

LiSIM® - Liebherr Simulations

Solutions for Maritime Cranes



LIEBHERR

Liebherr Simulations LiSIM® Solutions



Your Advantages at a Glance

Safety

- Lower risk of accident through training
- No danger for persons or machinery
- Training of appropriate action in case of an emergency
- Training of extreme situations without any actual danger

Productivity and Efficiency

- Comprehensive training programme
- Training ranges from learning the basics up to increasing productivity
- Training of processes and communication on the jobsite
- Time and cost savings

Economic Benefits

- No wear and tear on the machine
- The real machine remains productive during training
- Less downtime
- Reduced repair costs
- Long-term benefit through optimally trained operators

Classroom Solution



Cabin Solution



Container Solution



Comprehensive Training Solutions for your Operators

Simulators are globally recognized as a highly effective training method offering numerous advantages. The development of this sophisticated training tool was prompted by Liebherr's extensive experience in crane operator training. Based on the original Litronic® crane control system, LiSIM® is the only realistic virtual solution available on the market for learning the precise and innovative control of Liebherr maritime cranes.

	Weight	Length	Height	Width	Motion System	Display System
Classroom Solution	1.0 t	2.0 m	2.4 m	2.3 m	3-DOF	5 x 55"
Container Solution*	10.0 t	12.2 m	2.6 m	2.4 m	3-DOF	5 x 55"
Cabin Solution**	2.7 t	3.1 m	3.0 m	2.0 m	3-DOF	4-6 x 55"

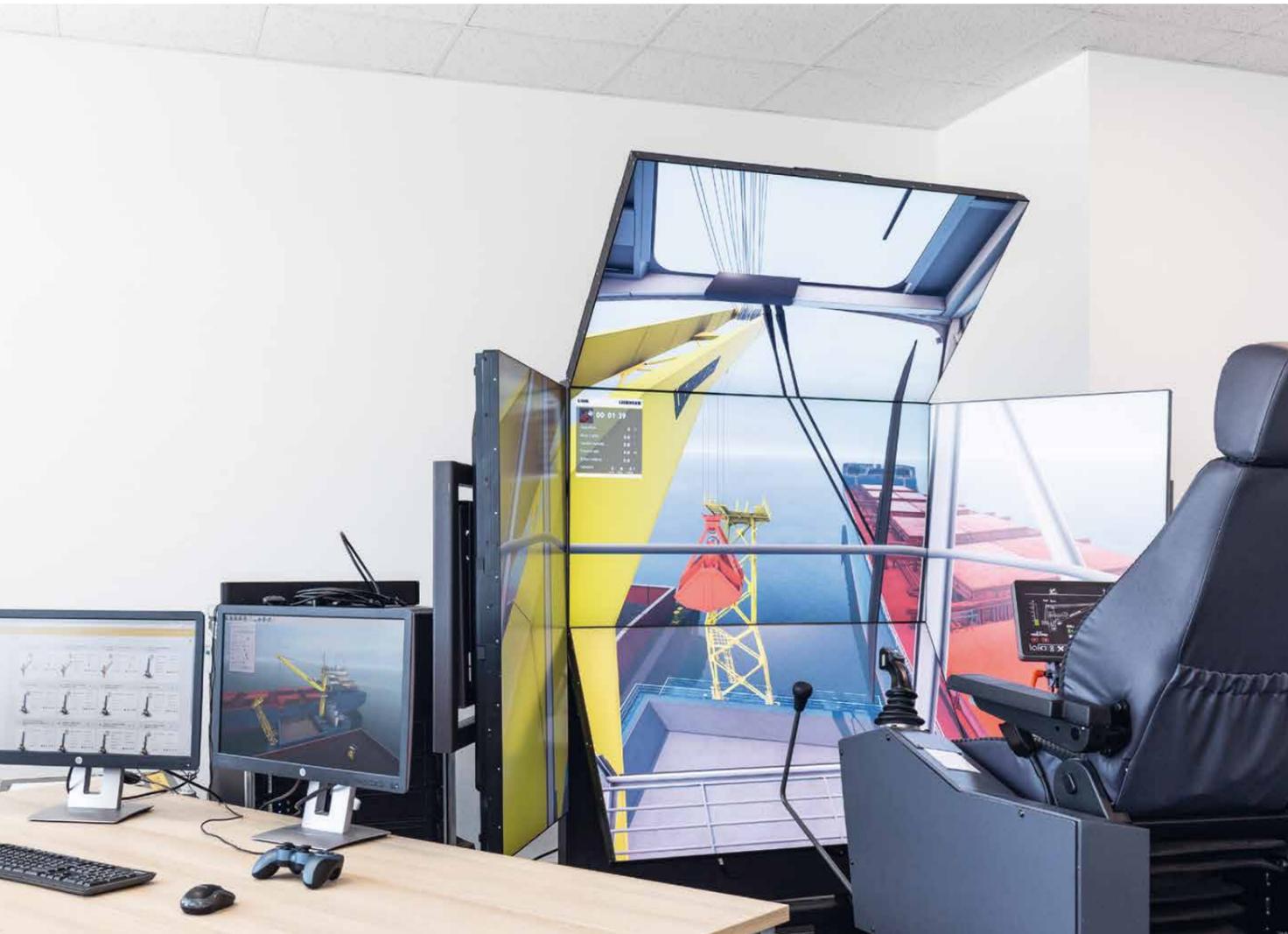
* Classroom solution housed in a 40' standard container

