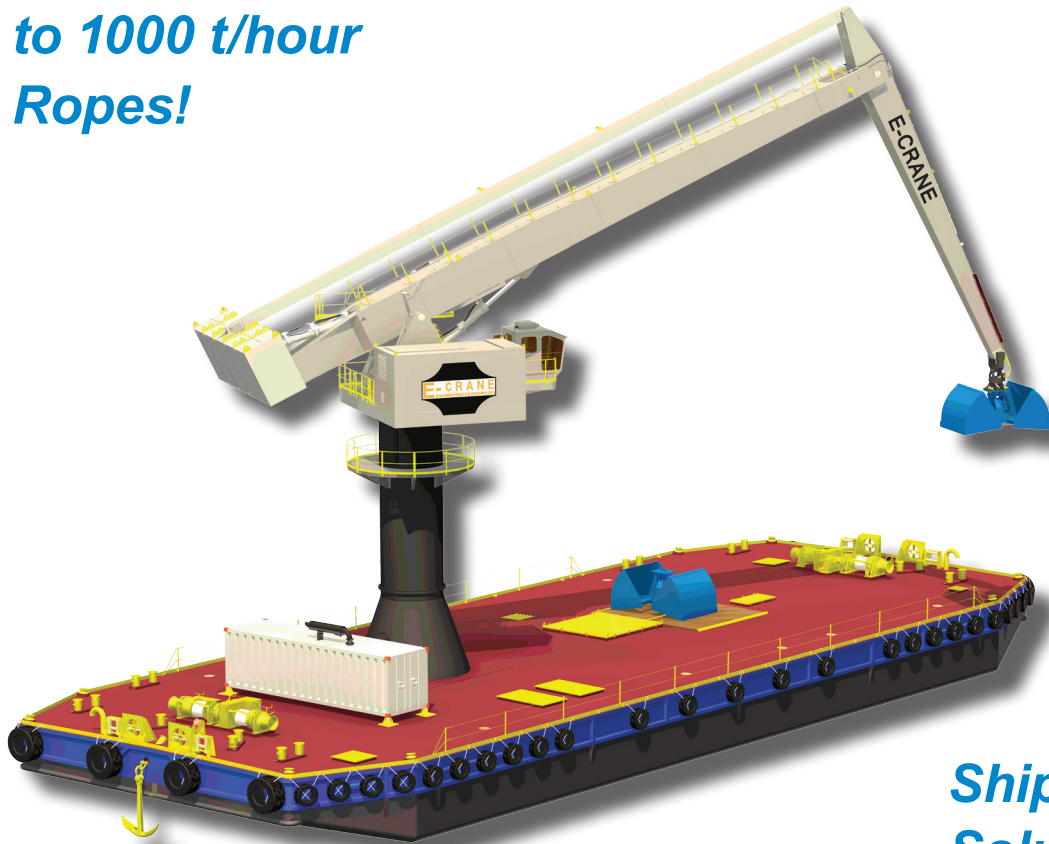


# SERIES

# E-Crane Floating Solutions

Superior Efficiency, Productivity... Now Within Reach!

*Up to 1000 t/hour  
No Ropes!*



**Ship-to-Shore  
Solution**

## Crane and Barge Fit Like 'Hand in Glove'!

- The E-Crane solution provides increased offloading capacity
- Great efficiency combined with excellent reliability
- Minimum investment using an existing barge

