

Product Range

Offshore Cranes



LIEBHERR

Offshore Crane Technology



Liebherr offshore cranes are modern, sophisticated machines that benefit from the experience gained during many years of design development and operation in the most severe environmental conditions. They offer a wide variety of applications including heavy load lifting and cargo handling. Up-to-date technology and excellent workmanship guarantee the high quality standards Liebherr offshore cranes are known for.

The combination of continuous research and lessons learned in other divisions together with the feedback from more than 1,000 cranes in the field provides Liebherr a huge wealth of experience our customers benefit from. Innovative and reliable products as well as a comprehensive customer service result from this and make our offshore cranes a benchmark for today's industry.

BOS-Series

The range of Liebherr board offshore cranes (BOS) includes rope luffing offshore pedestal cranes with an open A-frame design and either electrohydraulic or diesel-hydraulic drive. Being an offshore crane of the 3rd generation, the Liebherr BOS crane stands for the highest manufacturing standards and modern, innovative offshore crane technology. This makes the BOS crane a leader in its class.

MTC-Series

Instead of a slewing bearing the Liebherr mast type cranes (MTC) are fitted with a patented slewing mechanism, which supports precise handling and trouble-free operation. The MTC range includes modern, highly developed mast type cranes for all customers with a preference for non-metallic slewing systems.

RL-Series

The Liebherr ram luffing offshore crane (RL) is the result of more than 25 years of experience in the offshore industry. The product development is a continuous process and is based on actual feedback from users all over the world. The compact RL offshore cranes offer medium lifting capacities and working outreaches as well as exemplary reliability and availability.



CAL-Series

With the crane around the leg (CAL), Liebherr is breaking the rules of traditional design solutions and crane concepts. Based on the ultra-stable twin-boom design, the CAL is applicable for heavy lift construction, maintenance work and decommissioning.

RL-K-Series

Liebherr's ram luffing knuckle boom cranes (RL-K) are the newest products in the companies' offshore portfolio. The operation oriented design of the RL-K-series fulfils the demanding market requirements in both deep sea operations and pipe handling.

Customer Service

Benefit through partnership – the Liebherr service philosophy is based on long-term partnerships and traditional values. Liebherr is not only the first choice in terms of high quality offshore cranes, but also provides unrivalled service.

Liebherr Philosophy



Experience

Today, the Liebherr group incorporates more than 42,000 employees in more than 130 companies throughout the world. From the beginning Liebherr has been improving its products and services to meet the requirements of this demanding and steadily developing market.

Competence

Liebherr offshore cranes are sophisticated machines which are developed and manufactured in-house and are perfectly suited to the nature of their intended use. Modern, well-organised workshops reflect Liebherr's commitment to high quality workmanship. All our offshore cranes are produced in our own facilities – no part of the manufacturing process is subcontracted, unusual in this sector.

Quality

Full traceability from the first steel plate up to the fully assembled unit – what is a vision for others, is Liebherr's standard for any new offshore crane. Thanks to clearly defined working processes and Liebherr's dedication to quality, the cranes meet and even exceed the requirements of customers and certification authorities.

Technology & Innovation

Liebherr is well known as a trendsetter in new technologies and innovations. The Litronic® system, for example, is a crane management tool of the latest generation, which incorporates all crane controls, system diagnosis, safeguarding and recording functions. Additional features such as remote monitoring and remote diagnostic services are available upon request. The Master 4 release includes the latest developments in the electronic industry, e.g. 64bit CANBUS technology, large memory, touch screen functions, various data transmission protocols and several different interface types.

