

## HELLENIC NAVY MODERNIZATION PLANS

### Hellenic Navy's new frigate

The Hellenic Navy's new frigate will be a "high end" multipurpose/multisession frigate with advanced capabilities in anti-air, anti-submarine, and anti-ship warfare. It should be able to operate under all circumstances and weather conditions contributing to the accomplishment of Hellenic Navy's main mission and international obligations. Her main operational characteristics will assure the retainment for the next 15 – 20 years of navy's core traditional capabilities, referring to all the inherent tasks on Above Water and Under Water Warfare.

On Saturday 5 June 2021, the MOD Political and Military Leadership during a meeting held in Prime Minister office presented the results of the evaluation of the proposals submitted to the Hellenic Navy related to the four new frigate acquisition program. Candidate shipyards have been shortlisted from the following countries in alphabetical order: France, Germany, Holland, Italy, the United Kingdom, the USA. Spanish shipbuilder Navantia and its offer had not been selected.

The meeting chaired by the Prime Minister Kyriakos Mitsotakis was also attended by the Minister of National Defence Mr. Nikolaos Panagiotopoulos, HNDGS Chief General Konstantinos Floros, HNGS

Chief Vice-Admiral Stylianos Petrakis, Ministry of Defence Secretary General Mr. Antonios Economou, GDDIA General Director Mr. Aristides Alexopoulos, National Security Advisor Mr. Thanos Dokos and Prime Minister's Secretary General Mr. Grigorios Dimitriadis

Candidate frigates are,

- Naval Group with the FDI/Belharra
- Babcock with the Type 31/Arrowhead
- TKMS with the MEKO A200NG (or MEKO A300)
- Fincantieri (allegedly with the FREMM)
- Damen Sigma 11515
- Lockheed Martin with the MMSC

The Hellenic Navy maintains a large number of surface vessels and submarines in its inventory. However, the 10 years of economic recession (2009-2019) that affected the country particularly hard, have also affected the Navy's future procurement and modernization plans. The types currently operated are the Hydra class (Type: Meko-200HN) and the Elli class (Type: Kortenaer).

The HN presently consists of four Hydra-class frigates designed in Germany, products of the MEKO 200 frigate design, and delivered in the 1990s. It also has nine Elli-class frigates built in the Netherlands, all aside from two of which formerly served in the Royal Netherlands Navy, and delivered in the 1990s and early 2000s. The Elli class frigates HS Elli and HS Limnos were sold to Greece during construction, the rest were bought directly from the Dutch Navy. The Hydra class vessels were constructed in Greece by Hellenic Shipyards Co., except from HS Hydra that was constructed by the German company Blohm and Voss based in Hamburg.



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Οι καινοτόμες λύσεις, που σχεδιάζει, προστατεύουν τα συμφέροντα εθνικής ασφάλειας των συμμάχων της Γαλλίας.

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**Submarine's torpedo program**

Defence Minister Panagiotopoulos had stated that among the Hellenic Navy's priorities is the acquisition of modern heavyweight torpedoes to equip the S-214 type submarines. The Hellenic Navy is looking to procure 36 21-inch (533 mm) heavyweight torpedoes for its four Papanikolis-class Type 214 submarines and sole Type 209 AIP-equipped submarine, HS Okeanos, to replace legacy AEG SUT and SST-4 torpedoes. Navy originally launched the new-generation heavyweight torpedo acquisition program in 2002. The contenders will likely include Atlas Elektronik with the DM2A4 Seahake Mod4, Naval Group with the F21 and Leonardo with the Black Shark

**Meko frigate upgrade**

The Hellenic Parliament Defence Committee approved the mid-life update (MLU) of the Hellenic Navy's four Blohm + Voss/Hellenic Shipyards-built MEKO 200HN Hydra-class frigates, commissioned during the 1990s. The MLU is necessary to modernize the ships' capabilities to respond in the new operational requirements. The selected sub-systems for the MLU will be decided according to the budget availability which is around 450 million euro. No more details were announced

**MH-60R Multi-Mission Helicopters**

The Hellenic Parliament Defence Committee approved the acquisition of four (4) MH-60R Multi-Mission Helicopters to provide the capability to perform anti-surface and anti-submarine warfare missions along with the ability to perform secondary missions including vertical replenishment, search and rescue, and communications relay. On July 12, 2019, The State Department has made a determination approving a possible Foreign Military Sale to the Government of Greece of MH-60R Multi-Mission Helicopters with support for an estimated cost of \$600 million. The Defense Security Cooperation Agency delivered the required certification notifying Congress of this possible sale. The Government of Greece has requested to buy up to seven (7) MH-60R Multi-Mission Helicopters

equipped with ten (10) APS-I 53(V) Multi-Mode Radars (7 installed, 3 spares); eighteen (18) T700 GE-401 C Engines (14 installed, 4 spares); seven (7) Airborne Low Frequency System (ALFS) (7 installed); ten (10) AN/ AAS-44C(V) Multi-Spectral Targeting Systems (7 installed, 3 spares); eighteen (18) Embedded Global Positioning System/Inertial Navigation Systems with Selective Availability/Anti-Spoofing Module (SAASM) (14 installed, 4 spares);

one thousand (1,000) AN/SSQ-36/53/62 Sonobuoys; two (2) AGM-114 M36-E9 Captive Air Training Missiles (CATM); four (4) AGM-114Q Hellfire Training Missiles; one Hundred (100) Advanced Precision Kill Weapons System (APKWS) Rockets; thirty (30) MK 54 Torpedoes; twelve (12) M-2400 Crew Served Guns; and twelve (12) GAU-21 Crew Served Guns. Also included are eighteen (18) AN/ARC-210 APX-1990A(C) Radios with COMSEC (14 installed and 4 spares); twenty-four (24) AN/AVS-9 Night Vision Devices; ten (10) AN/APX-123 Identification Friend or Foe (IFF) transponders (8 installed, 2 spares); spare engine containers; facilities study, design, and construction; spare and repair parts; support and test equipment; communication equipment; ferry support; publications and technical documentation; personnel training and training equipment; U.S. Government and contractor engineering, technical and logistics support services; and other related elements of logistical and program support. The estimated total case value is \$600 million.

