

Abstract Submitted  
for the DFD10 Meeting of  
The American Physical Society

**Experimental investigations on the drag reduction mechanism of outer-layer vertical blades array**<sup>1</sup> INWON LEE, ASERC, Pusan National University, NAM HYUN AN, Division of Shipbuilding and Marine Eng., Kojé College, KWING-SO CHOI, University of Nottingham, HO HWAN CHUN, ASERC, Pusan National University — An experimental assessment has been made of the drag reducing efficiency of the outer-layer vertical blades, which were first devised by Hutchins (2003). The local skin friction reduction of the blades was reported to reach as much as 30%. In the present study, a series of drag force measurements in towing tank has been performed toward the assessments of the total drag reduction efficiency of the outer-layer vertical blades. A maximum 9.6% of reduction of total drag was achieved. The scale of blade geometry is found to be weakly correlated with outer variable of boundary layer. In addition, detailed flow field measurements have been performed using time resolved PIV with a view to enabling the identification of drag reduction mechanism. The comparison of real-time turbulence structure observed in the xz-plane in the outer layer revealed that the blades array disturbs the growth of the large-scale structures in the spanwise direction.

<sup>1</sup>This research was sponsored by the ERC program (ASERC) of Ministry of Education, Science and Technology & National Research Foundation of Korea.

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Date submitted: 06 Aug 2010

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