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ONLINE ISSN : 1881-1760

PRINT ISSN : 1880-3717

Journal of the Japan Society of Naval Architects and Ocean Engineers

Vol. 8 (2008) pp.155-162

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Free running model test on a large container ship under wind and waves at towing tank

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(Accepted July 9, 2008)

Summary: A ship navigating at sea is always suffered from wind and waves. The assessment of the ship speed and thrust under external forces as the wind and waves is important from economical viewpoints. Although the estimation methods for ship performance at sea were already presented, the confirmation of the methods has not been enough using experiments due to the difficulty of the experimental setup with wind and waves. In this time, free running model test on a large container ship under heavy wind and waves was carried out at the 400m towing tank in National Maritime Research Institute, Japan. Averaged navigating conditions and time fluctuations of the ship speed, drift, rudder angle, ship motions and thrust etc. were clearly understood from the experiments. Moreover, the assessment of the ship performance is conducted using a computational calculation method. The steady-state equations are formulated based on the MMG model for ship manoeuvring simulation to obtain the steady ship conditions. As a result, some important thrust related characteristics and efficiency of the calculated method in steady running condition in heavy wind and waves for the ship are clearly revealed from the experiments.

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