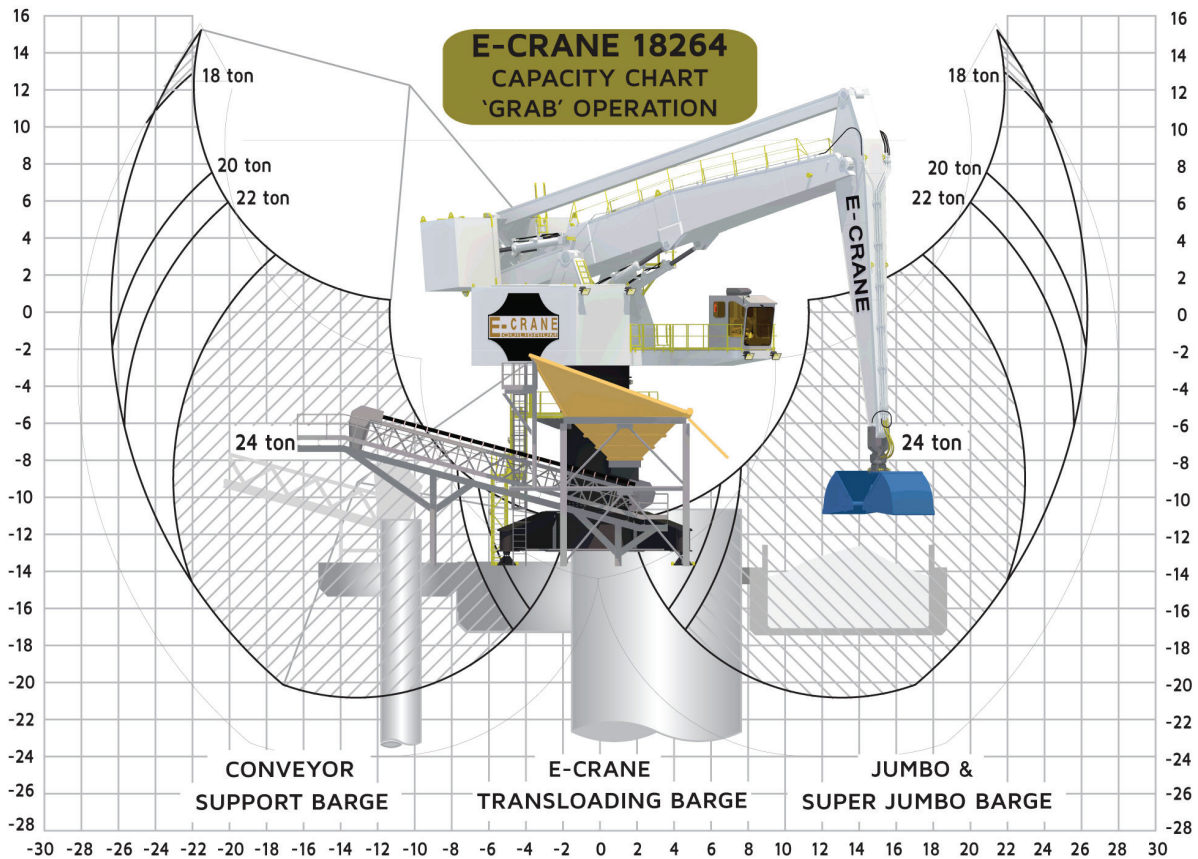
## Advantages over Other Floating Crane Concepts:

- Counterweight moves up & down, as well as back & forward for smaller tipping moments resulting in best barge stability



**SEABOARD/MIDEMA, SUCCESSFUL IN OPERATION SINCE 2008**

Seaboard operates a 1500 Series E-Crane specially designed to unload up to Handymax sized vessels from ship-to-shore or for transloading from ship-to-ship. E-Crane carried out conceptual design studies in close cooperation with the client to determine an optimum floating terminal concept.



## Crane Capacity

Grab Operation .....max 24 t  
Hook Operation .....max 27 t

## Main Dimensions

Boom Length .....16,0 m + 5,5 m  
Stick Length .....11,6 m + 3,0 m  
Main Pivot Height (typical) .....13,3 m above deck

## Weight

Crane Upper (Incl. Counterweight) .....186 t

## Working Area

Max. Outreach .....26,4 m  
Min. Outreach .....1,7 m  
Lifting Height .....36,0 m

## Transloading Capacity (Grab Operation)

Crane Cycles .....Up to 90 cycles/hour  
Best Daily Production .....Up to 30.000 t/day  
Peak Performance .....1.500 t/hour

