

# LIFTING THE WIND INDUSTRY

PALFINGER MARINE — WIND

## **THE LEADING ONE-STOP-SHOP SUPPLIER FOR DECK EQUIPMENT**

By joining forces with Harding, the new and enlarged PALFINGER MARINE has emerged as the global leading manufacturer of highly reliable, innovative and customised deck equipment and handling solutions for the maritime industries. Our product portfolio includes cranes, lifesaving equipment, winches and handling equipment. A worldwide service network, including the supply of spare parts, ensures fast and professional onsite support.

PALFINGER MARINE operates in all major maritime segments, including Offshore, Marine, Cruise, Navy and Coast Guard, and Wind.

**PALFINGER GROUP  
was founded in 1932  
by Richard Palfinger.**

**In 2016 PALFINGER  
achieved a revenue of  
EUR 1,357 billion.**

**In 2016 PALFINGER is  
built on two mainstays:  
LAND and SEA.**

**HQ is located in  
Salzburg, Austria.**

## **DESIGNED FOR WIND**

PALFINGER MARINE offers a wide range of reliable and innovative products and solutions that are especially designed for the wind industry. The entire product range is characterised by user-friendly and functional design with low maintenance requirements and high-quality materials and components. This ensures high performing, reliable equipment suitable for work in the most harshest maritime conditions.

### **APPLICATIONS**

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Windmill – platforms and nacelles

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Substations

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Wind farm service operation vessels

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Wind farm supply boats

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Crew transfer boats

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## FROM CRANE MANUFACTURER TO COMPLETE DECK EQUIPMENT SUPPLIER

Offshore wind started off as an industry in 1991, when the world's first offshore wind farm was commissioned off the coast of Vindeby, Denmark. PALFINGER MARINE entered the offshore wind business in 2001.

At this time PALFINGER MARINE's product portfolio included cranes for use on windmill platforms, in the turbine housing of nacelles as well as on substations. When developing the first wind crane prototypes, PALFINGER MARINE profited from its extensive know-how in the maritime field. Since 1992 the company, part of the publicly listed PALFINGER Group, has been offering lifting solutions for marine applications. The multinational PALFINGER Group, which has approx. 9,580 employees, generated total sales of approx. EUR 1,357.0 million in 2016.

Through acquisitions in the past years, PALFINGER MARINE's product range for the wind segment has been extended by heavy lift offshore cranes, lifesaving equipment, winches and handling equipment. A global service network as well as a strong after sales service and training focus round off the portfolio. As technology leader, PALFINGER MARINE is constantly striving for product innovations. Products are designed and developed in close cooperation with our customers.





PALFINGER MARINE is deeply committed to providing customers with high quality equipment. Experienced engineers and first-rate HSE and quality systems ensure that all requirements are fulfilled throughout the entire process from design till delivery. Reliable products that guarantee resistance even under the toughest conditions are top priority, without neglecting user-friendliness and functional design.

By becoming a complete supplier for the wind industry, customers are served with the entire product and service range. Having a single supplier of deck equipment and services to windmills and service operation vessels offers reduced sourcing complexity (one-stop-shop) to customers and saves costs and resources along the entire supply chain.

#### **WIND FARMS EQUIPPED WITH PRODUCTS FROM PALFINGER MARINE**

PALFINGER MARINE is the preferred choice of many wind farm operators and their subcontractors. All these wind farms are equipped with PALFINGER MARINE products:

- |                          |                          |                                  |
|--------------------------|--------------------------|----------------------------------|
| – Alpha Ventus           | – Fuqing Project         | – Northwind                      |
| – Amrumbank West         | – Galloper Wind Farm     | – Merkur                         |
| – Anholt                 | – Gemini                 | – MEG Offshore I                 |
| – Avedøre Holme          | – Global Tech I          | – Osterild                       |
| – Beatrice Demonstration | – Gode Wind I + II       | – Ormonde                        |
| – Belwind Demonstration  | – Greater Gabbard        | – Race Bank                      |
| – Block Island           | – Gunfleet Sands I + II  | – Rampion                        |
| – Borkum Phase I         | – Humber Gateway         | – Rhyl Flats                     |
| – Borkum Riffgrund       | – Hunterston Test Centre | – Sheringham Shoal               |
| – Burbo Bank             | – Inner Dowsing          | – Thornton Bank Phase I, II, III |
| – Burbo Bank Extension   | – Lincs                  | – Walney Phase 1                 |
| – Butendiek              | – Lynn                   | – Walney Phase 2                 |
| – DanTysk                | – Meerwind Süd/Ost       | – Walney Extension               |
| – Dudgeon                | – Nobelwind              | – West of Suddon Sands           |
| – EnBW Baltic 2          | – Nordergründe           | – Wikingen                       |
| – Fife Energy Park       | – Nordsee One            |                                  |
| – Formosa                | – Nordsee Ost            |                                  |

# WIND CRANES

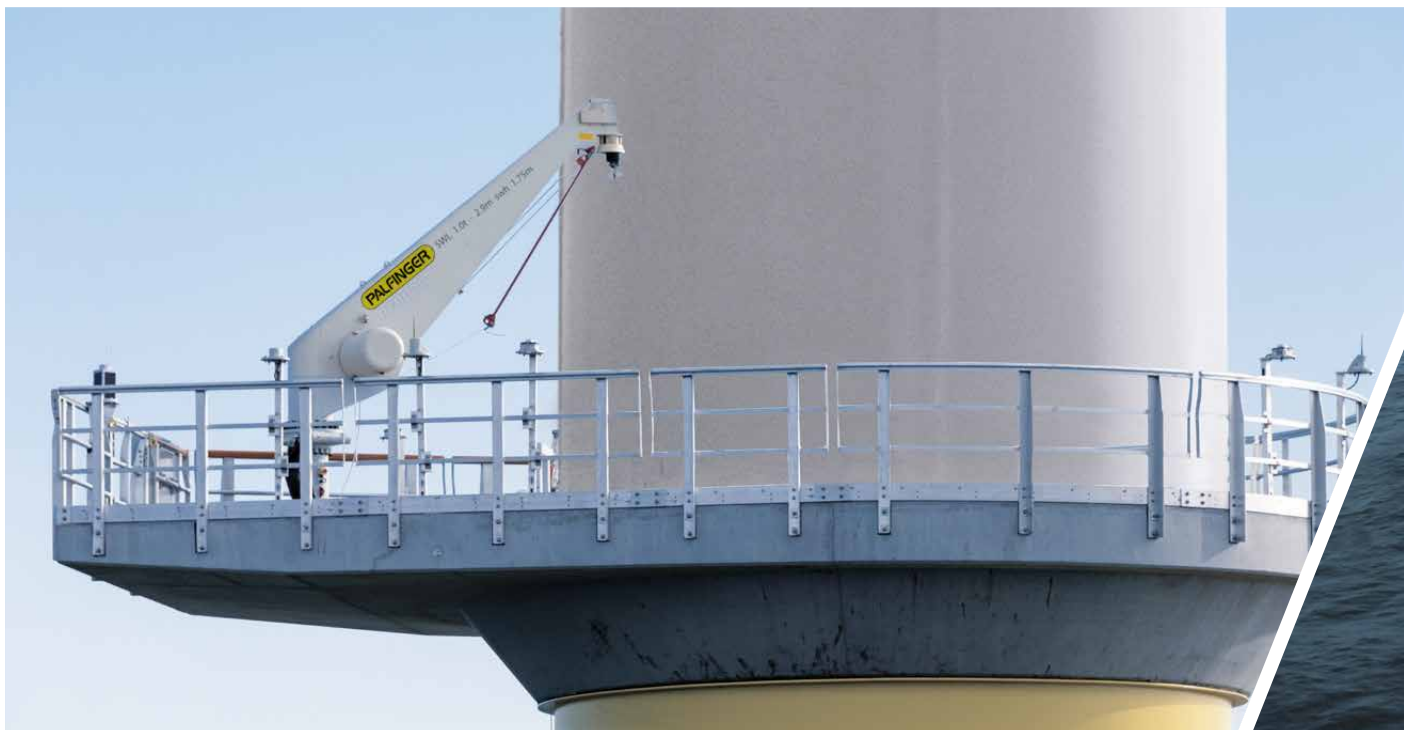
PLATFORM | NACELLE | SUBSTATION





# WIND CRANES

## PLATFORM CRANES | FIXED BOOM CRANES



PALFINGER MARINE platform cranes are experts in safe and fast material handling to and from offshore wind platforms. A special surface coating and processing of high-quality materials protects the cranes against corrosion.