Areas of Application



Heavy Lift

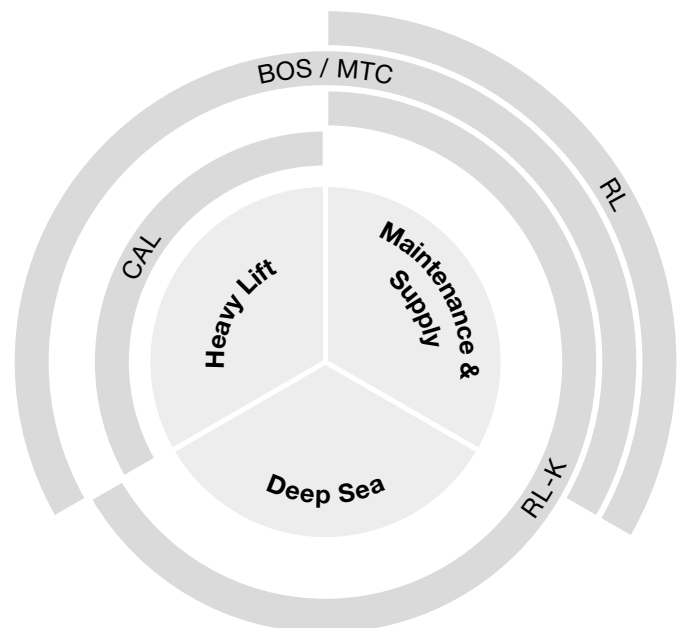
Heavy duty deployment, such as operations involving the erection of wind parks or the assembly of oil rigs, require the highest level of precision and safety. Liebherr offshore cranes are designed especially for these challenging tasks.

Maintenance & Supply

Liebherr offshore cranes are deployed for the assembly, repair and supply of oil and gas extraction systems. The performance capacity, size and also the way the cranes are constructed varies according to the respective requirements profile.

Deep Sea

Setting-up oil and deepwater wells requires the use of specially equipped cranes. For this area, Liebherr offers the ram luffing knuckle boom crane (RL-K) with deep sea winches and active heave compensation.



Liebherr product range in relation to the areas of application

Board Offshore Crane Series (BOS)

The BOS rope luffing type offshore crane is the right choice for applications requiring high lifting capacities at medium or high outreaches. Its design supports adequate access to all inspection and service areas, as well as maximum reliability and minimum downtime. Being an offshore crane of the latest generation (3rd), the Liebherr BOS crane represents state-of-the-art technology. The cranes are available with either electric or diesel driven prime mover and can be designed for safe or hazardous operation.

Technical data:

- Boom configuration up to 102 m
- Lifting capacity up to 1200 t

Standard features include:

- Modular design with standardised components for maximum reliability
- Manual Overload Protection System (MOPS) and Automatic Overload Protection System (AOPS) for maximum safety
- Liebherr Litronic® crane management system for highly efficient operation
- Hoist winches mounted inside the boom for prevention of "two-blocking"
- Power output regulator to avoid power pack overloads and to ensure optimum operating efficiency





Mast Type Crane Series (MTC)

For customers and applications requiring offshore cranes with non-metallic slewing bearings, Liebherr offers the MTC mast-type offshore crane. The patented slewing mechanism prevents the crane from “tilting” through self-alignment and also allows the gliding pads in the upper and lower bearing to be exchanged without the crane having to be lifted off the mast. The MTC cranes are available with either electric or diesel driven prime mover and can be designed for operation in either safe or hazardous areas.

Technical data:

- Boom configuration up to 78 m
- Lifting capacity up to 2000 t

Standard features include:

- Liebherr Litronic® crane management system for highly efficient operation
- Manual Overload Protection System (MOPS) and Automatic Overload Protection System (AOPS) for maximum safety
- Hoist winches mounted inside the boom for prevention of „two-blocking“
- Power output regulator to avoid power pack overloads and to ensure optimum operating efficiency





Ram Luffing Crane Series (RL)

The RL is the most compact crane in the Liebherr offshore crane range. It can be equipped with either a diesel-hydraulic or an electro-hydraulic drive. Depending on the crane size, the electro-hydraulic drive can be situated inside the slewing column. This is an optimal solution for operations with restricted space conditions and results in a small turning radius. Alternatively the crane can be outfitted with a machinery compartment for the diesel engine on the rear side of the crane. The diesel-hydraulic RL cranes do not rely on an external power source.

To increase safety and fulfil the requirements of operations on oil and gas platforms, the ram luffing crane series can be outfitted with a hazardous area rating.

The ram luffing crane series is ideal for providing reliable and trouble-free operation on unmanned platforms or installations requiring autonomous crane operation.