**Delivery of the 6<sup>th</sup> Super Vita Fast Attack Craft**

After a long delay almost eight years, the Hellenic Navy has taken delivery of the 6<sup>th</sup> BAE Systems designed Fast Attack Craft at a ceremony at Elefsis Shipyard near Athens. HS "Karathanasis" is the latest vessel in a class of seven 62 metre Fast Attack Craft being built by BAE Systems' industry partner, Elefsis Shipyards, for the Hellenic Navy. Under a long-term technology transfer programme, BAE Systems is the design authority and major subcontractor to Elefsis Shipyards, responsible for the design and combat systems integration of the vessels.

The 62 metre Fast Attack Craft is designed as a high speed, multi-role platform that can operate in both anti-air and surface combat situations. Used by the Hellenic Navy as a high-speed interception and offshore patrol craft, its extensive weapon fit on a compact hull delivers an economic solution to surveillance, intelligence gathering, patrol, interdiction and engagement of enemy forces.

The purchase agreement of the first three fast attack craft (FACs) of the Roussen class (was signed in January 2000, and the construction took place at Eleusis Shipyards, while the Vosper Thornycroft (now BAE Systems Maritime) provided the necessary planning, logistics and equipment for the vessels. In August 2003 a contract was awarded for further two ships, Grigoropoulos and Ritsos, to be built by Elefsis. Ritsos was launched in October 2006 while the vessel was commissioned recently in 2015. A contract from the Hellenic Navy for an

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additional two vessels, to bring the total to seven, was placed in September 2008. The first ship of the class was launched in November 2002 while three more vessels were launched the next three years. The seventh boat, Vlahakos, is expected to be delivered within 2021.

#### **Modernization of P-3 Orion Maritime Patrol Aircraft**

Defence Minister informed parliament that the Modernization of P-3 Orion Maritime Patrol Aircraft will be completed by 2024 while the total cost will be \$499.843.145,00.

The government-to-government agreement between the United States and Greece was announced in 2015, providing for the re-activation of one Hellenic Navy P-3B Orion maritime patrol aircraft, which has been delivered. This agreement also includes the modernization of four Hellenic Navy P-3B aircraft through the Mid-Life Upgrade (MLU) Program.

MLU kits provide an extension of service life by 15,000 flight hours. In addition, this contract provides for phased depot maintenance; a Greece indigenous mission integration and management system; new avionics; and other ancillary hardware and services.

The P-3 Orion is the model in maritime patrol and reconnaissance aircraft, and is used for homeland security, anti-piracy operations, humanitarian relief, search and rescue, intelligence gathering, antisubmarine warfare and, recently, to assist in air traffic control and natural disaster relief support. The Hellenic Navy operated the P-3 fleet for 15 years. Work on the Hellenic Navy P-3s is performed at HAI facilities in Greece, as well as at Lockheed Martin's facilities in Marietta, Georgia, and Greenville, South Carolina. Lockheed Martin is the Original Equipment Manufacturer (OEM) of the P-3 Orion.

The P-3 MLU and Avionics Modernization Program provides state-of-the-art operational advantages to the Hellenic Navy to not only support present mission requirements, but future ones as well. The domestic defense industry in Greece is providing 30 percent of the overall program value, drawing considerable industrial, financial and technological benefits for the autonomous operation and support of the specific weapon system.



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**Naval Group commits to working with Greek shipyards and local industrial and academic ecosystems for the frigates program and beyond**

A few weeks ago during his visit in Athens, Naval Group Global CEO Pierre Eric Pommellet has renewed the group's commitment to delivering the best solution to address the Hellenic needs and to maximising the involvement of the Greek industry, universities and research institutes.

Naval Group has submitted as part of the French Team with MBDA and Thales a comprehensive and robust package designed to ensure Greece has the best capabilities in the shortest timeframe with optimised costs.

At a press briefing, Pierre Eric Pommellet presented the FDI frigate and its outstanding capabilities. He explained that "thanks to the Aster 30 missile which is a standard feature of our ship, the FDI HN is the only frigate offered to the Hellenic Navy capable of protecting efficiently high value units or areas at sea, shore facilities, cities and Greek islands." He also said that "the French program is well underway with the first-of-class already in production in our shipyard in Lorient for a delivery in early 2024. Because the FDI frigate is already in production, we can offer a short time delivery to Greece with the first FDI HN in service by 2025."

He also gave details about the robust Hellenic Industry Participation plan proposed by Naval Group. Naval Group has deployed a team of experts on the ground to identify and meet the Hellenic companies interested in joining the frigates programs or other projects with Naval Group.

"We have identified close to 100 companies, already had exchanges with more than 70 including METKA, AKMON, STELMA, MILTECH, PRISMA, THALES Hellas, Terra Spatium, Hydrus Engineering. We are now entering the next phase by addressing them requests for proposals."

Regarding the shipyards, he said "Naval Group is committed to contributing to the revitalisation of the Greek shipyards and we are confident that with our

support Skaramangas and Elefsis will be able to build this latest generation frigate here in Greece. Naval Group has a solid experience in local construction all around the world. Engaging with local partners and transferring our technologies is in our DNA." Naval Group has been present in Greece since 2008 and wants to develop its footprint in the country for the frigates program but also beyond. During the event, Pierre Eric Pommellet explained how the know-how and technologies transferred for the frigate program will irrigate the Hellenic ecosystem and raise the level of excellence of the entire sector, sustaining jobs and economic benefits beyond the local construction and sustainment of the FDI HN. Greek partners of Naval Group will also have the opportunity to join the international supply chain of the group and participate in other projects.

