

Product Range

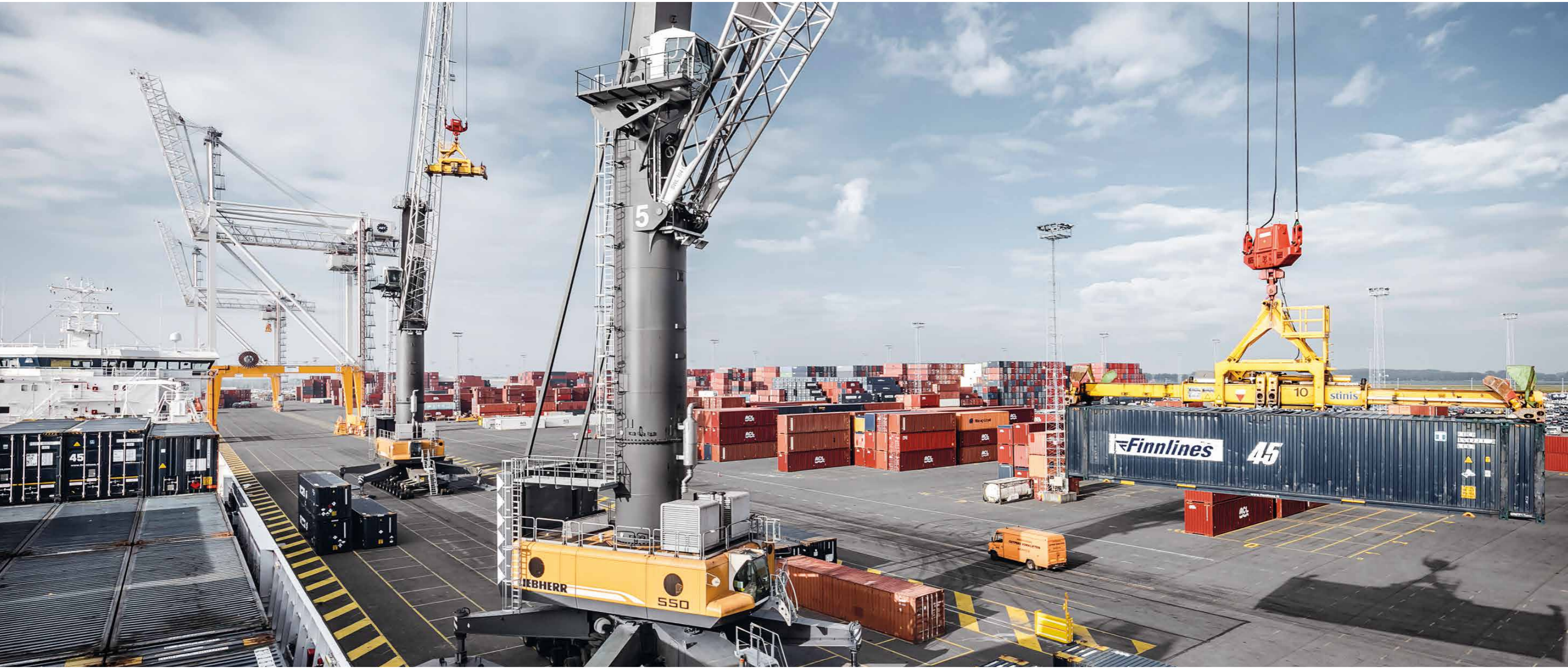
# Mobile Harbour Cranes



# LIEBHERR



# Versatile All-Rounder



Liebherr's range of mobile harbour cranes (LHM) is extremely versatile making it an universal all-rounder. The LHM is a key asset for handling all types of cargo from containers to bulk commodities, general cargo and even heavy lifts up to 308 tonnes at 18 metres outreach and up to 100 tonnes at 47 metres outreach. The product range covers all vessel sizes up to megamax and capesize. Diverse applications and varying terminal designs call for different equipment configurations. The Liebherr mobile harbour cranes enable full modularity, and so flexibility, across the entire product range.

The travelling system, whether rubber-tyred, rail-mounted or a floating unit, can be easily adapted to meet the port infrastructure. This also applies to the drive concept which can be chosen from a conventional diesel engine, a hybrid drive or an electric drive system.



# Unique Features

## 4-Chord Boom

The four struts (lattice design) of the boom provide maximum stability meaning precise crane movement and a longer service life.

## Luffing Cylinder

The tension cylinder is located above the boom. Thus it is protected from damage through swinging loads. There is no risk of buckling and the piston rod is fully protected in parking position.

