1st Malaysian-Designed Offshore Support Vessel (OSV)

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THE tremendous growth of shipping activities in Malaysia over the years and its great potential underlines the value of the maritime sector to economic well-being and the importance of the seas to the lives of the people. With our present standing as a top merchant shipping industry, it is only natural to aspire to be a shipbuilding nation. We aim to achieve long-term industrial competitiveness on a global basis through the transformation and innovation of our ship building sector. Shipbuilding is seen as a major player to ensure economic growth as it encompasses a wide array of skills, services, SMEs and professional undertakings.

But Malaysia is lagging behind in her ability to capture a sizable portion of the world shipbuilding pie. There are adequate skills to build various types of ships but skills alone are not enough to compete with shipbuilding giants that do not rely on skill alone but on massive designs and knowledge. Numerous issues contribute to this situation but the one of the most critical would be design capability.

Malaysian shipbuilders have relied heavily on foreign technical know-how and design. Due to its failure to develop indigenous design and development capabilities, the local market continues to be flooded with foreign components and design know-how. This has adversely influenced the development of local support industries which can be translated to less than marginal export performance.

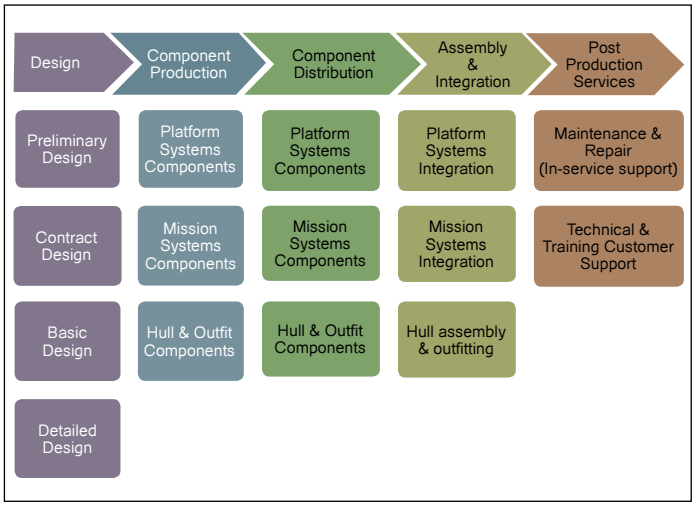

Figure 1: Shipbuilding Value Chain

MALAYSIAN SHIPBUILDING SCENARIO

The Malaysian Shipbuilding and Ship Repair Industry Strategic Plan 2020 aims to generate RM6.4 billion in GNI and to create an additional 55,500 jobs by 2020. This is in line with the growing demand for small to medium-sized vessels to meet the needs of the maritime and Oil & Gas industry for the next 10 years. Its recommendations are expected to boost the country's industrial competitiveness, which has come under increasing competitive pressure from Singapore, Vietnam, Indonesia, India, China and the Philippines.

The shipbuilding industry in Malaysia will not evolve by itself. For it to grow and be competitive, a comprehensive development plan was formulated and implemented. The factors considered to be of great influence are Policy, Institutional Framework, Regulatory Framework, Design and Technology, Human Capital, Finance and Incentives.

Modern shipbuilding involves multiple actors to design, construct and maintain a ship. Figure 1 illustrates the complex set of design, production, and post-production activities involving multiple actors across the shipbuilding value chain which comprises three major phases: Pre-production, production and post-production. Currently, the strength of the Malaysian shipbuilding industry lies in production but it is severely handicapped in the pre and post production.

DESIGN AND SHIP DESIGN

The standard of Design in a society reflects its intellectual, technological and organisational capabilities. Design is always associated with a creative act with developed ingenuity encompassing advanced knowledge, techniques and discipline which becomes the nerve centre for future innovations and discoveries.

Design is done in response to a challenge, a problem or a set of requirements, or as a planned action for the foreseeable future. The capability to design is a strategic act of consolidating perceived needs and the ability to act on it will create tremendous opportunities that will finally be translated into economic gain as well as a commanding status of a fully developed nation.

Design-led innovation has the potential to increase performance and the ability to compete on a global stage. Design is a strategic business capability that enables communities to grow locally and globally. The sophisticated application of design and the realisation that it is a valuable business tool will enable businesses to create new and more efficient ways to do things, increase exports and improve productivity. Figure 2 summarises the phases and activities of modern shipbuilding.

TECHNOLOGICAL DEVELOPMENT AND ECONOMIC GROWTH

Value-oriented benefits of product innovation are not the only reason to promote design activity which has far reaching influences on export and economic growth. International trade has long since shifted from raw materials to processed products. It is the design and the technological capability that give a competitive edge to the products in international market.

