



Maritime – Gangways

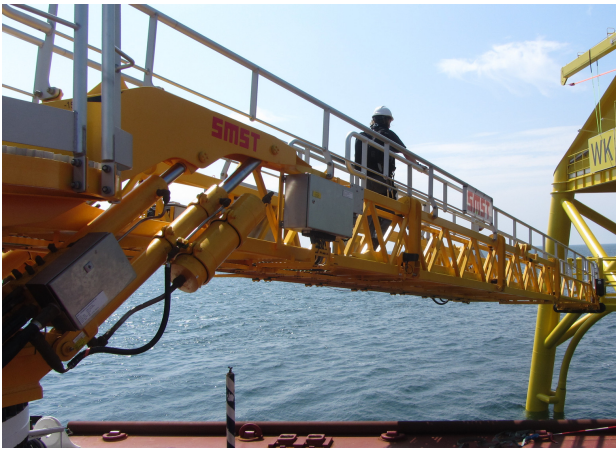
TAB-M

SMST is a company located in Drachten, the Netherlands which specializes in the delivery of lifting, transportation, drilling and pipelay solutions, particularly for the maritime and offshore industry. SMST provides a range of Telescopic Access Bridges (TAB) that can transfer personnel safely to an offshore structure or the quay side. A recent introduction is the motion compensated TAB-M series. Controllab has designed the motion compensation control algorithms for this bridge.

Access Bridge

The TAB-M can be operated by vessel's crew, doesn't need large generators and is inexpensive to operate. Due to these key assets, SMST access system M series has

gained a lot of interest from multiple offshore operators. The first bridge is already in operation and six more are being built. The M series is part of a range of four types of access bridge system offered by SMST.



The TAB-M in action.

These include the S, M, L and XL, which vary in length from a minimum of 4m up to 58m, and can be active or passive motion controlled. One of the challenges for SMST was to develop a control system for the TAB-M, that is safe and can be re-used for the other types of bridges.

Model Based Design

With model based design, a simulation model is used to design the control system of the bridge. This allows a large set of destructive and non-destructive scenarios to be simulated to test the performance and safety of the control system. After the control system has been successfully tested using simulations, it can be exported as C-code to the PLC and coupled with the safety and communication modules. The resulting PLC can again be tested by coupling it with the simulated bridge. This is called Hardware-in-the-Loop simulation. Controllab was asked to introduce model based design in the control department of SMST, and to provide tooling and training for this novel design method.

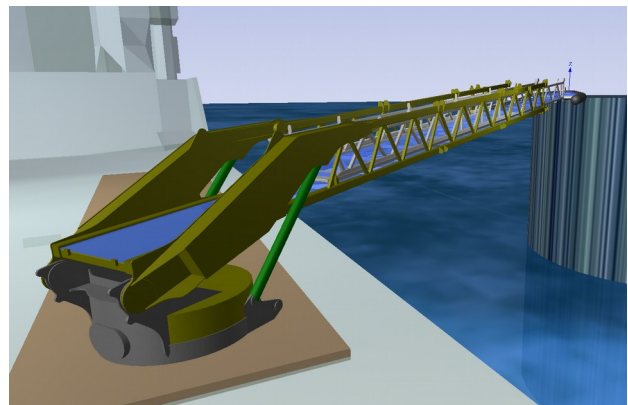
Approach

Controllab has developed the modeling and simulation package 20-sim. With this

package we can model and simulate machines and analyse their dynamics. This was used to find the maximum potential of the TAB-M bridge and exploit this by smart automation. The engineers of SMST were taught to handle this model, run simulations and inspect the performance using the virtual reality. Controllab provided the HIL simulator and helped SMST to test a number of scenarios.

Track Record

Controllab is active in the Marine and Offshore market for more than 20 years. Our



The TAB-M in virtual reality.

engineers have gained a thorough understanding of servo hydraulics, electric drives and machine design. They were able to share this knowledge with SMST and help SMST to become one of the leading companies in motion compensated access bridges.

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