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ÖZET

SAVAŞ GEMİLERİNDE EGZOZ GAZLARININ YAYILIMININ DENEYSEL VE SAYISAL OLARAK İNCELENMESİ

ERİNC DOBRUCALI


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ABSTRACT

AN EXPERIMENTAL AND NUMERICAL INVESTIGATION OF EXHAUST SMOKE-SUPERSTRUCTURE INTERACTION FOR A GENERIC FRIGATE

Erinç DOBRUCALI

In this PhD thesis, 1/100 scaled generic frigate has been modeled as a three-dimensional experimentally and numerically. There are main mast, electronic devices, bridge, radar dom and Sea Zenit weapon system on the upper deck. The forward and astern movements of the ship are also considered in both experimental and numerical study. The reason for choosing the mentioned frigate is that the ship has a helicopter platform, electronic and weapon systems which can be affected from the exhaust gas temperature. 1/100 scaled wooden model of the frigate has been produced. In flow visualization experiments, the effects of the velocity ratio in forward/astern cruise, yaw angle and different stack geometries on exhaust gas dispersion have been investigated. Furthermore, exhaust gas dispersion of the full size generic frigate has been modeled numerically in the real cruise conditions. The effects of velocity ratio, different stack geometry, exhaust gas temperature and yaw angle were shown for the real cruise conditions. Then experimental results have been used to validate the numerical results.

Keywords: Frigate, Exhaust Gas Dispersion, Flow Visualization

Science Code: 00