## Hydrostatic Drive

Closed hydraulic loops are used for all main functions such as hoisting, slewing and luffing. The crane driver benefits from extremely precise control, the service personnel benefits from a minimum number and size of components and the operating company benefits from reduced fuel consumption thanks to the standard use of reverse power.

## X-Shaped Support Base

The star-shaped supporting base reduces the torsion strain on the steel structure and ensures optimal vertical stability during operation.



## Tubular Tower Design

The round tower design minimises torsion and distributes forces evenly to the steel structure and the slewing ring. As a result, the service life of the crane is significantly increased.

In addition, the enclosed design of the tower provides the crane driver with secure and weatherproof access to the tower cabin.

## Machinery Housing

The machine housing is made of Glass-Fibre Reinforced Polymer (GFRP) making it low weight and corrosion-free. Furthermore, all components are easily accessible for maintenance work.

The swing radius lies within the support base for all crane types in the LHM series and so eliminates the risk of collision and the crane driver can concentrate solely on his work.

## Individual Wheel Sets

All wheel sets are individually steerable and have load balancing, whereby the ground pressure for each wheel does not exceed six tonnes. Access from all sides provides for easy maintenance. Furthermore, the 360° mobility ensures highest maneuverability. This is a decisive advantage at narrow quays and terminals.



# Applied Modularity



The Liebherr mobile harbour crane concept as a whole is characterised by an outstanding modularity designed to meet with all port requirements. The upper part of the cranes (slewing platform, tower and boom) remains basically the same. However, depending on the conditions and requirements at the harbour, the substructure can be chosen from a number of variants resulting in five different types of lifting solutions.



## LHM – Liebherr Harbour Mobile

Typical mobile harbour cranes from Liebherr are represented by the range of LHM cranes. Their decisive feature is the rubber-tyred travelling system. Each set of wheels can be individually controlled enabling maximum mobility in all directions and even turning on the spot, knowing no limits.



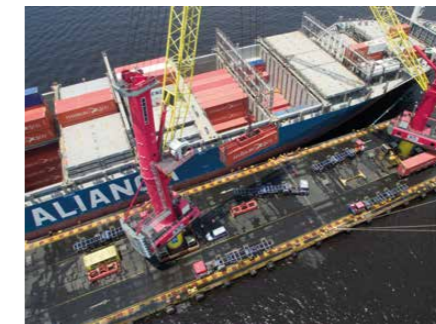
## LPS – Liebherr Portal Slewing

Liebherr's Portal Slewing cranes, type LPS, are specially designed for installation on quays or wharves where space is limited or traffic is high. The upper part is installed on a rail-mounted gantry enabling efficient cargo-handling without restricting quayside infrastructure and transportation of goods.



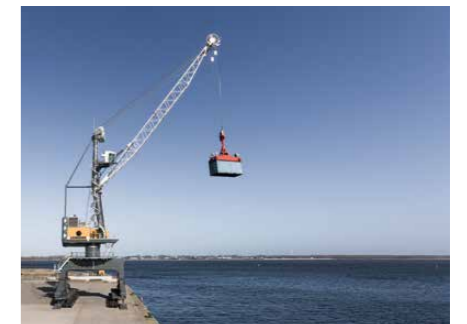
## LFS – Liebherr Fixed Slewing

Liebherr Fixed Slewing cranes, type LFS, is the preferred choice when stress levels on the ground must be kept low and space in the harbour is limited. The upper carriage is fitted on a fixed base column so reducing the space required but also ensuring the high productivity rates from the range of mobile harbour cranes.



## LBS – Liebherr Barge Slewing

Liebherr Barge Slewing cranes, type LBS, are a floating crane concept which combines the high performance of mobile harbour cranes with many years of experience in transshipment and barge solutions. The LBS cranes, fitted on barges and pontoons, are tailor-made to individual requirements and can be autonomously operated in sheltered waters.

