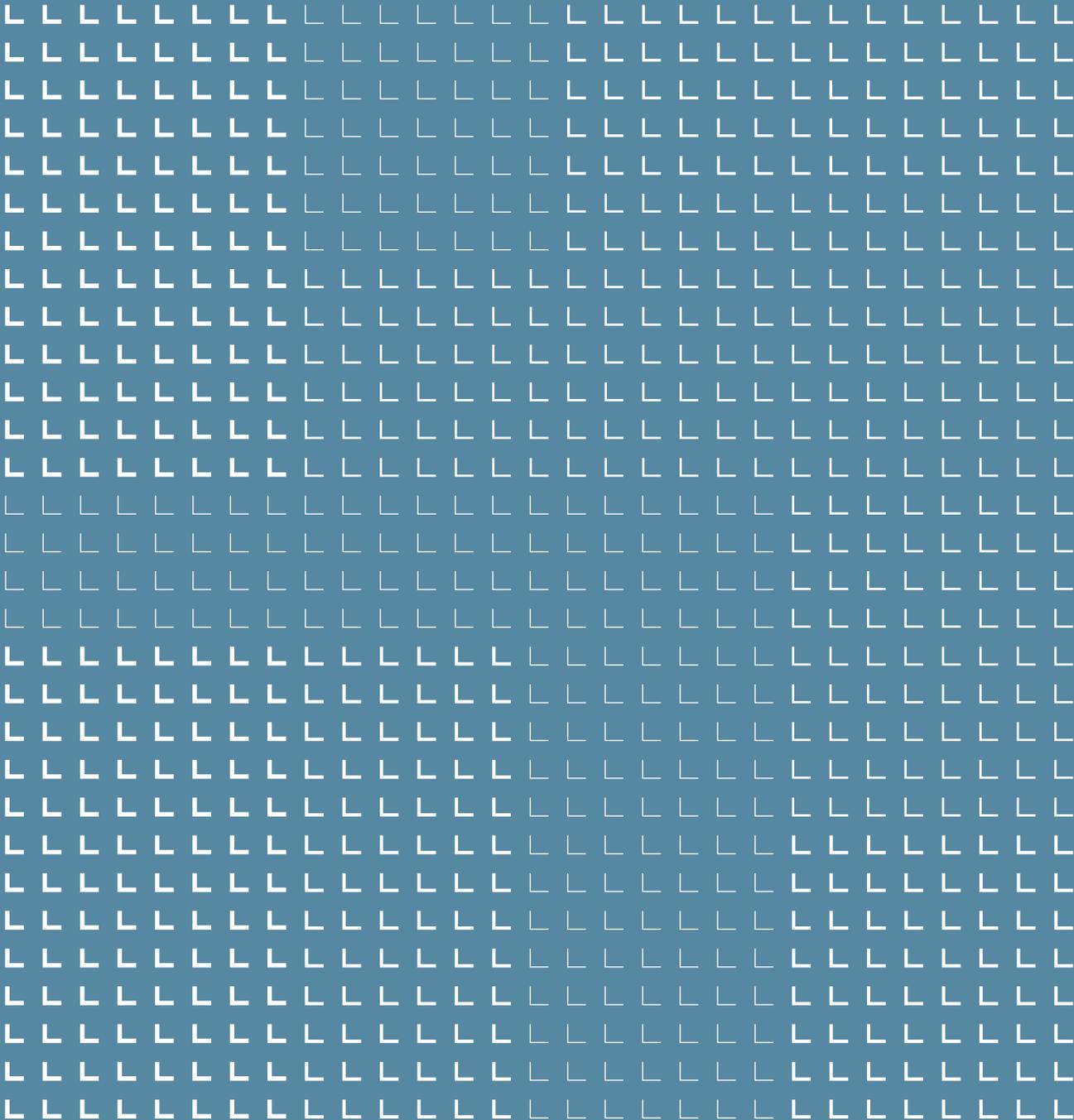

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LIEBHERR

Maritime cranes



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Over 60 years of Liebherr maritime cranes

Liebherr's history in the maritime cargo industry began in 1958 with the delivery of the first ship crane. Since then, the company has developed into a worldwide maritime service partner for ports and terminals, shipyards and shipping companies, as well as the offshore construction and exploration industries.