## Crane Design Conditions

Max Heel/Trim .....3°/2°  
Ambient Working Temperature .....-25 to 45°C  
Max. Windspeed .....20 m/s (operating conditions)  
.....63 m/s (parked & stowed position)

## Component Selection

### Main Electrical Motor

Nominal Output .....450 kW/600 hp – 50 Hz/60 Hz  
Main Power Supply .....400/480 VAC, 3 phase

### Load Sensing Hydraulic System

Main Implement Pumps .....4x 250 cc, 4x 435 l/min  
Swing Pump .....Closed-loop, 345 l/min  
Capacity Hydraulic Tank .....4.000 liter

### Hydraulic Cylinders

4 Identical Cylinders .....Bore 280 mm/Stroke 2.450 mm

### Swing Bearing

3-Row Roller Bearing .....Internal gear

## Forces & Moments (reaction @ swing bearing)

### Standard Operations (sheltered water) acc. to LRS Load Combination Case 1 (Hoisting Factor: 1.365 / Duty Factor: 1.200)

Overturning Moment .....6.600 kNm  
Vertical Force .....2.625 kN  
Horizontal Force .....325 kN  
Crane Swing Torque .....960 kNm

### Open Sea Operations

Forces and moments are determined by the detailed design parameters of the barge in combination with the dynamic hoisting factor.

