

ANALISIS *SEAKEEPING* KAPAL FIBERGLASS 1 GT AKIBAT PENAMBAHAN PANJANG (STUDI KASUS KAPAL CUSTOM ROD)

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ABSTRAK

kapal fiberglass merupakan sarana penting dalam perikanan di Indonesia, sehingga kajian mengenai *seakeeping* dan hambatan diperlukan untuk menjamin keselamatan serta efisiensi operasional. Penelitian ini bertujuan menganalisis pengaruh penambahan panjang kapal Custom Rod dari 5,83 m menjadi 7,32 m melalui pemodelan menggunakan *Maxsurf Motion* dan *Maxsurf Resistance*. Modifikasi dilakukan dengan harapan dapat memperbaiki karakteristik gerakan kapal. Hasil penelitian menunjukkan percepatan *heave* berkurang signifikan dari 1,143 g menjadi 0,108 g sehingga memenuhi kriteria kenyamanan menurut Tello et al. Gerakan *roll* tetap stabil di bawah ambang batas $6,0^\circ$, sedangkan pitch masih belum memenuhi kriteria pada sudut 135° dan 180° . Untuk hambatan kapal sebelum modifikasi mampu mencapai kecepatan 23 knot dengan kebutuhan 41,649 hp. sedangkan setelah modifikasi hanya mencapai 19 knot dengan kebutuhan 41,629 hp. Sehingga untuk mencapai 25 knot diperlukan mesin dengan tenaga lebih besar, yaitu sekitar 78 hp. Dengan demikian, penambahan panjang kapal terbukti efektif memperbaiki karakteristik *heave* dan *roll*, tetapi berdampak pada pitch serta menurunkan performa kecepatan akibat meningkatnya kebutuhan daya.

Kata kunci: kapal fiberglass, *seakeeping*, hambatan, , Custom Rod

***ANALYSIS OF SEAKEEPING OF A 1 GT FIBERGLASS
VESSEL DUE TO LENGTH EXTENSION
(A CASE STUDY OF THE 'CUSTOM ROD VESSEL')***

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ABSTRACT

Fiberglass vessels are an important means in Indonesian fisheries, thus studies on seakeeping and resistance are required to ensure safety and operational efficiency. This research aims to analyze the effect of extending the Custom Rod vessel from 5.83 m to 7.32 m through modeling using Maxsurf Motion and Maxsurf Resistance. The modification was carried out with the expectation of improving the vessel's motion characteristics. The results showed that heave acceleration significantly decreased from 1.143 g to 0.108 g, thereby meeting the comfort criteria according to Tello et al. Roll motion remained stable below the 6.0° threshold, while pitch still did not meet the criteria at angles of 135° and 180°. In terms of resistance, the vessel before modification was able to reach 23 knots with a power requirement of 41.649 hp, whereas after modification it only achieved 19 knots with a power requirement of 41.629 hp. Therefore, to reach 25 knots, a larger engine power of approximately 78 hp is required. In conclusion, the length extension of the vessel proved effective in improving heave and roll characteristics, but it had a negative impact on pitch and reduced speed performance due to the increase in power demand.

Keywords: *fiberglass vessel, seakeeping, resistance, Custom Rod*