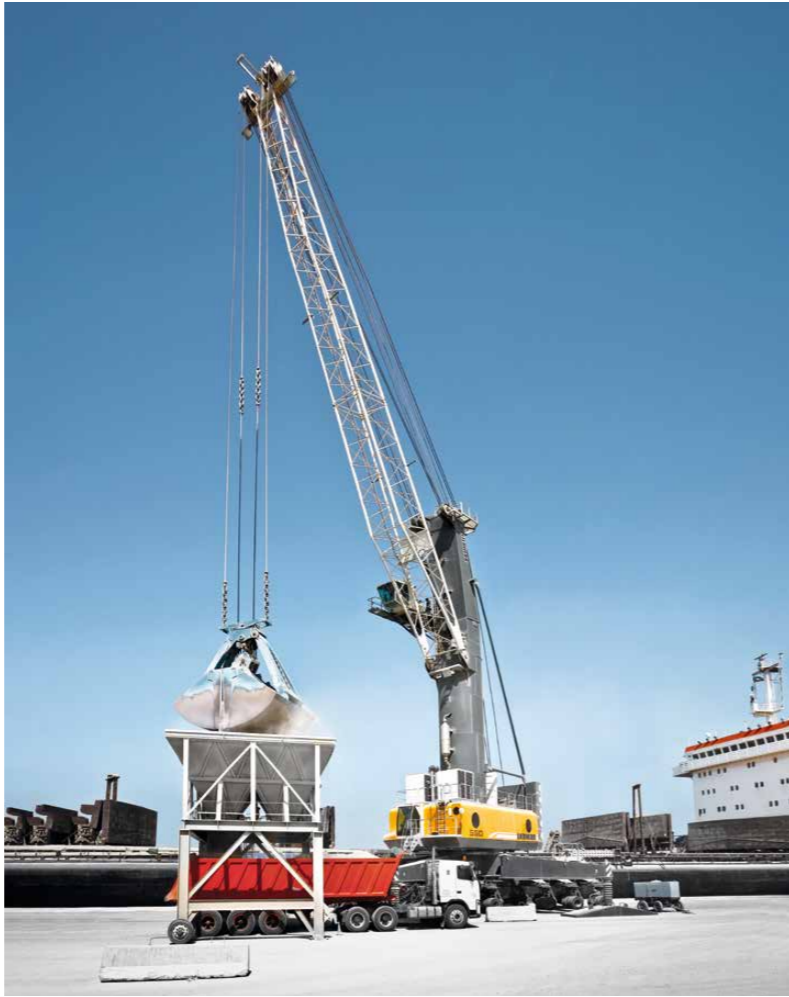


## LPM – Liebherr Portal Mobile

Liebherr Portal Mobile cranes, type LPM, are an ingenious combination of LHM and LPS cranes. Here, the upper part is installed on a gantry which is fitted with conventional rubber tyres instead of being rail-mounted. The LPM provides utmost mobility and all advantages of a gantry crane, without the need of rail infrastructure at the quay.



# One Machine, Many Possibilities



The multifunctionality of Liebherr's mobile harbour cranes makes them effective for all areas of application in the harbour. Lifting attachments can be exchanged within a matter of minutes thanks to the simple modular structure. After selecting the software, the respective lifting attachment is ready for immediate use.

**Container Handling**

The cranes are able to serve vessels with widths of up to 22 rows of containers, which means from Feeder ships up to Ultra Large Container Vessels (ULCV). Using manual, semi or fully automatic telescopic spreaders, all regular container sizes between 10' and 53' in single or twin lift can be handled.

**Bulk Handling**

Liebherr offers a wide product portfolio for highly effective bulk handling using various types of grabs. With a maximum material handling rate of up to 2,300 tonnes per hour, mobile harbour cranes from Liebherr are not only suitable for inland ports, but also large sea ports.

**General Cargo**

Lifting attachments can be quickly and easily exchanged to suit the actual handling requirements. Litronic®, Liebherr's own crane control system, automatically recognizes and pre-selects the lifting device ensuring unique versatility and continuity.

