

Hybrid Power Booster

Liebherr Pactronic®



LIEBHERR

Power by Accumulator and Electronics

The Liebherr Pactronic® is a revolutionary hydraulic hybrid drive system. It is characterized by an energy storage device. A hydraulic accumulator supplements the fluid pump in delivering power to the system. It serves as a pressure storage reservoir incorporating a gas in conjunction with a hydraulic fluid. Energy is stored in this compressed gas to be released upon demand.

The Liebherr Pactronic® is also an impressive power-booster. Hoisting as well as lowering speeds are increased substantially – without the need to go for a bigger diesel engine with more output and emissions. Thus the crane's efficiency reaches new levels with higher turnover figures.

In addition, Pactronic® achieves greater performance while reducing fuel consumption at the same time. This is achieved by fully utilizing the reverse energy and surplus power within the system. The sustainable hybrid drive therefore reduces the emission of CO₂ and other harmful substances. With Pactronic®, Liebherr smooths the path towards goods handling with high efficiency and low emissions.

Key Advantages:

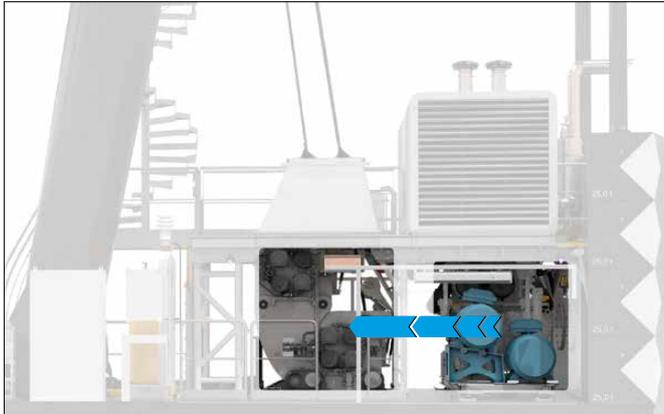
- Proven energy storage technology
- Has the same service life as the crane
- Maintenance free - Visual inspection every 10 years sufficient
- Fast charging and discharging
- Performance not affected by ambient temperature (no cooling, conditioning or isolation needed)
- 100% recyclable





Mode of Operation

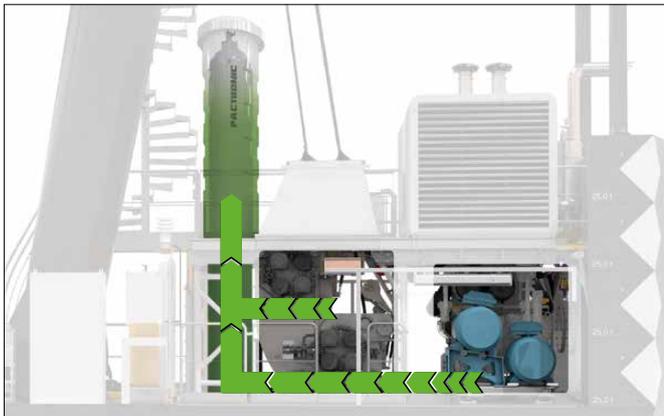




Hydrostatic power transmission

Conventional Drive System

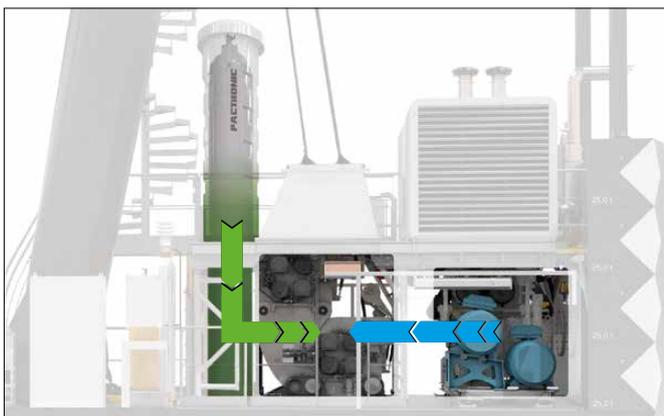
The conventional, hydrostatic hoist system of a Liebherr mobile harbour crane is driven by a hydraulic motor, a pump, the splitter gear box and the prime mover (diesel motor or electric motor).



Charging of the accumulator

Pactronic® – Lowering Mode

With Pactronic® a secondary energy source is added to the drive system. Charging of the accumulator is done by regenerating the reverse power while lowering the load. In addition, the surplus power of the primary energy source is also used for charging.



Discharging of the accumulator

Pactronic® – Hoisting Mode

The stored energy of the accumulator is transferred back to the system when the crane requires peak power during hoisting. Consequently, the total hoisting power is the sum of the conventional hydrostatic power and the secondary energy, provided by the accumulator.

