DESIGN AND PERFORMANCE ANALYSIS OF COLD STORAGE ON FISH CAPTURE SHIP WITH ABSORPTION REFRIGERATION CHILLER WATER USING REFRIGERANT AMMONIA-WATER (NH₃-H₂O)

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Abstract

Indonesia has huge potential for fishing to support supplying program employment for the people who became fishermen and to increase foreign exchange. However, most fishermen in Indonesia did not yet know how the process of handling a good fresh fish that is not easily damaged and rotted after being arrested.

The boat storage of fish process is an essential process for fishermen because it concerns the quality of the fish freshness who will be sold later. Usually, the fishermen keep the fish into the hold (fish storage space on the ship) that has been filled with ice mixed with salt. The use of ice mixed with salt is less efficient in terms of investment for all sail. So do the design of cold storage to replace the ice mixed with salt. The cold storage design including of cooling load, the thermal design of chiller water, and pump power on the installation design. This design for the mass of fish products in cold storage at 10 tonnes.

This design produces 6.73 hours of cooling time, 1.54 meters length of tube, and pump power 51.2 Watts. Performance analysis of this design can be inferred when the fishermen breaks, use of the hold system produces a lower temperature than cold storage system. Based on the work of the cold storage system for one day resulted a decrease in initial temperature when the additional fish and cooling rate becomes slower.
Keywords  : refrigeration, cold storage, chiller water