

Abstract Submitted  
for the DFD16 Meeting of  
The American Physical Society

**Optimization of air injection parameters toward optimum fuel saving effect for ships** INWON LEE, SEONG HYEON PARK, Pusan Natl Univ — Air lubrication method is the most promising commercial strategy for the frictional drag reduction of ocean going vessels. Air bubbles are injected through the array of holes or the slots installed onto the flat bottom surface of vessel and a sufficient supply of air is required to ensure the formation of stable air layer by the by the coalescence of the bubbles. The air layer drag reduction becomes economically meaningful when the power gain through the drag reduction exceeds the pumping power consumption. In this study, a model ship of 50k medium range tanker is employed to investigate air lubrication method. The experiments were conducted in the 100m long towing tank facility at the Pusan National University. To create the effective air lubrication with lower air flow rate, various configurations including the layout of injection holes, employment of side fences and static trim have been tested. In the preliminary series of model tests, the maximum 18.13%(at 15kts) of reduction of model resistance was achieved. This research was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MEST) through GCRC-SOP (Grant No. 2011-0030013).

Inwon Lee  
Pusan Natl Univ

Date submitted: 01 Aug 2016

Electronic form version 1.4