Liebherr Maritime Cranes is part of the Liebherr Group and provides an extensive range of port equipment, ship cranes, offshore cranes, digital solutions and consulting. With manufacturing facilities on the Baltic Sea in Germany, on the Atlantic coast in Ireland and on the North Sea coast in Great Britain, the locations are ideally situated for worldwide distribution. Digital solutions and services are provided from a digital solution centre in Nenzing, Austria.

The diverse portfolio of port equipment offers optimal solutions for the handling of cargo and containers in ports and terminals worldwide. Ship- and Offshore cranes in a wide selection of sizes and featuring innovative rope and cylinder luffing gear options offer tailor-made solutions for cargo shipping and offshore industry.

Digital solutions and consulting provide smart data analysis and productivity aids to maximise efficiency and returns from Liebherr cranes. A global network of over 450 service engineers in mixed sales and service companies deliver excellent customer service over the entire life cycle of the Liebherr machines.



Tradition and success in providing cargo handling solutions since 1958

Ship to shore container cranes



Liebherr Megamax STS cranes working an ultra large container vessel in Saudi Arabia

Liebherr ship to shore container cranes (STS) have been driving global trade for over 50 years and continue to innovate and lead the container handling industry. Liebherr-specific design features have evolved over the years to meet and exceed customer and market requirements.

Featuring an iconic lattice boom, control systems designed by Liebherr, simultaneous motion of all drives and the utilisation of high tensile structural steel, the Liebherr crane stands as a testament to a lifetime of industry leading design evolution and high quality performance.

From the earliest days, driver comfort and productivity aids have been at the heart of Liebherr machines. Ergonomically designed

cabins, air conditioning and Liebherr's unique boom hinge point deliver unrivalled comfort for the crane operator and allow for greater productivity. An extensive suite of state-of-the-art automation packages and productivity aids can be tailored to suit all operational environments.

Unique customer requirements such as double or articulated boom cranes, ultra-narrow spans or large cranes with optimised design for older quays, complement the extensive range of STS cranes. Liebherr STS cranes are available in all sizes from barge handling through to the latest generation of Megamax cranes.

Mobile harbour cranes

Through many years of experience and technology strictly focused on customer requirements, a range of products has been created which sets new standards in innovation, quality, mobility and flexibility.

The Liebherr mobile harbour crane (LHM) is a key asset for handling all types of cargo from containers to bulk, general cargo and heavy lifts up to 308 tonnes. In tandem operation, even loads of up to 616 tonnes can be handled.

The LHM is modular and so delivers unrivalled flexibility across the entire product range. The travelling system, whether rubber-tired, rail-mounted or a floating unit, can be easily adapted to meet the port's infrastructure requirements.

Liebherr mobile harbour cranes are tailored to the specific demands of the ship, port and transport industries. The extensive range offers an optimum solution for all vessel sizes and for every type of port or stevedore.

Versatility also applies to the drive concept with a conventional diesel engine, a hybrid drive or an electric drive system with emission free cargo handling on offer.

Due to its operational flexibility and outstanding reliability, the Liebherr LHM is the world market leader in the segment of mobile harbour cranes.

Liebherr mobile harbour crane type LHM 550 handling clay in Italy





Ship and port cranes

Liebherr has been supplying the shipping industry with a broad variety of ship cranes since 1958. The combination of over 60 years of experience in the maritime cargo handling sector, latest technologies and highest quality standards guarantee innovative and reliable products.

Today, the ship and port cranes' portfolio includes wire-luffing and cylinder-luffing cranes, gantry cranes and specifically designed lifting equipment for all types and sizes of cargo. The product range covers crane models with lifting capacities of up to 1,250 tonnes.

Liebherr Floating Transfer Solutions (FTS) provide a comprehensive range of floating cranes for high performance transshipment purposes in sheltered and open waters. State-of-the-art four-rope grab cranes offer considerable advantages through their innovative design and incorporated technology.

Liebherr Fixed Cargo Cranes (FCC), mounted on pedestals or non-travelling portal structures, and Liebherr Travelling Cargo Cranes (TCC), installed on movable gantries, provide space-saving solutions for small and medium sized ports. Fixed and Travelling Cargo Cranes are designed for the cost-efficient handling of containers, bulk materials and general cargoes at minimum operational costs for port terminals.

