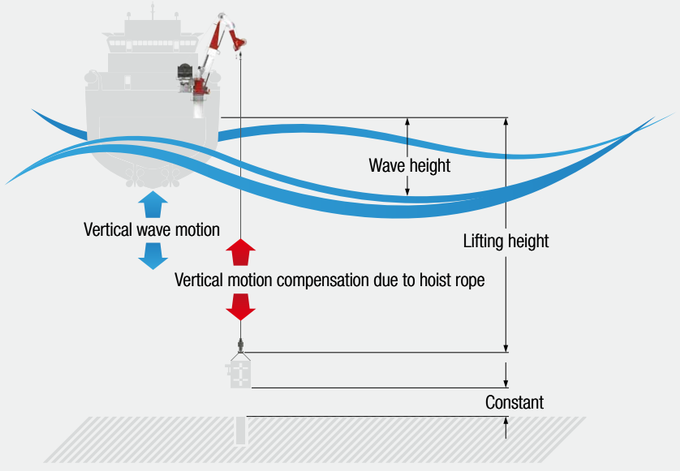
Offshore Crane Technology

Liebherr Heavetronic®

LIEBHERR

Function Principle



Offshore operations at high sea as well as subsea liftings are made difficult by wave-related ship movements. Despite these conditions, controlled handling of loads is indispensable for safe operation. Liebherr specially developed the active heave compensation (Heavetronic®) also known as AHC for this purpose. Heavetronic® is available for Liebherr ram luffing knuckle boom cranes (RL-K series). Typical applications of cranes using Heavtronic® is the installation of deep sea infrastructure.

Heavtronic® is based on an in-house designed motion reference unit (MRU) for registering and evaluating the current wave movements that affect the ship and thereby the crane. Based on the permanent measurements of these movements, a prognosis of the vertical movement of the crane is carried out. The movement of the winch is then proactively and automatically controlled to keep the load stable in relation to the seabed.

Heavetronic® is fully integrated into the Liebherr Litronic® control system and supports not only safe lifting but also safe lowering of loads. Liebherr's patented Pactronic® hybrid drive provides the system power requirements to remove the effect of the sea motions.

Subsea Winch

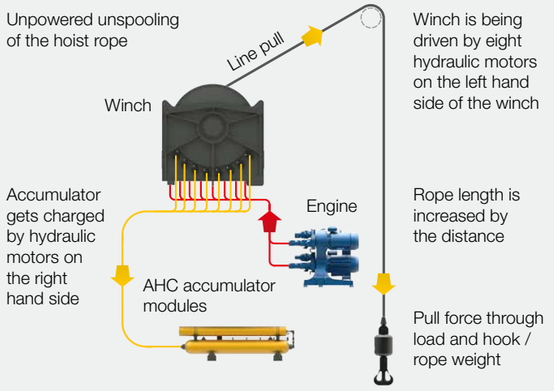
The Liebherr-developed deep sea winch makes it possible to work up to 3,600 metres below the sea-level. It features an adjustable winch table. The subsea winch includes a spooling mechanisms, which spare undue wear on the rope. This significantly increases the rope lifetime and therefore contributes to a reduction of operational costs.

Pactronic®

Liebherr's patented Pactronic® hybrid drive supports the main engine and here with provides the system power requirements to remove the effect of the sea motions. This feature charges the accumulator when the load gets lowered. While hoisting the saved energy from the accumulator will be used to optimise the energy balance.

