MAURITIUS
Maritime Week 2022
The Preferred Regional Maritime Gateway

Next Generation of Port Equipment Cranes, Hybrid and Full Electric

December 2022

LIEBHERR

Maritime Cranes

Factsheet: Group overview (2021)

1949

Founded by Hans Liebherr in Kirchdorf an der Iller, Germany

Parent company
Liebherr-International AG based in Bulle, Switzerland

Liebherr is a family-run technology company

13 Product segments

49,611
Employees

40
Production sites

11,639
Turnover in € mio

>140
Companies

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A 100% independent family business

From left to right: Jan Liebherr, Stéfanie Wohlfarth, Sophie Albrecht, Philipp Liebherr, Patricia Rüf, Johanna Platt, Isolde Liebherr and Willi Liebherr

Maritime cranes product range


CMA CGM


LIEBHERR
CMA CGM
PERMA
VASCO
LIEBHERR


CMA CGM
UASC


LIEBHERR
400
LIEBHERR
LIEBHERR
550
LIEBHERR

Liebherr-MCCtec

Production network

Facts and figures

1.21 B €
Turnover (2020)

5,010
Employees (Jan 2020)

2,110.000
Production hours (2020)

42
Companies worldwide

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Next Generation of Port Equipment Cranes, Hybrid and Full Electric

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01
Electro – Hydraulic Drive

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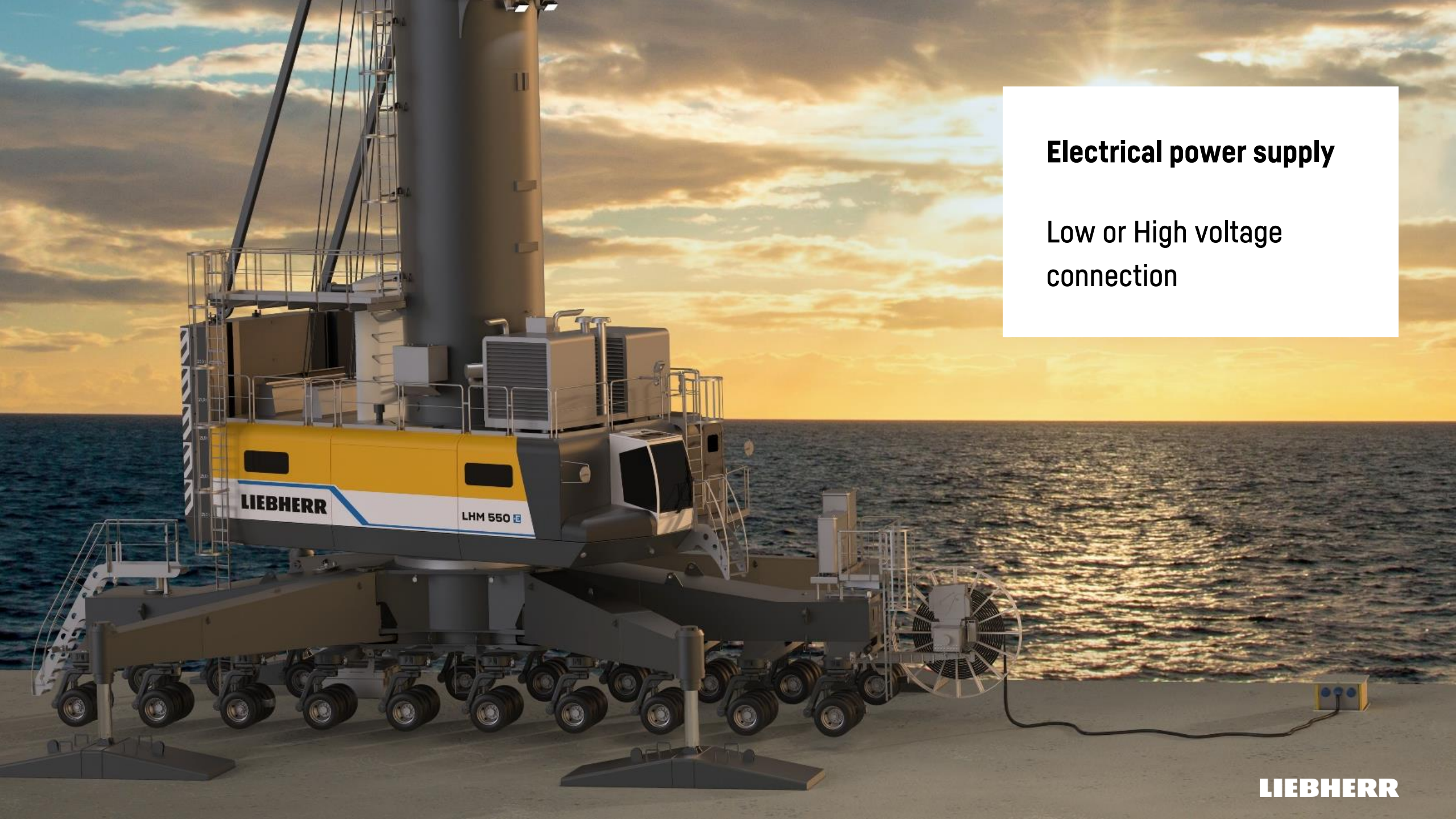

