UNIVERSITI TEKNOLOGI MARA
CAWANGAN BUKIT BESI

MEC299

HULL DESIGN AND STABILITY OF GRP PAYANG BOAT

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CHAPTER ONE

INTODUCTION

1.1 BACKGROUND OF STUDY

A traditional Malay open fishing boat is known as a perahu payang or simply a payang. Typically, you may find them around the Terengganu, Kelantan, Pahang, and, to a lesser extent, Johor coasts. During the South China Sea's north-east monsoon, a few patients regularly go to Singapore for treatment. The native fisherman used a payang, thus the term perahu payang (a form of seine). A Malay term with the meaning "boat" or "ship" is perahu. The name can therefore be translated as "payang boat."

Perahu Payang employs a team of 15 to 20 men during fishing. The pukat payang, from whence the name originates, is the net that it carries. The perahu payang is 33 to 45 feet (10 to 13.7 metres) in length and has a beam of 6 to more than 7 feet (1.8-2.1 m). The boat has superbly built-up bow and stern, which truly makes it stand out. The upper planks are often constructed of serayah wood, while the keel and bottom planks are made of chengai wood. To sustain the crew and nets if the boat is swamped, the upper strakes, or timbau, of Malay boats are frequently made of light woods like serayah or medang. If the boat was built of chengal wood, just the boat would float away. Two spar rests are present, and one.

Payang boat nowadays become extinct in our country. The boat building industry is currently faced with the problem of shortage supply of chengal wood and the consequent price increase. The price of chengal has increased every year from MYR 2,030.00 (US $ 534.00) in 1997 to MYR 3,100.00 per m3 in 2001 (Bumiputra-Commerce Bank 2001). As a result, the cost of the construction of a new boat or any woodwork has increased and it also takes a longer time depending on the supply of the wood. This payang boat is a legacy for young people. So, this legacy cannot be extinct just like that. To improve the original payang boat, the material to make it had to be changed to glass reinforced plastic (GRP). To make it more modern, the propulsion of the boat needs to be improved by putting the diesel two stroke engine. When the materials for making this payang boat are exchanged, the hull form of this payang boat need to be modified. Fiberglass is stronger than wood. Almost all fishing boats operating in Indonesia

are made of wood. The hulls of wooden boats are exposed to heat every day and float in seawater, a combination which can cause parts of the boat's hull to be quickly damaged. Fibreglass is a composite material which is strong, weather resistant and easily formed. (Sunardi et al., 2019, p. 2). Then, the hull may be thinner and the area inside the boat larger. The stability of payang boat also need to analyze using the modern method.

Figure 1.1: a payang in Museum Negara, Malaysia

1.2 PROBLEM STATEMENT

To create this payang bot will experience the problem of lack of manpower. High costs are also a problem in producing these bots. This traditional art is increasingly lost in the age of tails rather than inheritance of talents for which there is no continuity. This will give an impression to the inheritance. This skill cannot nurture the wisdom of the art of local bot making to the new generation so that this proficiency continues to be inherited and pioneered by the next generation.

To solve this problem, this bot needs to be customized by exchanging material from wood to glass reinforced plastic (GRP). This material has more benefits than wood. Fiberglass boats are extremely strong and do not rust corrode, or rot. (Abdullah, p. 17)

1.3 OBJECTIVE

The main objectives of this project are:

1. To design a suitable hull design for GRP payang potong belakang.
2. To analyse the stability of GRP payang potong belakang.

1.4 SIGNIFICANT OF STUDY

This study aims to benefit the community, heritage and environment. Wooden boats require a high amount of maintenance every year to keep them safe, strong, and attractive (Sullivan, 2019). Upsides to this method include relatively low maintenance, high strength, ease of repair, and generally low cost when compared to other boatbuilding materials (Boatbuilding Basics: Fiberglass, Composites, and Wood | PropTalk, 2013).

The study also aims to have an impact on heritage to appeal to young people about the existence of payang boats. This traditional bot-making art needs to be emphasized to young people so that this legacy is continued in the future. The manufacture of these modern boats will also benefit the fishermen. Renovating the original swamp boat into a modern boat will make it easier for fishermen to move the boat. This is because this modern boat uses modern propulsion which is diesel two stroke engine. The Department also plays a role in producing