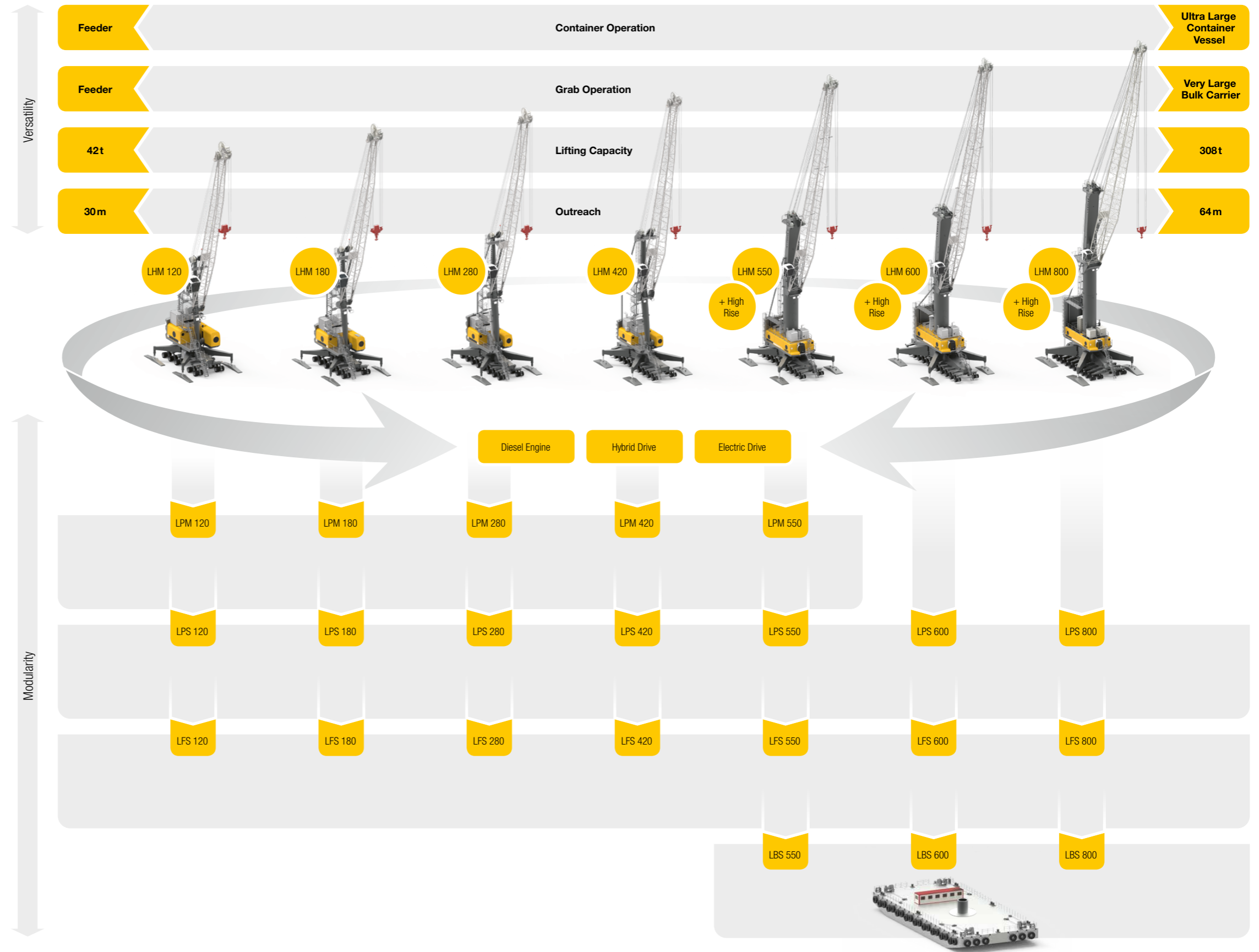
**Heavy Lift**

Liebherr's flagship model in the mobile harbour crane sector has a maximum load capacity of 308 tonnes at 18 metres outreach, which can even be doubled in tandem operation. With this high tonnage Liebherr proves its conviction to satisfy ever-increasing market demands.

# Product Range

Through many years of experience and customer-oriented engineering, the range of Liebherr mobile harbour cranes sets new standards in innovation and quality.

In terms of harbour management, versatility is as important as specialisation, and Liebherr's mobile harbour cranes combine these factors for all types of cargo in practically every harbour. Comprehensive basic equipment, easy transportation and high flexibility underline the cranes' effectiveness as an investment.





# Infinite Driving Pleasure

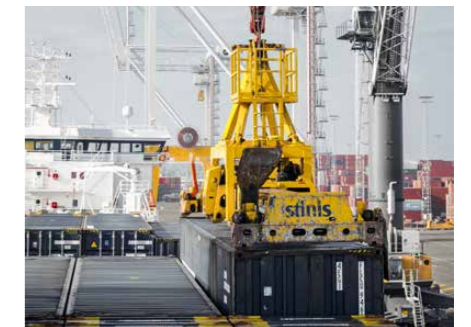


## Working Environment

Driver comfort is just as important as a good-quality machine. Liebherr mobile harbour cranes are designed to support the driver with regards to safety, comfort and control. An excellent and unobstructed view of the working area is provided through the forward-mounted position of the tower cabin which is made of 70% glass (safety glass). Ergonomically arranged monitors and controls can be easily operated from an adjustable comfort driver's seat. The conditions in the cabin are further improved through air conditioning and swing equalizers which reduce any vibration to an unnoticeable minimum. Furthermore, the cabin is noise insulated.