Electrical power supply

Low or High voltage connection

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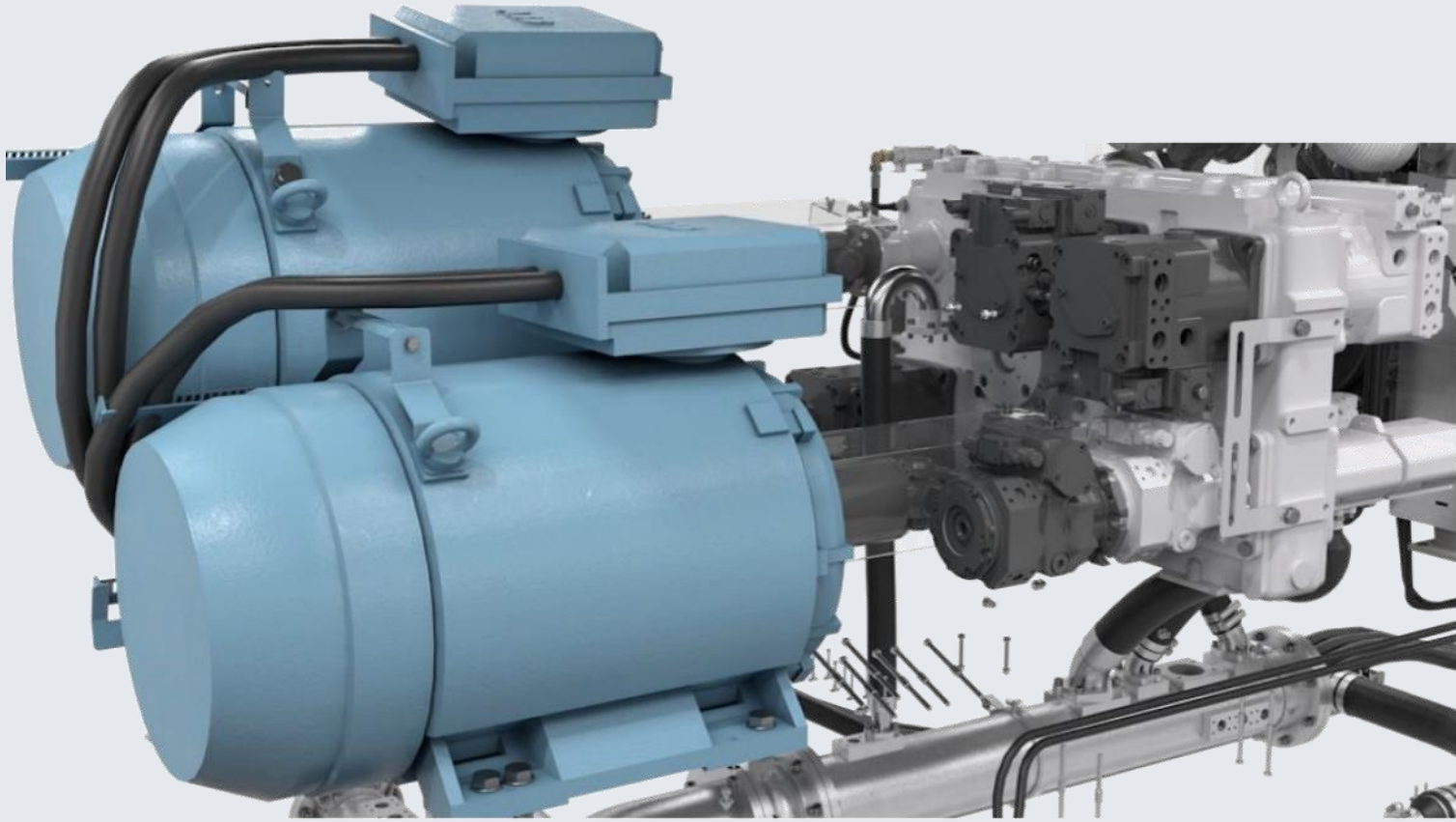
Green Technology made by Liebherr

