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Floating Equipment Model Using Anco Fishing Operation For Poor Bedono Fishermen, (Sayung, Demak, Central Java)

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***Abstract*— There are still fishermen using Anco as a fishing gear by carrying it, and walking along the river, greatly affecting the health of fishermen, especially for feet that are too long submerged in water, as well as limited fishing grounds. This obstacle can be overcome by using a simple, inexpensive and reliable floating tool for coastal areas, rivers and shallow and not fast-flowing mangrove forest waters. So it is necessary to do research to be able to realize floating tools that are in accordance with the conditions of the waters. The floating tool research activity is expected to be beneficial for the coastal communities of deesa Bedono, Sayung Subdistrict, Demak Regency, Central Java, especially to increase the fishing yield and welfare of the fishing community. The analysis results of the floating appliance ability receive loads up to 300 kg / drum so that the capacity of 1 tool module can be planned for 3-4 people. With affordable costs, it can be applied to the community.**

Keywords— Floating Equipment, Anco

I. INTRODUCTION

The Indonesian nation consists of 17,502 islands, and a coastline of 81,000 km with an area of fisheries in the sea of around 5.8 million Km2, consisting of islands and territorial waters covering 3.1 million Km2 and waters of the Indonesian Exclusive Economic Zone (ZEEI) covering an area of 2.7 million Km2. This fact shows that the prospects for Indonesia's fisheries and marine development are considered very bright and become one of the strategic economic activities. The sustainable potential (maximum sustainable yield / MSY) of Indonesia's capture fisheries resources is 6.4 million tons per year. While the potential that can be utilized (allowable catch) is 80% from MSY which is 5.12 million tons per year.

Anco fishing gear (Lift Net) is a net fishing gear, the size of the net can reach 5 m × 5 m. How it works, Anco is operated by soaking the jar in a horizontal position in the waters, and then lifting it after a while is left idle. The net has a hole diameter ranging from 0.5 - 1 centimeter. The net is stretched with a bamboo frame and given a bamboo stem as well. The bamboo handle functions to reach the middle of the river, lifting it back without having to go down to the water [1] ,see Fig.1

The fishing community uses anco by carrying it through the waters which are carried out every time they catch fish, this will cause skin disease, therefore it is necessary to have a floating tool specifically designed for the use of anco fishing gear. This design needs to be carried out in accordance with the conditions of the waters of the fishing area and the needs of the fishing community, so that research is needed in the field of exploration (explorative).

II. METHOD,

A. Bedono Village

Is a village located in the Sayung sub-district, which is one of the coastal areas in Demak Regency whose geographical location is on the North Java Coast (Pantura) and is directly related to the Java Sea. This coastal region is prone to the dangers of flooding, especially flooding caused by high tides. According to the results of a study from Damaywanti in 2013, the population of the Bedono Village initially had 7 settlements, namely Bedono, Mondoliko, Rejosari Senik, Pandansari, Tonosari, Tambaksari and Morosari. Tambaksari Hamlet is a hamlet that was first

relocated due to abrasion which is getting worse and permanently submerged by sea water.[2]

Most of the people in Bedono village work as fishermen, this is because environmental conditions are mostly located on the coast so their main livelihood is as fishermen. Bedono village used the land to function as aquaculture and mangrove swamps, because of the development of land needs, then reclaimed for settlements, roads and other facilities (Bappeda, 2002). This change in land use has caused rob for other regions. In Bedono Village is a settlement with an elevation of 0.5 meters and a low elevation of the Bedono region between 0.3 - 2.82 meters and land from clay silt sand with a rate of absorption of 0.015 m / day.