Crane Type	Outreach	Lifting Capacity	Significant Wave Height	Power Consumption	Dead Weight	Mode
<b>PF RANGE</b>						
PF1100	1.8 m	0.2 t	1.00 m	only manual operation	0.30 t	winch cargo
PF6000	2.4 m / 2.6 m	0.7 - 1 t	1.75 m	6 kW	0.95 t	winch cargo
PF8000	2.9 m	1 t	1.75 m	6 kW	0.95 t	winch cargo
PF9000	3.4 m	1 t	1.50 m / 1.75 m	6 kW	1.25 t	winch cargo
PF10000	4.3 m	1 t	1.75 m	6 kW	1.65 t	winch cargo
PF16000	3.0 m	2 t	1.50 m	12 kW	1.65 t	winch cargo
PF20000	6.9 m	1 t	1.75 m	6 kW	1.95 t	winch cargo

### FEATURES

Overload protection system (MOPS/AOPS)\*

Electrically operated rope winch (PF1100 only manually operated)

Hoisting speed: ~ 9–21 m/min\*

Hoisting height: up to 28 m\*

Wire rope, rotation free, galvanised

Electrically / manually operated slewing drive, speed: ~ 0.5 rpm

Electric power requirements:  
3 x 400–690 V AC / 50–60 Hz\*

Cable remote control system IP66\*

Protection class IP56/66/67

Stainless steel components (VA4)

Surface protection:  
spray galvanised system A8.04 acc. to  
DIN EN ISO 12944 C5-M high

Bottom flange on mounting base

### OPTIONS

Pivoting bars (additional lifting points)\*

Slack wire detection system\*

Visual warning light\*

LED working light\*

Pulley line system

Boom lowering function available for  
PF10000/20000

\* Not applicable for PF1100



## I STIFF BOOM CRANES



Crane Type	Outreach	Lifting Capacity	Significant Wave Height	Power Consumption	Dead Weight	Mode
<b>PSM / PSW RANGE</b>						
PSM400	8.0 m	1.5 t	2 m	28 kW	4.60 t	winch cargo
	8.0 m	1.99 t	1 m			winch cargo
	8.0 m	0.5 t	1 m			man riding
PSW36000	7.9 m	3 t	0.75 m	16 kW	3.50 t	winch cargo
	7.9 m	2 t	2 m			winch cargo

### FEATURES

Overload protection system  
(MOPS/AOPS)

Hydraulically / electrically operated rope  
winch

Hoisting speed: up to 21 m/min

Hoisting height: up to 28 m

Wire rope, rotation free, galvanised

Hydraulically operated slewing drive

Electric power requirements:  
3 x 400–690 V AC / 50–60 Hz  
1 x 230 V AC / 50 Hz (standstill heating)

Cable and radio remote control system  
Protection class IP56/66

Compliant with Machinery Directive  
2006 (CE)

Stainless steel components (VA4)

Surface protection:  
DIN EN ISO 12944 C5-M high

Bottom flange on mounting base

### OPTIONS

Man-riding function

Visual warning light

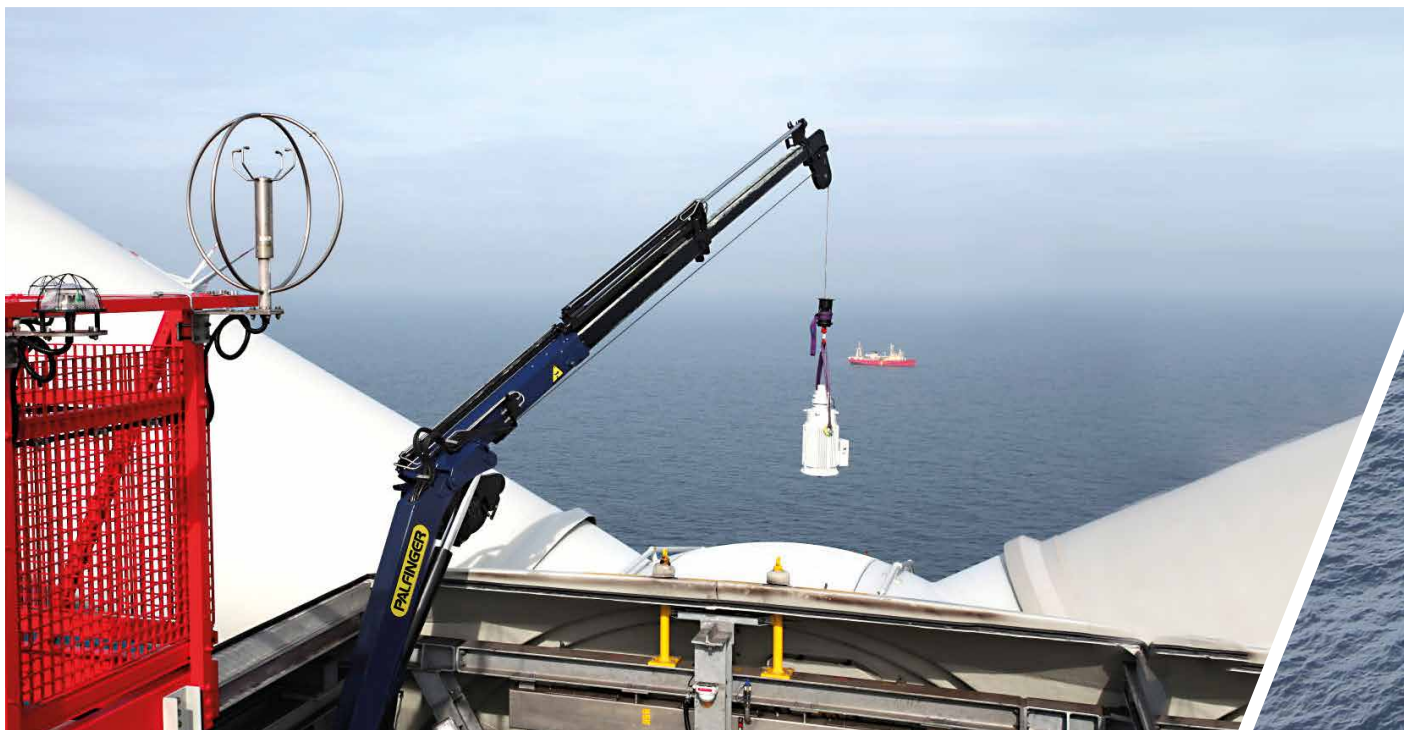
LED working light

Acoustic warning system

Biodegradable hydraulic oil

# WIND CRANES

## NACELLE CRANES | COMPACT BOOM AND FOLDABLE KNUCKLE BOOM CRANES



PALFINGER MARINE nacelle cranes guarantee maximum manoeuvrability with a huge range of different working positions. The crane enables safe and fast lifting from the platform to the nacelle and between heli-deck and the nacelle. Its compact design is the perfect fit for areas with limited working space.