Electro – Hydraulic power pack

- **Prime mover - electric motor**
- Highest efficiency
- Less energy consumption / optimized power output
- Reduction of noise emissions
- Maintenance-free



02 Versatile all-rounder

LPS 420 E

First 100% electrical driven port crane in the Liebherr MHC product range

All crane movements electrically driven:

- **Luffing**
- **Hoisting**
- **Slewing**
- **Driving**

Green Technology made by Liebherr

Liebherr eRTG – Cable Reeling Drum

- Reduced port infrastructure.
- Power options from 1KVA to 20KVA supply.
- Suitable for high speed data transfer for remote monitoring, remote driving and automation
- Multiple cranes operated from central power point.
- Option of centre/ end feed
- Typical travel length +/- 250m
- Active Front End (AFE) available to return regenerated power to the grid

Green Technology made by Liebherr

Liebherr eRTG – Busbar

- Auto-steering via conductor rail.
- Auto drive-in/out
- Data communication transfer over conductor rail
- Optional gantry positioning system
- Typical voltage 400-480v supply
- Typical power supplied to rail every 500m
- Conductor rail located inside/outside RTG span
- Most suited when regularly exchanging stacks
- Active Front End (AFE) available to return regenerated power to the grid

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02
Battery for travelling mode

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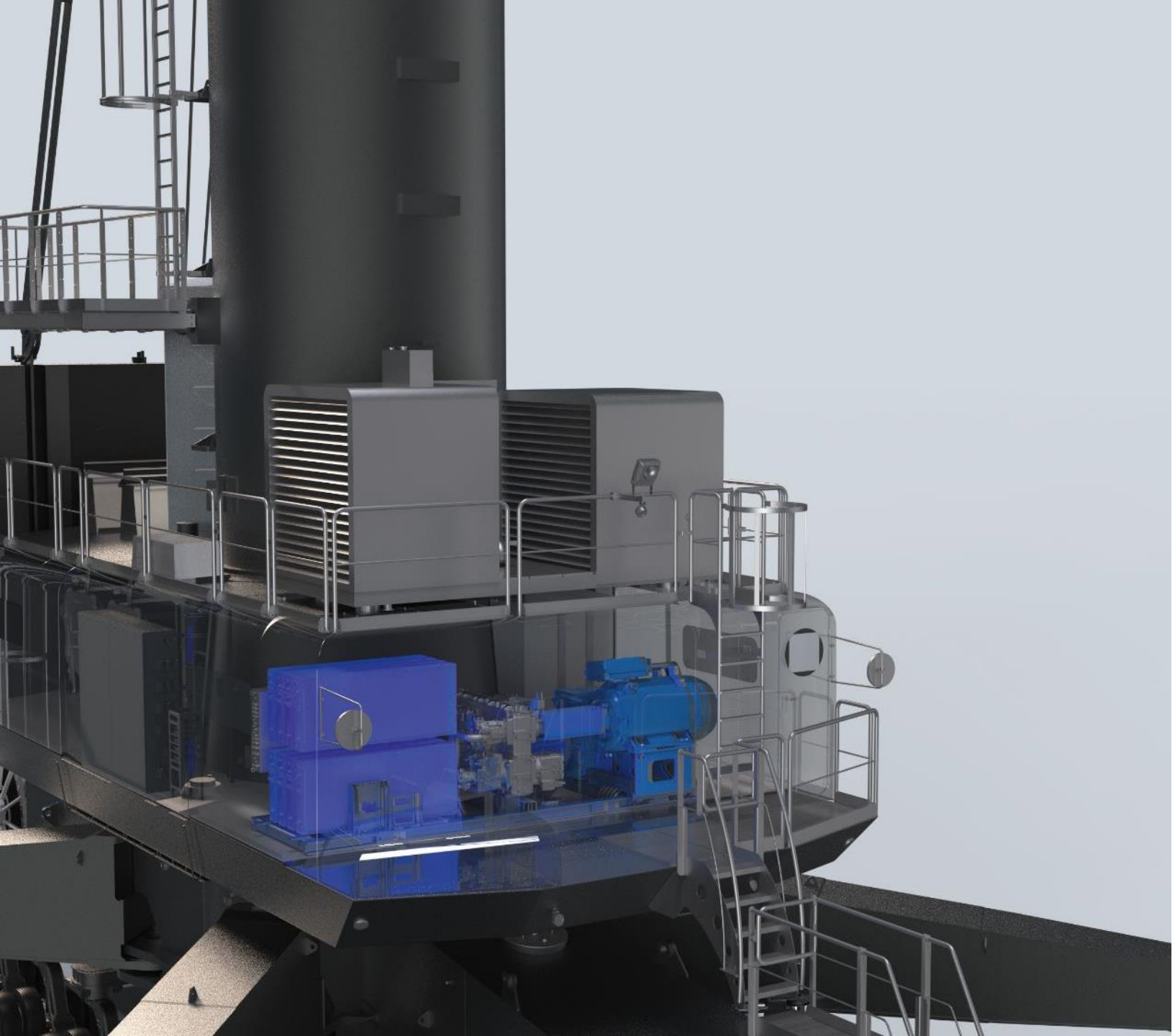

