



APPLICATION REPORT Marine

Sea wave height measurement

- Accurate wave height measurement
- Software adjusted to each project
- Automated indication for safely executing launch and recover procedures

1. Background

The Dutch company of TBV Marine Systems, part of HSD Associates, specializes itself in custom-made technical solutions which are to be implemented in the maritime industry. Carrying a great amount of experience in this market, they are aware of the rapid speed of technological innovations. Therefore, in collaboration with the German Global Davit GmbH, a specialist in the global Survival and Deck Equipment market, they have developed and implemented an innovative Fast Response Craft (FRC) Launch and Recovery System (L.A.R.S.). This system can launch and recover FRCs longer than ten meters, weighing over eight tons in sea states up to SS4, which is comparable to a five Beaufort wind speed and waves up to 2.25 meters.

2. Measurement requirements

The L.A.R.S. system is to be installed on naval and coast guarding vessels. These vessels are often operative in open seas, and with that facing all different types of weather and sea states. In order for these vessels to be operative and functional in these types of weather, the launch and recovery procedures of FRCs must be assured of a safe execution. To assure this safety, waves should not exceed a certain height and the mother vessel's heading and speed must be adjusted.

Due to the ever changing situation at sea and the great importance of accurate measurement of the wave height and direction, the innovative L.A.R.S. system must carry an accurate wave measurement system in order for it to function safely and properly.



www.tbv.eu



www.global-davit.de



3. KROHNE solution

For the current L.A.R.S. wave measurement system project, the customer decided to implement the KROHNE OPTIWAVE 7300. This wave measurement system, which is to be mounted on the stern doors of the mother vessel enable the vessel's crew to measure and analyze the waves, so that the crew does not enter the FRC when it is not safe, and the launch and recover procedures are only executed in a safe situation.



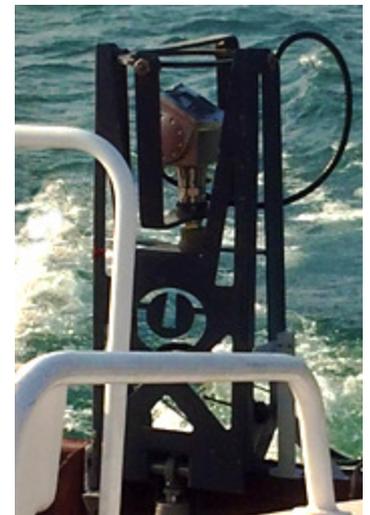
OPTIWAVE 7300 in measuring position

The OPTIWAVE 7300 is positioned on the outer stern door and is mounted on a special movable measurement bracket which can be operated by the control panel of the L.A.R.S.. Additionally, the system uses a combination of monitors and indication lights. The monitor provides information on the height of the waves, and the heading and speed of the mother vessel. The indication lights are used to inform the FRC crew with the moment at which it is safe to enter the FRC and when the launching or recovering procedure can set into action.

4. Customer benefits

The customers of TBV Marine Systems and Global Davit GmbH benefit greatly from the OPTIWAVE 7300 system, because this measurement system enables the L.A.R.S. system to be used in the heavier sea states. Therefore, the OPTIWAVE 7300 enables the naval and coast guarding vessels to be fully operational in every type of weather condition, and with that they are able to execute their mission safely at all times.

Furthermore, due to the easy and convenient handling of the measurement system, and the clear monitoring and indication features of the system, launching and recovering procedures can be executed safely, even in the most hectic situations.



OPTIWAVE 7300 in stored position

5. Product used

The OPTIWAVE 7300 is a non-contact Radar (FMCW) Level Meter for distance, level, volume and mass measurement of liquids, pastes and slurries. It gives a stabler measurement than pulse radar and is well suited to agitated process conditions. The device can operate at very low and very high process temperatures as long as the process connection temperature limits are observed.



WMS-Controller

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