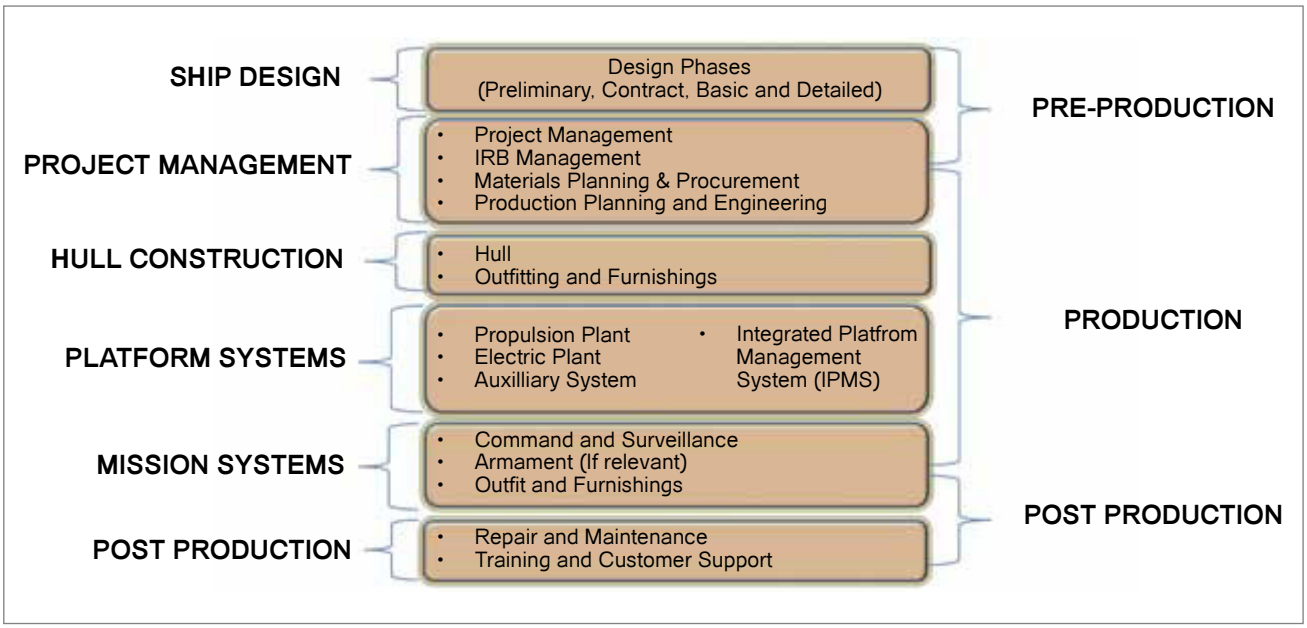

Figure 2: Modern shipbuilding activities

Design is recognised as a tool for development, especially in export trade, by the governments in industrialised countries as early as the first decade of this century. Most governments believe in and continue to promote design capability with greater vigour.

THE ACTION PLAN

With the full realisation of the strategic requirement for enhancing the full design capability of the Malaysian shipbuilding industry, the Shipbuilding and Ship Repair Industry Strategic Plan 2020 (SBSR 2020) was launched in 2011. Helming this initiative is the Malaysian Industry-Government for High Technology (MIGHT), with the Association of Marine Industries of Malaysia (AMIM). With this initiative comes the Entry Point Project (EPP) that specifically addresses SBSR 2020 with the aim of developing sustainable competitiveness in the industry.

Under this EPP project is the building of the First Malaysian-designed OSV and the stewardship of this milestone event has been given to Boustead Heavy Industries Corporation (BHIC). With its long involvement in national shipbuilding and ship repair, coupled with prime facilities and highly competent human resources, BHIC will be seen to champion the growth of the SBSR industry. With a basic hull developed earlier, a new design will be produced that will undergo extensive remodelling and review to undertake new requirements to fulfil current stringent international regulations as well as meet the expectations of local ship owners. The new design will be then utilised by BHIC to develop more design innovations in its path to harness the competitive advantage gained by the ability to design.

In order to execute the design of the vessel, BHIC has engaged a local research centre to undertake the enormous task of developing the design and conducting extensive design verifications and testing. Marine Technology Centre of Universiti Teknologi Malaysia (MTC-UTM) with its well-equipped design and testing facilities, has the ability to perform design, evaluation and model testing for the specific needs of the maritime industry.

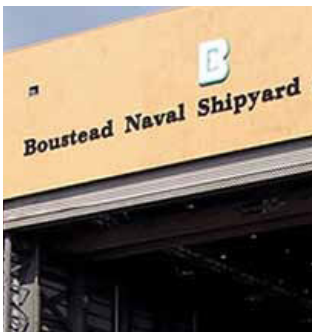

Figure 3: Boustead Naval Shipyard

Figure 4: A Typical Offshore Supply Vessel (OSV)

MTC-UTM which started as a marine hydrodynamics laboratory in 1997 to fulfil academic requirements, has transformed into a major research and consultancy centre. Over 100 model testings have been conducted in the past 15 years for international clients. With this vibrant activity, its laboratory was upgraded to a Marine Technology Centre (MTC) in 2012 with a strong focus on developing knowledge in marine technology through research and the development of the national marine industry.

Under the EPP project spearheaded by BHIC, MTC-UTM undertakes to provide design and model testing know-how. The design of the OSV, in particular the Anchor Handling Tug Supply (AHTS), is seen as the most strategic option in view of the number of local operators of the AHT in the Malaysian Oil & Gas industry.