The new crane

Unplugged LHM

- Up to **2 km travelling distance** with 260 kWh capacity
- Fully recharged battery within 10 to 12 hours
- Up to **10 years** battery lifetime
- Emergency operation possible

Zero emission traveling for grid connected cranes

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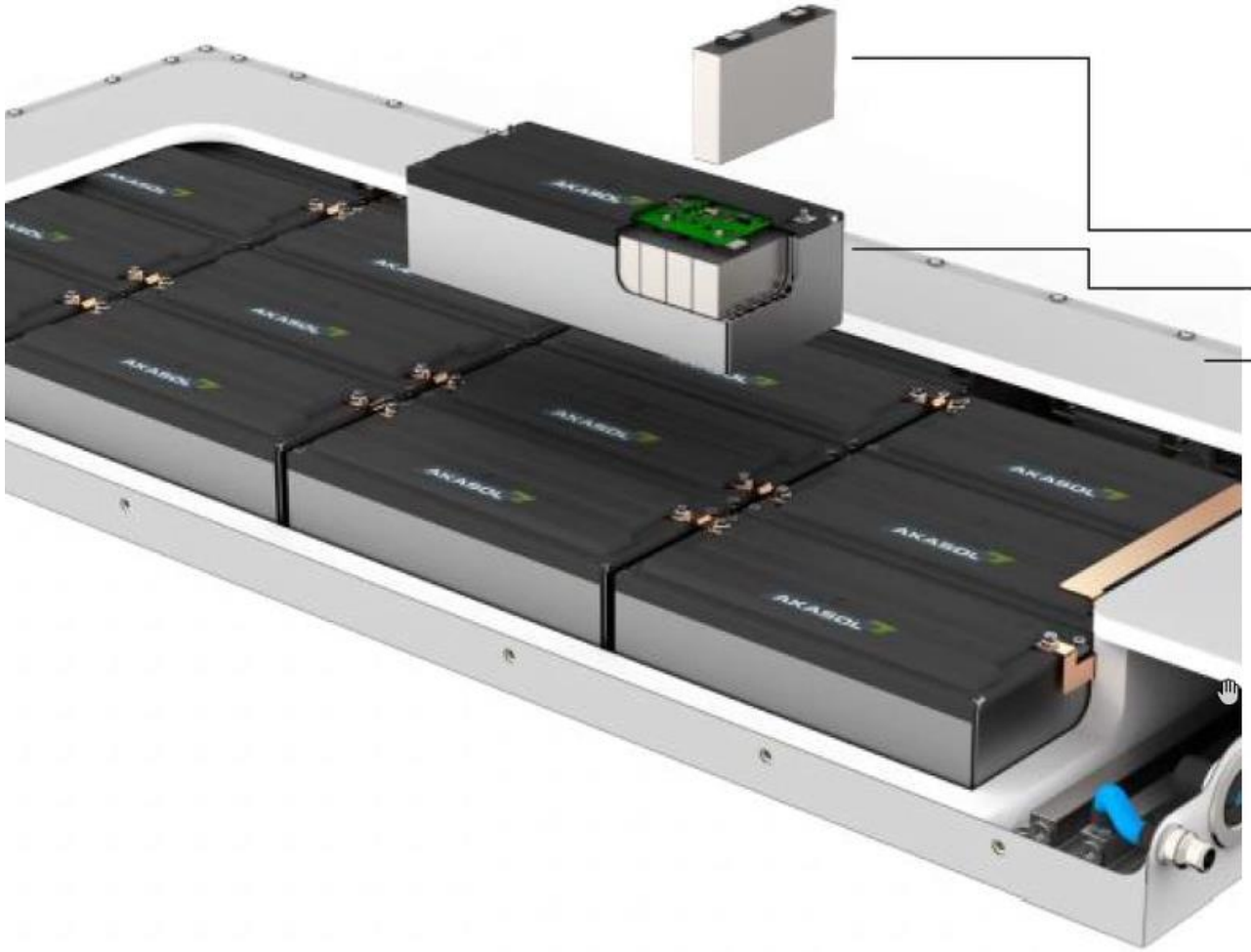
Zero emission LHM traveling by battery