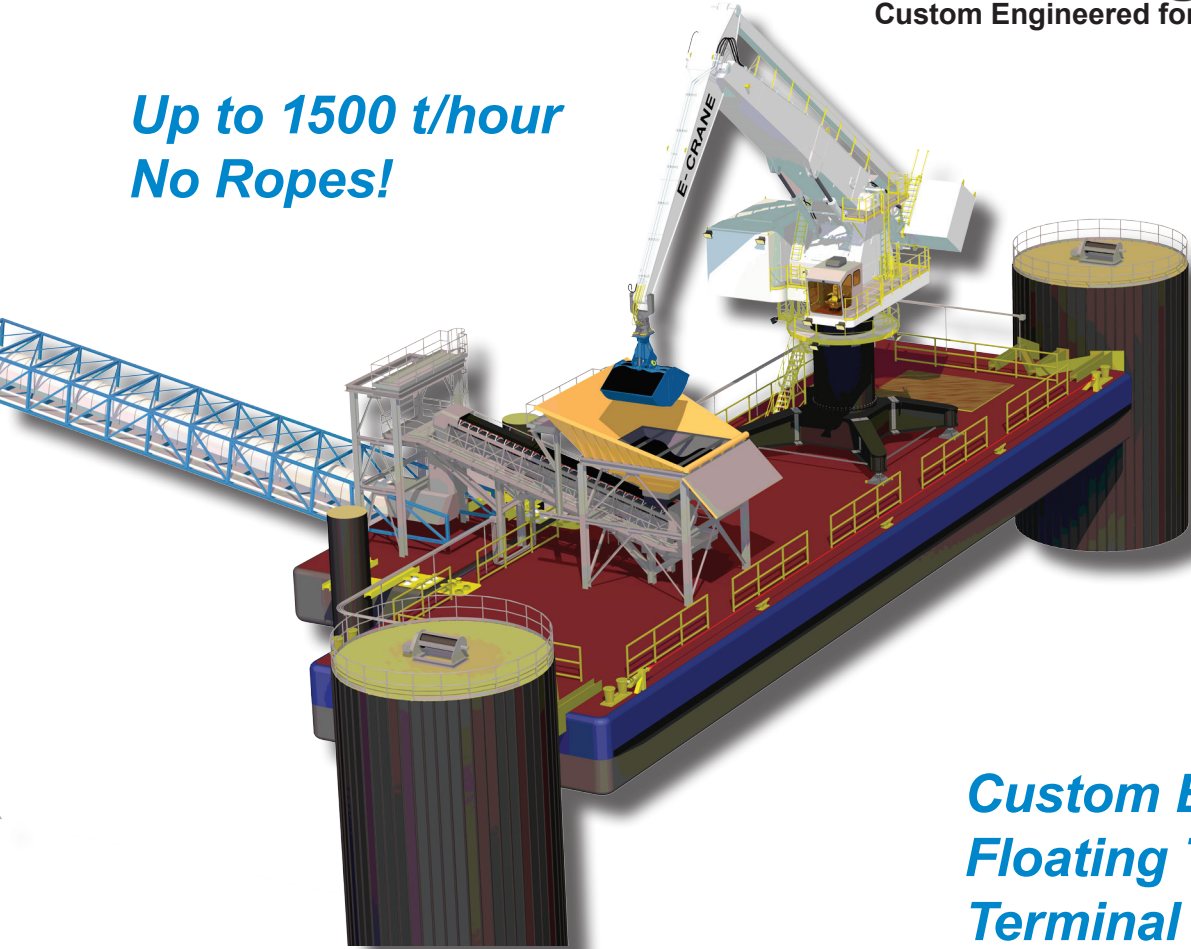


# SERIES

# E-Crane Floating Solutions

Custom Engineered for Superior Productivity!

