OPTIMATION DESIGN OF REFRIGERATION SYSTEM FOR CARGO HOLD BASED ON LIFE CYCLE COST : CASE STUDY IN FISHING VESSEL 30 GT - PEMDA SITUBONDO

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Abstract

Fishing vessel Purse Seine 30 GT Type belong to Ocean and Fisheries Department’s Pemda Situbondo is completed by refrigeration system for cargo hold in which each its wall insulation on Sterofoam. This insulation to be used because is cheapest although it investigated to overall of total cost is rated still not optimal enough.

In this final project optimizes original design of cargo hold to replaced by new design alternative in its insulation part with using insulation substance Polyurethane. Chosen 3 thickness variation of insulations, they are 4 cm (called; Design A), 8 cm (Design B) and 12 cm (Design C). The variation used as principal data to calculate the cooling load, afterward the selection to equipment of refrigeration system is needed. Based on insulation and equipment of refrigeration system data, will be calculated economically on Life Cycle Cost Method that is included investigation Cost, Operational Cost (energy cost, maintenance and repair cost, replacement cost) and salvage value.

The result of calculation of each alternative design that based on Life Cycle Cost Method, design B have most advantages economically than others about 22.98% to original design.

Key Word : Refrigeration System, Life Cycle Cost (LCC), Fishing Vessel 30 GT