Technical data:

- Boom configuration up to 58 m
- Lifting capacity up to 100 t

Standard features include:

- Liebherr Litronic® crane management system for highly efficient operation
- Space saving due to short minimum working and tail swing radius
- Manual Overload Protection System (MOPS) and Automatic Overload Protection System (AOPS) for maximum safety
- Power output regulator to avoid power pack overloads and to ensure optimum operating efficiency
- Precise operation thanks to closed loop hydraulic systems for hoisting and slewing





Crane Around The Leg Series (CAL)

With a safe working load of up to 1,700 tonnes, the CAL is one of the biggest cranes in Liebherr's product portfolio. Its boom is available up to 108 m and enables a rotation of $\pm 460^\circ$.

Using a powerful 4,000 kW electro-hydraulic power pack, this crane is equipped with an innovative solution for reverse power, avoiding disruption to the vessel supply system. Undesired reverse power is brought into the power supply system.

With its twin boom design, the crane's stability is increased and the winches are still able to be controlled separately. The main applications are heavy lift constructions, decommissioning, maintenance work as well as wind plant installations. In this way, it is the ideal solution for installation as a crane around the leg on jack-up vessels. These vessels can drive to their deployment site under their own power and support themselves on the sea bed with the aid of four lowerable legs. As its name suggests, the CAL is installed and placed around one of these legs. This results in a maximum loading area on deck.

Highest operational standards and safety features make this crane a prime example of modern heavy lift technology.

Technical data:

- Boom configuration up to 108 m
- Lifting capacity up to 1700 t
- $\pm 460^\circ$ fully rotating crane unit
- Bearings presently up to 11 m

Standard features include:

- Liebherr Litronic® crane management system for highly efficient operation
- Manual Overload Protection System (MOPS) and Automatic Overload Protection System (AOPS) for maximum safety
- Innovative cable chain
- Twin-boom design for increased stability
- Separate winch control





Ram Luffing Knuckle Boom Crane (RL-K)

The latest in our offshore range, the RL-K series meets the needs of both subsea and drilling operations with special pipe handling attachments.



RL-K 4200

With the RL-K 4200 Liebherr offers a knuckle boom crane for safe and efficient pipe handling operations. Next to the hook configuration, the crane can be outfitted with a pipe grabber or a load manipulator. With this special equipment the crane is able to fulfil every requirement of this sophisticated task in relation to oil and gas extraction systems. Either an internal or external pipe grabber can be attached to the crane.

The base unit of the pipe grabbing system can be rotated and swivelled. It is possible to enhance the base unit with a pipe internal grabber or pipe external grabber. With the pipe external grabber, up to six pipes with a maximum diameter of 500 millimetres and an overall weight of 10 tonnes can be lifted simultaneously.

Technical data:

- Boom configuration up to 50 m
- Lifting capacity of up to 100 t

Standard features include:

- Liebherr Litronic® crane management system for highly efficient operation
- Manual Overload Protection System (MOPS) and Automatic Overload Protection System (AOPS) for maximum safety
- Innovative machine house design provides more space for maintenance work
- Pipehandling equipment includes additional cameras
- Optimal positioning of the cabin: view in alignment with load
- Kinematic: extension of the boom to 180°



RL-K 7500

For efficient subsea operations Liebherr offers the RL-K 7500 with active heave compensation (Heavetronic®) and deep sea winch. The completely new design of this winch allows our cranes to lift up to 250 tonnes. Loads can be handled in water depths of up to 3,600 m. The innovative design concept of the winch unit significantly extends the lifetime of the main wire rope.

In addition to the reduced life cycle costs, the main winch can be easily adapted for the customer's site specific use. The vessel's motion is recognised using a completely new, in-house designed MRU (Motion Reference Unit). It compensates movements with the appropriate winch rotation and is based on Liebherr's electro-hydraulic drive system which is controlled by the well proven Litronic® system allowing smooth operation under all working conditions. Booms are available with outreaches between 35 m and 55 m.

