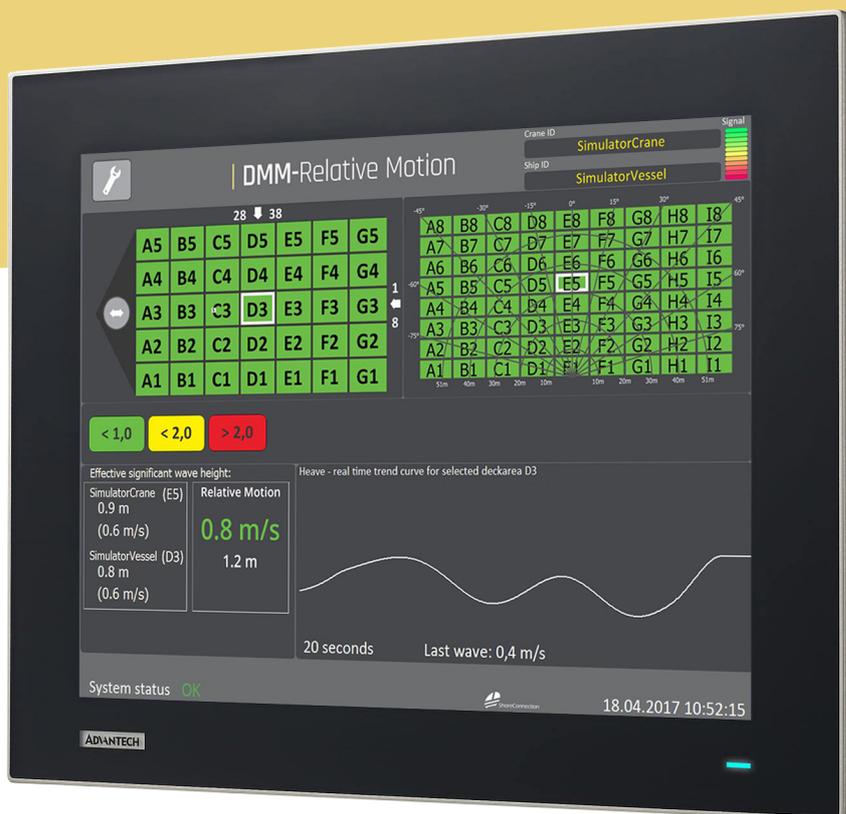


DMM- Relative Motion

Relative Motion Monitoring

*VESSEL TO
CRANE VESSEL
RELATIVE WAVE
MOTION DATA*



System description

The *DMM-Relative Motion* provides the crane operator with accurate vessel to vessel relative wave motion data.

By providing heave motion from the selected load supporting deck area at the supply vessel and adding the heave motions from the moving crane's boom tip, the system calculates the relative motion in meter per second as well as relative "Effective Significant Wave Height" between the two floating units.



Illustration Photo of a typical PSV and a FPSO ▲

Better use of crane capacity

A crane's rated capacity is limited by the impact of the sea state. Accurate information from the *DMM-Relative Motion* may allow lifting whereas the traditional sea state method would normally overestimate the motions and not allow lifting operation.

The *DMM-Relative Motion* works independently of the weather conditions, the loads position and the cranes position, ensuring that constant and reliable 20 minutes wave (SWH) information is buffered up in all possible lifting positions.

Better planning and positioning

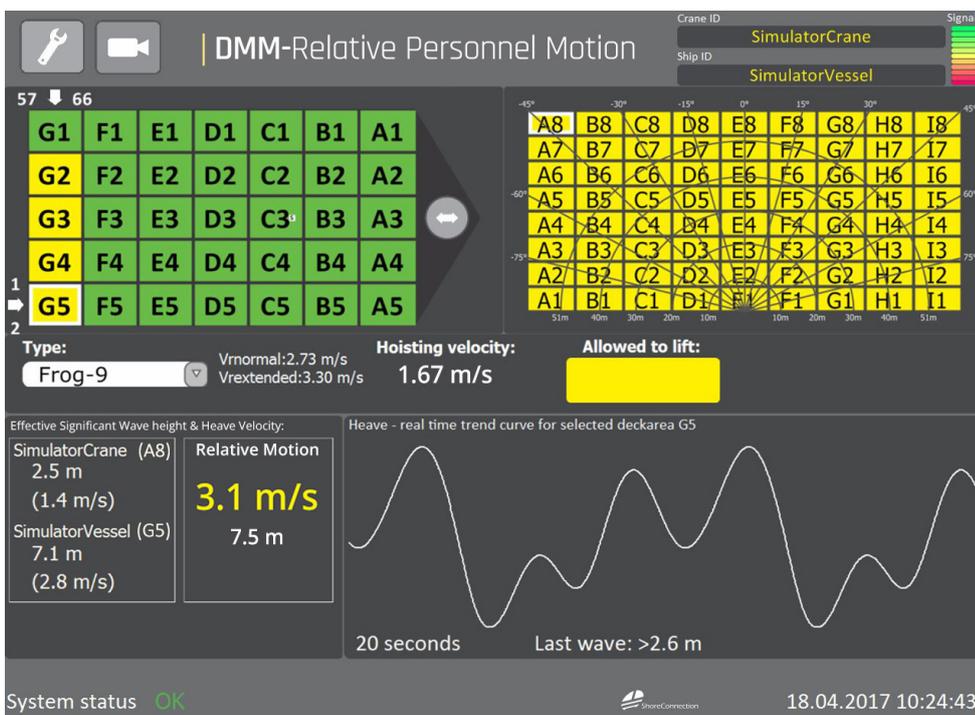
When the supply vessel is within 1500m the crane operator can connect to the supply vessel's DMM and monitor the motions and live video feed. As such the crane operator, can be well prepared for the lifting operation and, together with the vessels captain, decide whether to perform the lifting operation or to wait.

The system may also be used to position both the vessels on optimized heading to bring down the heave in the deck/boom tip area where the lift will take place.

Relative Motion for Personnel Transfer

When transferring people between a moving offshore unit and a moving vessel deck there is an even greater risk for accelerations which may cause personnel injury. The *DMM-Relative Personnel Motion* displays if the vertical accelerations are within safe limits for personnel lifting and landing.

The heave accelerations can be trusted before the crane turns outboard and position the boom tip with the personnel basket over the PSV deck area, avoiding unnecessary lift attempts and dangerous situations.



Personnel transfer with Frog from Reflex Marine

Typical display when lifting Personnel from moving crane to moving vessel