

Analisa water tunnel single dan double pada kapal pelat datar dengan pendekatan CFD = CFD analysis of single and double water tunnel on flat plate ship

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Abstrak

Beberapa penelitian untuk meningkatkan propulsi kapal sudah banyak dilakukan seperti wake equalizing ducts, asymmetric stern, grothues spoilers, reaction fins, kort nozzle, kort tunnel, waterjet, dan sebagainya. Penelitian tersebut bertujuan untuk mengarahkan aliran air dan meningkatkan kecepatan aliran air menuju baling - baling kapal. Berdasarkan penelitian tersebut, tercipta ide penggunaan water tunnel. Pada penelitian ini disimulasikan pada software CFD beberapa model water tunnel single dan double dengan variasi luasan inlet dan outlet.

Dari hasil simulasi CFD didapatkan bahwa pada water tunnel single dan zigzag, tidak terjadi pengaruh yang signifikan terhadap kecepatan air keluar tunnel, sementara pada water tunnel double, perluasan outlet mengakibatkan penurunan kecepatan air keluar. Didapatkan juga satu model yang potensial untuk diujikan selanjutnya yakni water tunnel single bend edge.

Several research to improve ship propulsion has been done such as wake equalizing ducts, asymmetric stern, grothues spoilers, reaction fins, kort nozzle, kort tunnel, waterjet, etc. The purpose of the research above is to direct water flow and improve velocity of water flow toward ship propeller. Based on that research, created an idea to make water tunnel system. Therefore, this research done by the simulating the ship on a CFD software using a various model of single and double water tunnel that varying in their inlet and outlet.

From the result of the simulation process, it is found that the single and the zigzag tunnel type doesn't have any significant effect with the varying size of the inlet and outlet. But, on the double tunnel type, an increase in outlet size will leads to decrease in the output velocity. On the other hand, i have found a design that is looks potential and worth to try for the next experiment according to the CFD result that named bend edge water tunnel.