

Design standardization of a commercial combination fishing vessel

There is a lack of standard designs for commercial combination fishing vessels in India. ICAR-CIFT has developed several designs of fishing vessels, fishery research vessels, mother ships and training vessels for state governments and union territories of India. The lack of standard designs for commercial purposes has been a long term negative impact on policy making in fisheries at national and state levels. Hence, design of a 19.75 m vessel was developed to meet this requirement of all the maritime states of India to conduct multi-purpose fishing commercially. The design was

developed and standardized under the project "Green Fishing Systems for Tropical Seas" funded by the National Agricultural Science Fund, ICAR for developing the design, model testing and construction of the prototype at Goa Shipyard Limited. A national survey was conducted in all the maritime states of India and designs of existing commercial vessels were collected. Thirty five most popular designs were short listed and were analyzed for fuel economy, performance and stability. Design of a 19.75 m L_{OA} vessel with 6.5 m breadth and 2.8 m depth was developed from this

data. This vessel is equipped for trawling, long lining and gillnetting with onboard hydraulic fishing equipment. Indigenously developed Refrigerated Sea Water (RSW) tank is another specialty of this design.

From the computer generated lines plan of the vessel developed at ICAR-CIFT, a 3-D model was prepared and the same was exported to stability analysis software, Maxsurf for further analysis. The simulation studies of this hull were conducted in Computer Fluid Dynamics (CFD)



Fig. 1. Model of the hull generated using CFD



Fig. 2. Model of the 19.75 m multipurpose fishing vessel used for testing at IIT Chennai

software for arriving at the resistance of the vessel. Figure 1 shows the model of the hull generated using CFD.

The 1:10 model of the 19.75 m multipurpose fishing vessel developed at CIFT was prepared (Fig. 2) by IIT Chennai and was tested in the towing tank for various speed range up to 10 knots to confirm the resistance values obtained from CFD analysis (Fig. 3).



Fig. 3. Model test progressing in the towing tank at IIT Chennai

After establishing the preliminary stability, the general arrangement drawing was prepared with subsequent stability verification. This vessel is designed and constructed under the IRS classification. The approval of the initial drawings is already done by IRS and the proto-type construction is underway at Goa Shipyard Limited, Goa.

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