** Cabin solution is not available for STS/RTG software solutions

DOF = Degrees of Freedom

Components

LiSIM® - Liebherr Simulations



Simulating all Aspects of your Job

Wide-ranging functionality is essential for the simulation of daily routines and extraordinary situations that machine operators face in the real world of maritime cranes.

Due to the flexibility of the virtual environment, users can run through any load handling situation and simulate harsh environmental conditions when required.

Each simulation solution is equipped with high standard components.

Screens

The high definition display system is optimized to provide the field view necessary for machine operation. It is mounted either on a steady frame for the classroom/container solutions or directly in the original crane cabin. The number of screens used depends on specific customer requirements.

Motion Base (3-DOF)

The motion base simulates a realistic feedback according to current machine movements and is equipped with three degrees of freedom. In terms of a mechanical body, the number of degrees of freedom is the possible number of independent movements.

Sound

Surround speakers reproduce the original machine sounds as well as those of a typical operational environment to provide a fully immersive training experience.

Original Liebherr Controls

The simulation is based on Liebherr's unique control system (Litronic®) with communications protocol. Liebherr supplies the entire set-up of the operator's seat including control levers and control panels, as well as keyboard and touchscreen to control the simulation.

- Control panel with PLC ("Master")
- Control levers
- Monitor (touchscreen)

Instructor Station

An instructor station is included as a standard for simulator start-up and the loading of scenarios. It comprises the computer in the rack with two 24" displays, keyboard, mouse and gamepad.

Using the instructor station the trainer can load different scenarios, modify simulation parameters or insert errors and monitor the operator's actions. The instructor can also "fly through" the entire simulation environment to view the operation from any position.

LiSIM® Classroom Solution Characteristics

Designed for easy integration into existing training centres, the seat and controls are mounted on a base and the monitors on a sturdy display frame.

