MARIN plays an important role as the Netherlands studies future naval assets

The Dutch military procurement arm 'Defence Materiel Organisation' (DMO) investigates requirements for future naval assets. DMO naval architects, Bart van Oers and Erik Takken, are working on concept design and technology development. They give us a sneak preview of their work.

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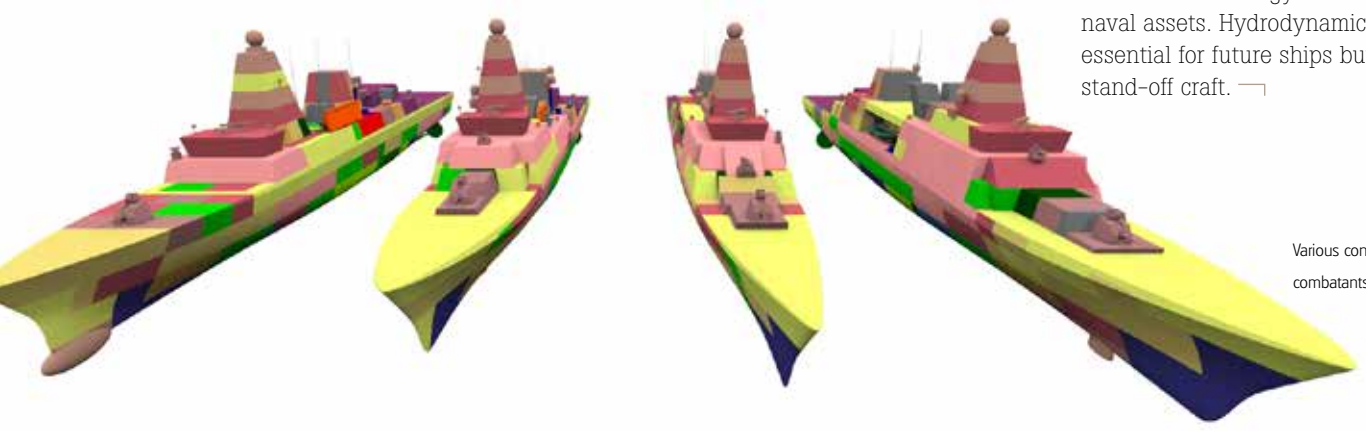
The Royal Netherlands' Navy needs to stay ahead with technological developments to maintain the advantage at sea. To support defining ambitious but feasible requirements, DMO's role is to investigate the technical and financial consequences of operational requirements. For this purpose, DMO employs in-house developed ship design models. PACKING employs a genetic algorithm to automatically produce thousands of varying conceptual ship designs which meet basic feasibility requirements. GCD2 employs MARIN's QUAESTOR-code and allows users to swiftly but manually define and evaluate conceptual ship designs in more detail. Lastly, TNO-developed simulation-based HOLON is employed to assess the effectivity of design and toolkit in relevant scenario's.

Furthermore, DMO directs research on a wide range of topics. Important research includes the development of silent but efficient propulsors. Balancing the interests of efficient maximum and transit speeds, to support reducing the dependency on fossil fuels, with additional design requirements such as maintaining a high silent speed in seaway, low-signature station-keeping or quiet manoeuvring is a considerable multi-disciplinary challenge which impacts the entire propulsion train and thus design.

Significant research effort is put in the integration of unmanned vehicles, which increasingly support military operations. The hydrodynamic performance of small unmanned underwater and surface platforms, especially of the sensors and weapons they carry, is especially important, but achieving the required performance is challenging due to their small size.

Hull form optimization is a continuing research effort. Typical hydrodynamic traits of naval vessels include outstanding manoeuvrability and high overall operability in waves to maximize availability of crew and performance of shipborne installations, including launch and recovery systems for manned and unmanned craft. Additional requirements may include good course-, track-, and station-keeping even in adverse conditions. Combining these requirements poses a complex task.

Amongst others, DMO employs MARIN's knowledge and tools to assure feasibility of and steer technology development for future naval assets. Hydrodynamics is not only essential for future ships but also for small stand-off craft.



Various concept designs of naval combatants produced with GCD2