

DESAIN PERAHU MANGROVE EKOWISATA DISUNGAI DESA JANGKANG

Nama : RIDHO FERDIAN

Nim : 1103230026

Dosen Pembimbing 1 : MUHAMMAD IKHSAN,ST.,MT

ABSTRAK

Sungai Jangkang memiliki potensi sebagai kawasan ekowisata mangrove yang memerlukan sarana transportasi air yang aman, nyaman, dan ramah lingkungan. Penelitian ini bertujuan menentukan ukuran utama, merancang Lines Plan dan General Arrangement, menganalisis tahanan dan stabilitas, serta membuat cetakan kombinasi perahu ekowisata berbahan fiberglass. Metode yang digunakan meliputi survei lapangan, studi literatur, penentuan ukuran utama dengan metode regresi linear berdasarkan kapal pembanding, perancangan menggunakan perangkat lunak Maxsurf, serta analisis tahanan dan stabilitas menggunakan Maxsurf Hullspeed dan Maxsurf Stability berdasarkan IMO A.749(18). Hasil penelitian menghasilkan perahu fiberglass berkapasitas 7 penumpang dengan ukuran utama LOA 13,5 m, B 5,5 m, H 1,65 m, dan T 0,8 m, menggunakan mesin tempel Yamaha 15 HP. Hasil analisis tahanan menunjukkan bahwa pada kecepatan operasi 6 knot, kebutuhan daya efektif sebesar 28,001 HP, sehingga masih berada di bawah kapasitas mesin yang digunakan. Analisis stabilitas menunjukkan bahwa pada kondisi lightship diperoleh nilai Initial GMt sebesar 1,010 m, GZ maksimum sebesar 0,262 m pada sudut 39,1°, dengan luas kurva GZ 0°–30° sebesar 4,7706 m.rad, 0°–40° sebesar 7,3205 m.rad, dan 30°–40° sebesar 2,5499 m.rad. Pada kondisi full load, nilai GMt sebesar 0,530 m dan GZ maksimum sebesar 0,230 m pada sudut 32,7°. Hasil tersebut menunjukkan bahwa perahu memenuhi kriteria stabilitas IMO A.749(18) dan memiliki karakteristik tahanan serta stabilitas yang sesuai untuk operasional ekowisata mangrove di Sungai Jangkang.

Kata Kunci: Perahu Ekowisata Mangrove, Fiberglass, Maxsurf, Tahanan, Stabilitas.

MANGROVE ECOTOURISM BOAT DESIGN ON THE JANGKANG VILLAGE RIVER

Name : RIDHO FERDIAN
Nim : 1103230026
Supervisor 1 : MUHAMMAD IKHSAN,ST.,MT

ABSTRACT

Jangkang River has potential as a mangrove ecotourism area that requires a safe, comfortable, and environmentally friendly water transportation facility. This study aims to determine the principal dimensions, design the Lines Plan and General Arrangement, analyze resistance and stability, and construct a mold for a fiberglass ecotourism boat. The methods used include field surveys, literature studies, determination of principal dimensions using linear regression based on comparable boats, design development using Maxsurf software, and resistance and stability analyses using Maxsurf Hullspeed and Maxsurf Stability based on IMO A.749(18). The results produced a fiberglass boat with a capacity of 7 passengers and principal dimensions of 13.5 m LOA, 5.5 m breadth, 1.65 m depth, and 0.8 m draft, powered by a 15 HP Yamaha outboard engine. The resistance analysis showed that at an operating speed of 6 knots, the required effective power was 28,001 HP, which was below the capacity of the selected engine. The stability analysis showed that under the lightship condition, the Initial GMt was 1.010 m, with a maximum GZ of 0.262 m at an angle of 39.1°. The areas under the GZ curve were 4.7706 m·rad for 0°–30°, 7.3205 m·rad for 0°–40°, and 2.5499 m·rad for 30°–40°. Under the full-load condition, the GMt was 0.530 m and the maximum GZ was 0.230 m at an angle of 32.7°. These results indicate that the boat meets the stability criteria of IMO A.749(18) and has resistance and stability characteristics suitable for mangrove ecotourism operations on the Jangkang River.

Keywords: Mangrove Ecotourism Boat, Fiberglass, Maxsurf, Resistance, Stability.