Fishing Craft Modification and Engine Optimisation: CIFT's Initiatives towards Future Proofing SSF

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Current scenario-Small scale fishing vessels & engines

Indian Rules for small/traditional fishing boats: Boats without wheel house, fish hold and mechanised winch conducting daily fishing

Fishing boats - Two types

Single day fishing boats

Wooden boats

- Open deck boats
- Boats with deck & cabin
- (Plywood+FRP) boats
- FRP boats
- Aluminium boats by CIFT
- All boats use OBM engines

Multi day fishing boats

- Wooden boats
- Steel boats
- FRP boats
- CIFT designed Steel boats
- CIFT designed FRP boats

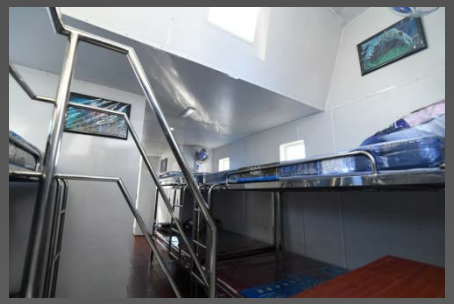
Inland fishing boats in FRP replacing wooden boats

Existing boats

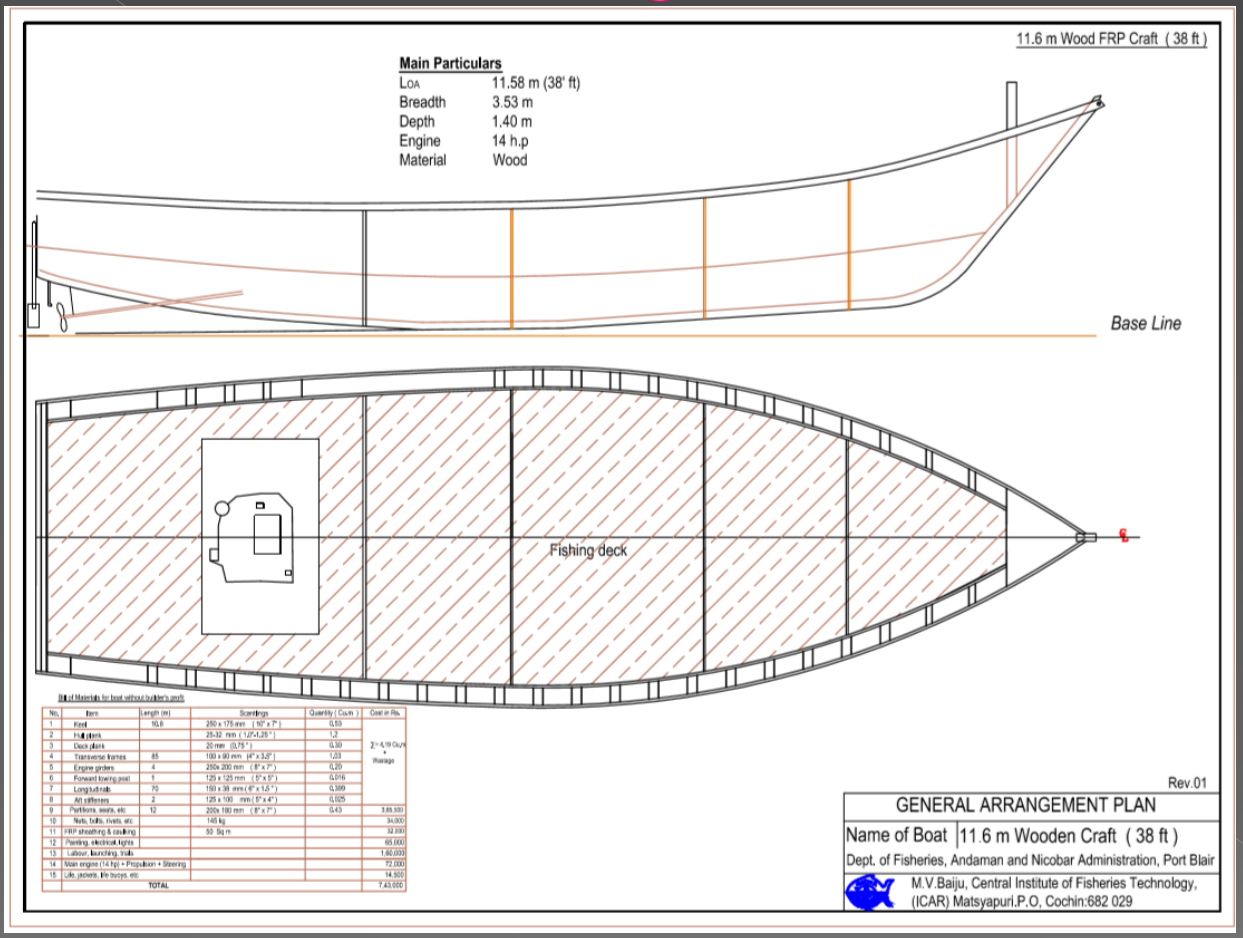
New boats

Existing boats; Wheel house, cabin and galley

CIFT designed boats: Cabin, Wheel house, water Tight doors



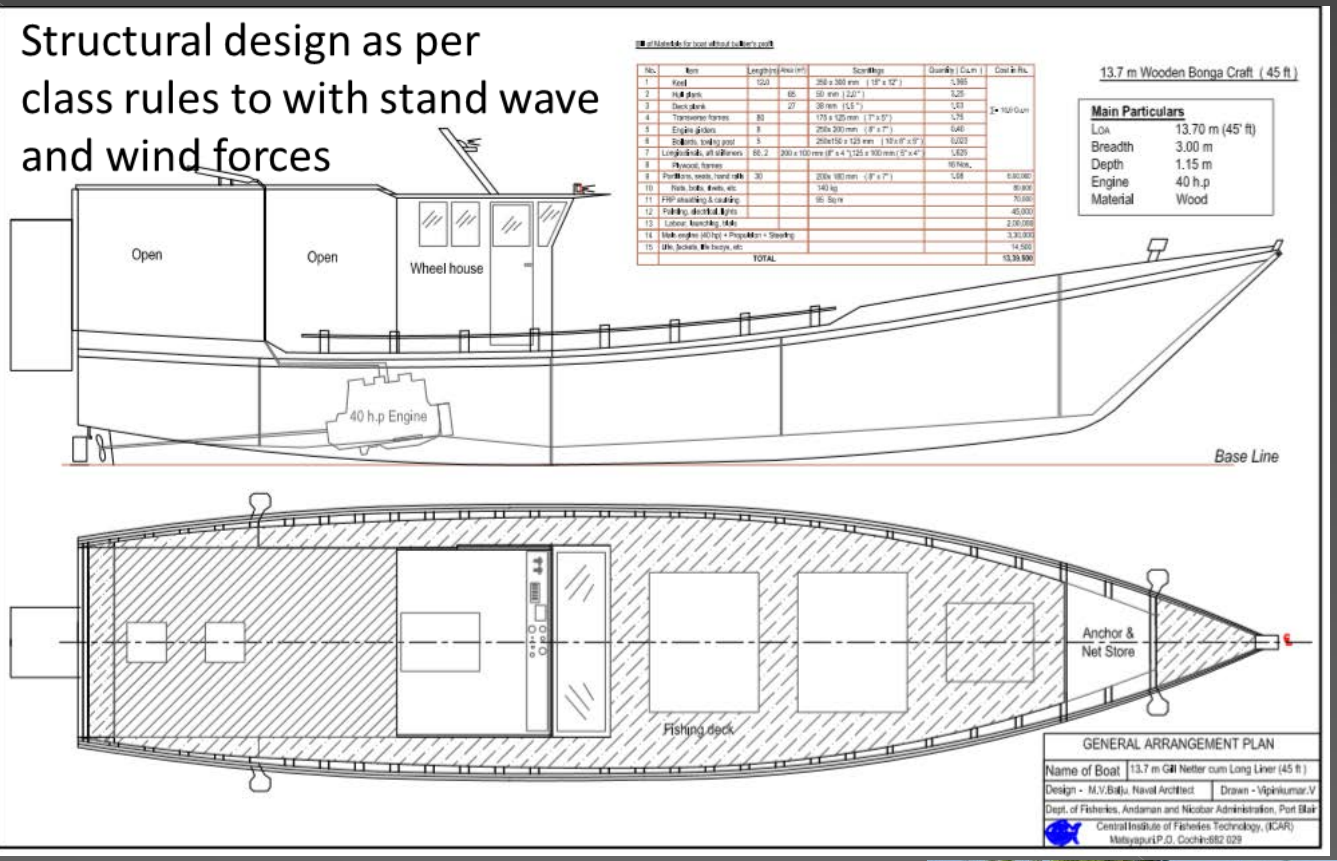
Modified fishing vessels for Andamans