## Crane Control and Assistant Systems

The Litronic® crane control system, developed by Liebherr, focuses on precision, safety and productivity. The crane driver benefits from the immediate response of the machine for consistently high productivity and a high level of safety. Numerous assistant systems have been developed by Liebherr to facilitate the working processes, including for example:



## SmartGrip®

This unique, game-changing system optimises grab filling rates in a self-learning manner. As such, it automatically adjusts its behaviour by recognizing bulk density, compression, granularity, depth of impression or type of grab. The advantages speak for themselves: more turnover, perfect crane utilization, less stress for the crane and the crane operator.

## Sycratronic®

This feature enables the operation of two Liebherr mobile harbour cranes in tandem mode with just one single crane driver. While manual tandem lifts require crane downratings of 25% and more, this unique system enables the usage of 100% crane capacity during tandem lifts. This ensures a better utilization of the cranes and thus saving additional costs. Potential misunderstandings between crane drivers can be avoided. Increased safety and simplified control leads to faster operation times.

## Cycoptronic®

This highly attractive system assists the crane driver by successfully counteracting disruptive load sways and swings, including wind impact, by electronically controlling both the slewing and luffing gear. Thereby Cycoptronic® automatically initiates dynamic counterbalancing movements for quick and efficient elimination. Consequently, cycle times are reduced and energy is saved.



# The Port of the Future

The demand for sustainable, environmentally sensitive operation and for low-emission cargo handling cranes is becoming increasingly important. Therefore, the development of green technology and products is a matter of particular interest for Liebherr.

## Sustainability Right from the Start

Corporate sustainability is firmly anchored in our business and environmental considerations are implemented in the design of all maritime products, from start to finish. All structural components used for mobile harbour cranes are 100% recyclable.

## Low-Emission Cargo Handling

Hybrid drive technology enables low-emission cargo handling. The Liebherr Pactronic® hybrid drive system allows for a considerable downsizing of the installed engine power. A power pack consisting of a 750kW diesel engine and Pactronic® achieves the identical hoisting speeds as a power pack consisting of 2x 750kW diesel engines. Less maintenance, less fuel consumption and less emissions are the result.





# High-Tech Site

## Maritime Hub on the Baltic Sea

From Rostock to the world: Liebherr-MCCtec Rostock GmbH, founded in 2002, develops and manufactures ship cranes, mobile harbour cranes and offshore cranes. Reachstackers and components for container cranes are also covered in its product portfolio. The plant's location direct at the Baltic Sea provides the best logistics conditions.

## Ready for Operation

When shipping large equipment semi-erected or even fully assembled by Ro-Ro vessel means that Liebherr mobile harbour cranes can be ready for operation immediately after driving off the vessel onto the quay.