The AHTS was designed using the latest technology in computational fluid dynamics (CFD) and advanced model testing. The method allows the ship's hull to be optimised prior to the model testing and is able to predict the influence of various hull geometry and environmental conditions on the final hull resistance. The hull designed at MTC-UTM demonstrates a reduction of 18% drag, which ultimately reduces engine size with savings in the final fuel costs.

Figure 5: Towing Tank Facilities at MTC-UTM

Figure 6: Basis Hull for AHTS

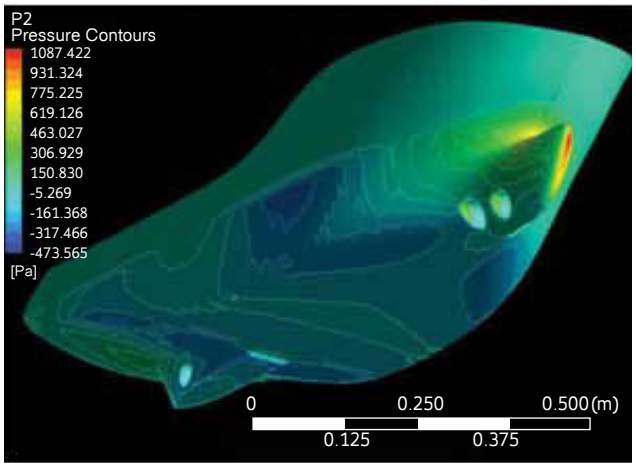

Figure 7: CFD Results of Optimise Hull of Type 7 Hull

MTC-UTM will conduct extensive resistance, propulsion and sea keeping testing in calm and turbulent waters. This knowledge and know-how is particularly important as the world governing body, the International Maritime Organisation (IMO), under the Environmental Protection Committee (EPC) have mandated the requirements of fulfilling the Energy Efficient Design Index (EEDI) starting January 2013.

THE WAY FORWARD

As the shipbuilding industry is crucial in facilitating the growth of trade and economic development in Malaysia, it is essential that efforts be made to bolster the capacity and performance of the sector by way of learning from the successful experience of leading shipbuilding nations. All the stakeholders, including policymakers, financiers, manufacturers, service providers, ship owners and shippers must close ranks to support local shipyards and spur the development of the industry.

For shipbuilding to prosper and to benefit other associations and downstream industries, the design capability must be nurtured, developed and protected. Design capability develops over time. It is the most expensive commodity to acquire and maintain but is definitely the most valuable asset in the shipbuilding value chain. It is the designers' prowess, not only in ship design but also in the general engineering sector which will ultimately develop the components.

BHIC and MTC-UTM are committed to overseeing the development of the SBSR industry. BHIC with its capital involvement in shipbuilding and ship repair will garner every effort to ensure sustainability in the shipbuilding sector as well as maximise its return on investments.

BHIC will continue to acquire opportunities to further develop the industry. MTC-UTM on the other hand will press on to acquire knowledge that would spur greater innovations through industry driven research. ■

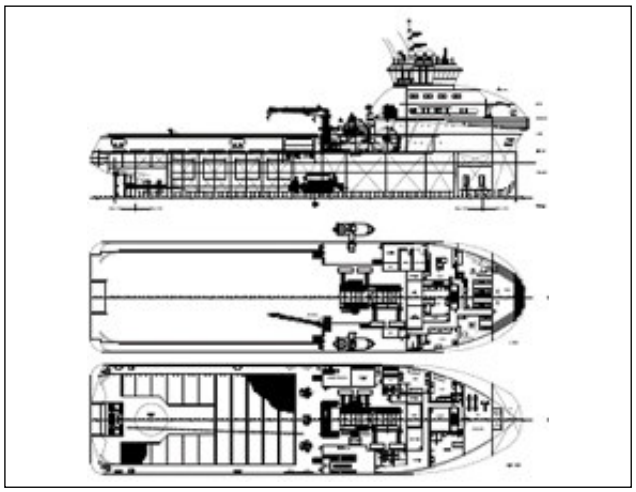

Figure 8: General Arrangement of Basis Hull

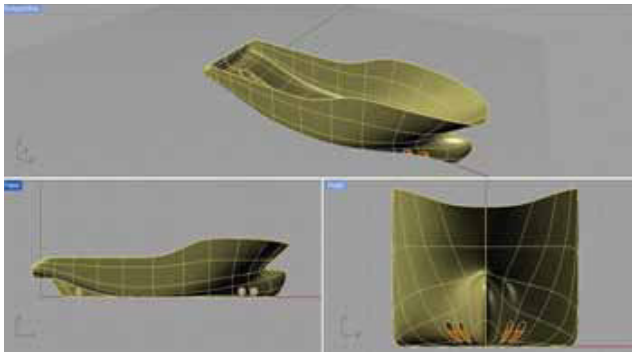

Figure 9: Type 7 Hull Developed

Figure 10: Conceptual Design of The OSV

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