Structural design as per class rules to with stand wav and wind forces

Existing boats

Structural design as per class rules to with stand wave and wind forces



Existing boats

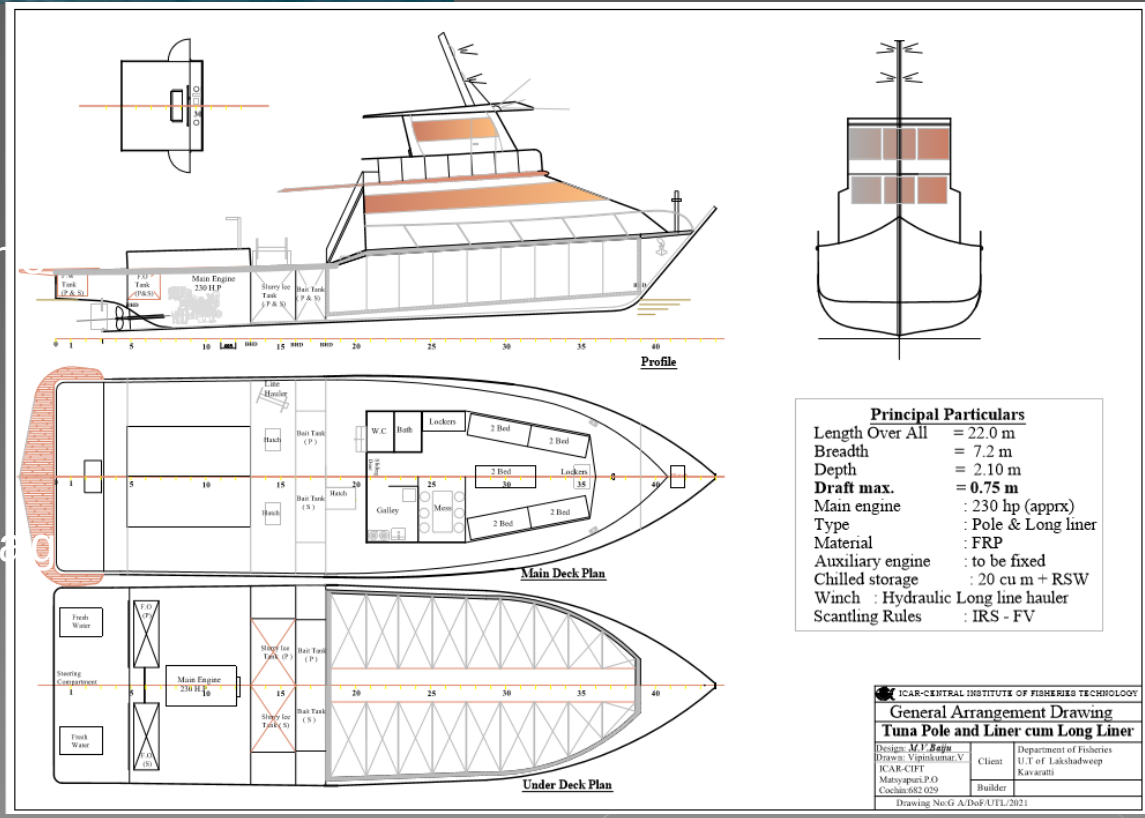
Lakshadweep

Wooden **pole and line** boats

FRP **Long liner cum Pole and liner- by CIFT**

Coral islands- Boats designed:

1. Lighter to avoid damaging th coral reef
2. Calculated Trim stability
3. IRS class structural design
4. Slurry ice incorporated
5. Water tight bulkhead for dama stability