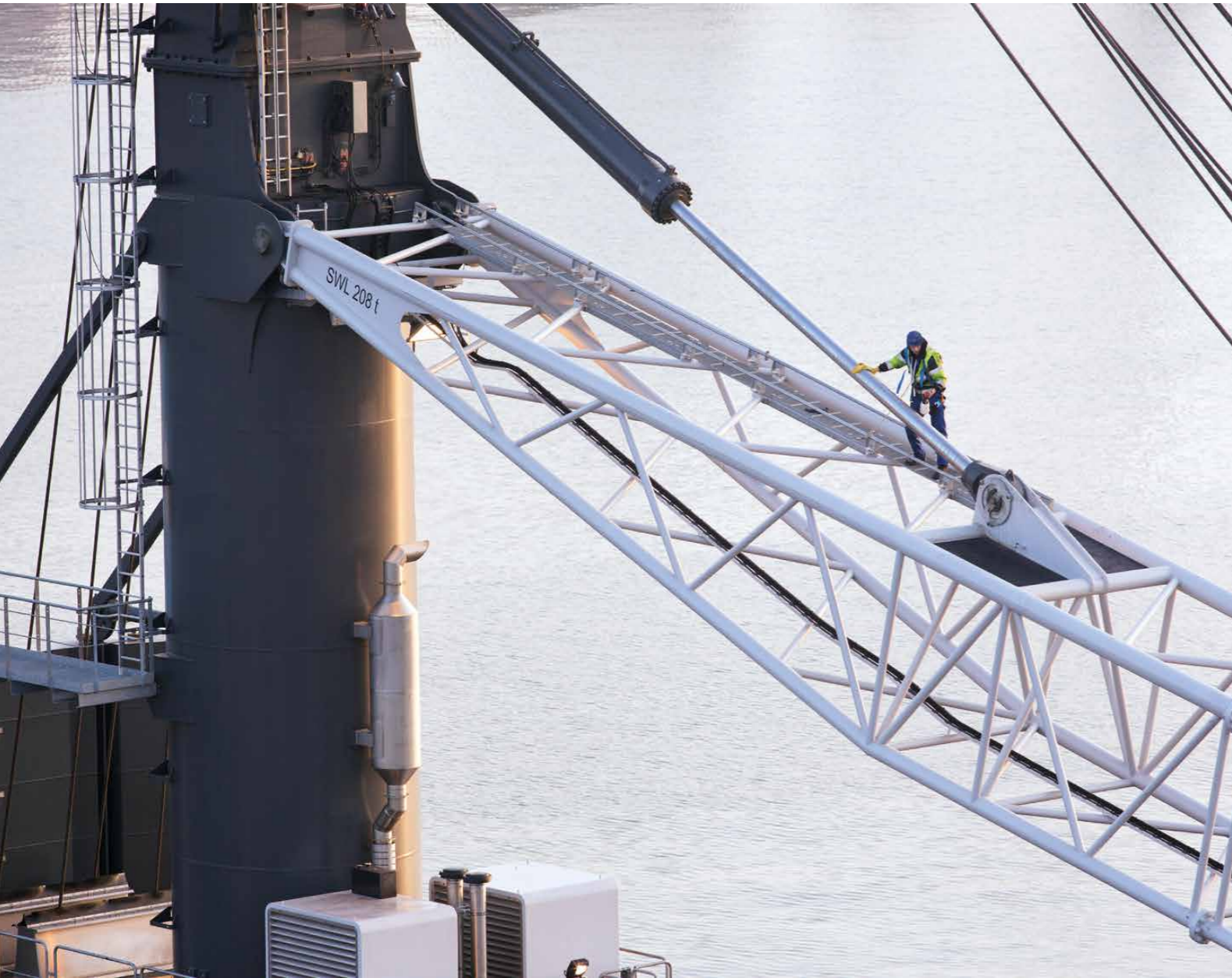
## Achieving Excellence

Before shipment, every crane is put through an intense factory testing program. This means that every single crane is fully assembled and tested before delivery, which results in extraordinary quick commissioning. Under normal conditions Liebherr mobile harbour cranes are assembled and ready for operation within just two weeks after delivery.





# Customer Service

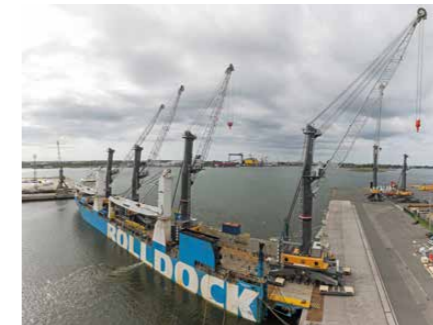


Based on many years of experience Liebherr provides effective assistance and support to its customers and will continue to do so in the future. The continuous improvement and expansion of the service network is part of Liebherr's commitment to offer the best possible support to customers worldwide.



## Testing

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



## Shipment

Located at the Baltic Sea Liebherr Rostock provides the best conditions for fast and effective shipment of large maritime cargo handling solutions. Mobile harbour cranes can be transported fully or semi erected also by Ro-Ro shipment. This guarantees fast commissioning. The good connection to the motorway also enables a road transportation.



## Training

Liebherr offers a range of flexible, high quality training solutions to fulfill 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.



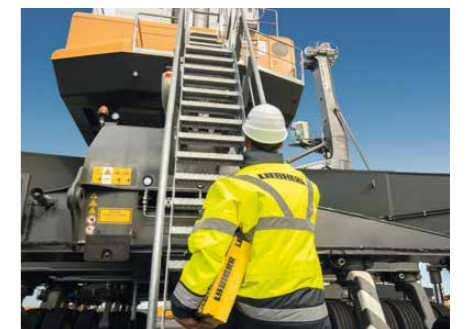
## Technical Service & Maintenance

A team of more than 600 experienced, multi-skilled and factory-trained service engineers is 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 over 41,000 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](http://www.liebherr.com)

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