Liebherr ship cranes can be used flexibly on board and in port areas for every kind of material handling

Digital solutions and consulting services

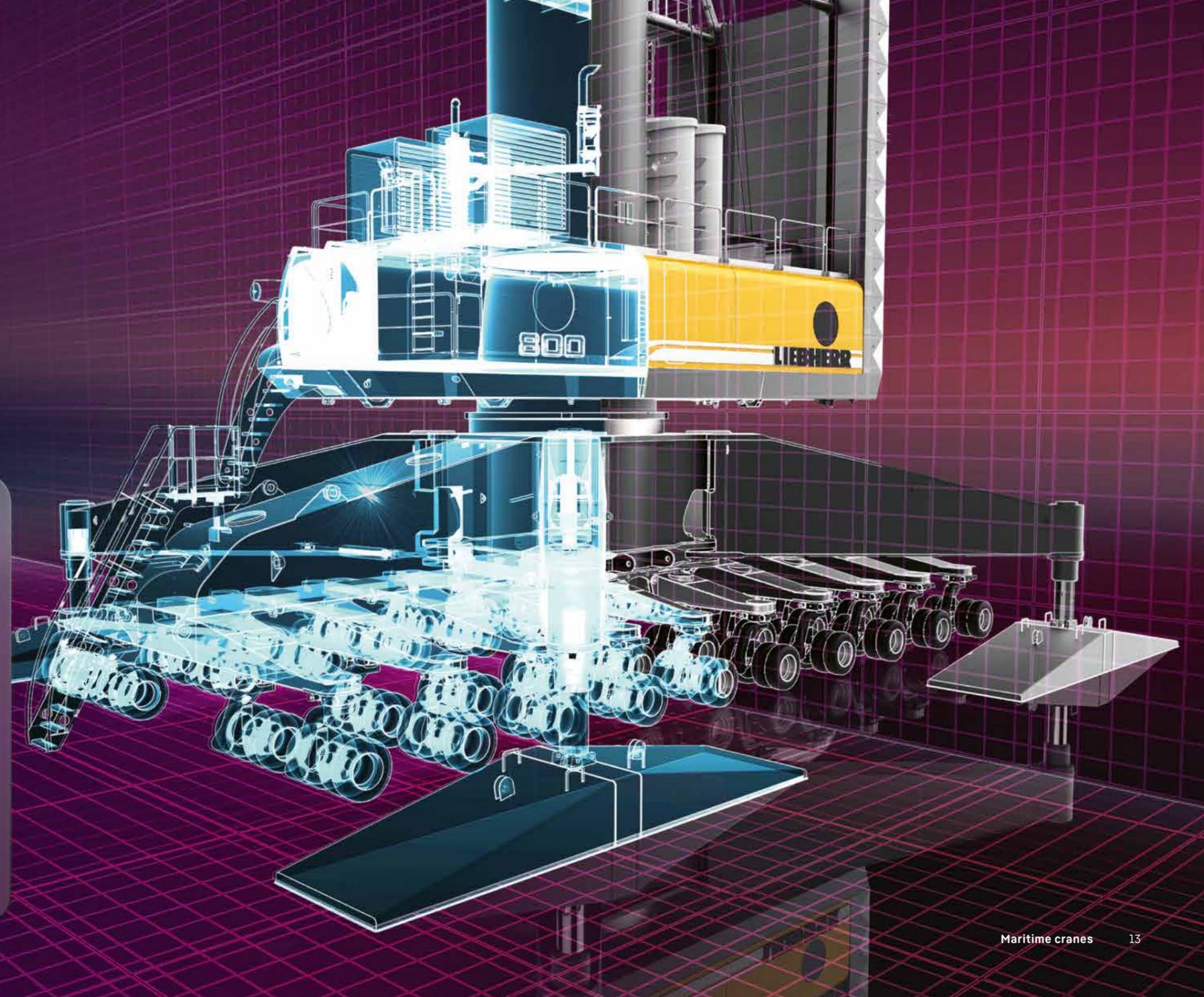
Liebherr cranes have played a key role in driving the development and competitiveness of the maritime industry. The continued demand for faster, more reliable and high tech cranes has led to the convergence and collaboration of traditional crane manufacturing, productivity tools and big data analytics. Today, Liebherr is much more than a crane manufacturer. State-of-the-art machines, advanced technology, LiSIM crane simulators, data analytics and expertise are combined to optimise productivity and efficiency in the maritime industry worldwide.

