UNIVERSITI TEKNOLOGI MARA

FINITE ELEMENT ANALYSIS ON DEVELOPMENT OF ECO-FRIENDLY SWATH FOR SUSTAINABLE RECREATIONAL PURPOSES

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ABSTRACT

This project investigated the structural analysis of a Small Waterplane Area Twin Hull (SWATH) vessel using Finite Element Analysis (FEA), focusing on total deformation and equivalent Von-Mises stress. Due to the growing popularity of leisure boating, the necessity for environmentally friendly and structurally efficient marine vehicles has increased. The research assessed the vessel's structural integrity by analyzing its deformation and stress distribution under various loading conditions. To assess material performance, optimize structural elements, and guarantee adherence to safety and sustainability regulations, FEA simulations were carried out. Material optimization operational conditions simulation, and detailed SWATH structure modelling were all part of the study. The findings provide details on the vessel's capacity to tolerate operational strains while reducing deformation. The building of safer and more effective marine leisure boats is aided by this structural analysis study.

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