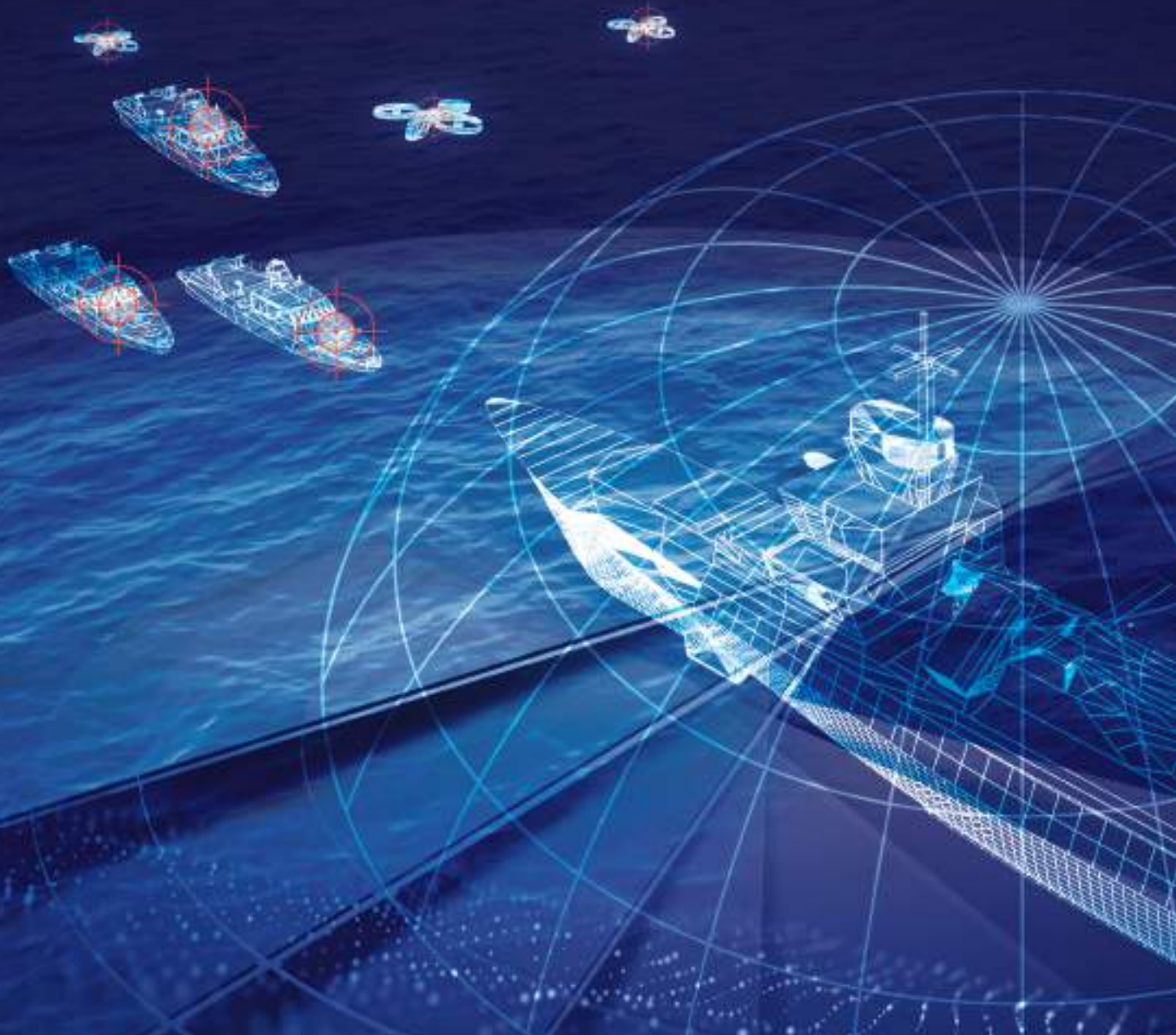
Naval Group organised "R&D partners days" on 22 and 23 June in Athens for meetings with industry partners and with FORTH-ICS on 24 in Heraklion for academic meetings. A webinar was also organised the following week for companies that could not attend and would like to join the R&D projects. These events supported Naval group's ambition to support Greece becoming a global centre for naval innovation and were a fantastic opportunity to meet with current and new partners and discuss on-going and future projects in cutting edge domains such as additive manufacturing, predictive maintenance, drones or naval mission systems.

Naval Group has signed partnerships with the National Technical University of Athens (NTUA), the University of Patras and the Foundation for Research and Technology-Hellas (FORTH) and is already working on cyber security applied to the naval and maritime domains with Greek partners in the frame of different European programs such as CYBERMAR as well as the PESCO Pandora and H2020 projects.



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## Thales and Nexter to equip French Navy ships with a new generation of artillery

The RAPIDFire system developed by the consortium formed by Thales and Nexter has been chosen by the French defence procurement agency (DGA) to equip future French Navy vessels with new artillery. This new system will provide the Navy's surface vessels with an effective close-in defence capability against modern air and surface threats.

Naval forces are exposed to several threats with complex behaviours, such as unmanned air and surface vehicles, light aircraft and missiles. RAPIDFire leverages the combined expertise of Thales and Nexter to meet the very short-range defence requirements of the armed forces. The solution features a latest-generation multi-threat (air and surface), multi-environment (land and naval) gun system, with a cost of engagement commensurate with the value of the threats.

