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Non-Linear Metamodels for Resistance Prediction of Post-Panamax Containership

The scope of this paper is the development of nonlinear meta-models for the prediction of the resistance of a Postpanamax Containership.

The goal is the creation of new systematic series for modern hull, using CFD simulation instead of experiment in towing tank, in order to have the possibility to take in account more geometries in less time.

In order to consider different hull geometries, several different deformations are applied on the original shape. Then, a huge amount of geometrical coefficients and the resistance are evaluated and used to create different metamodels.

For each metamodel, different sets of geometrical coefficient are used. The sets are created starting using only global coefficients (CB, CP, CV, LPP/LOS) finishing to consider also more local one (CB, CP, etc. for After body, Fore Body and Parallel Body and Bulb Coefficients), in order to create simpler or more accurate prediction. This hierarchical division can help in the use of the different metamodel for the resistance prediction in the different design phases, in according with the increase of the design knowledge, starting from the concept design, where CFD Simulation cannot be performed, due to the absence of a complete geometry.

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