

Research Vessels with Modular Mission Modules and Proven Technologies



During the Oceanographic Survey Vessel Conference, held in London, UK, from 7-9 June 2016, Damen Shipyards Group announced the introduction of a range of multi-role auxiliary vessels (MRVs). The common theme running through the series is the provision of a basic platform offering reliable and cost-effective multi-role potential and hydrographic survey capabilities to naval clients.



With the addition of supplementary modular mission equipment, this new family of Damen vessels can be mobilised in numerous, mainly littoral, naval tasks such as: explosive ordnance clearance and disposal, diving operations, torpedo recovery and overhaul, ROV and UAV deployment, SAR, coastal infantry and submarine support. The largest version of the range will be able to operate

worldwide, on the ocean as well as in littoral waters. This ship has additional capabilities such as disaster and humanitarian relief, oceanography and naval training support.

The introduction of flexible concepts which allow as many functions as possible to be included into a range of smaller vessels without reducing the effectiveness and capacity of the fleet while maintaining the benefits of modularity; this is Damen's ambition with this new family of vessels.

Multi-purpose Platform

The new range of vessels consists of three different designs: the MRV 660, MRV 1600 and MRV 3600. Designed for different geographic profiles, these vessels are respectively 43, 62 and 85 metres long. Hydrographic capabilities, to map the seabed for safe navigation and as a preparatory action for military operations in particular, are indispensable to navies worldwide. Depending on a naval client's specific requirements, any type of hydrographic equipment can be integrated into these three vessels.

The idea behind these vessels is to create a basic platform that can assist in a variety of tasks through the selection of the required mission configuration, e.g. coastal transport, submarine support or coastal infantry operations. The stimulus to switch from the traditional one-to-one replacement is to lower the total cost of ownership without losing capability and capacity.

Minimal Draught

With a draught of 1.9 metres, the MRV 660 is suited for very shallow coastal, riverine and inland water operations. In addition to shallow water hydrographic surveys, this vessel is capable of a comprehensive array of duties such as diving operations, EOCD support, ROV and UAV deployment, with a core crew of 8 and capacity for an additional 15 specialists.

The key points are to maximise displacement, minimise resistance and optimise seakeeping characteristics for the area in which the ship will operate, according to Damen design and proposal engineer Tim Viveen. The MRV 660 has design characteristics that help achieve this: an aluminium superstructure and reduced freeboard section cut down on weight. And tunnel ducts on the underside of the hull ensure enough water reaches the propellers.

Additional Roles

The MRV 1600 is designed for littoral and regional offshore operations. Its larger size allows for greater endurance and carrying capacity

of both crew, mission modules and cargo. The vessel will be manned by a core crew of 13, with capacity for an additional 30 mission specialists. The main deck can hold six standard 20-foot mission containers and the below-deck cargo hold can store two 20-foot containers and palletised cargo.

This medium-sized vessel can take on similar hydrographic and auxiliary duties to its smaller sister vessel, with the addition of torpedo recovery and overhaul tasks in support of submarines and anti-submarine warfare units. Small scale coastal transport and infantry support is also possible.

Global Operations

Intended for worldwide service, the capacity of the largest vessel in the range – the MRV 3600 – allows for more than one specific mission during a deployment. Capable of hydrographic operations both in littoral and deeper waters, this vessel also has a helideck and substantial storage capacity for other mission configurations, equipment and cargo. Furthermore, the MRV 3600 can serve as a base for more extensive operations such as disaster and humanitarian relief. There is accommodation for 14 core and 45 additional mission crew and enough space on board to provide emergency hospital services for 50 to 60 people.

Modularity

One of Damen's key aims with this new range of vessels is to reduce the pressure on a navy's human and financial resources. The modularity of the mission modules also plays a major part in reducing this pressure: capabilities of specialised ships have been combined into one ship by using these add-on equipment modules – these can be fitted inside standard 10-, 20- or 40-foot containers or have the footprint of a standard container, states Damen design and proposal manager Piet van Rooij.

Cost Results

A modular platform is inherently flexible: this allows naval clients to better react to changes in the mission environment. Modularity also has implications on the total cost of ownership: the lifetime of an individual vessel can be efficiently extended by upgrading capabilities with new equipment modules that are not integrated into the original design.

Financial advantages are to be found in the fact that the MRV range is commercially built and also uses commercially available components. This is made possible because of the vessels' non-combatant role.

Complementary Design

The Multi Role Auxiliary Vessel range serves to expand the company's naval portfolio that includes larger vessels such as frigates, corvettes, LPDs, AORs and OPVs. These MRV designs are complementary to the range of ships that Damen already offers for the defence and security markets, currently being at the stage of finalised conceptual design. Considering the next step, being more detailed engineering while taking advantage of COTS equipment and tested designs, Damen is confident that the actual construction can be swiftly accomplished, with excellent quality and reliability.