RAPIDFire is a gun system that offers high precision thanks to its optronic fire control system integrated onto the turret, its advanced algorithms, powerful gun and automatic ammunition management system allowing the best reactivity and efficiency for the operator. RAPIDFire incorporates the new reference medium calibre 40 mm gun developed by CTAI, the international subsidiary of Nexter Systems and BAE Systems, which equipped new armoured vehicles in France, UK and Belgium. The system is compatible with the full range of ammunitions developed for land forces programmes and is predisposed to the use of future ammunition as the smart Anti Aerial Airburst (A3B) round.

Nexter and Thales formed a temporary consortium for RAPIDFire as part of a work programme and roadmap put in place 10 years ago. The programme is currently in the development phase. When development is complete, the weapon systems will enter production, and the first delivery is scheduled for 2022. Developed in a surface-to-air approach allowing use at sea but also from land, the project also provides an option to prepare for future use on land carriers. RAPIDFire, a true joint solution, will thus be a gun system capable of equipping naval, land and air forces.

"We're delighted to be supporting the French Navy as it enhances the self-defence capabilities of its warships. With its combination of fast-into-action time and firing accuracy, RAPIDFire, developed in cooperation with Nexter, provides the best response for protecting Navy vessels against modern threats. It has the potential to become a key component of our offering of advanced force protection solutions." Thomas Got, Vice-President Integrated Airspace-protection Systems, Thales.

"The 40 CTA has unrivalled power and compactness, making it a gun system that is particularly suitable for protecting surface vessels. With RAPIDFire, Nexter is delighted to extend the CTA40's range of use in cooperation with Thales and the French Navy." Michel Vatrej, Systems and Programmes Director, Nexter.



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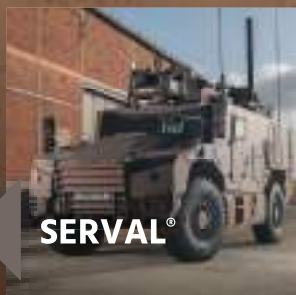


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### **ELGIUM NAVAL & ROBOTICS selects iXblue for the forefront sonars and inertial navigation system for 12 mine countermeasures vessels of the Belgium and the Royal Netherlands Navies**

Belgium Naval & Robotics have selected iXblue as the supplier of the forefront sonars and the navigation system for the Belgian and Dutch mine countermeasures vessels. These new assets will grant superior capabilities to the ships in terms of increased detectability with the sonars and higher reliability and safety for the navigation system.

iXblue, will provide the inertial navigation solutions for the naval platforms of the MCMV program, from surface ships to surface and submerged UAVs and Towed Sonars.

By ensuring resilient navigation and positioning, as well as extreme accuracy and real-time detection and analysis of mines, obstacles and other detected objects, iXblue will offer a complete and fully integrated navigation solution that will contribute to the protection of Mine Countermeasures vessels and their crews.

The front sonar FLS 60 will ensure a precise and real-time detection of mines while iXblue's inertial navigation system will provide resilient and reliable navigation information under all circumstances.

BELGIUM NAVAL & ROBOTICS – a Naval Group and ECA GOUP consortium – was awarded a contract in 2019 for twelve mine countermeasures vessels and their drone systems for the Belgian and Royal Netherlands Navies. After a design period of three years conducted by Naval Group, Kership will execute the detailed design and production phase for the motherships. The program will span over more than 10 years.

Six ships will be delivered to the Belgian Navy and six to the Royal Netherlands Navy with a first delivery scheduled for 2024. They will be equipped with complete drone systems supplied by ECA GROUP containing a total of more than eighty underwater, surface and aerial drones entirely dedicated to Mine Countermeasures operations.





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## Rafael unveils: Sea Breaker

Sea Breaker utilizes Rafael's technological innovations such as electro-optics, computer vision, Artificial Intelligence, and decision-making algorithms for full operational capability in GNSS-denied environments for maritime superiority missions

Rafael Advanced Defense Systems Ltd. unveils Sea Breaker™, a 5th generation long range, autonomous, precision-guided missile system, enabling significant attack performance against a variety of high-value maritime and land targets.

Sea Breaker is a naval and artillery unit force-multiplier, designed to overcome the modern warfare arena challenges, using Rafael's legacy of high-end precision-guided solutions.

Sea Breaker provides surgical, pin-point precision strikes from stand-off ranges of up to 300 km. It features an advanced IIR (Imaging Infra-Red) seeker, ideal for engagement of maritime and land targets, stationary or moving, in advanced Anti Access/Area Denial (A2/AD) arenas, and in littoral or brown water, including archipelago, as well as for engagements in which previous generation RF-seeker-based missiles are not effective.

Sea Breaker can be launched from naval platforms, varying in size, from fast attack missile boats to corvettes and frigates.

The land version is a central part of the shore defense, based on Rafael's highly mobile SPYDER launchers. The battery architecture supports standalone launchers, or operation as an integrated solution, with a command-and-control Unit (CCU) and various sensors, based on customer requirements.

Using Artificial Intelligence, Sea Breaker performs deep-learning and big data-based scene-matching, a unique combat-proven Rafael technology, enabling Automatic Target Acquisition (ATA) and Automatic Target Recognition (ATR). The system has full operational capability in GNSS-denied arenas, in all weather conditions. The missile is ECM immune and jam resilient. Sea Breaker's mission profile enables sea-skimming and terrain-following low-level flight above ground.

Flying at high subsonic speeds, Sea Breaker has a multi-directional, synchronized full sphere attack capability, based on predefined attack plans, according to waypoints, azimuth, impact angle and aim point selection, ensuring a high probability of mission success, with a 250 lb. penetration, blast and fragmentation warhead, making a single hit effective enough to neutralize a frigate-sized ship.

