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Project SOPHYA - Progress in seakeeping of planing hulls

Project SOPHYA (Seakeeping Of Planing Hull Yacht) has as its general purpose the improvement of comfort and propulsion performance of pleasure motor planing craft, through the study of the correlation between the performance in rough sea and the state of the sea.

The project is founded by the FvG region with Monte Carlo Yachts, Uni-TS and SISSA as partners. During the study, a hydrodynamic optimisation (DoE) was developed with the aim of determining the link between the hull parameters and its behaviour in rough seas.

To validate the study, towing tank tests in still water, regular waves and irregular waves and sea trials in rough sea were carried out on a boat whose hull was chose as a mother hull for the optimisation.

Then, a completely parametric model of the hull has been created with Grasshopper inside the Rhinoceros 3D environment, a selection of variables has been included in the multi-objectives optimization process carried out through Mode Frontier (ESTECO) by measuring the parameters chosen by performing CFD simulations with the Star-CCM+ solver (SIEMENS).

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