

Abstract

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Studying the Hydrodynamic Characteristics of New Type of Artificial Reef

The hydrodynamic characteristics of new design for artificial reef with low flow drag to provide suitable shelter for fishes and marine organisms in the Malaysian seas, were studied in this paper. The concept used in the design is based on the streamlined bicycle helmet design concept. The flow characteristics and the wave forces (FW) of the helmet and hollow cube artificial reefs (ARs) of the same volume have been studied at a water depth and wave celerities of Malaysia seas using Computational Fluid Dynamics (CFD) RANSE (ReynoldsAveraged Navier-Stokes Eqs.) code Ansys Fluent. The Shear Stress Transport (SST) turbulence model was used in the RANSE code. The streamlined body of the helmet artificial reef provides flow zones with moderate flow speed at this area, which can help fishes and marine organisms to find good shelter. The special shape of the different openings in the body of the helmet artificial reef improves the condition of the flow velocity distribution inside the unit than that of the hollow cube unit, which can increase the amount of the nutrient to the living fishes and organisms inside the reef.