Crane Type	Outreach	Lifting Capacity	Power Consumption	Dead Weight	Mode
<b>PC / PK RANGE</b>					
PC1500	3.1 m	0.4 t	200 bar / 6 l/min	0.25 t	winch cargo cargo hook cargo hook
	3.1 m	0.4 t			
	1.2 m	0.99 t			
PK11001	8.6 m	0.5 t	310 bar / 30 l/min	1.8 t	winch cargo
PK41002	14 m	1.6 t	300 bar / 100 l/min	6.9 t	winch cargo
	6 m	3.5 t			winch cargo
	14 m	0.45 t			man-riding
PK50002	11.1 m	2.3 t	310 bar / 100 l/min	7.9 t	winch cargo
	8 m	3.5 t			winch cargo
	5.5 m	5.5 t			winch cargo

### FEATURES

- Overload protection system
- Hydraulically operated rope winch
- Hoisting speed: ~ 15 m/min\*
- Hoisting height: 140 m\*
- Wire rope, rotation free, galvanised
- Hydraulically operated slewing drive
- Electric power requirements: 24 V DC
- Required oil flow: ~ 6 - 100 l/min
- Pressure: 200–310 bar

\* Not applicable for PC1500

- Cable or radio remote control system
- Protection class IP56
- Stainless steel components (VA4)
- Nickle chrome or stainless steel piston rods
- Surface protection:  
DIN EN ISO 12944-2 C4-M high
- Compact storage position (fully folded)

### OPTIONS

- Man-riding function\*
- Endless slewing\*
- Visual warning light
- LED working light
- Acoustic warning system

**PALFINGER BLADE ACCESS (PBA) | ON- AND OFFSHORE BLADE INSPECTION AND REPAIR**



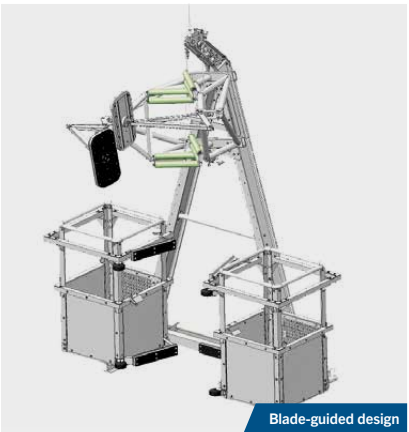
PALFINGER BLADE ACCESS (PBA) is an innovative solution for safe blade inspection and effective repair of wind turbine blades both on- and offshore. Compared with the conventional method, PALFINGER BLADE ACCESS represents an enormous improvement with regard to service work on wind blades. Due to the stable position the working zones are more secure than before and allow direct access to electricity and maintenance tools in the workman's basket. Maintenance and service work on wind turbine blades can be performed in a safer and more cost-efficient manner using this product innovation certified by DNV GL.

With the PALFINGER MARINE nacelle crane PK 40002 M the basket is easily lifted into operation, attached to the blade and can be stored on-site at the ground base. The time consuming handling of equipment can be reduced to a minimum. The blade-guided design means that service engineers follow the contours of the blade and remain at the same distance from the blade at all times.

Transport and setup can be handled faster and safer than before, which allows the service team to spend more working hours on the blade, even in bad weather conditions. The basket has enough space for two technicians and working tools and allows even complex tasks to be performed while on the blade.

Based on customer requirements, this patented package solution promises a better way to perform maintenance work on wind blades.

SPECIFICATIONS	FEATURES
Width: 2,564 mm	DNV GL certified
Height: 3,191 mm	Non-corrosive fibre composite
Depth: 889 mm	Stainless steel structure
Person freestanding height at 2100 mm	Space for two technicians and equipment in the working basket
Total net weight: 221 kg	20 minutes to travel from ground level to the blade interface
Total net weight: 495 kg incl. payload	Designed for storage at the platform
Corrosion grade: C5 high	Parking on-site during service work
Service range: Leading edge and approx. 500 mm on both sides of the wind blade	





# WIND CRANES

## SUBSTATION CRANES | STIFF BOOM, KNUCKLE BOOM AND TELESCOPIC BOOM CRANES



PALFINGER MARINE substation cranes showcase their advantage by loading and unloading heavy equipment, material or tools. The versatile and maintenance-friendly crane with an enormous outreach can cover a huge range of the platform area.

Crane Type	Outreach	Lifting Capacity	Significant Wave Height	Power Consumption	Dead Weight*	Mode
<b>PSM / PKM / PTM RANGE</b>						
PSM1800	21 m	10 t	1.60 m	65 / 100 kW	14 t	winch cargo
	21 m	7.5 t	2.50 m			winch cargo
	13.5 m	8.5 t	1 m			winch cargo
	21 m	1 t	1 m			man-riding
PSM3000	17.5 m	10 t	1 m	90 kW	23 t	winch cargo
PKM750	16 m	5 t	0 m	65 / 90 kW	11 t	winch cargo
	16 m	3.8 t	0.50 m			winch cargo
	16 m	3.4 t	0.80 m			winch cargo
	16 m	2.6 t	1.60 m			winch cargo
	16 m	1.3 t	1.60 m			man-riding
PTM1800	30 m	3.3 t	1.50 m	65 / 100 kW	12.5 t	winch cargo
	20 m	3.5 t	1.50 m		21 t	winch cargo
	17.5 m	5 t	2.50 m		19.2 t	winch cargo

\* Standard / basic crane

### FEATURES

Hydraulically operated rope winch

Hydraulically operated slewing drive, endless slewing/limitation also possible

Wire rope, rotation free, galvanised

Stainless steel components (VA4)

Ceramic coated and stainless steel piston rods

Overload protection system (MOPS/AOPS)

Protection class IP56/66

Elect. power requirements:

Main and emergency power pack (IP56)

3 x 400–690 V AC / 50–60 Hz

1 x 230 V AC / 50 Hz (standstill heating)

Hoisting speed: up to 18 m/min

Hoisting height: up to 50 m

Surface protection:

DIN EN ISO 12944 C5-M high

Cable and radio remote control system

### OPTIONS

Man-riding function

Visual warning light

LED working light

Acoustic warning system

Aircraft obstruction light on boom tip

Lightning protection rods

Centralised greasing system



## JETTY (HARBOUR) CRANES | TELESCOPIC BOOM CRANES



PALFINGER MARINE jetty cranes can be installed for jetty and harbour site applications. Proven technology, a maintenance-friendly design and high-quality workmanship characterise these cranes.