Technical data:

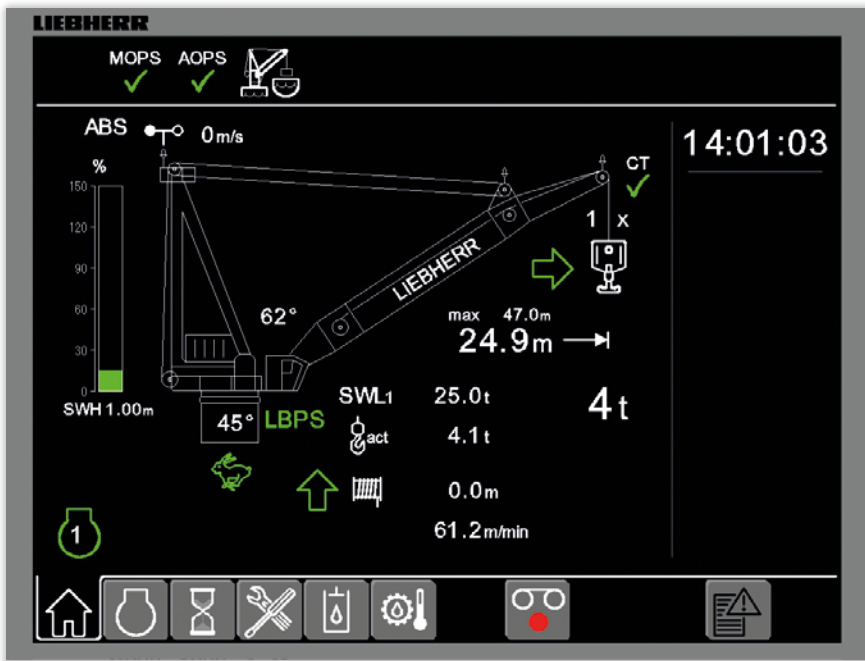
- Boom configuration up to 55 m
- Lifting capacity of up to 250 t

Standard features include:

- Liebherr Litronic® crane management system for highly efficient operation
- Manual Overload Protection System (MOPS) and Automatic Overload Protection System (AOPS) for maximum safety
- Patented winch design for subsea operations to increase the lifetime of the rope
- Liebherr Heavetronic® to compensate vertical movements
- Powerboost: use of reverse power to increase efficiency

Litronic®

This software, developed in-house by Liebherr, automatically covers all crane movements and load cycles and therefore actively supports the crane driver in controlling the crane. Thanks to the real-time monitoring of important machine parameters the crane driver is constantly informed in detail about the actual operation of the crane.



Litronic® control

- Stepless load curve through automatic load moment control
- Improved loading speeds through intelligent crane control
- Quick troubleshooting through detailed error codes – either on crane monitor or via remote service
- Sycratronic® – Automatic Tandem Control
- LiCAS: Liebherr Collision Alert System

