AN INVESTIGATION INTO THE MECHANISM SYSTEM OF WAVE MOVEMENT TO POWER CATAMARAN

Student Name : Andrianadi Yoghi
NRP : 4103 100 026
Departement : Teknik Perkapalan FTK-ITS
Lectuere : - Prof.Ir. I Ketut Aria Pria Utama, MSc. Ph.D
- Ir. Murdijanto, M. Eng

ABSTRACT

Mechanism of wave power system consists of springs system and foil. Springs system and foil are used to move katamaran. Where the wave power system of this mechanism will be installed on a catamaran. This system can move with ocean currents. With this sea currents, will be moving the foil and the spring will respond by giving the opposing forces so that there can beat against the current to move a catamaran. This study theoretically supported by ANSYS software to model and calculate the wave power system mechanism consisting of spring and aerofoil system. So that will get the thrust by calculating catamaran resistance first.

NACA 0015 foil proved to be a choice of foil as a mechanism driving wave power system. Wave velocity plays an important role which is a direct contact to the foil, then forwarded to the spring. At the current speed $W_1 = 0.068 \text{ m/s}$ catamaran able to move with speed ranges from 0.198 to 0.265 knots. While the speed of the wave $W_2 = 0.095 \text{ m/s}$ the ranges is from 0.618 to 0.756 knots. In the spring constant, which analyzed the value of $K_t$ is 10 Nm and 100 Nm. So the value of the resulting a difference. $K_t = 10 \text{ Nm}$ has a deviation of almost 8 m, while the $K_t = 100 \text{ Nm}$ has a deviation of 0.8 m and therefore have a difference of 1 / 10. For this analysis, the value taken was $K_t = 100 \text{ Nm}$.

A catamaran with wave power drive systems this can then be applied to the fishermen vessel, to provide an alternative or perhaps as a mover replacement fishing boats.

Kata kunci: Current, Aerofoil, Spring, Thrust