

KOMPARASI *MONOHULL* DAN LAMBUNG KATAMARAN BENTUK *CHINE* PADA DAMPAK PERUBAHAN PERAIRAN DANGKAL

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ABSTRAK

Modifikasi bentuk lambung semakin banyak diteliti dengan melakukan variasi bentuk lambung untuk mendapatkan sebuah lambung kapal yang optimum. Berbagai modifikasi lambung kapal telah dilakukan, salah satu caranya dengan penambahan jumlah lambung menjadi *multihull*. Pada penelitian ini, melakukan studi komparasi *monohull* dan katamaran bentuk lambung *chine* terhadap variasi rasio perairan dangkal. Permodelan lambung menggunakan *maxsurf*, dan analisis terhadap pengaruh *squat*, *sinkage*, dan *trim* dengan menggunakan *ansys AQWA Hydrodynamic Diffraction*. Berdasarkan hasil simulasi terhadap efek *squat*, lambung katamaran memiliki efek *squat* paling signifikan pada rata-rata 20,69 % lebih rendah dibandingkan lambung *monohull*. Sedangkan pada efek *sinkage*, lambung katamaran memiliki efek *sinkage* paling signifikan pada rata-rata 40,4 % ketika *trim by stern* dan ketika *trim by bow* 34,21 % lebih rendah dibandingkan lambung *monohull*. Dan pada efek *trim*, pada perubahan LCG 10 % ketika *trim by bow* dan *trim by stern*, pada lambung *monohull* dan katamaran menghasilkan efek *sinkage* yang terkecil. Pengaruh dari *squat*, *sinkage*, dan *trim*, sangat signifikan terjadi pada kondisi kedalaman terendah yaitu pada $H/T = 1,2$. Dan dapat disimpulkan pula model katamaran lebih aman ketika berlayar di perairan dangkal dibandingkan dengan model *monohull*.

Kata Kunci: Kapal *monohull*, Kapal *multihull*, *Squat*, *Sinkage*, *Trim*, Faktor perairan dangkal, Rasio perairan dangkal

COMPARATION OF MONOHULL AND CHINE SHAPE CATAMARAN ON THE IMPACT OF CHANGES IN SHALLOW WATERS

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ABSTRACT

Hull shape modifications are increasingly being investigated by varying the shape of the hull to get an optimum hull. Various modifications to the hull have been made, one the ways is by increasing the number of hulls to become multi-hull. In this study, a comparative study of monohull and chine hull catamarans was carried out on variations in the ratio of shallow water. Hull modeling using maxsurf, and analysis of the effect of squat, sinkage and trim using ansys AQWA Hydrodynamic Diffraction. Based on the simulation result on the squat effect, the katamaran hull has the most significant squat effect at an average of 20,69 % lower than monohull. While on the sinkage effect, the katamaran hull has the most significant sinkage effect at an average of 40,4 % when trim by stern, and when trim by bow is 34,21 % lower than monohull. And on the trim effect, the 10 % LCG change when trim by bow and trim by stern, on monohull and catamaran hulls produces the smallest sinkage effect. The effect of squat, sinkage, and trim, was very significant at the lowest depth condition, at $H/T = 1.2$. and it can be concluded that the catamaran model is safer when sailing in shallow waters compared to the monohull model.

Key Words: Monohull ship, Multihull ship, Squat, Sinkage, Trim, Shallow water factor, Shallow water ratio