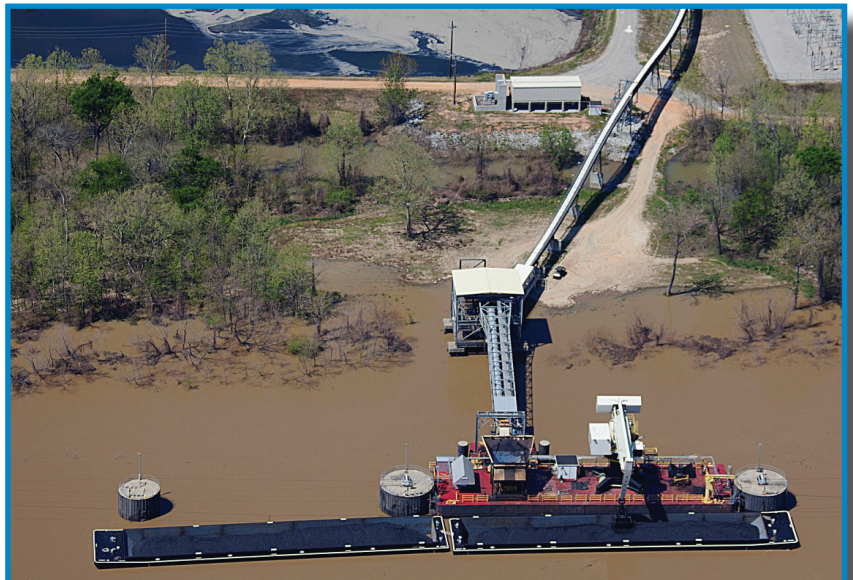
**Up to 1500 t/hour  
No Ropes!**



**Custom Engineered  
Floating Transloading  
Terminal**

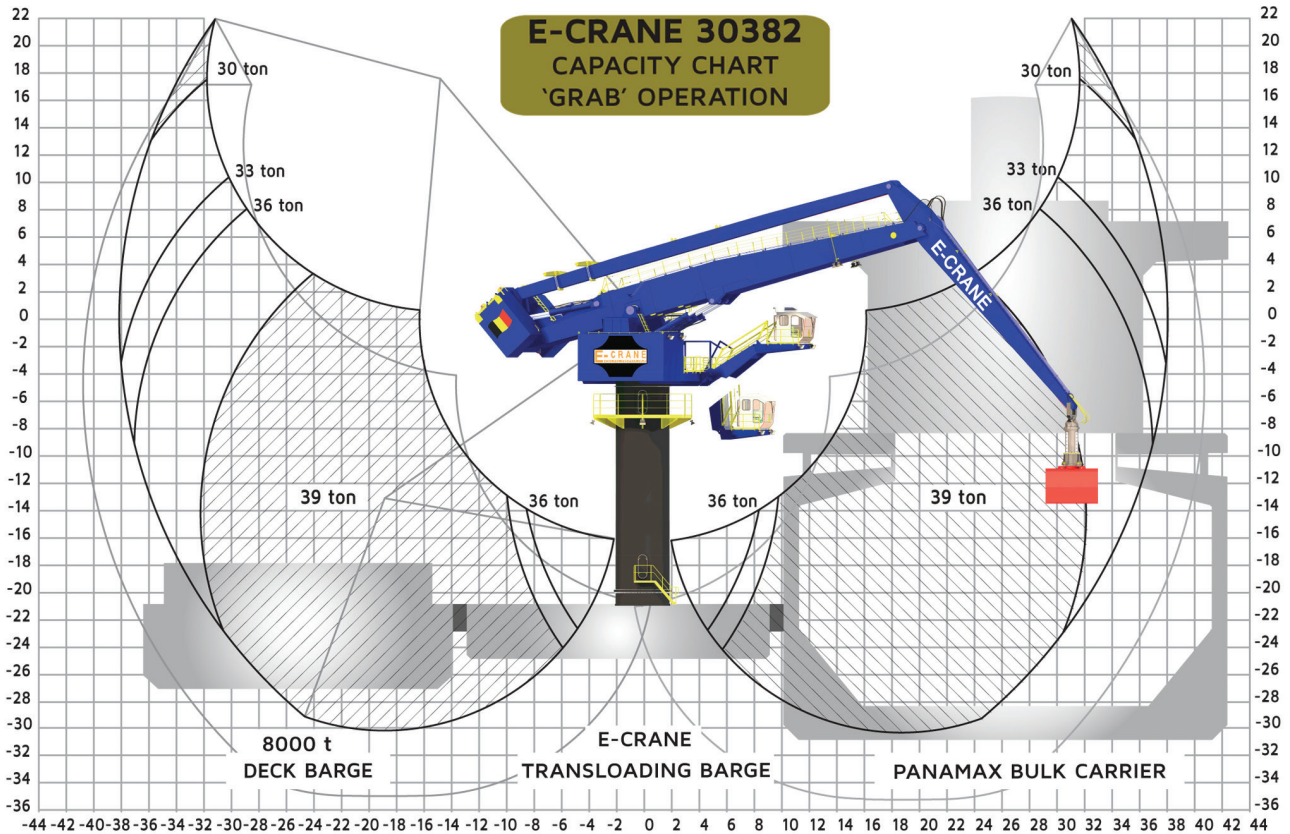
## E-Crane Barge Shifting and Breasting Solutions:

- The ultimate system in barge moving controllability.
- Utilizes infinitely variable speed control in both the breasting and moving modes
- Ensures that the lines remain under controlled tension throughout the moving process
- Results in smooth acceleration and deceleration
- Perfectly integrated into crane operators cab for best comfort & safety



**LOWMAN, SUCCESSFUL IN OPERATION SINCE 2007**

When PowerSouth Energy Cooperative upgraded its Lowman Power Plant for gas desulfurization, E-Crane offered a turnkey solution to the material unloading and river level problems: a floating terminal consisting of two barges, a hopper, a barge-haul system and a barge-breasting system.