Crane Type	Outreach	Lifting Capacity*	Significant Wave Height	Power Consumption	Dead Weight**	Mode
<b>PTM RANGE</b>						
PTM600	17.9 m	1.85 t	harbour site conditions	37 / 55 kW	6.3 t	winch cargo
	17.9 m	1.75 t	0.5 m			winch cargo
	12.5 m	3.0 t	harbour site conditions			winch cargo
	12.5 m	2.6 t	0.5 m			winch cargo

\* Local authority standards to be considered

\*\* Standard / Basic crane

FEATURES			OPTIONS	
Overload protection system (MOPS/AOPS)	Hydraulically operated slewing drive, slewing angle to be defined		Man-riding function	
Hydraulically operated rope winch			Visual warning light	
Hoisting speed: up to 18 m/min	Electric power requirements: 3 x 400–690 V AC / 50–60 Hz 1 x 230 V AC / 50 Hz (standstill heating)		LED working light	
Hoisting height: up to 28 m			Acoustic warning system	
Wire rope, rotation free, galvanised			Biodegradable hydraulic oil	
Cable and radio remote control system	Buttom flange on mounting base			
Protection class IP56/66	Surface protection: DIN EN ISO 12944 C5-M high			
Stainless steel components (VA4)				

# PRODUCTS FOR THE WIND INDUSTRY

SUBSTATION CRANES

MARINE AND  
OFFSHORE CRANES

WINCHES AND  
HANDLING EQUIPMENT

CREW TRANSFER BOATS





*NACELLE CRANES*

*PALFINGER BLADE ACCESS*

*PLATFORM CRANES*

*LIFESAVING EQUIPMENT*

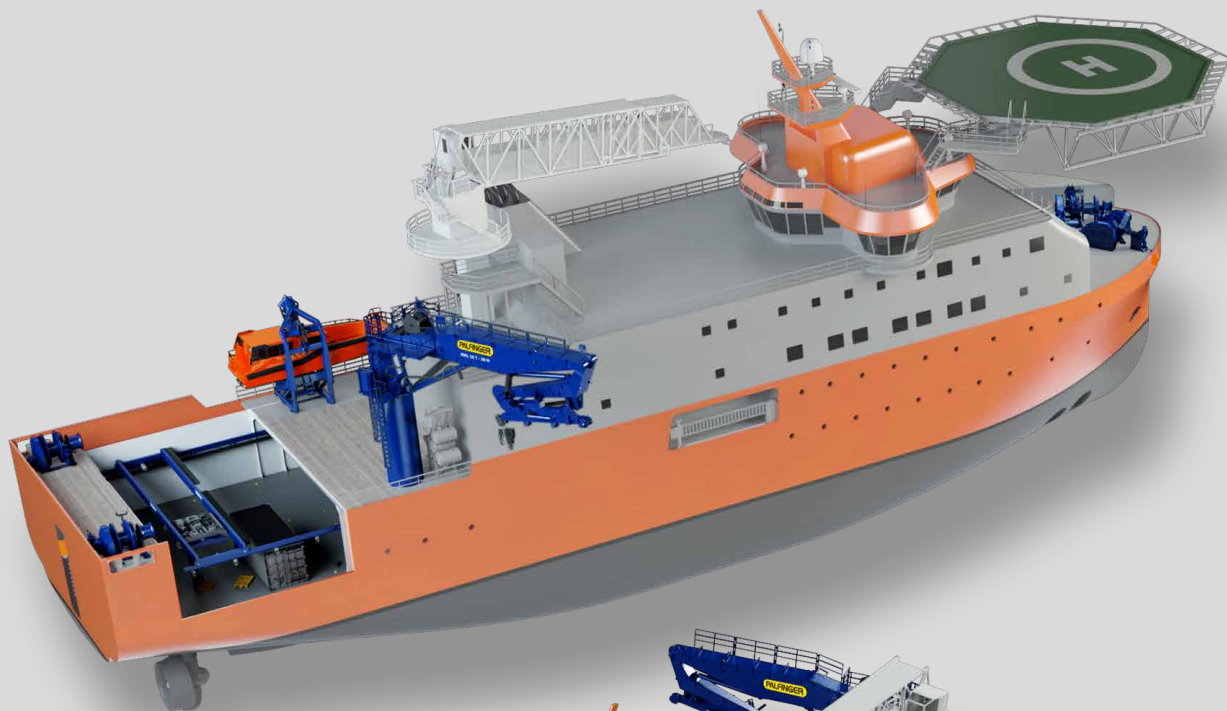


# DECK EQUIPMENT

WIND FARM SERVICE OPERATION VESSELS

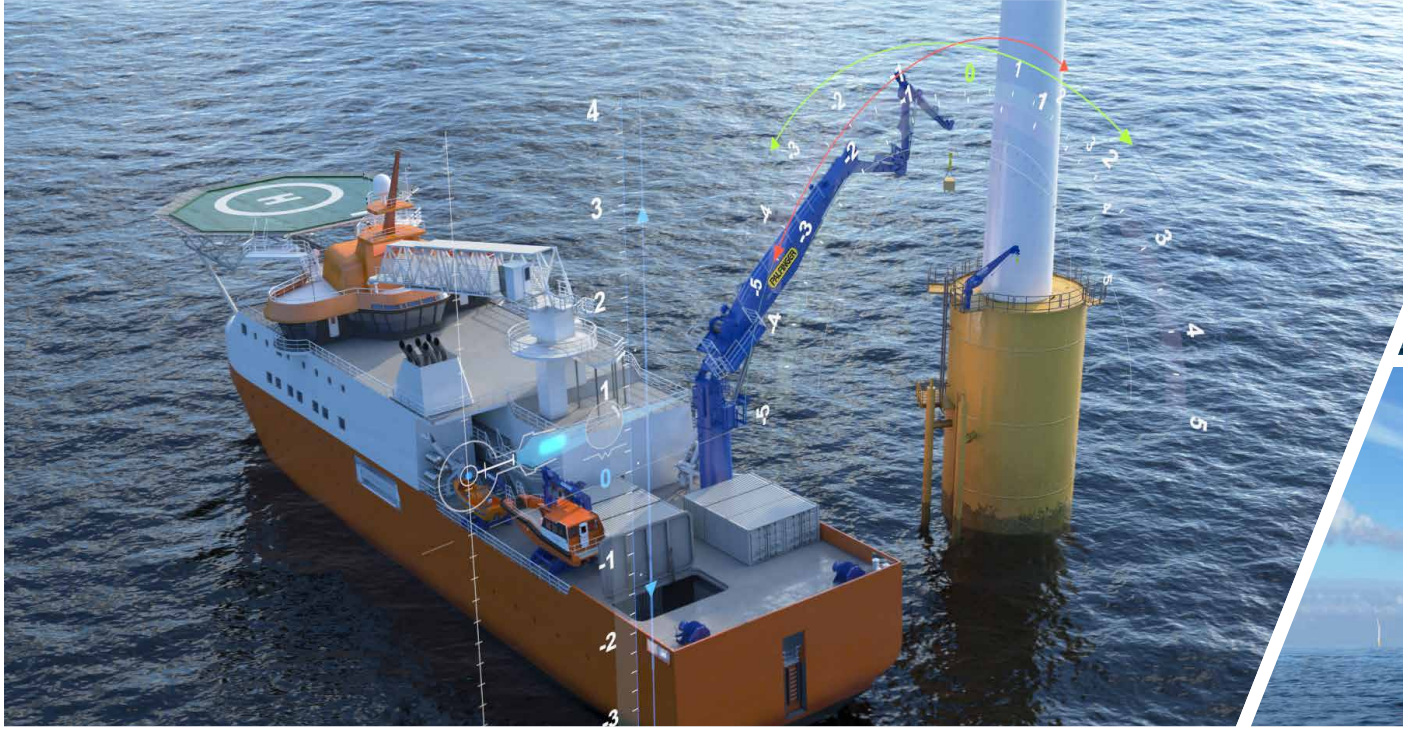






# MARINE AND OFFSHORE CRANES

## 3D-COMPENSATED CRANES



PALFINGER MARINE has developed a new modular, 3D-compensation unit, for use on wind farm service operation vessels (SOVs) for increased vessel operability. Hence enabling smaller and more cost-effective vessels to be used in harsher weather conditions.