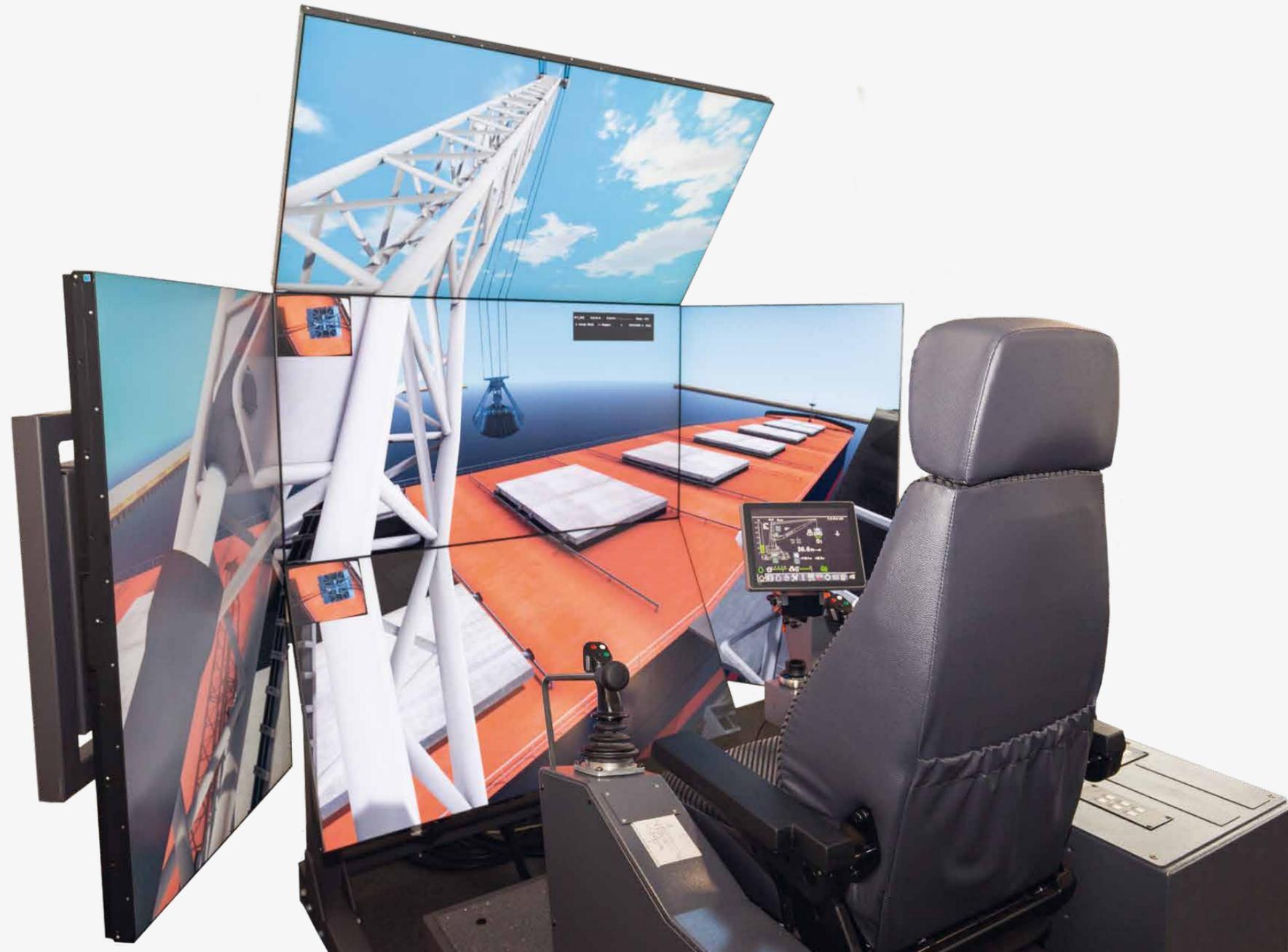
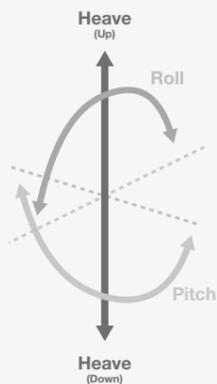
- Easy integration into existing classrooms
- Spacious
- High-standard

Original Liebherr Equipment

The simulator is equipped with Liebherr's original components and control systems.

Motion Base

The 3 Degrees of Freedom (DOF) motion base provides a convincingly true to life operating experience.



