

Hydrodynamic Behavior Study of Fast Mono Hull and Catamaran Vessels in Calm Waters Using Free Surface Flow Analysis

Authors : Mohammad Ali Badri, Pouya Molana, Amin Rezvanpour

Abstract : In this paper, planning catamaran and mono-hull vessels resistance and trim in calm waters were considered. Hydrodynamic analysis of fast mono-hull planning vessel was also investigated. In order to hull form geometry optimization, numerical methods of different parameters were used for this type of vessels. Hull material was selected in carbon fiber composite. Exact architectural aspects were specified and stability calculations were performed as well. Hydrodynamic calculations to extract the resistance force using semi-analytical methods and numerical modeling were carried out. Free surface numerical analysis of vessel in designed draft using finite volume method and double phase were evaluated and verified by experimental tests.

Keywords : fast vessel, hydrostatic and hydrodynamic optimization, free surface flow, computational fluid dynamics

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020