

Integrated ship maneuverability simulation tool for very large crude oil carrier

Abstract :

A good systematic input and output management system is more essential for ship maneuvering simulation to eliminate unnecessary error due to many considered factors such as hull shapes, shallow water, narrow channel, trim in loading and ballast condition, and propulsion system. In this paper, we proposed an Integrated Ship Maneuverability Simulation (SMS) tool to be used in investigating turning circle characteristics of a very large crude oil carrier (VLCC) at 35 degree of rudder angle. The input and output datasets from the surrounding environments of VLCC have been captured using special sensors and converted as input file to the Integrated Ship Maneuverability Simulation tool. The forces and moments acting on the hull which have been induced by propeller and rudder during maneuvering are calculated independently. Then, these forces and moments are integrated to the SMS tool in order to get a total dynamic effect on ship maneuvering performance. The simulation results using SMS tool have been compared with the experimental datasets for validation. From the comparison, the proposed SMS tool has been able to simulate ship maneuvering performance good agreement with the experimental dataset.