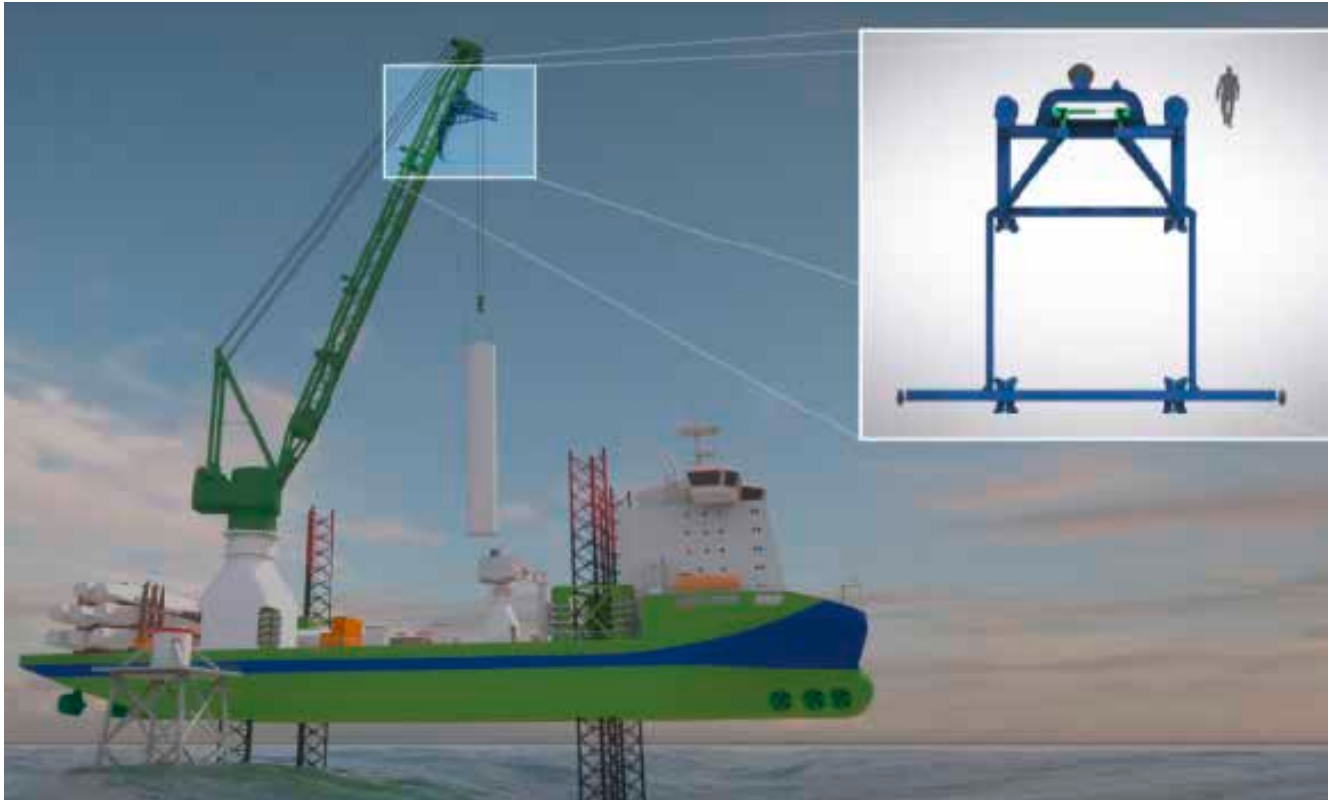




EVERYTHING UNDER CONTROL – EVEN IN STRONG WIND

Safe installation of offshore wind turbines with Boom Lock®

Offshore operations have increased rapidly in recent years: Wind turbines are thus becoming increasingly larger and wind farms are being located increasingly further away from the coast. To make their installation possible, ships have been continually adapted for operation in rough seas. However, up to now very little attention has been paid to cranes and their central task – lifting. Until today: This is because High Wind has developed a ground breaking solution in the form of Boom Lock®, using the technology of Bachmann electronic.



▲ Boom Lock® is a mechatronic system that enables offshore wind turbines to be installed faster and more safely even in strong winds.

Boom Lock® is a mechatronic system that enables offshore wind turbines to be installed faster and more safely even in strong winds. »With Boom Lock® these can be erected even at wind speeds of 15 m/s. This results in a doubling of the time window in which the installation can take place,« explains Ole Jacob Wang Nielsen, general manager at High Wind. »The installation time is also shortened by 25 percent.«

More precision, more safety

Boom Lock® is fastened directly on offshore cranes. »If the distance between the turbine part to be installed and the crane becomes critical, Boom Lock® fixes the hook in a metal frame and thus prevents any lateral swinging. However, forward and backward movements still remain possible,« explains Ole Jacob Wang Nielsen. »Only at the end of the installation is the hook completely fixed. From this point onward, very precise movements are also possible.« Boom Lock® is controlled by the crane operator. »We have ensured that we restrict the normal operation of the crane as little as possible,« Ole Jacob Wang Nielsen notes. »Boom Lock® can be activated with just one button on the keypad and then controlled with the usual operating elements.« Together

with engineering consultants Controllab, High Wind built a realistic simulator to provide training and qualification facilities for people working with the new tool. An integrated safety system also prevents collisions and damage by providing functions such as overload warnings.

All requirements fulfilled

Boom Lock® started with an idea. High Wind wanted to create a tool that gives us complete control of the load moved by a crane in all directions. It also had to be suitable for all components and turbines and had to avoid as much as possible any impairment of the capability and functionality of the crane ship. Access to the new tool also had to be as easy as possible. With Boom Lock® this idea became reality. High Wind also brought Bakker Sliedrecht and Controllab on board as partners. Besides PLC code, the Bachmann M1 controller also understands the C code automatically generated by 20SIM and comes with integrated safety functions. Bachmann was a clear choice due to the key arguments in its favor. Together with Controllab High Wind simulated, tested and optimized the system even before the prototype was built. The required modules of the M1 automation system are installed both in the



High Wind NV is headquartered in Belgium and is a combination of different organizations. Industrial partners pool their technical knowledge and experience in the field of offshore operations and lifting. Other organizations – including the Flemish government – act as financiers.

www.high-wind.eu



» We use a powerful MH212 processor module, which handles all the control tasks and provides all the necessary interfaces for the inputs, outputs and encoders. «

Ole Jacob Wang Nielsen,
General manager at High Wind

control cabinet and also in the Boom Lock®. The powerful MH212 processor module handles all the control tasks and provides all the necessary interfaces for the inputs, outputs and encoders. The extensive safety concept was created by system integrator Bakker Sliedrecht, who was also responsible for building the control cabinet and cabling, together with Bachmann specialists.

Successful test run: Tremendous interest in Boom Lock®

The results of the first trials in practice were

impressive. In a test run, the blade of a 6 MW turbine could be held stably in the wind – at a wind speed of 15 m/s with gusts up to 20 m/s. Since then an offshore project was successfully completed in which fifteen 3.3 MW turbines were installed. Several companies have already expressed their interest. High Wind are convinced that Boom Lock's success is not just down to them alone. Reliable partners like Bachmann, Controllab and Bakker Sliedrecht, who took part in the project with great enthusiasm and commitment are the key to this success.



▲ The operator has full information on the crane and the Boom Lock®

◀ Hook block designed for safe lifting of heavy load gets guidance from the Boom Lock® system