The missile's datalink supports real-time man-in-the-loop decision-making and tactical updates. It also features a mid-flight abort capability and Battle Damage Assessment (BDA).



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## SEA CEPTOR TO PROTECT ROYAL NAVY'S NEW TYPE 31 FRIGATES

MBDA's Sea Ceptor system will protect the Royal Navy's new Type 31 frigates under a contract awarded by the UK Ministry of Defence.

Sea Ceptor is the world's most modern naval air defence system of its class. Utilising the Common Anti-Air Modular Missile (CAMM), it offers both world-leading close-in air defence and local-area air defence. The system will allow the Type 31 to protect simultaneously both itself and vessels near it from attack from current and future threats, including high-speed manoeuvring missiles, attack aircraft and fast inshore attack craft.

Eric Beranger, CEO of MBDA, said: "We are very pleased to mark this latest success for the CAMM family. Sea Ceptor was designed to change the game in naval air defence and, with Type 31 the latest in a growing list of ship classes that Sea Ceptor has been chosen to protect, it is rapidly delivering on this promise."

The new contract includes integration of Sea Ceptor with the Type 31's systems, along with delivery and installation of ship hardware for the Type 31 programme. Designed and made in the UK, the contract forms part of the Portfolio Management Agreement (PMA), a partnership initiated in 2010 between the UK MoD and MBDA on sovereign complex weapons design and production. The PMA delivers world-beating military equipment for the UK Armed Forces and has secured over 4,000 jobs at MBDA UK while generating savings worth over £1.2 billion.

Sea Ceptor is currently in service on the Royal Navy's Type 23 frigates and will also protect the new Type 26 frigates. The UK Ministry of Defence maintains a common stockpile of CAMM missiles for both the Royal Navy and British Army. The CAMM missile family has been selected by a growing list of other nations for both naval and land-based air defence.

Sea Ceptor is the next-generation, ship-based, all-weather, air defence weapon system. Through the use of new advanced technologies, Sea Ceptor provides complete protection against all known and projected air targets.

Sea Ceptor will protect both the host ship and high value units in the local area. The Weapon System has the capability to intercept and thereby neutralise the full range of current and future threats including combat aircraft and the new generation of supersonic anti-ship missiles. Capable of multiple channels of fire, the system will also counter saturation attacks.

### CHARACTERISTICS

- Weight: 99 kg
- Length: 3.2 m
- Diameter: 166 mm
- Range: In excess of 25 km
- Speed: Supersonic





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IDE utilizes high-end technologies in the design and development of advanced products in the areas of Missile Electronics, Tactical IP Communications, Integrated C4I Systems, Surveillance, Hybrid Electric Power Systems, and Unmanned Systems. The Company retains its international recognition through the long standing participation in European and NATO new technology development programs. Utilizing advanced production capabilities and large-scale project management know-how, IDE is a key player in the high technology sector of the Hellenic Defense Industry.



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## thyssenkrupp Marine Systems hands over “INS Oz” in Kiel to the Israeli Navy as second SA'AR 6 corvette

thyssenkrupp Marine Systems today officially handed over the second of four corvettes to the Israeli Navy. In the presence of Jeremy Issacharoff, the Israeli ambassador to Germany, his wife, Laura Kam Issacharoff, first named the ship “INS Oz”. Subsequently, thyssenkrupp Marine Systems Managing Director Dr. Rolf Wirtz officially handed over the ship to the Israeli Navy in a ceremony that was kept small due to the pandemic. In the world of shipping, it is a favoured tradition to pass on the names of good ships. With the Israeli Navy, however, the “INS Oz” is the first vessel to receive this name.

Dr. Rolf Wirtz, CEO of thyssenkrupp Marine Systems: “As the first ship in the history of the Israeli Navy with this name, the “INS Oz” will establish a new tradition. We are convinced of this here at thyssenkrupp Marine Systems, because she has everything it takes. We are very proud that, after the first-of-class, this is now the second vessel to receive this honour.”

©TKMS

The SA'AR 6-class corvettes will form the backbone of the Israeli Navy for the next 30 years. thyssenkrupp Marine Systems is building the ships in a joint venture with German Naval Yards Kiel. Rear Admiral Ariel Shir had arrived in Kiel for the occasion of the naming and handover: “Today is a great and historic day for the State of Israel, the Israel Defense Forces and of course the Israeli Navy. This is a day when a vision becomes reality. A day when we can see this vision in all its grandeur, thanks to the hard work tirelessly contributed by so many.”

The contract for the delivery of four SA'AR 6-corvettes was signed in May 2015. After the design phase, the construction phase began with the type ship's first cut ceremony in February 2018. Only 15 months after the first steel was cut, the ship was undocked. In May 2019, the “INS Magen” received its name in Kiel and was handed over in November 2020. The following two units of the series are also scheduled for delivery in 2021. The Israeli Navy is itself equipping the corvettes with radar and weapon systems.

### Principal dimensions of the SA'AR 6 corvettes

- Length: approx. 90 metres
- Beam: approx. 13 metres
- Displacement (full load): approx. 1,900 tonnes





