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Sensitivity Analysis of the Resistance of a Post-Panamax Containership

The democratization of CFD simulations helps the evaluation of several ship hull forms in few time.

With the post-processing of the resultant data, it is possible to understand better the influence of the geometry on the resistance, helping engineers in the configuration of good geometries also in early design stage. During this phase it is necessarily to use tool derived from statistical analysis.

For this paper, it is studied the influence of the geometrical coefficients on the resistance.
As original hull, in order to give results derived from a modern hull form, the Duisburg Containership is used.
In order to achieve results independent of the transformation applied, the hull is deformed using different Free Form Deformation.
The results are later studied with two kind of correlations, i.e. Parsons' and Spearman's ones, linear and non-linear multivariate regressions and "What-If" analysis.
The results are given pro each deformation and for all combined together.

The tools and the framework proposed can be use also for other studies, helping engineer in an analytic analysis of the problem, very useful in particular for innovative design, where it is not possible to rely on experience and old results.

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