### TYPICAL OPERATIONS

- Offshore wind turbine supply and maintenance operations.
- Work towards all kind of fixed installations where elimination of ship motion is required to ensure safer and improved lifting operation.
- The 3D-compensation module is designed for mounting on PALFINGER MARINE offshore cranes – knuckle boom cranes, telescopic boom cranes or stiff boom cranes – onboard vessels to transfer goods to and from windmills or other fixed installations.  
The 3D-boom module can be dismantled and parked in a separate cradle, allowing the crane to be used as a standard offshore crane.
- 3D-compensation increases the operational safety and eases transfers for lifting and landing. It enables positioning of the cargo on the wind turbine, substations and installations despite movements of the vessel due to waves and currents, as the 3D-compensation keeps the load vertically and the boom tip horizontally steady.
- The low weight being compensated gives an advantage, as it exerts less influence on the ship stabilising systems and also requires less power consumption when in 3D mode.
- The unit has very high performance with high accuracy due to the state-of-the-art , tailor-made MRU unit located on the unit itself.
- PALFINGER MARINE has put great effort into making a more user-friendly interface (HMI) from the operator cabin display and on the radio remote controllers used for smaller cranes.





#### CRANE COMPENSATION: ROLL

- Rotation around longitudinal axis

#### CRANE COMPENSATION: HEAVE

- Movements in vertical direction

#### CRANE COMPENSATION: PITCH

- Rotation around transversal axis

#### 3D-COMPENSATION UNIT

- Plug and play concept for mounting and dismounting
- Easy to retrofit onto existing offshore cranes
- Existing crane configuration may still be used



#### FEATURES

- Knuckle boom jib crane
- 3-axis hydraulic motion compensation system for pitch, roll and heave
- 3D unit powered by crane power pack using quick connections
- Motion reference unit (MRU)
- MOPS – Manual Overload Protection System
- AOPS – Automatic Overload Protection System
- Min./max. payload in 3D-compensation mode: 1–3 t
- Operational window up to approximately 3 m wave height, wave period 4–20 s
- Compensation working range is approximately 6 m in vertical, 5.5 m in radial and +/- 1.5 m in slewing direction

#### OPTIONS

- Radio or cable remote control systems
- Active Heave Compensation on winch can be added for increased performance
- Anti-collision system mounted in the boom tip
- Operator cabin (with A/C)
- Centralised greasing system
- Further options available upon request

# MARINE AND OFFSHORE CRANES

## ACTIVE HEAVE COMPENSATED (AHC) CRANES



PALFINGER MARINE delivers AHC offshore cranes ranging from smaller models for SOVs to larger models for subsea lifts, in addition to special systems for module handling deployments. All cranes are tailor-made to meet customer requirements and can be delivered in various configurations. The AHC system is developed for the harsh offshore environment. Rugged design made by experienced engineers, ensures trouble free operation under the most extreme conditions.

### AHC CRANE DESIGN FEATURES

#### LOW WEIGHT AND LOW CENTRE OF GRAVITY

- Low built design
- All components and the AHC winch placed as low as possible to ensure low weight and low centre of gravity
- High lifting capabilities compared to weight and centre of gravity maximise the cargo capacity on deck
- Maximising wire capacity on the AHC winch centre safe fleet angles

#### LOW POWER CONSUMPTION

- Advanced hydraulic drive system and smart system design to share the available power effectively between the different functions
- Low installed power compared to AHC performance and available hoisting speeds

#### HIGH PERFORMANCE

- Capacity to reduce movement at up to 98%
- Optimised drive train for correct speed and high capacity

#### OPERATOR ERGONOMICS AND MAINTENANCE ACCESS

- State-of-the-art operator cabin environment
- Designed for easy access to all points of maintenance, inspection and service

#### HYDRAULIC SYSTEM

- HPU placed inside crane pedestal (no need for container system)
- Zero load drop when the brake is removed, no need for tuning of the system with different loads
- Load can be held in subsea mode with brake off and all safety systems active for several days if necessary without any movement of the load due to leakage in the hydraulic system





## FEATURES

- Fully equipped operators cabin
- Up to 3000 m capacity wire
- AOPS / MOPS / TENSIONING
- Floodlights
- Boom tip camera
- Helicopter lights
- Emergency back-up control system
- Design according to DNV 2.22
- SWL 5–250 t

## OPTIONS

- Tugger winches
- Aux winch (with our without AHC winch)
- Fibre rope solution
- Pedestal adapter
- Hazardous zone classification
- Lift planning tool
- Remote diagnostic
- Winch below deck
- Design according to EN 13852 / NORSOK



100 T AHC CRANE

### DKF1600C 100 T AHC CRANE

- Low centre of gravity
- Low weight
- Low power consumption
- Superior AHC performance



5 T AHC CRANE

### DKF220C 5 T AHC CRANE

- Low weight
- Extended outreach for windmill operations



AHC Winch

### AHC WINCH

- Secondary controlled drive technology
- Extremely high acceleration
- Accurate speed and tension control
- Reliable and safe

# MARINE AND OFFSHORE CRANES

## FOLDABLE KNUCKLE BOOM CRANES



The foldable knuckle boom cranes range is used for loading, unloading and cargo lifting on the deck of wind farm supply and service vessels. Due to the compact construction, the cranes can easily be accommodated on every type of vessel, especially where space is limited. Adding various features and options turns the foldable knuckle boom cranes into a multi-functional tool. PALFINGER MARINE foldable knuckle boom cranes can be designed in accordance with specific offshore rules and regulations.

Crane Type	Max. Outreach	Lifting Capacity	Total Moment
PK RANGE	3.4–21.2 m	0.5–26.4 t	45–1,176 kNm
PFM RANGE	7.5–20.2 m	5–32 t	1,883–4,059 kNm

### FEATURES

- Long-life surface treatment: corrosion protection
- Low/high temperature operations
- Lebus grooved winch drums
- Return oil utilisation
- Continuous slewing system
- Power link system

### OPTIONS

- Constant tensioning
- Remote control
- Standing platform
- Operator cabin
- Overload protection: MOPS, AOPS
- Offshore Control System (OCS)
- Man-riding function
- Workman basket
- External hydraulic power packs
- Local control stand (FLVK)

## KNUCKLE BOOM CRANES



PALFINGER MARINE supplies a wide range of knuckle boom cranes for various applications. Knuckle boom cranes are designed to lift high loads with an extended jib and provide the operator with great flexibility during lifting operations. Movements of the load can be limited as the boom tip can be kept closer to the deck. A high level of control makes the crane ideal for offshore lifting operations in higher sea states. Severe weather conditions with heavy seas introduce oscillating motions to suspended loads. The range includes cranes with up to 250 t SWL lifting capacity.

Crane Type	Outreach	Lifting Capacity	Total Moment
PKM RANGE	8–25 m	1.1–9 t	267–2,840 kNm
DKF RANGE	10–55 m	1–250 t	3,500–60,000 kNm

FEATURES	OPTIONS	
Long-life surface treatment: corrosion protection	Constant tensioning	Design according to rules and regulations (API 2C, EN13852, NORSOK etc.)
Operation from control platform on crane	Remote control	
Electro hydraulic drive	Operator cabin	Diesel hydraulic drive
Continuous slewing	Overload protection: MOPS, AOPS	Shock absorber
Low/high temperature operations	Offshore Control System (OCS)	Tugger winches
	Man-riding function	Aux winch
	External hydraulic power packs	Lebus drum
	Anti-collision system	Docking head for boat handling
	Active Heave Compensation (AHC)	Pipe gripper



# MARINE AND OFFSHORE CRANES

## STIFF BOOM CRANES



PALFINGER MARINE telescopic boom cranes are based on a pedestal slewing design with hydraulic cylinder luffing. The boom extension is a telescopic inner section that allows a more flexible and wider operational radius in use and leaves the crane stored in a compact position. The advantages of our telescopic boom cranes are low weight and less complex design, making them maintenance-friendly.