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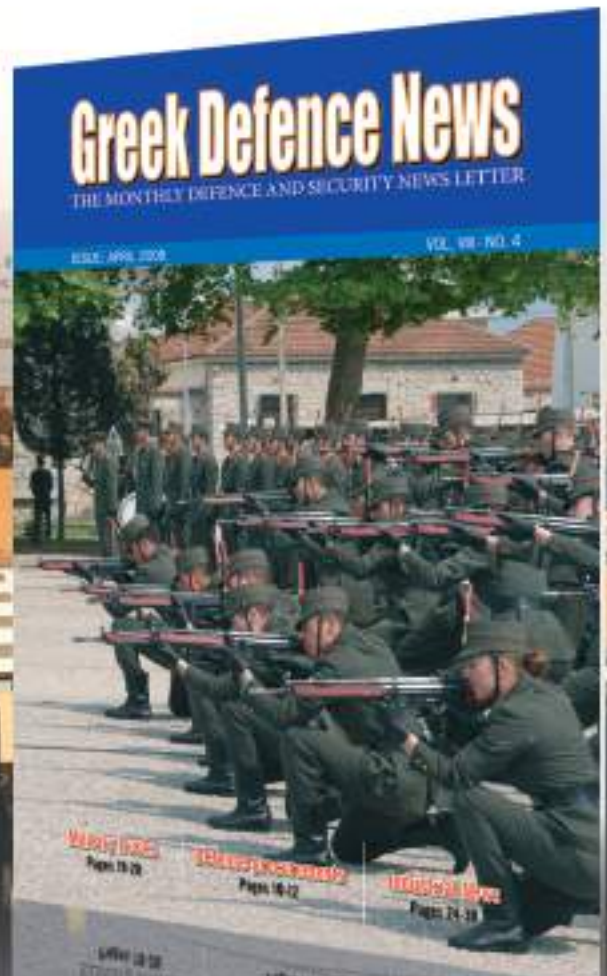
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## Naval Group exhibits at DEFEA in Greece

From 13th to 15th July 2021, Naval Group participates in the first edition of DEFEA, the Athens Defence Exhibition in Greece organised by the Hellenic Ministry of National Defence. Naval Group will showcase its state-of-the-art military ship offer, illustrated by the FDI frigate, the most modern new generation frigate. During this exhibition, Naval Group will also present its skills to provide services to meet its customers' requirements and to arrange short timeframe innovative strategic partnerships in transfer of technology. Naval Group is the main partner of DEFEA.

Contributing to naval and industrial autonomy in Greece Naval Group is committed to its customers to provide high performance naval military capacity and to stand by them for the long term. Naval Group supports its partners in developing national security through transfer of technology for the production and maintenance of their defence systems and contributes to their self-reliance and sovereignty. The company has been established in Greece since 2008 and is able to bring its robust track-record in terms of large and successful technology transfers worldwide.

During DEFEA, Naval Group reiterates its commitments to develop strategic partnerships with the Greek Industry and the Hellenic Navy. Naval Group submitted as part of the French Team with MBDA and Thales a comprehensive package designed to ensure Greece has the best capabilities in the shortest timeframe with optimised costs as well as a robust Hellenic Industry Participation plan. Naval Group presents its comprehensive offer for modern fleets

Naval Group is one of the few companies in the world with the ability to deliver directly or in transfers of technology a complete range of warships with their combat systems and all the critical equipment necessary to engage naval power in a theatre of operations.

Naval Group's booth on DEFEA will reflect this comprehensive offer with a focus on surface ships and innovative solutions.



The FDI frigate is the 5th generation of combat ship for naval supremacy and crisis management. This warship is designed for navies looking for a compact frigate able to perform a large range of missions stand-alone or within a task force either. Like the FREMM, the FDI frigate features high level capabilities in anti-air, antisurface, anti-submarine and asymmetric warfare domains, taking into account French Navy operational legacy acquired in wartime situation.



### SHOW DAILY FOCUS ON DEFEA 2021

As the first digital frigate, **FDI frigate** integrates latest-generation systems around a naval digital distributed cloud architecture, natively cyber-secured and compatible with the new Information. Technologies developments and evolutions and provides sailors with adapted services. Different versions are available to embrace the specific needs of each navy.

The French Navy will operate five FDI frigates. The first of them is already in production and will be delivered in 2024 and the next two in 2025.

The FDI HN will meet all the requirements of the Hellenic Navy and the first could be in service as soon as early 2025. Naval Group's offer includes to build 3 of the 4 frigates in Greece.

**Gowind®** is a military-engineered compact surface combatant equipped with a set of state-of-the-art, combat-proven anti-submarine, anti-surface and anti-aircraft systems to NATO standards. Gowind® takes the best of the latest technological advances developed and mastered by Naval Group for large frigates, in order to anticipate and meet future operational requirement.

It integrates the latest generation of combat systems developed by Naval Group, SETIS®, the "Panoramic Sensors and Intelligence Module (PSIM)" - a combination of the integrated mast with its various sensors and the Operational Centre and associated technical premises - and the high level of integration, automation and user-friendliness of the Naval Group systems.

The Gowind® corvette is already sea proven with the Egyptian navy and after a first of class built in France in only 38 months, the rest of the series is successfully being built in Egypt.

The whole products and services offer of Naval Group will be displayed through **Naval XPlore**. Thus, delegations will be able to discover the whole Naval Group's warships offer in virtual operational situations. Naval XPlore is an interactive, immersive and customisable miniature 3D center.



In a closed room in the booth, visitors will face the increasing complexity of the operational environment of a warship, combined with the diversity of threats and the performance of new weapons.

Time and priority management is essential to enable them to establish a clear, accurate and up-to-date tactical picture, as well as to properly counter short-term threats. Thanks to operational feedback and continuous investment in R&D, Naval Group demonstrates through the Naval XPlore experience how the ships of Naval Group and its combat management systems provide intelligent and innovative solutions to meet the needs of the navies.

Naval Group is the European leader in naval defence. Naval Group uses its extraordinary know-how, unique industrial resources and capacity to arrange innovative strategic partnerships to meet its customers' requirements.

As a system-integrator and prime contractor, the group designs, produces and supports submarines and surface ships. It also supplies services to shipyards and naval bases. Attentive to corporate social responsibility, Naval Group adheres to the United Nations Global Compact. The group reports revenues of 3.3 billion euros and has a workforce of 15,798 (data for 2020).