Liebherr's range of digital solutions and consulting services enable operators to maintain a competitive edge and adopt a digital mindset. Customers are supported

with the implementation of smart technologies in order to stay productive, user friendly, efficient and competitive. By utilising data analysis tools and highly skilled engineers in conjunction with industry knowledge, Liebherr's digital solutions and consulting helps to improve customer crane's reliability and plan smartly for the future.

The Liebherr LiDAT® SmartApp is a comprehensive tool to analyse and improve the machine's performances in order to enhance operations. Machine information is transmitted in real-time, along with historical information allowing the customer to analyse, react and better plan future operations.

Liebherr offers big data analysis tools and expertise to optimise port productivity and efficiency



Container stacking cranes



Liebherr's eight rope reeving arrangement and simultaneous drive motion are key features in the Liebherr rubber tyre gantry crane (RTG) and the Liebherr rail mounted gantry crane (RMG). The eight rope reeving system offers unparalleled rigidity and stability which delivers container moves with no sway. This is ideal for automatic operation and together with Liebherr Liduro drives offer excellent fine positioning and power control, whilst eliminating the need for a separate headblock. Liebherr RTGs are equipped with a variable speed diesel engine, energy storage systems and all electric or hybrid power options to deliver low running costs. The machines can be customised for all operational requirements. Semi-automated and automated RTGs provide cutting edge solutions for productivity and safety, whilst an extensive range of productivity and safety systems can be retrofitted to existing machines.

Liebherr RMGs have been the foundation of efficient intermodal terminals for over 50 years and today are available in various sizes and specifications catering for the busiest of terminals. Customers can select from a range of productivity aids or opt for fully automated stacking cranes with remote control.

The Liebherr straddle carrier with one over two or one over three high stacking options completes the range.

Liebherr rubber tyre gantry cranes are an essential part of the landside operations of this busy port in Saudi Arabia

Material handling machines

Liebherr's versatile range of material handlers provides a high-performance solution for fast and efficient dockside cargo handling.

In order to meet the wide variety of application requirements, an extensive product range is available. Depending on the application, each machine can be further configured with a selection of undercarriages, equipment, grabs and quick coupling systems.

Great ranges, high lifting capacity and outstanding stability are integral to the Liebherr material handlers. Clever

engineering and a new weight-optimised design of the equipment delivers efficient operation and maximum performance at minimum cost per tonne of handled material.

A holistic approach to design allows an optimal tuning of the engine, hydraulic and electronic components delivering precision and fine control whilst ensuring fast, powerful movements.

The Liebherr material handling machine LH 110 M HighRise Litronic in port handling operations in Germany



Duty cycle crawler cranes



In recent times dredging has become an increasingly important application for Liebherr duty cycle crawler cranes. In this application the machines are either installed on ships or pontoons and/or operate from water banks or harbours.

Dredging is necessary when sediment settles and leads to shallow water, which impairs the shipping industry. This often occurs in estuaries. Excavation of sand from the seabed in the course of land reclamation is a further possible application. In doing so, the duty cycle crawler cranes must endure high dynamic forces. Thanks to their robust design, the duty cycle crawler cranes from Liebherr are perfectly suitable.

The machines are fitted with either mechanical or hydraulic clamshell grabs. While mechanical grabs convince with low operating costs, hydraulic models are especially recommendable for hard ground conditions.

The removal of sediments in order to maintain the necessary minimum depth is a constant task at the port of Piombino, Italy

Maritime technology

The future offers many new opportunities for the maritime industry in general and for manufacturers of maritime cargo handling equipment in particular. The demand for sustainable, environmentally sensitive machines with zero or reduced emissions has become increasingly important.

Liebherr crane technologies are designed to improve safety, increase productivity, all the while allowing for ease of use. In addition, all technical developments are in the interest of sustainability. Machine learning, automation, intelligent functions and algorithms support crane and

terminal operators. Liebherr also uses big data analytics to connect machines and their operators. The insights gained help to optimise process and maintenance procedures.

The intelligent technologies surrounding Liebherr's maritime cranes provide optimal control over the material handling process, help improve safety, reduce load cycle times and energy consumption, and extend the life of the machines.