Crane Type	Max. Outreach	Lifting Capacity	Total Moment
PSM RANGE	6–21 m	0.9–12.5 t	270–3,750 kNm
DK RANGE	10–55 m	1–200 t	3,500–60,000 kNm

### FEATURES

- Long-life surface treatment: corrosion protection
- Operation from control platform on crane
- Electro hydraulic drive
- Continuous slewing
- Low/high temperature operations

### OPTIONS

- Constant tensioning
- Remote control
- Operator cabin
- Overload protection: MOPS, AOPS
- Offshore Control System (OCS)
- Man-riding function
- External hydraulic power packs
- Anti-collision system
- Active Heave Compensation (AHC)
- Design according to rules and regulations (API 2C, EN13852, NORSOK etc.)
- Diesel hydraulic drive
- Shock absorber
- Metalizing
- Aux winch
- Lebus drum





# LIFESAVING EQUIPMENT

## SAFEGUARDING THE WIND INDUSTRY



PALFINGER MARINE offers the safest range of opportunities for our customers. All systems have their unique features. This gives us the flexibility and capability to provide customers with the best possible solution for their project. For the wind industry we deliver the following products:

### **LIFE AND RESCUE BOATS**

Safe, reliable and innovative – a full range including fast rescue boats, lifeboats and crew transfer boats.

### **DAVITS**

Innovative, compact and well-designed – customised systems of high quality.

### **OUR MOST SOLD PRODUCTS TO THE WIND FARM SERVICE OPERATION VESSELS ARE:**

- Life raft and rescue boat slewing davit
- (Fast) Rescue boat davit
- Workboat davit
- Daughter craft davit
- Rescue boats
- Fast rescue boats
- Crew transfer boats
- Workboats







# PROFESSIONAL BOATS

## CREW TRANSFER BOATS | WORKBOATS



### PB 600

- Hull and console made of seawater-resistant aluminium or glass reinforced plastic (GRP)
- Speed with 3 persons, no deck load >30 knots
- Single inboard diesel with single waterjet
- >550 kg bollard pull



### PB 700

- Hull and console made of seawater-resistant aluminium
- Speed with 3 persons, no deck load >30 knots
- Bollard pull >550 kg (single inboard diesel), >1,100 kg (twin inboard diesel)
- Weight fully loaded approx. 3,300 kg (single inboard diesel), 3,800 kg (twin inboard diesel)
- Special bow landing platform optional
- Build according to SOLAS fast rescue boat standards
- Foam fenders



### PB 850

- Hull and console made of seawater resistant aluminium
- Speed with 3 persons, no deck load >30 knots
- Bollard pull >700 kg (single inboard diesel), >1,100 kg (twin inboard diesel)
- Weight fully loaded approx. 4,600 kg (single inboard diesel), 4,800 kg (twin inboard diesel)

Model	Dimensions	Capacity (pers. at 82.5 kg)	Weight (incl. max. pers.)	Propulsion
PB 600 A	6.40 x 2.40 m	8 persons	Approx. 3,000 kg	Single waterjet
PB 600 G	6.40 x 2.40 m	8 persons	Approx. 3,000 kg	Single waterjet
PB 700 A	7.14 x 2.70 m	8 persons	Approx. 3,300 kg	Single waterjet
PB 700 A	7.22 x 2.80 m	8 persons	Approx. 3,480 kg	Twin waterjet
PB 850 A	8.50 x 3.20 m	8 persons	Approx. 3,960 kg	Single waterjet
PB 850 A	8.50 x 3.20 m	8 persons	Approx. 4,210 kg	Twin waterjet

A = Aluminium  
G = Fiberglass

## OPTIONS AND ACCESSORIES

Shock absorbing seats

Different boarding platforms

Safety railings

Suitable davit system

Fender options



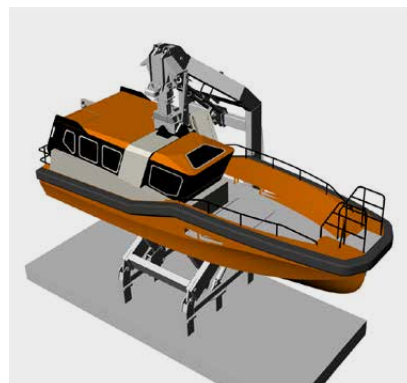
#### **PB 950**

- Hull and console made of seawater-resistant aluminium
- Twin waterjet, high manoeuvrability
- 3 t bollard pull
- Ease of maintenance, sufficient space in the engine room
- Towing post integrated in hoisting arrangement
- Flush working deck of 14 m<sup>2</sup>



#### **FRSQ 1000**

- Hull and console made of seawater-resistant aluminium
- >1,300 kg bollard pull
- Deep V-bottom construction suitable for high speeds and high stability in any offshore environment
- Complies with UKOAA / SOLAS regulations
- Delivered with design approval and certificate of inspection
- Excellent access to the engines for maintenance purposes



#### **PB 1000/1200**

- Hull and console made of seawater-resistant aluminium
- Speed with 8 persons, full tank 30 knots
- Twin waterjet, high manoeuvrability
- >1,300 kg bollard pull
- Weight fully loaded approx. 7,800 kg (single inboard diesel), 8,600 kg (twin inboard diesel)
- Low maintenance on the aluminium hull

Model	Dimensions	Capacity (pers. at 82.5 kg)	Weight (incl. max. pers.)	Propulsion
PB 950 A	9.77 x 3.50 m	6 persons inside cabin	Approx. 7,540 kg	Twin waterjet
PB 1000 A	10.32 x 3.40 m	10 persons inside cabin	Approx. 7,800 kg	Twin waterjet
PB 1200 A	12 x 3.50 m	12 persons inside cabin	Approx. 8,600 kg	Twin waterjet
FRSQ 1000 A	10.35 x 3.50 m	15 persons inside cabin	Approx. 7,400 kg	Twin waterjet

## **OPTIONS AND ACCESSORIES**

Air-conditioning

Heating

Project specific equipment

Davit with pendulum function

Reinforced deck for heavy loads

Sanitary appliances (toilet and sink)

# WINCHES

## ANCHOR WINDLASS WINCHES

PALFINGER MARINE anchor windlass winches are offered in a variety of configurations and sizes to handle virtually any anchor application. Anchor windlass winches by PALFINGER MARINE have rugged design including fabricated steel construction, heavy duty split bronze bearings, gears hardened to exceed working load requirements, clutched and braked drums and high corrosion resistance. The winch design provides easy access to all points of lubrication and inspection. Wire drum windlass winches can be delivered (without cable lifters). Windlass winches are supplied with roller type chain stoppers suitable to withstand 80% of the chain breaking force.