**Come and meet us at booth E19 at  
Metropolitan Expo Athens on DEFEA!**

SHOW DAILY FOCUS ON DEFEA 2021

## **Babcock International to meet the requirements of the Hellenic Navy's frigate modernisation programme**

Babcock International, is forging a game-changing approach to global shipbuilding to offer warship design, build and in-service support options to international navies through its Arrowhead 140 general purpose frigate.

In Greece, supported by the UK Government, Babcock has been fine-tuning a programme to meet the requirements of the Hellenic Navy's frigate modernisation programme which will include a Hydra Class upgrade, an interim frigate capability and four Babcock Arrowhead 140 frigates.

Babcock's comprehensive package of support and industrial strategy would see it support the modernisation of Greek shipyard facilities, underpinned by partnering proposals with Greek industry to develop local workforces and transfer knowledge and technology within the wider domestic shipbuilding supply chain – all undertaken as part of the company's commitment to Greece.

Primed for export, the Arrowhead 140 is a proven, intelligent and adaptable frigate based upon an in-

It is an efficient and highly-effective platform with the scope to adapt its capabilities to specific operational and lay-out requirements. It's a cost-effective, high-value vessel designed for in-country build; perfect for a modern, global Hellenic Navy.

The platform's heritage and clever design enhancements enable improved warship capability whilst retaining its proven strengths. International customers will benefit from the design being chosen for the next generation of UK Royal Navy Type 31 frigates through non-recurring expenditure, accurate known costs for design and build and significant economies of scale.

Will Erith, Chief Executive Marine, Babcock said: "The buildability of the ships enables the effective transfer of a UK design to Greece for efficient manufacture and in-country assembly, while de-risking the build programme.

"The frigate's modular build credentials mean that it is primed for pre-outfitting with open compartments allowing for rapid assembly, enabling build time and cost reduction efficiencies and an accelerated entry into service.

"We will work with Greek industry to utilise domestic supply chains, to modernise and equip facilities, upskill and grow local workforces and transfer knowledge and technology to support an in-country build that will stimulate economic growth and prosperity."



### SHOW DAILY FOCUS ON DEFEA 2021

#### **Propulsion that's powered to perform**

The platform has the capability to accommodate a variety of propulsion solutions. Arrowhead 140's size allows sufficient fuel for long-range independent global operations. With sustainability in mind, the space available and the systems designed into the platform are configured for compliance with IMO Tier III regulations for ECAs.

#### **Armaments to equip you to engage**

The platform can be fitted with an extensive range of high-end capabilities. The hosting of offensive and defensive systems for enhanced air defence, surface and sub-surface warfare, maritime interdiction, self-protection and engagement of long range land targets provides for significant strategic, political and operational choice and the confidence in operational performance. Arrowhead 140 can also host an array of unmanned vehicles, weaponry, communication and electronic warfare capabilities to defend against a wide spectrum of operational threats.

#### **MISSION SYSTEMS THAT ARE FLEXIBLE AND ESTABLISHED**

The Arrowhead 140 design for the UK requirement incorporates Thales' TACTICOS™ Combat Management System utilising open architecture networks and computing environments to provide a scalable and upgradeable mission / combat management capability suitable for a wide range of mission profiles and scenarios. However with generous provisioning of combat system compartments and cabling routes throughout the

ship, the platform's design flexibility allows for a choice of command systems and operational capabilities.

#### **Aviation capability choices**

The Arrowhead 140 flight deck is designed for a wide range of naval aircraft and air systems, with a hangar that can accommodate an organic medium naval helicopter such as a MH-60 Seahawk combined with unmanned air systems.

Dedicated aviation magazine facilities to store and prepare air-launched weapons including ASW torpedoes and Anti-Surface missiles are provided. The large flight deck provides the flexibility to launch and recover non-organic aircraft up to 15t in weight.

#### **Accommodation that sustains a mission ready crew**

Arrowhead 140 can operate with a Ship's Company of less than 100 personnel. With dedicated accommodation for 180+ personnel and additional temporary accommodation, the platform can carry a significant number of Embarked Military Force, including Special Forces, littoral manoeuvre troops or additional command and control personnel.

#### **Expert Support through life**

Babcock's through-life support offering assures ship availability, reliability and cost-effective readiness. This includes the optimal integration of people, processes and technology with novel mobile, remote and connected technology ensuring systems can provide the maintainer with an in-depth understanding of the performance, maintenance and material condition of their assets



© Babcock International- Arrowhead 140 frigate

## **INTRACOM DEFENSE: A strong domestic partner for the New Frigates and MEKO Upgrade Programs of the Hellenic Navy**



INTRACOM Defense (IDE) is the largest defense company in Greece and its main capabilities include Missile Electronic Systems, Communication & Information Systems, Hybrid Electric Power Systems, Unmanned & Surveillance Systems and Depot Level Maintenance Services. In these areas, IDE develops and manufactures advanced products and integrated solutions that meet the operational needs of its customers. Moreover, the Company participates in joint NATO and EU development and production programs in co-operation with major international defense systems manufacturers.

IDE has significant experience in industrial cooperation programs obtained through its participation in the majority of Greek armament programs of the Hellenic Ministry of Defense, either as the prime contractor in the frame of tenders or by promoting its own products or as a subcontractor in the frame of co-production of major weapon systems (aircraft, ships, armored vehicles, etc.). In most of the cases, IDE's successful performance in the Greek MoD Programs was expanded in OEMs third party sales programs by becoming a key partner and main member of their global supply chains.