Blue revolution & PMMSY scheme

Before modification by CIFT

Locally designed and
Locally constructed-
No stability check

Designed by CIFT

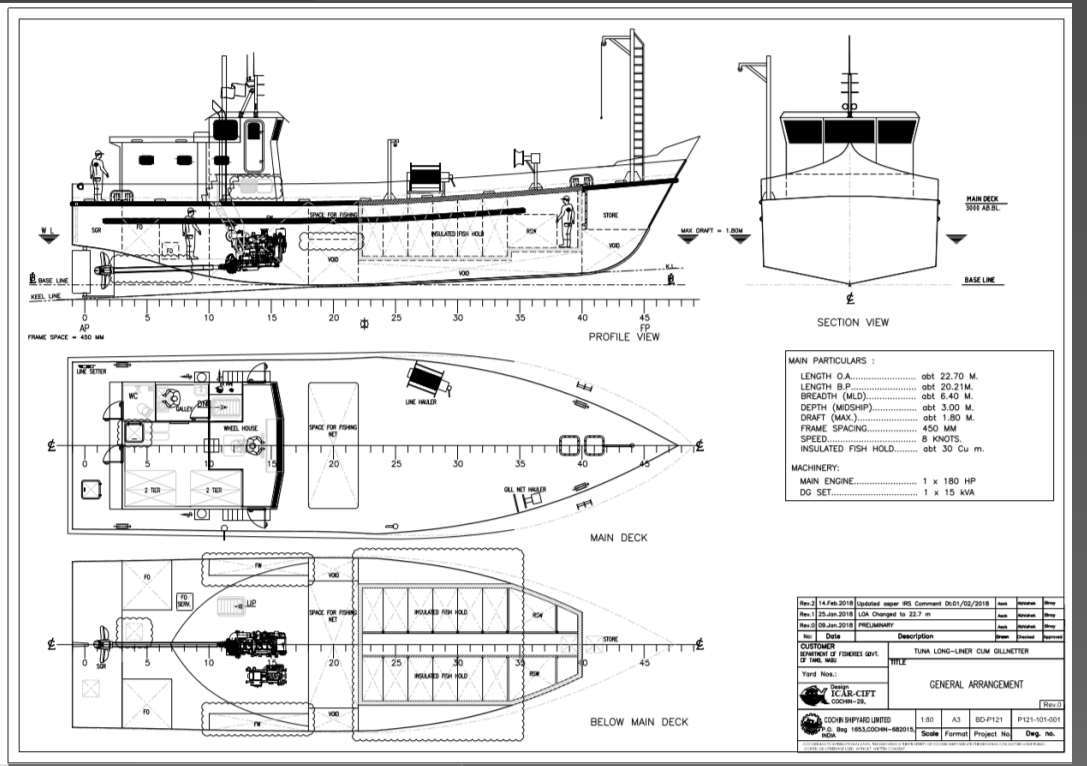
IRS class design with:

1. Life saving appliances
2. Fire control
3. Light Sound & Signals
4. Proper berthing
5. Galley
6. Toilet

Blue Revolution & PMMSY Schemes

22.5 m Loa Long liner cum Gillnetter

Length Over All	: 22.70 m
Breadth	: 6.4m
Depth	: 3.0 m
Draft	: 1.80 m
Speed	: 8.0 knots
Main Engine	: 180 h.p
RSW tanks	: 2 tons
Insulated store	: 30 Cu.m



This vessel is performing very well as per the feed back received. The Insulated fish store is the best quality in India. The RSW tanks are introduced to keep the fish quality at a higher level. The raw materials used for the construction are certified by Indian Register of Shipping (IRS). This will not corrode like the other fishing vessels. The hull has been developed using Computational Fluid Dynamics analysis and model testing for fuel efficiency. 16 boats are already in operations and another 33 are getting constructed. The stability has been tested and certified by IRS.

RSW tank

Marine Ambulance

For the search and rescue operations for fishers marine ambulance has been designed indigenously along with Cochin Shipyard, the largest ship builder of the country. As a consultant to the Department of Fisheries, Government of Kerala, CIFT supervised the design & construction of three Ambulances at Cochin Shipyard.

- Length Over All : 22.50 m
- Breadth : 5.56 m
- Depth : 3.0 m
- Draft : 1.49 m
- Speed : 14.0 knots
- Main Engine : 2 x 515 kW

Class : IRS FV

A mortuary, examination area, three beds for rescued fishermen, first aid facilities and galley, mess, toilet facilities for the rescued fishers and crew are arranged inside this vessel

Engine optimisation done in two ways

1. Testing the commercial marine engines for the power and torque at test bed for fishing purposes
2. Estimating the power of engines requirement based on resistance calculations using CFD

Controlling emissions

1. Conversion of Diesel engines into Diesel+ LNG dual fuel mode
2. Solar boats for inland fishing and 3.63 m LOA 8.0 m LOA
3. New variant of IOCL Xtragreen diesel tested for +ve lower emission results-low CO, NO