Simulation Software

A real-time physics engine realistically simulates the machine, material and surroundings to a very high standard.

High-Resolution Screens

High-resolution screens allow a wide view of the 3D environment for the crane operator.

Operator Analysis

In order to ensure an objective assessment of all trainees LiSIM® offers a specially designed analysis tool.

LiSIM® Container Solution Characteristics

The 40 ft. container offers three compartments: the utility room, the simulator area and a briefing room. This compact and fully insulated solution includes a heating and air-conditioning unit as well as appropriate lighting.

- Compact
- Mobile
- Fully equipped

Worldwide Shipping

Flexible and easy transport due to CSC (Container Safe Convention) certification

Worldwide Operation

High quality heating and air-conditioning systems for use around the world



Customized Training Content

Customized training content is applicable for Liebherr's portfolio of maritime cranes.

Compact and Flexible Training Facility

Instructor station for the trainer and optional high resolution touchscreen for theoretical training

Fully Equipped Training Unit

Completely independent training unit with an enclosed LiSIM® classroom simulator

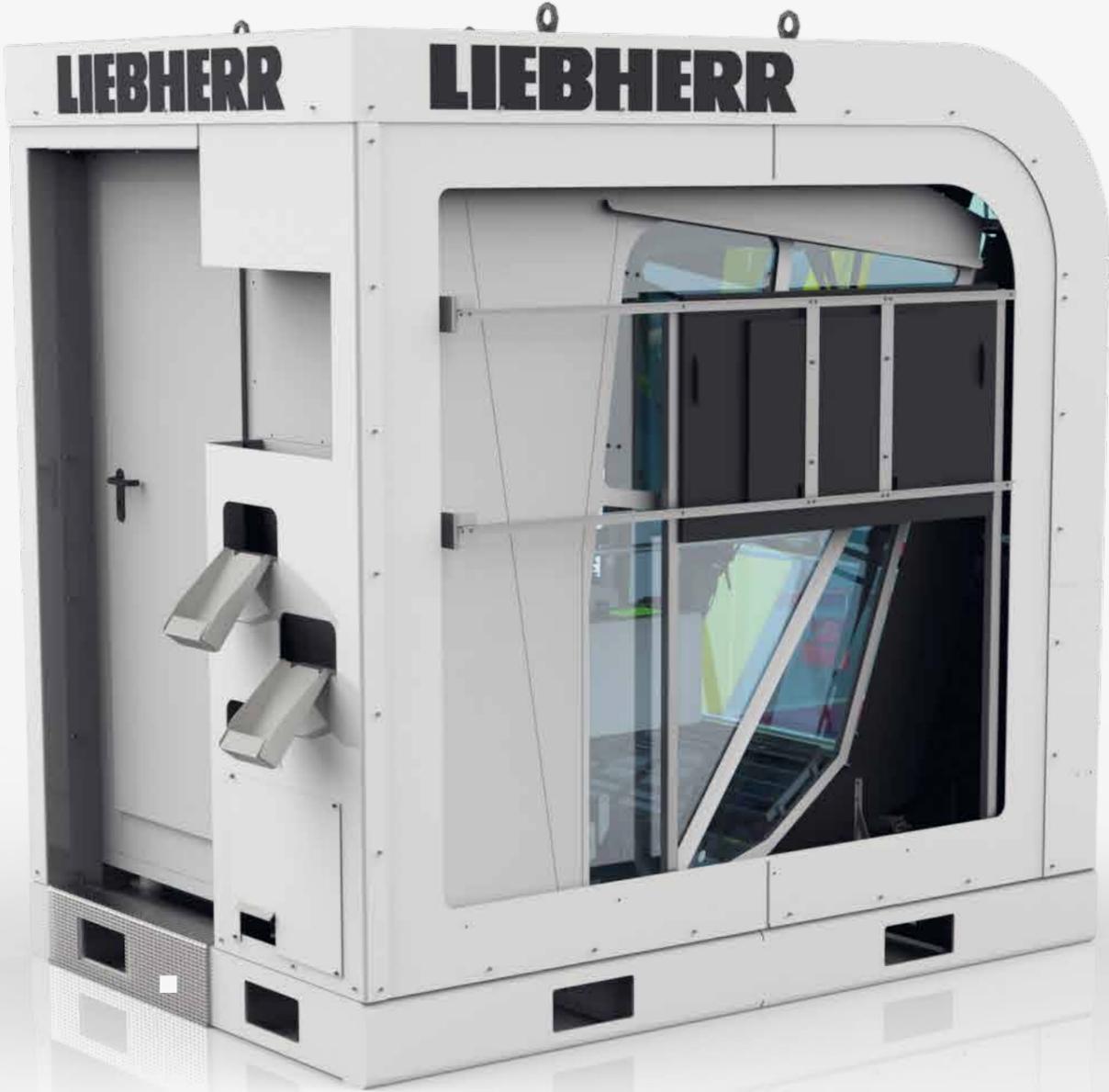
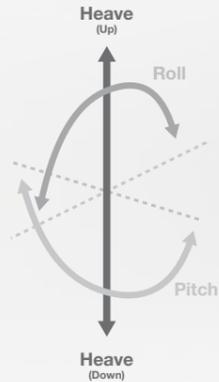
LiSIM® Cabin Solution Characteristics