Liebherr offers a variety of environmentally sound solutions across all product lines



Sustainability right from the start

- Recyclable components
- Noise protection
- Liebherr biodegradable oil



Cleaner power for every installation

- All-electric cranes with zero emission
- Hybrid drive systems
- Low-emission diesel engines



Automation software for increased efficiency and reduced energy consumption

- Intelligent grabbing
- Path finder / sway-free load
- Synchronised lifting

Corporate responsibility

As a family-owned company operating worldwide, Liebherr carries a considerable responsibility towards society and the environment. Liebherr is convinced that long-term success can only be achieved if it remains conscious of this responsibility in all its activities. The protection of humanity and the environment is of special importance in all business operations. For products and their manufacture, this means that they must be safe, efficient and environmentally acceptable. Liebherr maritime cranes encourages environmentally conscious, social and sustainable behavior. The company also supports the ten principles of the United Nations Global Compact on human rights, labor standards, the environment and anti-corruption. Therefore, Liebherr maritime cranes is

committed to make an active contribution to the Sustainable Development Goals of the United Nations. For its long-standing commitment to sustainability, Liebherr-MCCtec GmbH was awarded a gold medal by the independent rating agency EcoVadis. This puts the company in the top 3% of all evaluated companies of its industry. EcoVadis score sustainability using indicators in four key areas; Environment, Labour and Human Rights, Ethics and Sustainable Procurement.

The Liebherr group aims to honor its responsibility to society and the environment at all times. In its long history, the company has grown successfully through responsible as well as future-oriented behavior.

EcoVadis is the world's most credible supplier of business sustainability ratings with over 75,000 companies participating



WE SUPPORT



Offshore cranes



With more than 1,000 offshore cranes in the field, Liebherr has gained a great wealth of experience, through many years of design development, and operations in the most severe environmental conditions.

Liebherr's product portfolio includes general purpose and heavy lift cranes. For oil and gas applications, Liebherr provides various crane series with ram and rope luffing systems and with conventional slewing bearings. In addition, the portfolio also includes cranes, which are based on the kingpost principle.

Offshore heavy lift cranes are characterised by having the lattice boom, slewing bearing and A-frame attached to the superstructure. With a lifting capacity of up to 5,000 tonnes, Liebherr offshore cranes are ideal for installing offshore wind turbines and for the commissioning

and decommissioning of offshore installations. For applications on jack-up installations, Liebherr provides special space saving crane designs.

In the field of subsea operations, Liebherr offers offshore cranes, with operating depths of up to 3,600m. Furthermore, the portfolio also includes offshore cranes for pipe laying applications in the oil and gas industry. Internal and external pipe grippers are available for this purpose and can be used in addition to conventional hook operation.

All general purpose crane series can be equipped for hazardous areas. Depending on customer needs, lifting capacity upgrades and retrofits such as hook garage or boom extension can be installed.

Liebherr crane around the leg,
type CAL 64000 lifting parts of an
offshore wind plant in France.