B. Lift Net

Anco is a fishing gear which is included in the lift nets group. Lifting nets are a group of fishing gear made of rectangular mesh material equipped with frames made of bamboo or other materials, which are operated by being immersed in the waters and then lifted to the surface. This type of fishing gear is in accordance with international standards for classification of fishing gear statistics. In other countries, this tool is commonly known as Scoop net or Scoop basketball. Materials needed to make ANCO include bamboo or similar materials, waring, mining, and wire. The size of this tool is adjusted to the needs and area of the water, but in general it is used to measure around 6 m X 6 m. In the manufacturing process, various considerations are needed such as trap capacity and lever capability when lifting weights to determine the weight of the load that can be carried in a single operation.[3]

C. Bouyancy

Is an upward force carried out by the fluid to resist the weight of the volume of the sinking object. A column of fluid, pressure increases with increasing depth as a result of the accumulation of the weight of water above it. The volume of a sinking object into the fluid will experience a large pressure at the base of the fluid column compared to when it is near the surface. This pressure difference is the resultant force, tends to accelerate the movement of objects up or make the downward acceleration of an object decrease to zero and reach the terminal speed. The magnitude of buoyancy force is proportional to the magnitude of the pressure difference between the surface and base of the column, and is equivalent to the displaced fluid weight (displacement) which should fill the space occupied by the object. So that objects have a greater density than the fluid will sink, and objects having a lower density than fluid will float , see Fig 2

Figure 1 . Lift Net

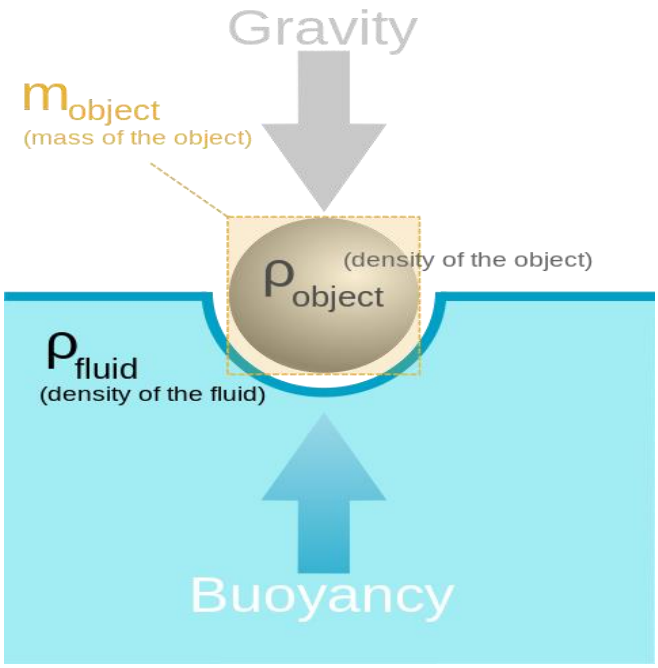

Figure 2 . Bouyancy Force

D. Floating Tool Design Principles

The design activity is a interactive process, especially at the initial stage, where information about environmental conditions is needed as an operational area. Any requirements must be fulfilled in order to operate according to the user's height [4] (for example: fishing community), this is so that the planned float tool will get a complete design, in terms of size and displacement needed.Planning is carried out starting from the user's request (special requirements), region or route or location, desired shape and size, space arrangement, empty weight, freeboard and trim requirements, stability, main power driving needs, structure, propulsion, auxiliary machinery and equipment , production and operational costs, if problems are found then the planning iteration process is at the initial stage, see Fig 3.