Installed in an original Liebherr crane cabin, this impressive solution ensures that the operator becomes familiar with controlling the machine in a real-life environment.

- Authentic
- Multifunctional
- Highly immersive

Motion Base

The 3 Degrees of Freedom (DOF) motion base provides a convincingly true to life operating experience.



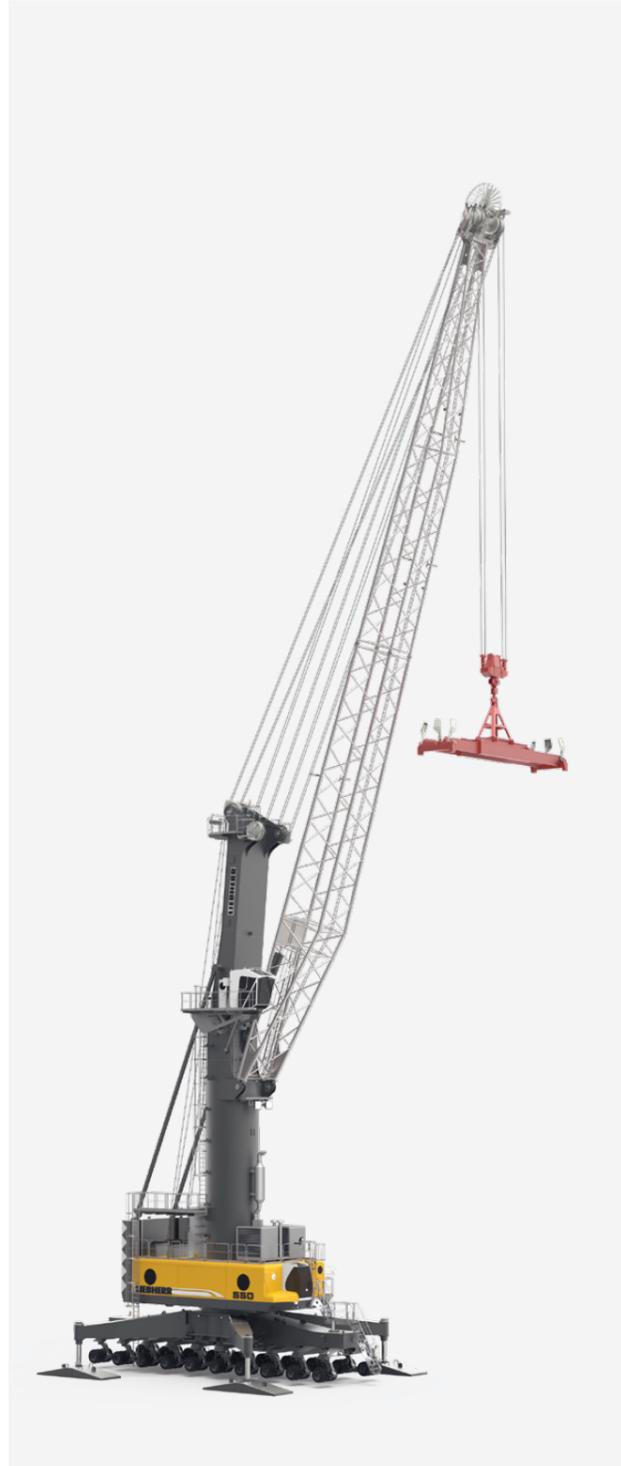
Panoramic View