Customer service

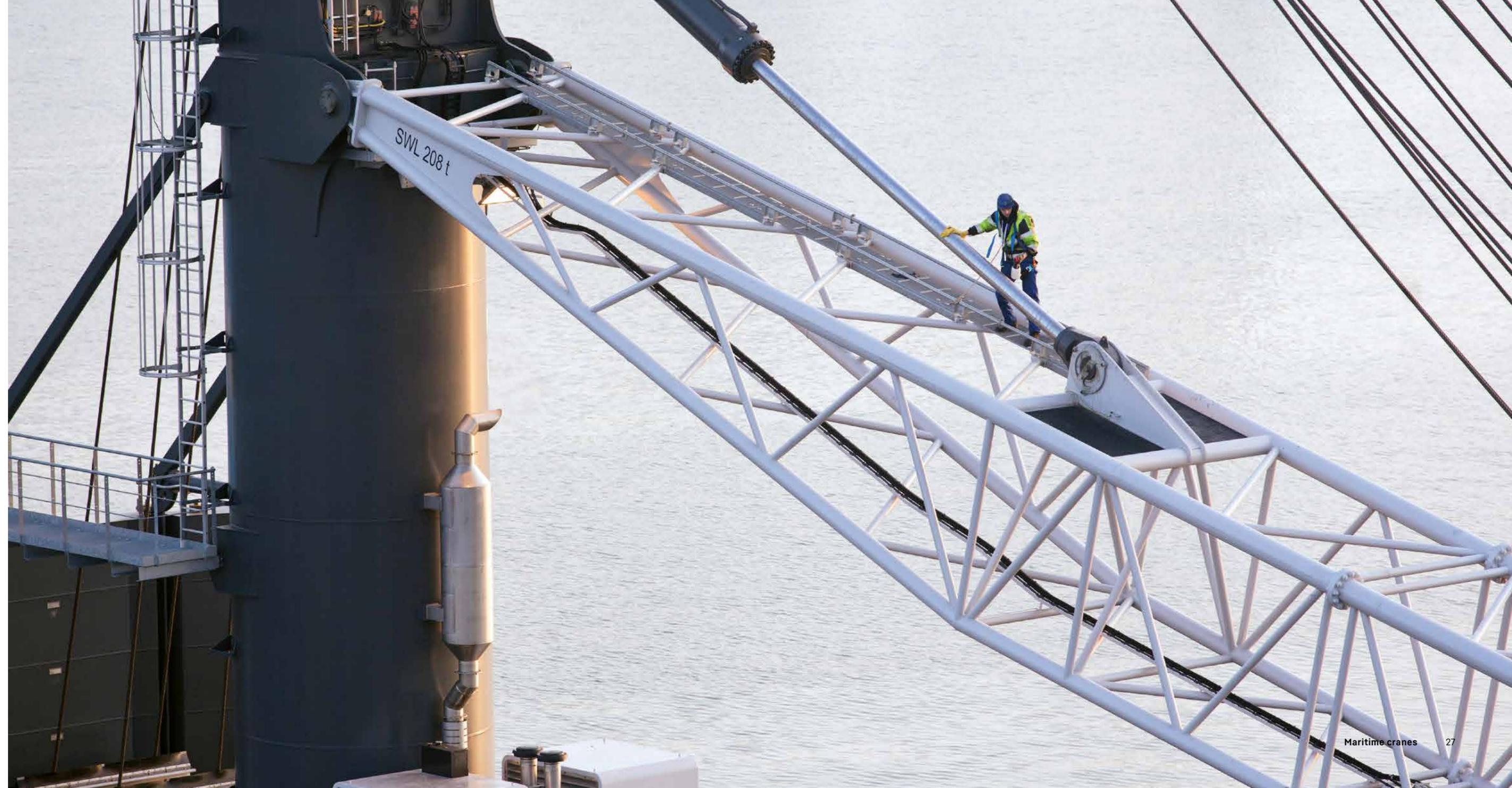
Liebherr stands not only for high-quality machines, but also for a reliable and trustworthy service partner. The close cooperation between Liebherr and its customers builds trust and enables excellent customer service that provides added value over the entire life cycle of the machine.

Based on many years of experience, Liebherr provides effective assistance and support through specially trained technical advisors and service engineers stationed worldwide. Professional field engineers carry out inspections and recommend customised maintenance programmes to suit all operational

requirements. In training courses at the company's own training centres and at the customer's site, Liebherr experts pass on their detailed specialist knowledge and help to make daily operations more efficient and reliable.

Whether it is regular maintenance work, repairs, remote support, or customised solutions - competent customer service support makes a significant contribution to the maximum availability and reliability of Liebherr's maritime products.

Liebherr maritime service engineer during the assembly of an LHM 600 in Belgium



Maritime Training Centre

Target group-oriented courses in combination with the latest digital learning media enable efficient training



As a competent service provider and training specialist for maritime products, Liebherr guarantees efficient and safe crane operation at the highest level.

The Maritime Training Centre enables professional training for individual target groups such as customers, Liebherr sales staff and service engineers. The training concepts are developed in close coordination with these target groups and focus on efficient and safe use of maritime cranes manufactured by Liebherr. Product knowledge, crane operation, maintenance and troubleshooting are central training elements.

Every customer experiences the same training and the same spirit, no matter where in the world the training takes place.

In order to ensure that the training also meets future requirements, Liebherr relies on new digital learning media such as social learning, video learning, gamification and augmented reality.

The Maritime Training Centre comprises a professional team with many years of experience in the area of training. A network of strategic cooperation partners complements these qualifications.

