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# Taglines


## Taglines

Save lifting of loads with offshore cranes is often compromised by the external conditions. Heavy winds or ship motions can make the crane load start to swing, leading to dangerous operations for the deck crew. The application of tag lines is a secure method to reduce the swinging of loads and secure a save deck operation.

## Automation

Tag lines have to prevent the load from swinging but should not constrain the crane hook. This is most safely achieved with tag lines that follow the crane hook automatically. By reading the commands from the main crane control system the tag line control system will calculate the exact length required for every line. This allows the crane operator to fully concentrate on the hoisting operation. Controllab can provide the control software for tag line automation including a number of features.

## Features

- Up to six tag lines following the load.
- Automatic compensation for luffing and hoisting
- Adjustable load orientation
- Fixing load orientation, both horizontal and vertical throughout the hoist.
- Load swing damping.
- Automatic homing (set-up at the start)

For complex operations we can verify the correct operation of the tag line control software using a digital twin.

## Boom Lock

The company High Wind (a subsidiary of DEME) has developed the Boom Lock system. It is a tool that allows an offshore crane to install wind turbine components at high wind speeds. The Boom Lock consists of a trolley that can travel up and down the crane boom to catch and secure the crane hook. The system is equipped with horizontal and vertical tag lines to control the swinging and orientation of the load. Controllab has designed and tested the control of the tag lines.

## Digital Twin

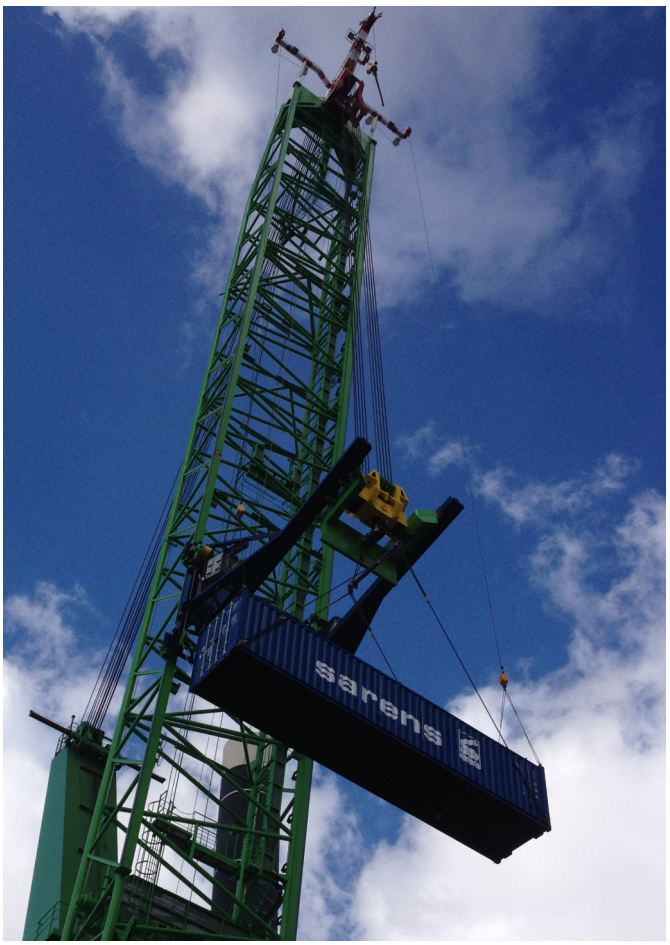
One of the key issues with the tag line system for the Boom Lock was the ability to suppress the swinging of the wind blades and follow the main hook during luffing and hoisting. To achieve this goal a hybrid control strategy with position and force control was developed.

To allow the tag lines to be used with various blade carriers and easy testing with a container, a homing algorithm was implemented, that automatically detects the load position and orientation. With this algorithm the tag lines can be easily connected and disconnected to a wide variety of load carriers.

The control software was tested on a digital twin, an in-house developed crane and blade simulator. This allowed for easy adjusted and fine-tuning of the tag line system.

## Operation

The tag line system was implemented on the jack up vessel Neptune. The system was first tested using a container and then upgraded to a wind blade. The tag lines could stabilize the wind blade in wind speeds up to 15 m/s. Since 2015 the system is in full operation and used for hoisting wind blade, nacelles and other loads.




## Need Help?

Controllab is specialized in complex control systems for tag lines, access bridges, cranes and more. Please contact us if you are developing a crane system and need help on tag line control.

**Contact Us**

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