### FEATURES

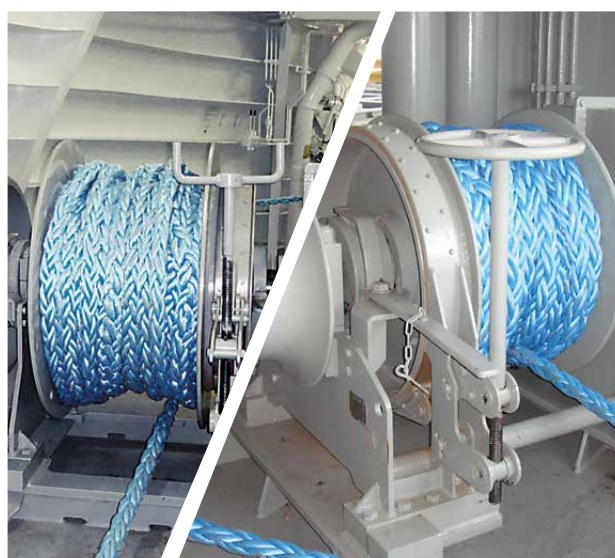
- Electric or hydraulic drive
- Rated pull (cable lifters) – according to class
- Single or double configuration
- Chain size from 36–160 mm
- Manually operated clutch
- Manually operated band brake
- Local control

### OPTIONS

- With or without mooring drum
- Auto tension/tension control (for mooring drums)
- With or without warping end
- Chain length and/or speed measurement
- Bridge operated anchor drop
- Hydraulic operated brake
- Remote control (wireless)

## MOORING WINCHES

PALFINGER MARINE offers a range of mooring winches for all types of vessels with almost unlimited speed and line pull capacities. The rugged design is made for harsh and demanding offshore conditions and includes heavy duty split bronze bearings. The operating mechanism for brakes and clutches is designed for easy and safe manual operation, but may also be remotely operated by hydraulic cylinders. The winch design provides easy access to all points for lubrication and inspection.



### FEATURES

- Electric or hydraulic drive
- Single or multi drum configuration
- With or without warping end
- Rated pull: 5–40 t
- Manually operated clutch and band brake
- Local control

### OPTIONS

- Auto tension/tensioning control
- Split drums
- Hydraulic operated band brake
- Hydraulic operated clutch
- Light line speed
- Remote control (wireless)



## CAPSTANS

PALFINGER MARINE offers a range of capstans for various mooring operations. Hydraulic capstans are designed with internal drive systems in order to save space onboard the vessel. Electric capstans can be incorporated directly into the deck structure by means of foundation pipe pieces. The foundations are open at the bottom and make it easy to connect the motors from below deck. Electric capstans are delivered with DOL or frequency converters for variable speed.



### FEATURES

- Electric or hydraulic drive
- Rated pull from 3–15 t
- Local control or remote control with cable

## BOLLARD CAPSTANS

PALFINGER MARINE combined bollard capstans (powered bollards) have a space-saving design to make efficient use of deck space onboard the vessel. They combine the features of a standard capstan (rotating part) with the features of a standard bollard (non rotating part).



### FEATURES

- Electric or hydraulic drive
- Rated pull from 5–10 t
- Local control or remote control with cable

# LIFTING AND HANDLING EQUIPMENT

## CONTAINER AND PALLET HANDLING SYSTEMS (CPHS)



PALFINGER MARINE is the supplier of an automated system for safe, efficient and easy handling of containers, pallets and loose goods onboard wind farm service operation vessels (SOVs). The system is highly adaptable and suitable for various vessel designs as well as retrofitting to existing vessels. This specialised overhead travelling crane is equipped with a telescopic container spreader for handling both 10' and 20' ISO containers.

### THE STANDARD CPHS SYSTEM INCLUDES:

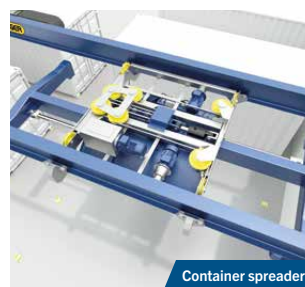
- Main rails and transverse bridge
- Transverse trolley with integrated jigger winch
- Adjustable container spreader with automated twist locks
- Hydraulically operated pallet fork unit and 1 t auxiliary winch



Pallet fork



Transverse trolley



Container spreader



Aux winch

### FEATURES

Rated capacity:	Container lifting 12–25 t
Winch:	1 t
Container size:	Standard 10' and 20' ISO or PWHC containers
Pallet size:	EUR pallet (1,200 x 800 mm)
Local control:	Portable cable-based control panel

### OPTIONS

Aux winch integrated in trolley for handling loose goods
Detachable pallet fork with quick connectors
Radio remote control

## CONTAINER SKIDDING SYSTEMS (CSS)



PALFINGER MARINE has developed a complete system for skidding and securing (sea fastening) of containers onboard SOVs. Hydraulic cylinders operate the system and ensure low maintenance costs and smooth operation. Each line is fitted with four hydraulic cylinders connected to the sliding rails (one on each end) for pushing the container carrier and container. With a friction coefficient of 0.2 the lines can push loads of 15–20 t each. By using two lines, the system can push up to 40 t. Each container carrier can be placed anywhere along the sliding rails. The system also includes removable guidance units (normally one unit for each hatch position). This ensures precise positioning of containers when lowered by crane onto the skidding lines. The system is delivered along with four movable locking devices per container for sea fastening in order to safely secure the containers during transfer mode.

### A STANDARD SYSTEM INCLUDES:

- Removable guiding system for placing containers on deck
- Two sliding rails per line suitable for both 10 ft and 20 ft containers
- Container carriers for moving the containers along the lines
- Removable container end stoppers with integrated lock for parking the containers
- Removable locking device/sea fastening device for securing the containers during transfer

Length and number of lines for each system is customised according to vessel design and customer requirements.



Locking devices

### FEATURES

Number of lines:	According to vessel design
Skidding length :	According to vessel design
Container carriers:	Two per line
Cylinders:	Four per line
Pulling force each cylinder:	3–5 t
Speed:	0–10 m/min
Guiding system:	Four removable guiding devices per line
Sea fastening devices:	Four movable locking units per container
Control:	Radio remote control



# LIFTING AND HANDLING EQUIPMENT

## ONBOARD SLIPWAYS



PALFINGER MARINE supplies highly innovative onboard slipway systems for stowage, launch and recovery of small crafts up to 12 m, such as rescue boats and daughter crafts onboard offshore vessels and wind farm service operation vessels (SOVs). The system can be delivered mounted on a hydraulic frame (with hydraulic cylinders for lifting the entire frame) or for mounting directly into the hull structure of the mother vessel. All systems are adapted according to vessel structure in addition to the length and hull shape of the small crafts. PALFINGER MARINE works closely with customers and design companies in order to find the optimal and most cost-efficient solution according to the intended usage, speed, type of craft, wave height, sea state and redundancy requirements in addition to material, weight and space constraints.

### BENEFITS

#### LOW WEIGHT AND LOW CENTRE OF GRAVITY

PALFINGER MARINE slipway systems eliminate the use of hooks, painter line, or arrester wire during normal operation, reducing the risk of dangerous situations during launch and recovery operations. Embarking, disembarking and operation are designed to be safe and easy, even in harsh conditions.

#### LOWER FUEL CONSUMPTION AND EMISSIONS

The SOV does not have to approach each and every windmill unit to transfer personnel and cargo, saving time- and fuel-consuming manoeuvring operations at each windmill.

#### FASTER WORK CYCLES AND INCREASED PRODUCTIVITY

The PALFINGER MARINE multi-craft slipway system enables the SOV to launch several personnel and cargo transfer boats in order to service more than one windmill at a time. By using personnel and cargo transfer boats, the SOV does not have to wait for service personnel at the windmill, eliminating the need for the SOV to drop off and pick up personnel and goods at each individual windmill unit. The SOV can use gangways at easily accessible windmills and deploy personnel and cargo transfer boats at windmills with difficult access.

#### LOWER RISK OF DAMAGE TO WINDMILL INSTALLATIONS

By using personnel and cargo transfer boats, the SOV can stay at a distance during supply operations, reducing the risk of collisions between the SOV and the windmill installations.