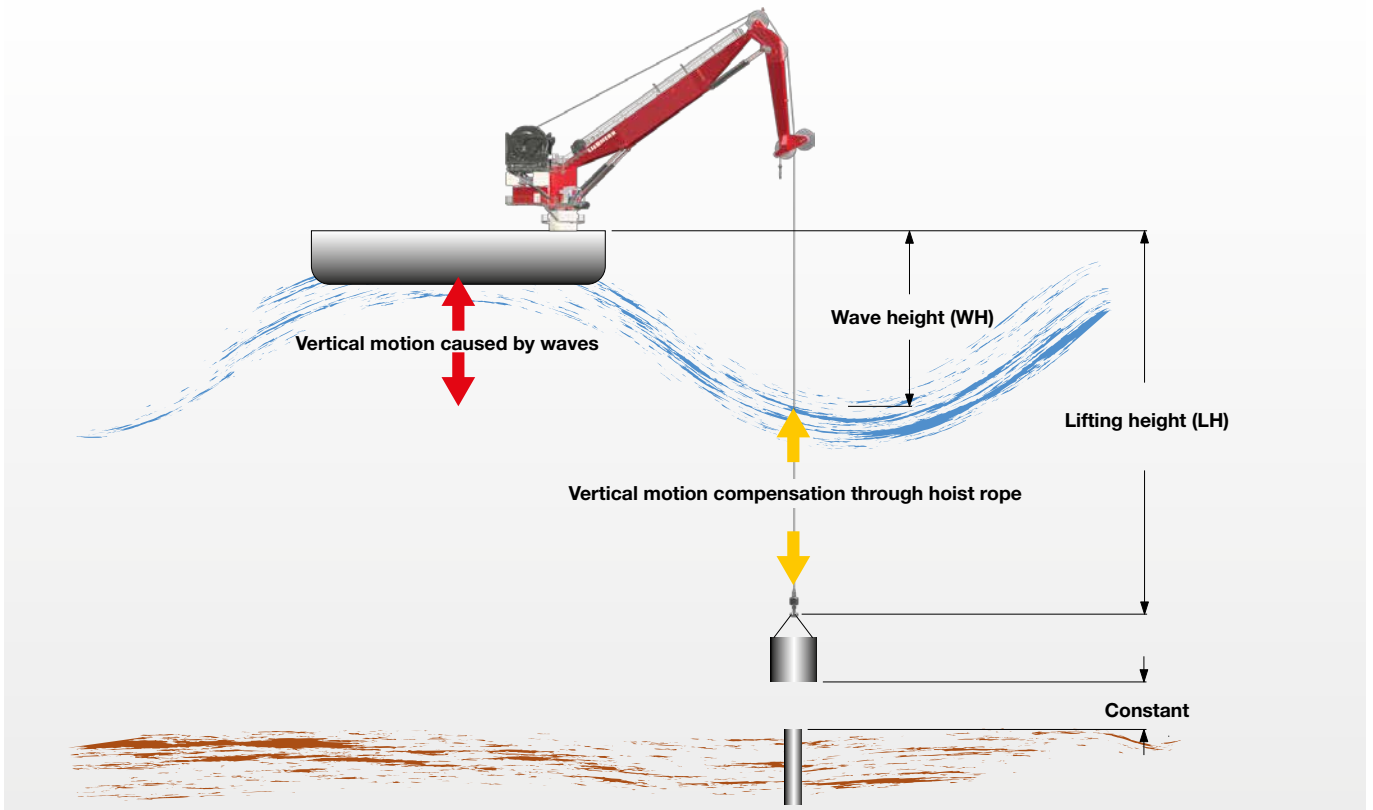
Additional Equipment

With a wide spectrum of optional retrofit packages Liebherr is in a position to adapt its products to meet with both individual customer requirements as well as external conditions in the area of operation. The dynamic range of optional components and installations is continuously enhanced and extended.

Amongst others, the important retrofit packages include:

- Air-conditioning
- Automatic slew bearing greasing
- Auxiliary hoist
- Boom rest
- LiCAS: Liebherr Collision Alert System
- Halogen or high pressure sodium floodlights
- Hook garage
- Load recorder
- Man-riding
- PTT radio system
- Radio remote control
- Sector limitation
- EX-rated components
- Three different cabin sizes
- Access to operator's cabin platform via stairway
- Vertical line finder
- LiDAT remote troubleshooting and analysis/ diagnosis tool
- CCTV camera system for main and auxiliary hoist
- Emergency power pack system
- Stainless steel package
- Arctic temperature package down to -50 °C (ambient working temperature: -30°C up to +36°C)

Heavetronic®



Offshore operations at high sea as well as subsea liftings are made difficult by wave-related ship movements. Despite these conditions, controlled handling of loads is indispensable for safe operation. Liebherr specially developed the active heave compensation (Heavetronic®) for this purpose. It is available for Liebherr ram luffing knuckle boom cranes (RL-K Series).

Heavetronic® is fully integrated in to the Liebherr Litronic control system and supports not only safe lifting but also safe lowering of loads. Liebherr's patented Pactronic® Hybrid Drive provides the system power requirements to remove the effect of the sea motions.

The system is based on an in-house designed motion reference unit (MRU) for registering and evaluating the current wave movements that affect the ship and thereby the crane. Based on the measurements of these movements, a prognosis of the vertical movement of the crane boom tip is carried out. The movement of the winch is proactively and automatically controlled to keep the load stable in relation to the seabed.

Customer Service



Testing

Offshore cranes go through an extensive testing programme. Prior to delivery all electrical and hydraulic installations undergo detailed examination. After assembly at the shipyard Liebherr service engineers conduct final adjustments of limit switches and prove the crane's functions through to an overload test.

Assembly

Crane parts are transported in maximum sized pieces and assembled and commissioned by a team of experienced engineers. In addition to training at Liebherr facilities prior to erection, Liebherr offers comprehensive on-site training covering all technical aspects of the crane, during and after installation.

