DESIGN OF HYBRID PROPULSION SYSTEM (DMP & DEP) FOR TRIMARAN
TYPE FAST PATROL BOAT

Name: DEDY WAHYUDI
NRP: 4108204008
Department: Marine Engineering, Faculty of Marine Technology
ITS, Surabaya.
Supervisor: 1. Dr. Ir. AA. Masroeri, M.Eng.
2. Ir. Hari Prastowo, M.Sc

Abstract

A lot of research to develop a patrol boat, beginning modification of hull model until propulsion system equipment. For example the model ship type AMV (Advanced Marine Vehicle) was developed starting from the Catamaran, Trimaran and Pentamaran model. Everything is aimed at obtaining the ship design that has the speed and stability. In addition to achieving high-speed vessel must be equipped with propulsion (Main Power) is great, that means the main engine dimensions, auxiliary equipments and fuel tanks is too large. Many Limitations of space on the ship's engine room trimaran vessel is the main obstacle in designing propulsion system. Beside that Patrol boat should have many missions speed, so propulsion system should be designed at that conditions.

Hybrid propulsion is a combination of Diesel Mechanical Propulsion (DMP) with Diesel Electric Propulsion (DEP). DMP system is connected directly to the propeller shaft (or through a reduction-gear). DMP has provide more efficiency rate of 95%. While DEP is only able to provide efficiency by 85% - 89% is slightly lower than DMP, but the DEP offers many advantages such as simplicity and suitability in the rotational speed settings, control systems, engine power production Redundancy, Flexibility in the design of equipments layout in engine rooms, noise, vibration and fuel consumption efficiency which affects the lower pollution.

Design of Hybrid Propulsion system can be satisfied and achieved the Power requirements and optimally at all speed condition of patrol boat. Therefore the author made using modeling Maxsurf-11.12 software and carried out various optimization of the choice of main engine, propeller and system conditions for fast patrol boat cruise.

Keywords: Patrol boat, trimaran, speed, available spaces, hybrid propulsion, advantages