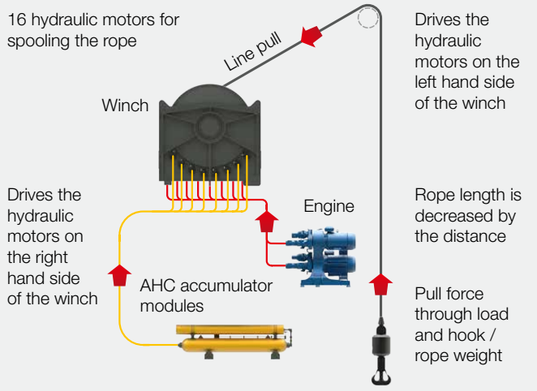
Advantages at a Glance

- Improvement in efficiency of subsea lifting
- Controlled and safe handling of loads
- Optimal positioning of loads in rough enviromental terms
- Limitation of dynamic forces to the crane structure
- Several move functions during AHC operation simultaneously
- Sophisticated system to keep the load at a constant position
- Precise sensors for optimised measuring and data recording
- Automatic memorizing of the vessel's motion and self-acting initialization of the Heavetronic® system within 20 minutes
- Optimized spooling behaviour with a huge number of layers
- Fully integrated in the Liebherr Litronic® system
- Best service including long-term spare parts availability



Saving Energy by Unrolling the Rope

Scenario: Due to the vessels motion upwards, the rope must be lowered to keep the load in a constant position

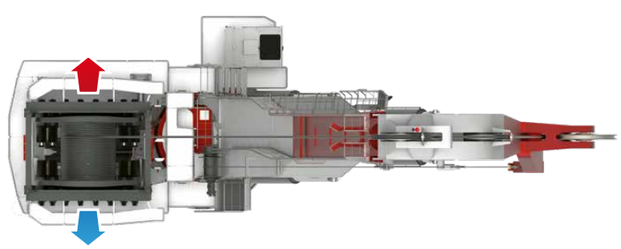


Using Stored Energy for Rolling the Rope

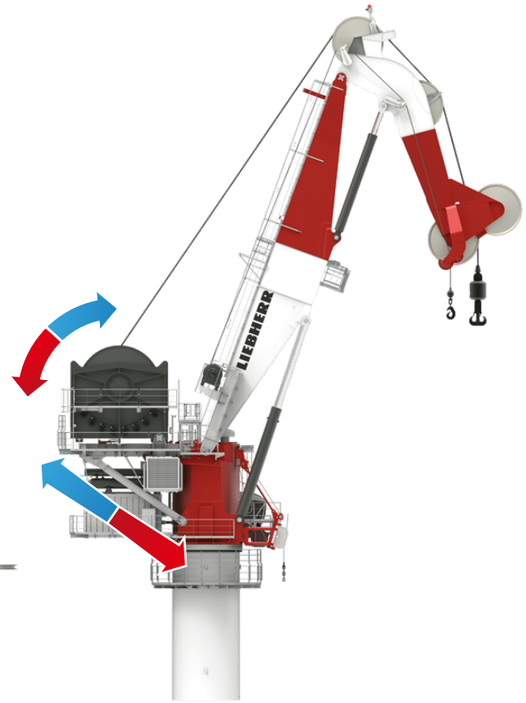
Scenario: During downwards movements of the vessel the rope length must be decreased to hold the load in position

Advantages at a Glance

- Loads can be lowered to the water surface with a short rope length
- Subsea crane with Heavetronic®
- Possible to hoist and lower of full capacity in subsea mode
- Saving space in boom rest position
- Modular hoisting gear system
- Pipe and riser handling equipment
- Two-part box boom design
- Optimised boom geometry for low working radius (under 10 m)
- Optimised rope guidance: increased rope life



For optimal spooling the Liebherr deep sea winch automatically moves sideways.



Specially Designed for the RL-K Series

Liebherr offers the RL-K 7500 - ram luffing offshore crane for highest requirements in subsea lifting. In addition, the crane is also designed for general offshore crane applications.

Heavetronic® was integrated for the first time in the RL-K 7500 subsea crane from Liebherr. Due to this AHC system the ram luffing knuckle boom crane is able to handle loads in water depths of up to 3,600 metres below the sea level. With our innovative winch concept we are able to serve different rope types for various offshore and subsea applications. This increases the flexibility of the crane enormously. The rope type as well as its diameter depends of the specific application the crane is going to be used for. The adaption of the required configuration is very easy.

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Subject to change without notice.

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