## Crane Capacity

Grab Operation .....max 39 t  
Hook Operation .....max 45 t

## Main Dimensions

Boom Length .....23,0 m + 8,5 m  
Stick Length .....17,0 m + 4,0 m  
Main Pivot Height (typical) .....21 m above deck

## Weight

Crane Upper (Incl. Counterweight) .....393 t

## Working Area

Max. Outreach .....38,2 m  
Min. Outreach .....2,0 m  
Lifting Height .....52,2 m

## Transloading Capacity (Grab Operation)

Crane Cycles .....Up to 60 cycles/hour  
Best Daily Production .....Up to 30.000 t/day  
Peak Performance .....2.000 t/hour

## Crane Design Conditions

Max Heel/Trim .....3°/2°  
Ambient Working Temperature .....-25 to 45°C  
Max. Windspeed .....20 m/s (operating conditions)  
.....63 m/s (parked & stowed position)

## Component Selection

### Main Electrical Motor

Nominal Output .....630 kW/844 hp – 50 Hz/60 Hz  
Main Power Supply .....400/480 VAC, 3 phase

### Load Sensing Hydraulic System

Main Implement Pumps .....4x 260 cc, 4x 450 l/min  
Swing Pump .....Closed-loop, 430 l/min  
Capacity Hydraulic Tank .....4.000 liter

### Hydraulic Cylinders

5 Identical Cylinders .....Bore 330 mm/Stroke 2.950 mm

### Swing Bearing

3-Row Roller Bearing .....Internal gear

## Forces & Moments (reaction @ swing bearing)

### Standard Operations (sheltered water) acc. to LRS Load Combination Case 1 (Hoisting Factor: 1.365 / Duty Factor: 1.200)

Overturning Moment .....14.500 kNm  
Vertical Force .....5.250 kN  
Horizontal Force .....640 kN  
Crane Swing Torque .....2.400 kNm

### Open Sea Operations

Forces and moments are determined by the detailed design parameters of the barge in combination with the dynamic hoisting factor.

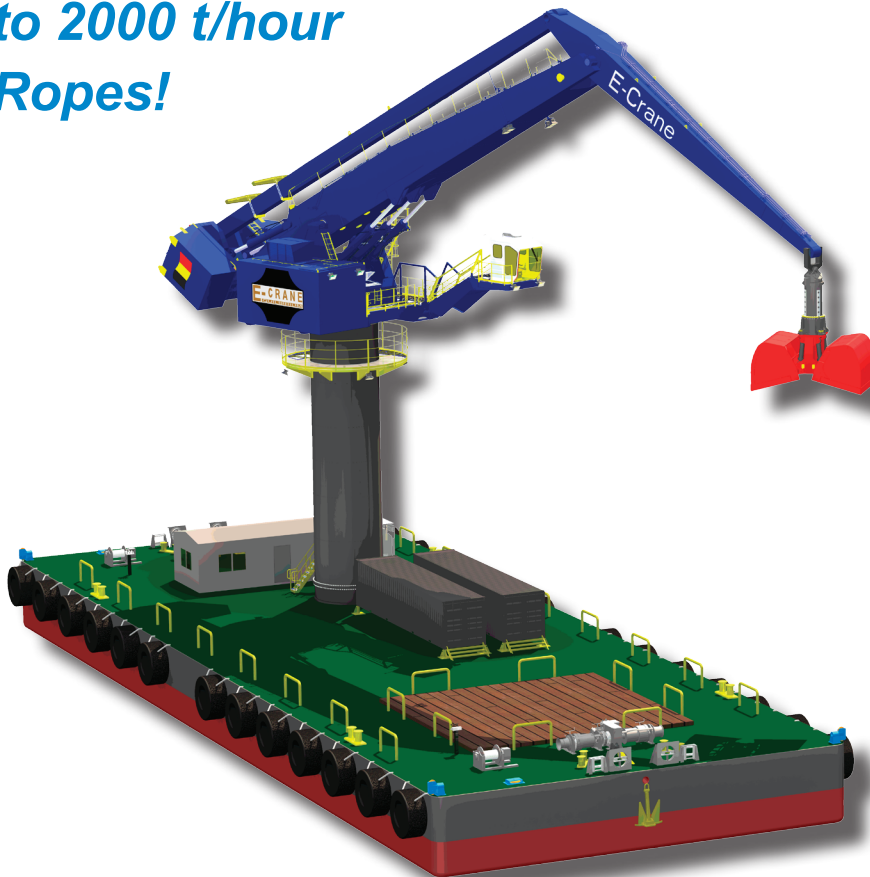


# SERIES

# E-Crane Floating Solutions

Extraordinary Products by Extra Ordinary People!

