



Contribution ID: 15

Type: Paper

## INVESTIGATION OF ENVIRONMENTAL EFFECTS OF HIGH SPEED BOATS

*Thursday, 15 October 2020 10:45 (30 minutes)*

Luxury high speed boats are increasingly being used for entertainment purposes however, not only humans, but also animals are negatively affected by high speed boats, and time is running out fast for people to do something about it.

In this study, a review of current negative effects of high speed boats to the environment are presented. Then, two main source of negative effect of high speed boats, the harmful gas emissions and noise are investigated. Noise radiated from a high speed super yacht model for different conditions are predicted by CFD analysis. In the CFD analysis, the yacht model is simulated for 5 different cruising speeds. Unsteady flow around the yacht is simulated using Reynolds Averaged Navier Stokes (RANS) with SST (Menter) k-w turbulence model. Resistance values are obtained and noise levels around the yacht are predicted by Ffowcs Williams-Hawkings noise model. Required propulsion power are estimated using resistance and propulsion values for different speeds. Harmful gasses (especially NO<sub>x</sub> and SO<sub>x</sub>) released from the yacht and pollute the air are investigated from the similar studies which have similar conditions. In particular, the change of noise level and harmful gases released into the environment, when the speed of the yacht increases are examined and discussed. Consequently, it is believed that this study would lay an important foundation for the widespread investigation for the negative effects of the high speed boats in the future.

**Primary authors:** Prof. ALKAN, Ahmet Dursun (Prof.); Dr USTA, Onur (Dr.); Mr ACAR, Alpay (Research Assistant); Ms ATASAYAN, Elis (Research Assistant)

**Presenter:** Prof. ALKAN, Ahmet Dursun (Prof.)

**Session Classification:** CFD/EFD/Sea Trials 1

**Track Classification:** Propulsion, Ship Machinery