The MEKO[®] X frigate.

The MEKO[®] X is the latest member of the MEKO[®] design family which today includes the MEKO[®], the MEKO[®] A and the MEKO[®] DELTA frigates and corvettes.

Defining fixed requirements for a surface combatant which is intended to enter service in the first half of the next decade is not a logic process. Thus, an Operational Concept Document (OCD) which is based on assumptions regarding future requirements has been prepared for this vessel. This document outlines assumed operational needs, which were then used to develop the MEKO[®] X.



The MEKO[®] X will be a future surface combatant capable of sustained national and coalition operations in a multi-threat scenario. This ship provides a new level of capabilities in all warfare areas. It includes aspects of Network Centric Warfare as well as a broad spectrum of interoperability concerning joined or combined operations. It will possess a combat system able to perform Area Air Defence including Theatre Ballistic Missile Defence in combined task groups, surveillance operations, long range surface actions and stand-off ASW attacks with distance weapons as well as enhanced strategic power projection to support land operations. The MEKO[®] X will be a large frigate with the following main characteristics:Length overall151.0 mMax. beam28.5 mDisplacement appr.8000 tComplement120Speed>28 knotsRange>6000 nmEndurance45 days

Due to this size, the platform incorporates a number of technical features which result in a high survivability of the structure as well as of all systems by fully exploiting, among others, the philosophies of physical distribution of the systems or their redundancies.

Enhancement of the structural survivability is being realised by the introduction of four longitudinal boxgirders over more than 80 % of the ship's length and by six double-walled bulkheads. The objective of these measures is, in case of a hit, to reduce and contain the extend of destruction of the total weapon system "Ship" in order to preserve its capability to move on and to continue the combat mission.

The hull lines are designed following the Delta-Hull form principles which are applied to the MEKO[®] DELTA class frigates for the first time.



MEKO[®] X Top View

The MEKO[®] X will have an all-electric propulsion plant with two podded drives. The fundamental advantages and benefits of an all-electric ship are widely known. However, it is worthwhile to recall the major benefits :

- Increased vessel safety
- Higher flexibility
- Lower operating costs
- Enhanced availability, reliability and maintainability

The electric power for propulsion and ship's service loads is supplied from four diesel generator sets and one gas turbine generator set. Due to the energy demand for the propulsion plant a 6,6 kV medium-voltage (MV) is used. There are four consumers of power on the system, two propulsion converters and two ship service transformers.

This all-electric system provides the MEKO[®] X with a most modern yet economic power plant.

An already mentioned positive consequence is the flexibility to arrange the prime movers. The gas turbine generator set is located on the 01 deck which facilitates and reduces air supply and exhaust delivery systems.

The diesel generator sets are also re-located higher in the hull in order to improve their survivability and maintainability and last but not least to reduce their noise emission.

To support manoeuvrability and further improve the propulsion redundancy, a retractable electric rudder propeller can be fitted forward.

The initial weapon fit of the MEKO[®] X is remarkable comprehensive.

In total 96 VL cells are evenly distributed between the fore and aft part of the ship. Also distributed in equal numbers forward and aft are two 16 cell vertical launchers for Point Defence Missiles

Two medium calibre guns are mounted, one forward, one aft, further fostering the already strong land-attack capability of the $MEKO^{\textcircled{R}} X$.

In line with the advanced MEKO[®] X concept, the vessel incorporates a new radar system, which provides, while using an arrangement of six active phased array modules, long range and volume surveillance as well as multi-target tracking and targeting. Continuous wave target illumination will also be performed by these active phased array modules.

In order to enhance the system sustainability, the arrays are distributed on both masts. All six arrays cover predefined sectors. In case of degradation, three arrays on each mast will be able to cover 360°. This possibility will strengthen the Two-Island concept applied to the combat suit as well to the ship systems.

To support ASW operations the MEKO[®] X is equipped with a hull mounted sonar, an Active Towed Array Sonar (ATAS) as well as with helicopter launched torpedoes.

The delta-hull form provides ample space in the ship's aft part to locate two helicopter hangars below the flight deck and thus also permitting the installation of a big aft VLS launching system located in front of the landing deck. Below deck, the beam of the vessel is totally dedicated to helicopter storage and maintenance purposes. Access to the hangars from the landing deck is provided by two lifts. This arrangement permits the independent landing, transfer and storage of two big helicopters. These two aircraft with their own sensors and weapons constitutes an formidable hazard to any attacking submarine.



MEKO[®] X Front View

Derived from the MEKO[®] DELTA design - the design of the MEKO[®] X has been developed with the aim to incorporate on a new level the in not to distant future available latest technologies and capabilities in warship design. This vessel with its strategic possibilities can provide new options concerning power projection and Area Air Defence.

The intention of Blohm+Voss in presenting this MEKO[®] X concept study is to support the customer in his task to define future combatant vessels and generate a common understanding over future needs and possibilities.