

## Problems in Mechanisation of Low Energy Fishing Craft for Coastal Waters

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The paper describes the stages of development in mechanisation of traditional fishing craft and the problems connected with the operational cost of these devices. Both imported outboard motors using petrol-kerosene engine and indigenously developed drive unit have been tried to mechanise the traditional craft. The comparative merits and demerits of these types of drives are discussed in the paper. Diesel driven units are more economical. However petrol - kerosene units are more popular owing to their light weight and convenience in handling.

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Imported outboard motors using petrol /kerosene widely are used to mechanise traditional fishing craft. Eventhough these outboard motors are very convenient and efficient in operation, the high consumption and cost of fuel will render these drives quite uneconomical. Hence a study was taken up to develop mechanisation of small craft using indigenously available light weight diesel engines. As a result an in-board-outboard drive consisting of a chain drive system powered by a diesel engine of very light weight was developed. The innovation was published through the National Research and Development Corporation of India for commercial exploitation. Consequently some private entrepreneurs came forward and modified the device. This includes introduction of 2 types of drive units using gear transmission replacing the chain transmission system of CIFT design and a diesel outboard motor exactly

like the imported petrol/kerosene outboard motor.

Recently M/s. Greaves Cotton and Co. developed a new version of diesel outboard motor with long tube which is the power pole propulsion system quite popular in the eastern countries. The engine along with the power transmission shaft can be installed on a tilting platform on the craft. The operation is very easy as the shaft with propeller can be dipped in water for the craft movement as and when required. The whole unit can easily be removed from the craft and taken away after the day's work.

### Performance of the device

The performance of the various drive units are technically sound and acceptable to the fishermen. Costwise, the indigenous diesel engine driven units are cheaper due to the lower fuel consumption and its lower cost. Table I shows the cost comparison between an imported OBM and indigenous power pole drive unit.

The high rate of fuel consumption makes the imported OBMs costlier compared to the indigenous diesel engine drive units which consume much less fuel. Even though kerosene is made available cheaper by subsidy, the higher rate of consumption makes the imported OBMs costly. How-

Table 1. *Cost Comparison*

Item	Imported OBM	Indigenous power pole
1. Unit model	Yamaha-8-BK	Greeves LT-OBM 3523
2. Type	2 stroke	4 stroke
3. Fuel	Petrol start; Kerosene running	Diesel
4. H.P.	8 SAE	6.5 DIN
5. Fuel Consumption	Petrol 200 ml/h	1 lit/h
6. Cost of operation/day @ 5 hours per fishing cycle	Petrol Rs. 16.17 Kerosene 40.00 Rs. 56.17	Rs. 24.10
7. Cost of operation in 250 days	Rs. 14,042.50	Rs. 6,025.00
8. Average catch per year	Rs. 75,000	Rs. 75,000
9. Cost of unit	Rs. 22,000	Rs. 18,500
10. Maintenance cost for 1500 hours inclusive of spares	Rs. 6000	Rs. 2500
11. Total cost inclusive of maintenance	Rs. 42042.50	Rs. 27025.00
12. Interest on investment @ 12% average	Rs. 5045.10	Rs. 3243.0
13. Total cost of operation	Rs. 47087.60	Rs. 30268.00
14. Net earnings of fishermen	Rs. 27912.40	Rs. 44732.00
15. Percentage of profit on investment	59.3%	147.8%

\* Cost of fuel: Petrol @Rs.16.17

Diesel @ Rs.4.82

Kerosene @ Rs.2.00 (Subsidised)

ever, the major disadvantage of indigenous diesel drive unit is that they are heavier compared to the imported OBMs. They have almost double the weight of the imported OBMs requiring two persons to transport them. Another disadvantage is that owing to higher compression ratio,

diesel drive units are prone to higher vibrations requiring sturdy parts of the drive unit. Due to these disadvantages and since kerosene is available on subsidy, imported OBMs are still more popular among the fishermen.