Training

Liebherr offers a range of flexible, high quality training solutions on-site to fulfil specific customer training needs. Thereby, the main focus lies on creating a sustainable awareness for efficient and safe crane operations. In addition, it has always been Liebherr's philosophy to train customers' engineers in all aspects of crane maintenance, repair and operation. Where necessary, customer personnel are then able to ensure that crane downtime is reduced to a minimum.



Technical Service & Maintenance

A team of more than 600 experienced, multi-skilled and factory-trained service engineers are based in more than 50 service centres around the globe. They are available ad hoc or on a contractual basis. The continuous expansion of our worldwide sales and service network is part of Liebherr's commitment to offer the maritime industry the best possible support.

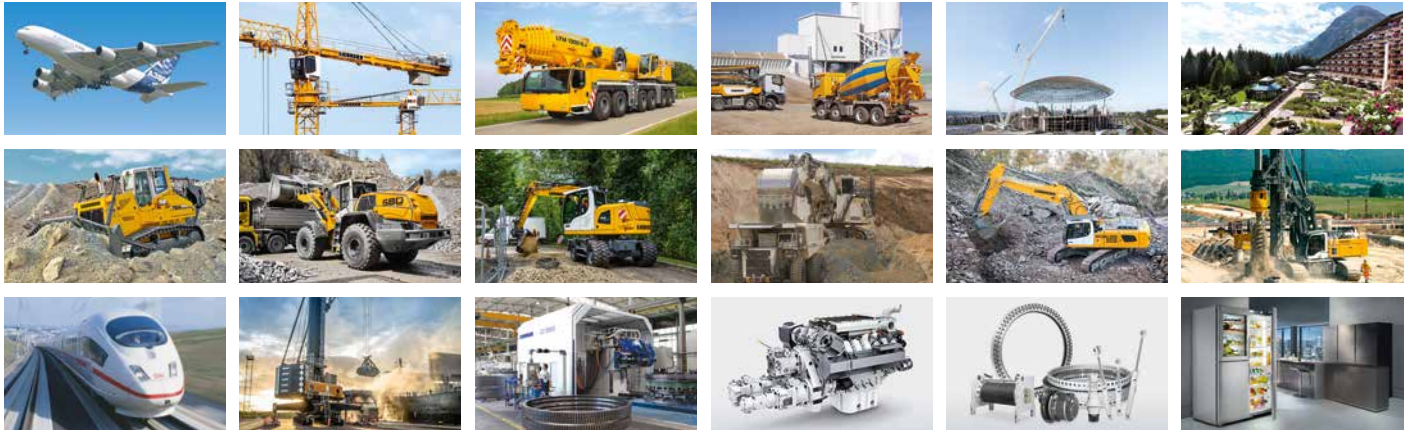
Upgrades & Retrofits

It might be required to upgrade cranes due to changes in the installation layout, changes in rules and regulations, operational requirements or just to extend the service life of an older crane. In consideration of new conditions Liebherr offers retrofits of existing drive systems and structural inspections.

Spare Parts

Every operational hour is vital if cranes are to function effectively. Liebherr original spare parts (OEM) and service staff are at our customers' disposal 24/7. Availability of components over the whole service life of the crane is guaranteed. Liebherr also recommends a steady supply of critical spare parts on-site. In combination with Liebherr training on technical specifics, this allows for minimal downtime of cranes.

The Liebherr Group of Companies



Wide Product Range

The Liebherr Group is one of the largest construction equipment manufacturers in the world. Liebherr's high-value products and services enjoy a high reputation in many other fields. The wide range includes domestic appliances, aerospace and transportation systems, machine tools and maritime cranes.

Exceptional Customer Benefit

Every product line provides a complete range of models in many different versions. With both their technical excellence and acknowledged quality, Liebherr products offer a maximum of customer benefits in practical applications.

State-of-the-art Technology

To provide consistent, top quality products, Liebherr attaches great importance to each product area, its components and core technologies. Important modules and components are developed and manufactured in-house, for instance the entire drive and control technology for construction equipment.

Worldwide and Independent

Hans Liebherr founded the Liebherr family company in 1949. Since that time, the enterprise has steadily grown to a group of more than 130 companies with about 42,000 employees located on all continents. The corporate headquarters of the Group is Liebherr-International AG in Bulle, Switzerland. The Liebherr family is the sole owner of the company.

www.liebherr.com