## FEATURES

- Single or double/parallel slipways with wheels
- Deck- or frame-mounted
- Fixed wheel foundations
- Hydraulic drive
- Local control
- Backup winch system for emergencies
- Overrunning clutches on wheels (allow high-speed entry)

## OPTIONS

- Stored power package
- Different types of stern arrangement – extension of the slipway into the sea
- Adjustable wheel foundations to adapt for different small craft configurations
- No drive on wheels (gravity launch with small craft providing power for recovery)
- Remote control
- Training

## MULTI-CRAFT SLIPWAY SYSTEMS



## WORLDWIDE SERVICE



PALFINGER MARINE provides comprehensive, customised and reliable services to customers around the world. Specially trained engineers and experts with extensive know-how ensure fast on-site support, from telephone assistance to on-time delivery. With the world's largest service network, PALFINGER MARINE can deal with your vessels more efficiently than any other service provider in the industry. In addition to our own 33 offices, PALFINGER MARINE has also partnered with multiple service stations – extending our network to the most remote areas.

Experienced engineers and first rate HSE and quality systems ensure that all requirements are fulfilled during the entire process from design to delivery. All stages throughout the supply chain are performed in compliance with ISO 9001:2008 and manufacturing is conducted in state-of-the-art production facilities.

PALFINGER MARINE always aims to be in the forefront when adhering to rules and regulations. All equipment and products are delivered according to applicable requirements of classification companies, national and international regulations and standards, as well as our customers' own company standards.



**24/7 AVAILABILITY**  
SERVICE HOTLINE  
+43 662 4684 82128



**100 %**  
GLOBAL COVERAGE





## CRANES

- Survey reports and load testing
- Global network with skilled engineers
- Periodic annual and 5-yearly inspections
- Hydraulic hose kit exchanges
- Multilevel service agreements
- Crew training
- Original spare parts
- Supervision of installations
- Commissioning and handover

## LIFESAVING EQUIPMENT

- Sea trial testing and commissioning
- Rule inspection and complete boat maintenance
- Global network with skilled engineers
- Crew and computer-based training
- Original spare parts
- Installation and commissioning
- Periodic annual and 5-yearly inspections
- Re-hooking

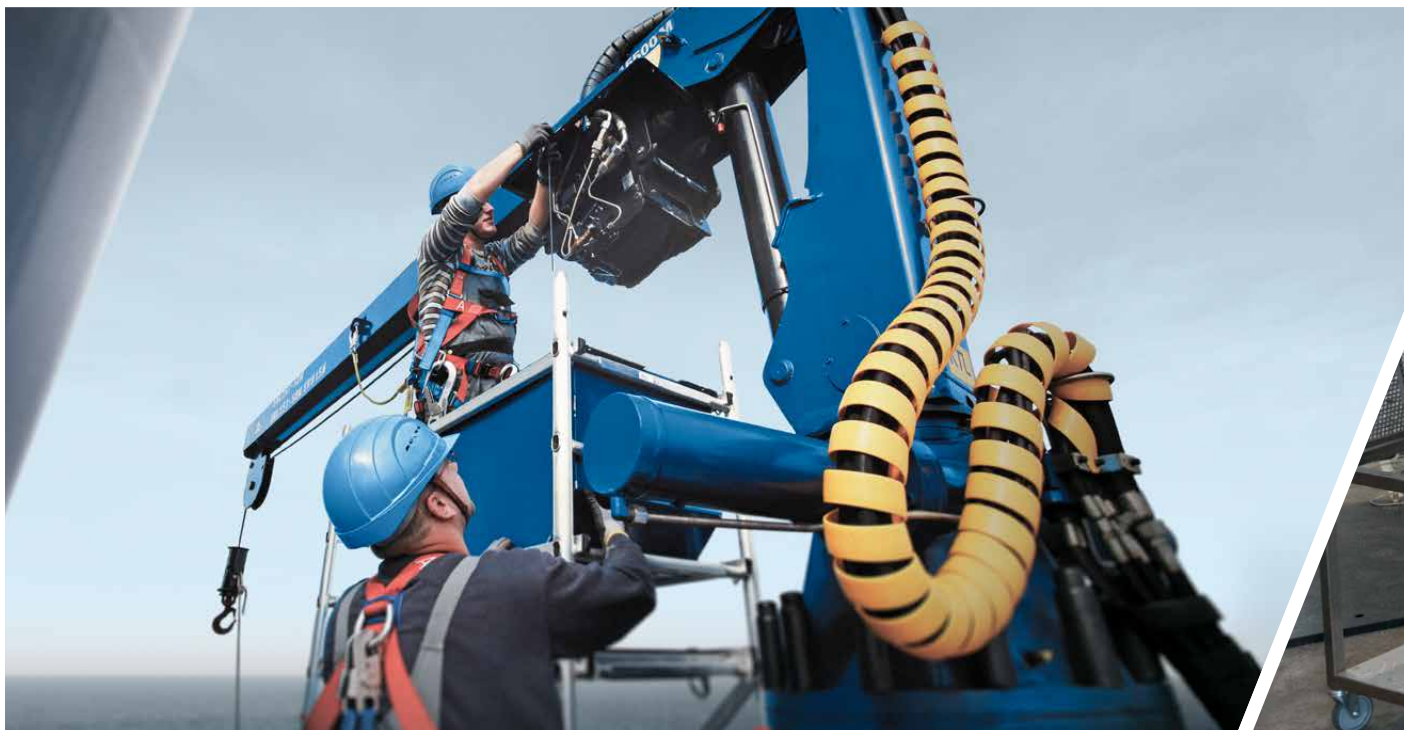
## WINCHES AND HANDLING EQUIPMENT

- Installation and commissioning
- Annual inspections
- Lifetime support service
- Global network with skilled engineers
- Original spare parts
- Crew training

## LIFE CYCLE SUPPORT

- Fleet service agreements / PALFINGER 360
- Fixed-fee, all-inclusive
- Preventive and corrective maintenance schemes
- Inclusive periodic annual and 5-yearly inspections
- Hydraulic hose kits

## TRAINING BY PALFINGER MARINE



As a full-service provider, PALFINGER MARINE offers solutions that cover every aspect of proactive service and customer support. The global training teams offer training courses for the entire PALFINGER MARINE product range. These courses can be conducted worldwide, both in-house and on-site.

Proper training in the correct operation and maintenance of PALFINGER MARINE deck equipment increases safety onboard and the lifespan of the equipment. PALFINGER MARINE training programmes set the standard for operators and service staff covering management, operation, maintenance and safety awareness for the offshore, marine, cruise, naval and wind industry.

We develop and facilitate our training courses using PALFINGER MARINE's broad expertise and experience, in accordance with international standards, regulations and requirements.

Each year we train thousands of participants in the operation and (preventive) maintenance of cranes, lifesaving appliances, winches and other marine deck equipment.



### **KNOWLEDGE AND EXPERIENCE**

As the original equipment manufacturer (OEM), PALFINGER MARINE's training instructors have gained extensive experience and share their knowledge about all products.

### **GLOBAL COVERAGE**

With 33 fully-owned sales and service stations in 19 countries, we have direct access to most of the key ports in the world. Holding training sessions onsite on a customer's vessel or installation enables training sessions with up to 15 people at a time. That means minimal interruption to onboard activities, guarantees cost-effective and time-efficient solutions for the customer.

### **PRACTICAL APPROACH**

In general, our courses consist of 30% theoretical and 70% practical instruction. This hands-on approach, often using the client's own equipment, provides a safe and familiar working environment for the participants. Creating awareness and understanding the risks involved with improper use of marine deck equipment is also a key element in these training sessions.



**PALFINGER**

LIFETIME EXCELLENCE

**PALFINGER MARINE**

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