The display system covering all cabin windows with high-definition screens allows a wide view, which is extremely important for machine operation.

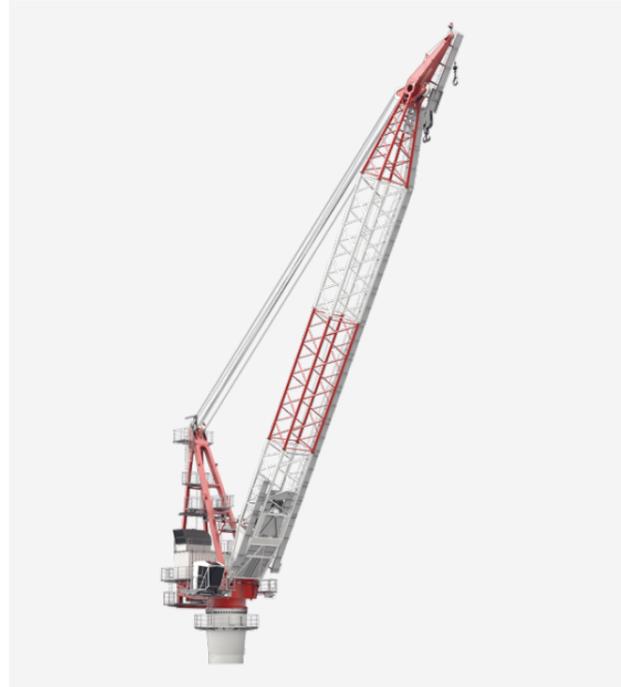
Authentic Solution

Original OEM components from Liebherr provide training under realistic conditions.

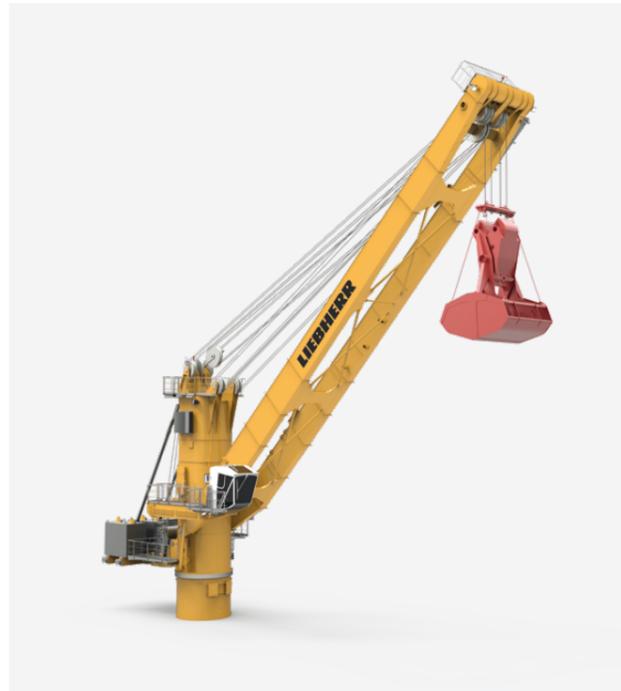
LiSIM® Software Solutions for Maritime Cranes