LHM Battery

Batteries by Akasol

Made in Germany

12 cells are included in one module

One battery unit consists of 15 modules

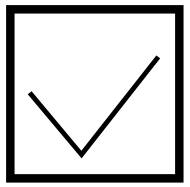
One battery unit has 33kWh capacity

8 battery units used in LHM
→ 264 kWh (1.440 cells)

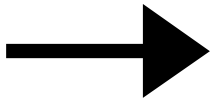
The new crane

Zero emission LHM traveling by battery

Emission free crane travelling via battery



Emergency operation possible



Up to 2 km travelling distance

10 years battery life time

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03
PACTRONIC: Hybrid drive System

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Pactronic®

Hybrid Drive System

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Maritime cranes

The new LHM

Pactronic® 2.0

– The Liebherr Pactronic is an impressive power-booster

– Hoisting speeds are increased substantially

– The crane’s efficiency reaches new levels with higher turnover figures

Power by accumulator and electronics

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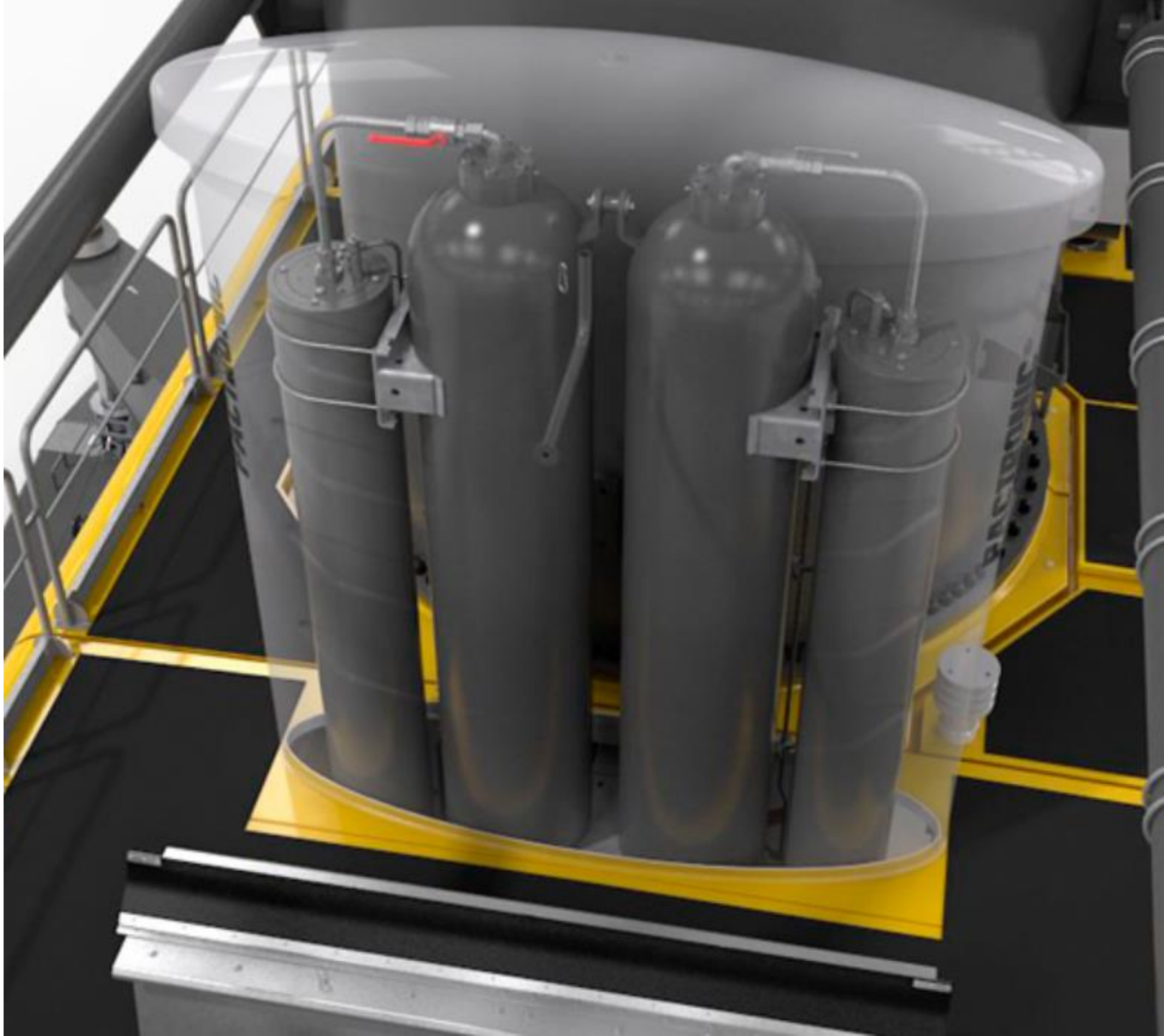
Green Technology made by Liebherr

Pactronic®

Power by Accumulator and Electronics.

- Increased hoisting power (+100%)
- Higher turnover with efficiency and low emissions
- Handling performance depending on the application +30%
- Based on turnover figure, optimized fuel consumption



The new crane

Hybrid technology

Pactronic 2.0

Boost mode

Green mode

Individual adjustable

Pactronic 2.0

Boost mode

– In this mode, the Pactronic acts as a significant power amplifier.

