

ENGINEERING DESIGN OF A SKIMMER BOAT FOR COASTAL WASTE MANAGEMENT IN BALIKPAPAN CITY

www.itk.ac.id

Student Name : Gozales
NIM : 09211021
Main Supervisor : Ir. Alamsyah, S.T., M.T.
Co-Supervisor : Harlian Kustiawansa, S.T., M.T.

ABSTRACT

Marine pollution in the coastal area of Balikpapan City caused by the accumulation of domestic waste and plastic debris has become a serious issue, disrupting both the ecosystem and the daily activities of coastal communities. To address this problem, a skimmer boat (waste-collecting vessel) was designed, equipped with a conveyor system to efficiently and effectively collect floating waste from the water surface. The design process employed the Parent Design Approach method, utilizing Maxsurf software to determine the vessel's optimal principal dimensions in accordance with the specific characteristics of Balikpapan's waters. The design results indicate the vessel's main dimensions are length over all (LOA) = 13.3 m, beam (B) = 6 m, draft (T) = 1.09 m, depth (H) = 1.8 m, and hull beam (B1) = 1.9 m, with an operational speed of 6.5 knots. The vessel features a stable catamaran hull and is equipped with a waste storage bin with a 7-ton capacity, as well as a conveyor system that continuously lifts waste from the water surface to the storage bin. With this design, the skimmer boat is expected to significantly reduce waste pollution in Balikpapan's coastal areas and operate efficiently under local maritime conditions. The implementation of this vessel may also serve as an applicable solution for other coastal regions facing similar waste management challenges.

www.itk.ac.id

Keywords: Skimmer Boat, Conveyor, Parent Design Approach, Maxsurf, Marine Pollution