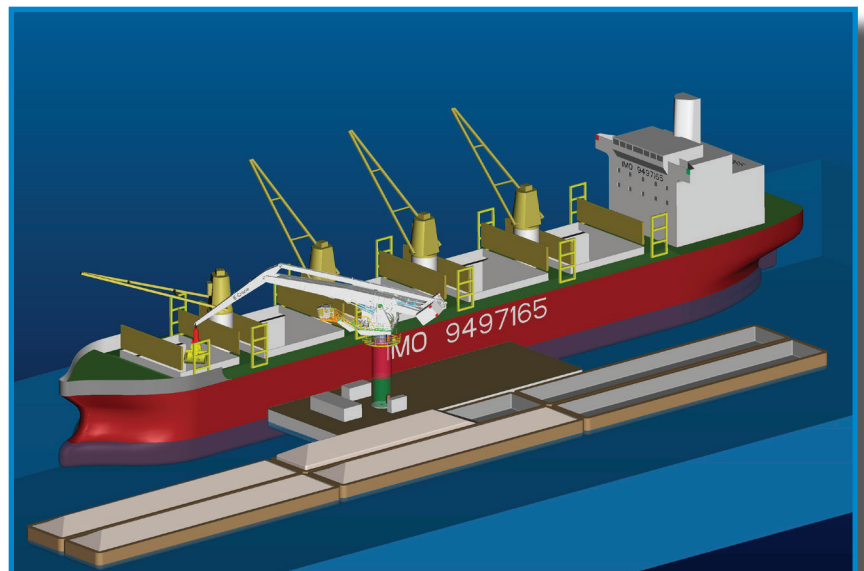
*Up to 2000 t/hour  
No Ropes!*



*Barge-to-Ship  
Mid-Stream  
Operation*

## E-Crane®, Best Choice for Professional Bulk Handling:

- Used for loading & unloading Panamax & Capesize vessels
- Excellent performance for tough, heavy or sticky bulk cargos
- Push down capability into bulk materials for best possible grab filling
- Minimum investment using an existing barge



## MAGGI, SUCCESSFUL IN OPERATION SINCE 2014

Maggi is a barge mounted 3000 Series E-Crane used to unload material barges. The material will be directly transferred to a Panamax sized ship on the other side of the crane barge. The midstream transfer will occur along the Amazon river and will be the largest midstream transfer operation ever accomplished for E-Crane.



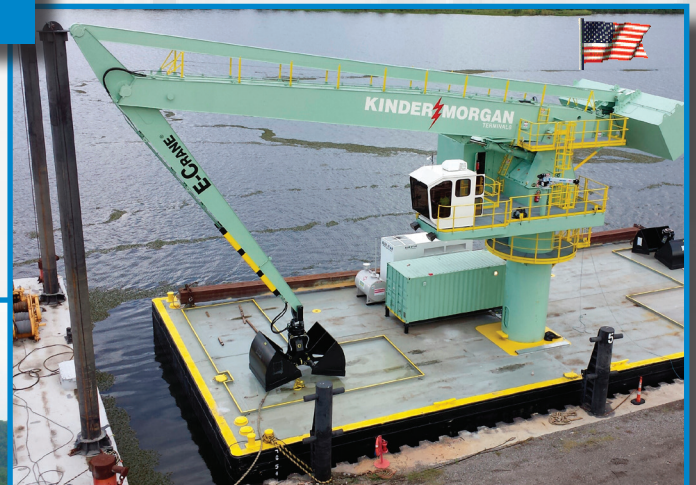
**3000 Series: 26317 PD-E**



**3000 Series: 27450 PD-E**



**1500 Series: 11264 PD-E**



**MH1200: MH10317 PD-E**

**E-Crane International USA**  
1332 Freese Works Place  
Galion, OH 44833  
USA

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Fax: +1 (419) 468 0074  
Website: [www.e-crane.com](http://www.e-crane.com)

# E-Crane Floating Solutions

Customer satisfaction guaranteed!