– Lifting speeds are significantly increased – without the aid of a larger or even additional main unit for more power.

This massively increases the efficiency of the crane

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Pactronic 2.0

Green mode

- This mode is designed to **save fuel or power** consumption and to **reduce CO2 emissions**
- During the lifting process, the Pactronic supports the main unit to such an extent that **less power is required** by the main drive, despite the **lifting speeds remaining the same**

As a result, absolute fuel or power consumption and emissions are reduced

Pactronic 2.0

Individual adjustable

The second generation Pactronic is thus even more closely aligned to the actual needs of the user.

– By setting the **individual lifting height**, the power output of the Pactronic is adjusted accordingly

– The additional energy of the Pactronic is distributed over the **entire lifting process**

– Pactronic **reacts to changes of the outside temperature** and the accompanying change in pressure in the reservoir

Green Technology made by Liebherr

Liebherr Hybrid RTG

- Fully integrated energy storage system from Liebherr for mobile and stationary applications
- Scalable “connect & use” system for effective energy utilisation
- Complete system with 1.5 MJ of energy, which enables the accumulation and supply of 100 kW/15 seconds
- Multiple units can be connected in parallel to enable an increase in storage capacity
- Allowing Peak power shaving and energy storage
- Significant downsizing of genset

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03
Crane control and assistance system