Production sites



Liebherr-MCCtec Rostock GmbH

The maritime production site in Rostock (Germany) is the largest manufacturing plant of the maritime crane division. Due to its direct link to the Baltic Sea it has optimal logistic conditions. Equipped with a Liebherr TCC 78000, one of the world's most powerful gantry cranes, Liebherr provides a high degree of flexibility for handling goods with a weight of up to 1,600 tonnes.

Foundation: 2002
 Total area: 451,000 m²
 Products: Mobile harbour cranes, ship cranes, offshore cranes, reachstacker

Liebherr Container Cranes Ltd.

Killarney (Ireland) was Liebherr's first manufacturing plant outside of Germany and initially manufactured tower cranes before focusing on container cranes in the late 1960's. Today it is responsible within the Liebherr group for design, manufacture and sales of STS, RTG and RMG cranes worldwide.

Foundation: 1958
 Total area: 190,000 m²
 Products: Ship-to-shore container cranes, rail-mounted gantry cranes, rubber tyre gantry cranes

Liebherr Sunderland Works Ltd.

Once the location of the UK's oldest shipyard, Liebherr Sunderland continues this proud maritime heritage by producing maritime cranes for the global market. Its prime location on the North Sea has seen over 2,000 offshore and ship cranes delivered worldwide. Weekly shipments of reachstackers take advantage of this prime coastal location.

Foundation: 1989
 Total area: 70,500 m²
 Products: Ship cranes, offshore cranes, special cranes, reachstacker

Liebherr-Werk Nenzing GmbH

Amid the Austrian Alps, Liebherr-Werk Nenzing GmbH specializes in cranes and construction machines for lifting, material handling and deep foundation. On rivers and in harbours, the machines from Nenzing are mainly used as floating solutions. Duty cycle crawler cranes are real specialists in all matters relating to dredging. Digital solutions and services for the construction site of the future complete the product range.

Foundation: 1976
 Total area: 254,500 m²
 Products: Duty cycle crawler cranes, special deep foundation machines, crawler cranes and digital solutions

Liebherr, an international family-run business

Liebherr was founded in 1949 by Hans Liebherr. Since then the business has grown into the Liebherr group with over 48,000 employees and over 130 companies spread throughout all continents. Today, Liebherr is not only one of the largest construction machine manufacturers in the world, but is also recognised in many other sectors as a supplier of technically sophisticated products and services with a focus on customer benefit. At the head of the group is Liebherr International AG in Bulle/Switzerland, the shareholders of which, are all members of the Liebherr family.

The fact that Liebherr is a family-run business has characterised the corporate culture from the outset. Liebherr has demonstrated stability and reliability for more than 70 years and strives for a long-term and close cooperation with its customers and business partners.

Highest quality is the focus of all Liebherr activities. All employees within the Liebherr group pursue this requirement in their daily work. Liebherr works on its products with passion, whereby the customer perspective



Active family shareholders in the Liebherr Group (l-r): Jan Liebherr, Stéfanie Wohlfarth, Sophie Albrecht, Philipp Liebherr, Patricia RUF, Johanna Platt, Isolde Liebherr and Willi Liebherr

Our core values

The Liebherr group is one hundred percent family-owned. This situation has always determined our corporate culture and will continue to provide a firm foundation for our success.

- 01 We are independent**
“Our independence enables us to take decisions rapidly and autonomously.”
- 02 We are a trustworthy partner**
“We aim to maintain our consistency and trustworthiness for many years to come.”
- 03 We are innovative**
- 04 Our employees are a key factor in our success**
“We work systematically to keep one step ahead.”
“We greatly appreciate the degree to which our employees identify with their company.”
- 05 Highest quality in everything we do**
“We devote all our efforts to best performance.”
- 06 We accept responsibility**
“We aim at all times to fulfil our responsibility to society in general and to the environment.”

Hans Liebherr (1915-1993)



The group's divisions

The Liebherr Group develops and manufactures a very vast range of exciting products. These have made a name for themselves on the world markets thanks to their maximum precision and exceptional durability. With its consistently remarkable innovations and visionary technologies, the company aims to inspire its customers. Liebherr makes an important contribution to technological progress – the limits of what was previously possible are being redefined time and time again.



Earthmoving



Mining



Mobile and crawler cranes



Tower cranes



Deep foundation machines



Material handling technology



Refrigerators and freezers



Concrete technology



Maritime cranes



Aerospace and transportation systems



Gear technology and automation systems



Components



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