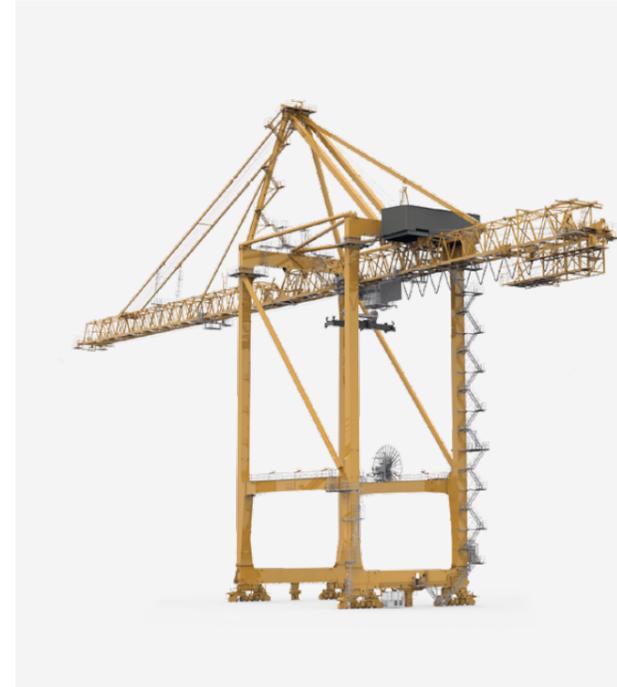
Mobile Harbour Crane series



Offshore Cranes - BOS series



Floating Cranes - CBG series



Container Cranes - STS series



Container Cranes - RTG series

High quality simulators offered by Liebherr cover all areas of the maritime cargo handling industry.

Mobile Harbour Cranes

Unique technology such as the optimised undercarriage concept or the inhouse-developed crane control system make Liebherr mobile harbour cranes among the most powerful material handling equipment in the world. The flexibility of the mobile harbour crane makes it effective for all areas of application in the harbour and thereby guarantee the highest level of effectiveness.

Offshore Cranes - BOS series

A compact and function-orientated design as well as Liebherr's in-house developed Litronic control system make the board offshore crane series (BOS) from Liebherr one of the most successful products in the offshore crane segment. The BOS is a conventional slew bearing crane with a cable luffing mechanism and can be powered electro-hydraulically or diesel-hydraulically.

Floating Cranes - CBG series

The CBG series of four-rope grab cranes is designed for the high speed handling of bulk cargo. The integrated control system automatically monitors the heel and trim angle of the crane and reacts in critical situations with relevant warning and correction programs. The extended cabin supports a better view of the hold. Owing to the special properties of the structure and the integrated safety programs, the CBG floating crane is not only suitable for operation in sheltered waters but also on the open sea.

