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Bollard Pull & Escort Trials at MARIN

MARIN carried out an extensive array of tests for bollard pull & escort trials and it boosted its offering with new dedicated equipment.



About the Author

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Bollard pull is derived from a trial where the towline is connected to a bollard and the power settings are increased to MCR (Maximum Continuous Rating). The tension in the towline is then measured by a calibrated and certified load cell. “Sustained bollard pull”, “maximum static bollard pull” and “maximum bollard pull” are derived from the measured continuous tension. To conduct the required measurements during bollard pull and escort trials MARIN Trials & Monitoring has recently expanded its measurement equipment. The range of available load cells has now been extended to have a capacity of 250 tonf. Additionally, the new load cells are equipped with wireless, high range data transmission and a Moving Base Real-Time-Kinematic GPS” system has been acquired to record the horizontal towline angle during escort trials.

This system consists of two Real-Time- Kinematic GPS receivers working in a Rover/ Base setting. One system is placed on the escorted vessel and the other on the escort tug. In this way the track and the head-

ing of both vessels are recorded as well as the towline angle. This is important real time information to determine the maximum steering force obtained. During both bollard pull and escort trials the developed shaft power of the tug is derived from the shaft torque and rpm measured by MARIN’s SMART system.

Escort notation trials

To receive a Class ‘escort tug’ notation the maximum steering force that can be produced by the tug on the vessel, as well as the time it takes to swing from board to board, have to be established. For this purpose escort trials are conducted where the escort tug is connected to the stern of a large vessel. While the vessel maintains course and its pre-set speed, the tug swings sideways to produce the maximum steering force on the vessel. The time required to achieve maximum steering force from one side to the other is also measured.