30% Less Fuel Consumption*



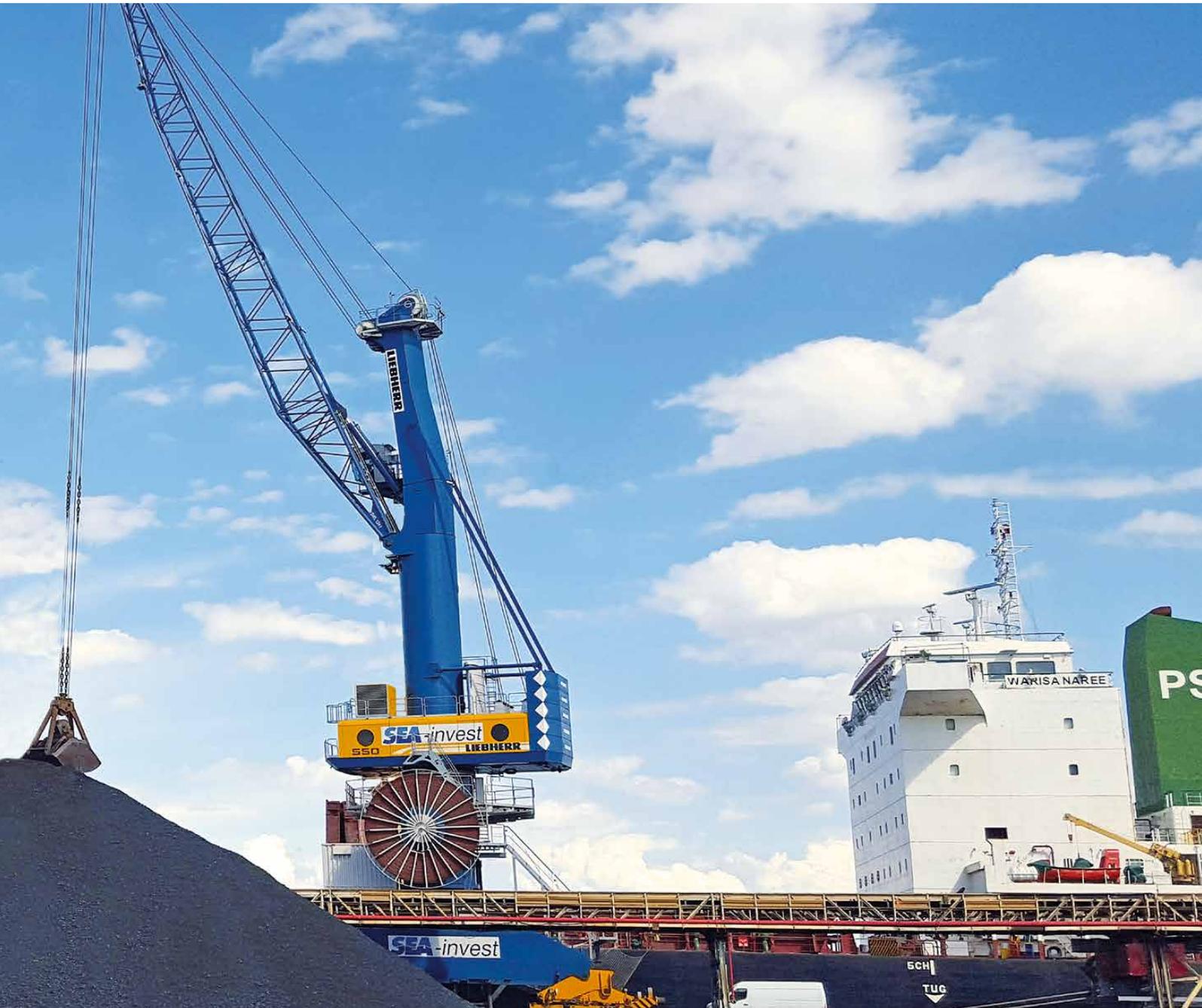
Sustainable technologies have always been high on Liebherr's agenda. Production and products are constantly optimised to help reduce CO₂ emissions and pollutants. Offering a unique combination of extremely low fuel consumption and supreme performance, Pactronic® represents state-of-the-art drive technology. It is an essential milestone in Liebherr's strategy on the way to genuine ultra-efficient, low-emission cargo handling. Pactronic® stands for pioneering, economical and environmentally friendly technology, innovative energy recovery and increased performance with hybrid power.

Key Advantages:

- Greater performance and decreased fuel consumption
- Further reduced exhaust emissions
- Less noise exposure
- CO₂-Reduction: -30%

* Fuel consumption (litre / ton) can vary depending on mode of operation.

30% More Turnover*



The Pactronic® hybrid drive system addresses two critical issues: reducing fuel consumption and increasing handling performance. When an application is started that requires additional power, the Pactronic® can transition back stored energy to the system and power up the hoisting capabilities of the crane. Pactronic® stands for a highly efficient, power and turnover booster for mobile harbour crane operators around the world.

Key Advantages:

- Increased hoisting power (+100%)
- Increased lowering power (+100%)
- Higher turnover with identical prime mover
- Handling performance depending on the application +30%

* Turnover (tonnes/hour) can vary depending on mode of operation.

