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## A DIS-based air cavity concept for planing hull

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Reducing fuel consumption and carbon emissions are two of the main concerns of the maritime industry. Among the available energy-saving devices or solutions, one of the most promising is air lubrication which has been extensively studied in the last decades, especially for the drag reduction on displacement hulls.

Compared to displacement hulls, the planing and semi-planing hulls have different hydrodynamic behaviour since the resistance and running attitudes are significantly influenced by the hydrodynamic component of pressure and the hydrodynamic pressure can influence the effectiveness of the air lubrication solution on planing hull.

This study proposes an air lubrication solution for a planing workboat combining the airflow injection with an air cavity solution obtained by a DIS (Double Interceptor System) device implementation.

The results of the experimental and CFD simulations campaign with natural and forced airflow injection combined with a cavity generated by DIS are presented. The drag resistance improvement and the airflow details have been analyzed by inducing a systematic variation in the airflow rate.

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