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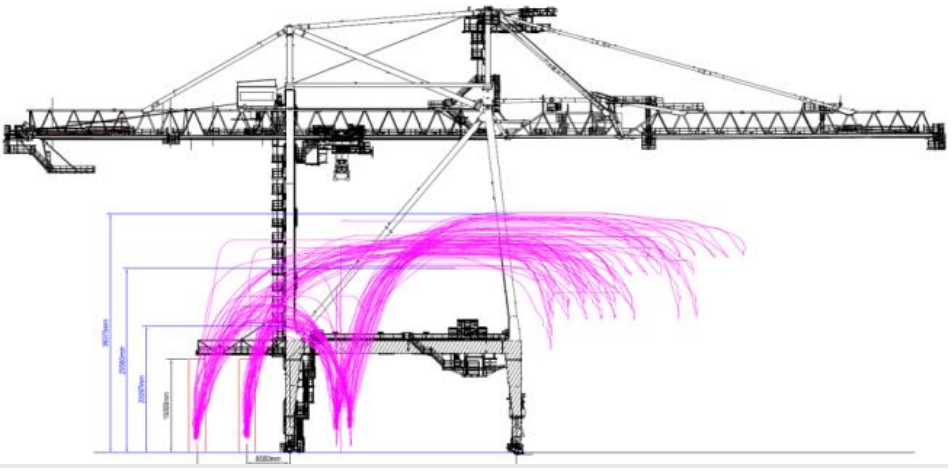
Crane Control & Assistance Systems



Liebherr Automation Systems

– STS Automation

– Optimum Hoist & Trolley path

– Ship/Stack profiling – stack collision prevention

Remote Operator Station

– Full remote operation / Semi automation with remote

– Exception handling

– STS / RTG /RMG

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Green Technology made by Liebherr

Crane Control & Assistance Systems

SmartGrip®

- Optimises grab filling rates in a self-learning manner
- Recognizing bulk density, compression, granularity, depth of impression or type of grab
- More turnover, perfect crane utilization, less stress for the crane and the crane operator

Sycratronic®

- Enables tandem mode with usage of 100 % crane capacity
- Increased safety and simplified control leads to faster operation times

Soft Touch Down

- Perfect protection for your cargo
- Automatically slows down the lowering winch as the container approaches its destination
- Naturally increases safety, simplifies operation and reduces noise emission in your port – cycle by cycle

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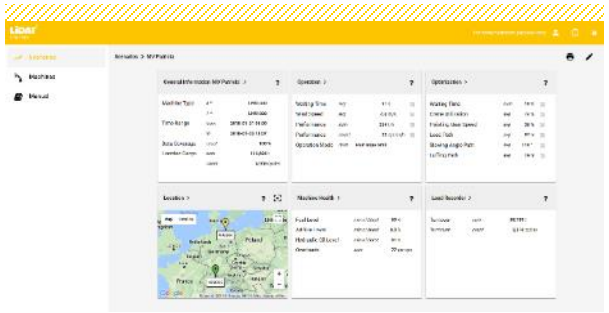
Green Technology made by Liebherr

Crane Control & Assistance Systems



LiDAT smartApp®

- IT-solution for analysing and optimising cargo handling processes
- Makes the processes faster, more environmentally friendly and more cost effective
- Real-time overview of the equipment status and the progress

Cycoptronic® - Anti Sway

- Counteracting disruptive load sways and swings, including wind impact, by electronically controlling both the slewing and luffing gear
- Automatically dynamic counter balancing movements for quick and efficient elimination
- Reduces cycle times and massively simplifies operation

Teach In

- Slewing and luffing area definition due to Point to point teach-in
- Precise and simplified handling due to fixed working areas
- Increased turnover, safety and driving comfort

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04 Customer service

Advanced technical support

For **highest productivity** of your machine:

Increased availability by reduced time to repair; longer service life

For **reduced service costs**:

On-site service attendances reduced to a minimum – through this lower field service costs

For **immediate qualified fault analysis**:

2nd level backup support with OEM; contacting service partner via an app; extended availability of our experts

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Fully electric Liebherr equipment

EMT 1005/1205

Fully electric

LR 1200.1/1250.1 Unplugged

Fully electric

LB 16 Unplugged

Fully electric

Crawler excavator with Hydrogen engine

•The first Liebherr excavator powered by a hydrogen combustion engine

•Significant reduction of CO2 emissions, as well as easy and fast refuelling

•No power difference between Liebherr H966 hydrogen engine and a diesel-powered internal combustion engine

•Versatile use even under most demanding conditions

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HYDROGEN ENGINE H966

– The H966 hydrogen engin is developed and produced at Liebherr Machilles Bulle SA in Switzerland

Thank you.

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