**1500 Series: 11264 PD-E**  
**2000 Series: 18264 PD-E**



**700 Series: 4248 PD-E**



**MH1200: MH10290 PD-E**



**700 Series: 4264 PD-E**

## E-Crane International EUR

Argon 15G  
4751 XC Oud Gastel  
The Netherlands

Phone: +31 (0) 165 320 100  
Fax: +31 (0) 165 320 759  
Website: [www.e-crane.com](http://www.e-crane.com)

# Product Range

Custom engineered to meet customer requirements



## 700 SERIES

Model	Maximum Outreach		Capacity Duty Cycle		Capacity Lift Mode	
	m	ft	ton	UST	ton	UST
4248	24,8	81.5	5,5	6.0	6,5	7.0
4264	26,4	86.5	5,5	6.0	6,5	7.0
4290	29,0	95.0	5,5	6.0	6,0	6.6
4317	31,7	104.0	5,3	5.8	6,0	6.6
6317	31,7	104.0	7,5	8.3	9,0	9.9

## 1000 B-SERIES

Model	Maximum Outreach		Capacity Duty Cycle		Capacity Lift Mode	
	m	ft	ton	UST	ton	UST
7248	24,8	81.5	9,1	10.0	12,0	13.2
7264	26,4	86.5	9,1	10.0	12,0	13.2
7290	29,0	95.0	10,0	11.0	13,6	15.0
7317	31,7	104.0	10,0	11.0	13,6	15.0
7359	35,9	117.5	10,0	11.0	13,0	14.3
7382	38,2	125.5	10,0	11.0	13,6	15.0
7421	42,1	138.0	10,0	11.0	11,0	12.1
7450	45,0	147.6	10,0	11.0	11,0	12.1

## 1500 B-SERIES

Model	Maximum Outreach		Capacity Duty Cycle		Capacity Lift Mode	
	m	ft	ton	UST	ton	UST
11248	24,8	81.5	17,0	18.7	19,0	20.9
11264	26,4	86.5	16,5	18.2	19,0	20.9
10290	29,0	95.0	14,0	15.4	15,5	17.1
9317	31,7	104.0	14,0	15.4	15,5	17.1
9359	35,9	117.5	12,5	13.8	13,5	14.9
9382	38,2	125.5	12,0	13.2	13,9	14.9

## 2000 B-SERIES

Model	Maximum Outreach		Capacity Duty Cycle		Capacity Lift Mode	
	m	ft	ton	UST	ton	UST
18264	26,4	86.5	24,0	26.5	27,0	30.0
16290	29,0	95.0	20,0	22.0	25,0	27.5
15317	31,7	104.0	20,0	22.0	25,0	27.5
14359	35,9	117.5	17,0	18.7	21,0	23.1
17359	35,9	117.5	21,0	23.1	28,0	30.8
13382	38,2	125.5	16,0	17.6	20,0	22.0
16382	38,2	125.5	20,0	22.0	24,0	26.4
21382	38,2	125.5	30,0	33.0	40,0	44.0
19421	42,1	138.0	25,0	27.5	33,0	36.3
18450	45,0	147.6	24,5	27.0	29,0	32.0

## 3000 B-SERIES

Model	Maximum Outreach		Capacity Duty Cycle		Capacity Lift Mode	
	m	ft	ton	UST	ton	UST
26317	31,7	104.0	34,0	37.4	40,0	44.0
23359	35,9	117.5	30,0	33.0	40,0	44.0
30382	38,2	125.5	39,0	42.9	45,0	49.5
27450	45,0	147.6	36,0	39.6	43,0	47.3
26478	47,8	156.8	33,0	36.3	40,0	44.0