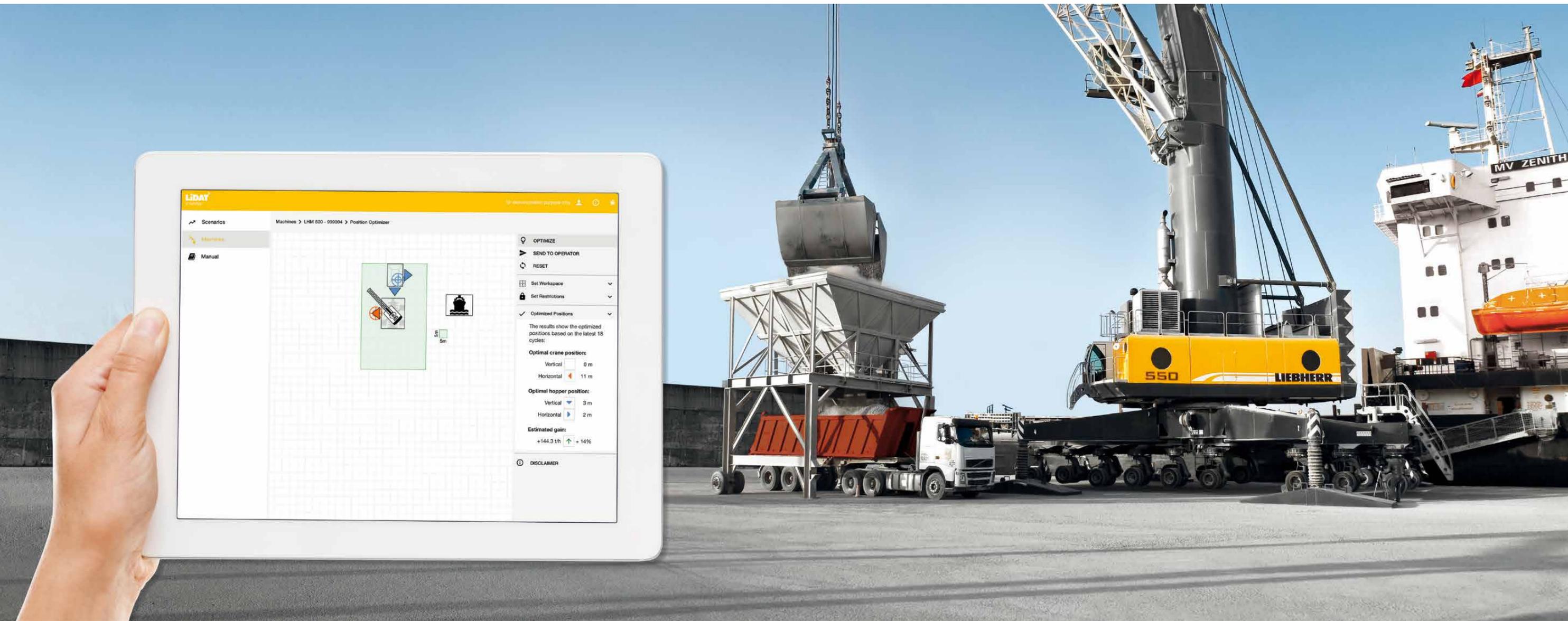
Container Cranes - STS series

Ship to shore container cranes are custom designed with a range of outreaches and specification detail according to individual customer requirements from panamax size through to the largest megamax cranes. Safe working loads from 40 to 120 metric tonnes are available in single, twin and tandem lift configuration. Ship to shore container cranes (STS) from Liebherr achieve up to 99.6% availability during actual vessel operation.

Container Cranes - RTG series

Rubber tyre gantry cranes (RTGs) are available with spans of between five and nine containers wide (plus a truck lane) and with hoisting heights from 1 over 3 to 1 over 6 containers high. Supplied with Liebherr's eight rope reeving anti-sway system and drive systems, the Liebherr RTG delivers exceptional productivity and reliability in container stacking.

Optimise your performance with big data analytics



LiDAT® smartApp is a web based software solution, developed for analysis and optimisation of maritime cargo handling processes. By using LiDAT® smartApp in simulator trainings the trainee's performance during training scenarios can be analysed very easily and in real-time. This helps trainers to improve the trainee's skills based on their individual results. With LiDAT® smartApp all simulator training results are displayed on a well-structured graphical user interface and are available as PDF-files.

The focal point of LiDAT® smartApp is to make maritime cargo handling processes faster, more environmentally friendly and more cost efficient. By transmitting status data continuously and cycle data directly after being generated on the crane, LiDAT® smartApp gives a full overview of the equipment and the process. This allows to analyse both and to identify starting points for improvement. For example, a tailor-made feature in the optimisation package for mobile harbour cranes recommends specific optimisation actions.



Analysis

Detailed analysis of cargo handling process in real-time



Optimisation

Identification of starting points for optimisation activities



Direct access

Information obtained directly from crane control system, rather than from external sensors



Web app

Intuitive web application, available for different devices



Tracking

Comprehensive, informative data collection on process and machine statuses



Comparison

Direct comparison of multiple cranes during definable time periods

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