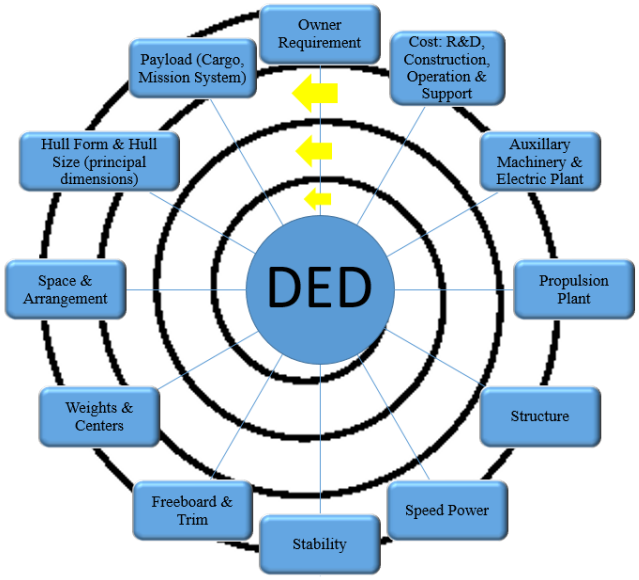

Figure 3 . Ship spiral design concepts

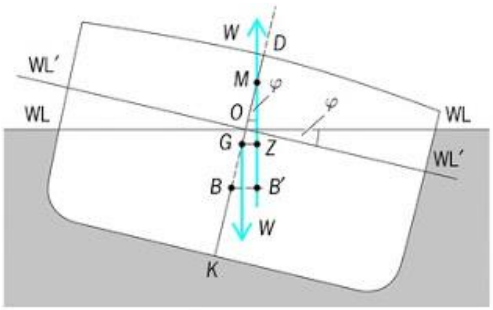

Figure 4 . Ship Stability

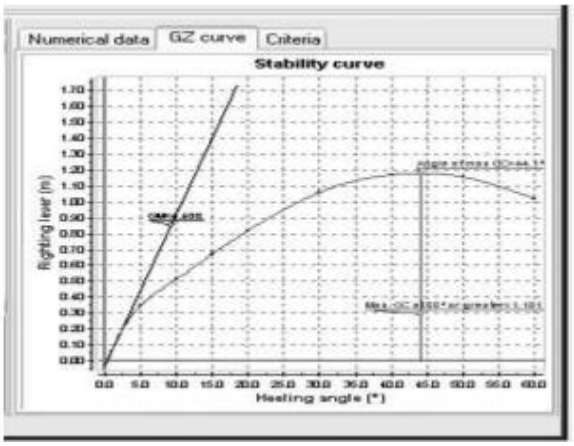

Figure 5 . Ship Stability

E. Floating Tool Stability

Stability is the ability of floating tools to be able to stand upright when experiencing shaking due to external forces, such as waves and others. This is needed to secure the user when carrying out activities using the Floating Tools [5]

The stability criteria that must be met are as follows (Construction Standards for Small Vessels (2010) - TP 1332 E);

- the angle of static heel, determined from the intersection of the righting lever (GZ) curve and the heeling arm curve, shall neither exceed 10 ° nor immerse the margin line;
- the residual area, between the Curves of Righting Levers and Persons Healing Arms shall not be less than 0.025 meter-radians; and
- the remaining right lever must have a value of at least 0.1 meters.

The stability of the ship can be divided into 2 types, namely dynamic stability and static stability.

- Dynamic Stability
  Dynamic stability is the work needed to lighten a ship at a certain angle.
- Static stability
  Static stability is the ship's ability to return to its original position after being shaken, see Fig 4.

III. Results and Discussion

Stability calculations are used to find out how large the buoyancy tool is to accept external forces, such as waves and wind. Contact with operational applications using floating tools to be more effective when using Anco., see fig. 5.

The curva shows that Gz is a maximum of 1.2 m at a slope angle of 440. The minimum standard of boat design criteria from IMO based on the calculation of the transverse stability of a floating tool is as follows, see Table 1 :

Table 1. The Result of Floating Tool Design Validation Viewed from Calculation of Transverse Stability Based on IMO Standards with DelftShip software

Minimum design criteria applicable to ship	
1. Area 0° – 30°	**Yes**
2. Area 0° – 40°	**Yes**
3. Area 30° – 40°	**Yes**
4. Max.GZ at 30° or greater	**Yes**
5. Angle of max GZ	**Yes**
6. Initial metacentric height	**Yes**

IV. CONCLUSION

The making of floating appliance float models for fishing with anco fishing gear for pre-prosperous fishing communities, Bedono Village, Sayung Subdistrict, Demak Regency, Central Java used several approaches. Looking at the economic capacity and location of the village, a design can be formulated to model a floating tool. Based on the analysis results, the ability of the floating appliance to accept loads up to 300 kg / drum so that the capacity of 1 tool module can be planned for 3-4 people. With affordable costs, it can be applied to the community. In this case it is very useful especially the process of finding a fishing ground.[6]

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