The company has participated in major large-scale, high technological value programs of Greek MoD as follows:

- Manufacturing and testing of the on-the-edge Integrated Sensor Underwater System ISUS, for the new submarines U-214 program of the Hellenic Navy.
- Manufacturing of the main electronic subunits for the CROTALE NG and APG-68(V9) radars for the Hellenic Armed Forces and third countries. Additionally, IDE manufactured the ARTHUR Weapon Locating System for the Hellenic Army and the complete HARD (Helicopter and Aircraft Radio Detection) 3D radar for international customer of OEM.
- Design, development and manufacturing of missile electronics, such as the Telemetry system,

the Guidance section power supply and the Field Test equipment of the short range air-to-air IRIS-T missile. IDE, as a member of the international industrial consortium, actively participates in the design and production of Telemetry electronics for the Evolved Sea Sparrow Missile (ESSM) Block 1 and Block 2 missiles, currently used by the Hellenic Navy. Moreover, the Company manufactures electronic units for the MAVERICK air-to-ground missile and the Rolling Airframe Missile (RAM).

- Manufacturing and integration of the ground electronics of the PATRIOT PAC3 system as the only non-US based manufacturer. The activities included manufacturing of the launching stations, development of the test stations system and integration & testing as well. The Company has also participated in the modernization program of the Hellenic Army's HAWK mid-range AA missile, by manufacturing the Fire Control Unit and major parts of the radar and launching systems.
- Participation in the production of the Advanced Self-Protection Integrated Suite (ASPIS II) for the Hellenic Air Force (HAF) Block 52+ F-16 aircraft fleet.
- Participation in the Hellenic Navy S-Class Frigates mid-life Modernization Program by manufacturing sub systems of the EDO CS 3701 ESM system. Moreover, the Company undertook the installation, Set to Work, HAT & SAT activities of the system.
- Manufacturing of major electronic and electro-optical systems for the Hellenic Main Battle Tank (MBT) Leo2.

IDE has to exhibit a long lasting cooperation with the Hellenic Navy (HN) and extensive experience and familiarity with MEKO ships. In the framework of a National broadband high speed network program, IDE as a prime contractor performed engineering services, installation and commission of communication systems in the majority of HN vessels (frigates, fast attack crafts, etc).



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IDE can act as a domestic subcontractor to the Prime Contractor and to the major subsystems OEMs, by undertaking work scope regarding the supply of products and equipment, coproduction tasks (manufacturing under license) and services such as installation on board, set to work, testing and technical support, as well as Follow on Support, in the following areas:

The company possesses all the necessary and appropriate organization and experience for the successful implementation and management of complex industrial cooperation projects applying contemporary and established project management processes, practices and techniques.

Based on its high-quality industrial infrastructure, technology and experience IDE can participate as a major industrial partner in the HNs new Frigates & MEKO Upgrade programs.

- Communication System
- Multi-Function Consoles, workstations and Electronic Cabinets
- Launchers
- Weapon and missile electronics under OEMs license
- Radar and other Sensor electronics under OEMs license
- Weapon systems upgrade

Additionally, IDE is interested to act as an engineering services provider for on board system integration activities in support to the Prime Contractor.



# Rafael at DEFEA 2021



## Rafael marks 10 years since Iron Dome's first combat interception

With over 3.600 combat interceptions, at a success rate of 90%, and numerous lives saved, this year marks the 10<sup>th</sup> anniversary of the first combat interception of Rafael's **Iron Dome Air Defense System**.

Iron Dome has played an instrumental role in every conflict since its first combat interception in April 2011, by stopping thousands of rockets from hitting Israel, spanning small to large mortars and rockets with varying ranges and warheads.

Iron Dome serves as highly mobile, dual mission systems, designed to defeat Very Short Range (VSHORAD), as well as rocket, artillery and mortar (C-RAM) threats, aircraft, helicopters, UAVs, PGMs, and cruise missiles.

Some of the advanced capabilities that were demonstrated were put to the test during operation "Guardian of the Walls" which took place in May 2021, in which Hamas and other Palestinian terror organizations fired thousands of rockets at Israeli civilian and military sites. Iron Dome performed as expected, at a success rate of some 90% against salvos of rockets (dozens at a time) of different types and ranges, thereby preventing severe damage and loss of life. This was the system's most significant combat test so far, and it delivered.

Iron Dome provides robust, yet selective defense. Its ability to discriminate between threats headed towards a populated area and those that will fall into the sea or open fields, reduces costs, and limits unnecessary interceptor launches. A single battery can protect a medium-sized city.

Rafael has developed additional variants of the Iron Dome system, to form a family that consists of the **naval variant C-Dome**, providing protection of strategic naval and land assets against advanced ballistic, aerial and surface-to surface threats, including saturated attacks. Using the same interceptor as the Iron Dome, **C-Dome is operational on the Israeli Navy corvettes**.

Iron Dome is also offered as an integrated, all-in-one air defense (**I-Dome**) system for maneuvering tactical forces in the field on a single vehicle.

In August 2019, the United States and Israel signed an agreement for the procurement of two Iron Dome Defense System batteries (IDDS-A). The first battery was delivered in September 2020, and is already undergoing a process of implementation in the U.S. The second battery was delivered in accordance with the agreement and project schedule, in January 2021.

Rafael's multi-tier air defense array of solutions that provide protection against an entire spectrum of aerial threats includes the **Counter UAV (Drone Dome) System**, an innovative end-to-end system



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designed to provide effective airspace defense against hostile drones and UAV's used by terrorists to perform aerial attacks, collect intelligence, and other intimidating activities. Drone Dome has 360° circular coverage and is designed to detect, track, and neutralize drones classified as threats flying in No-Fly zones. Drone Dome has a very fast response time, it causes minimal collateral interruptions to the surrounding urban environment, with maximum safety to friendly aircraft. The Drone Dome System is operational under all-weather conditions, 24 hours a day. First, the threat is detected and identified by the Radar and EO/IR sensors. The data is combined and correlated and alerts the operator of the hostile UAV. The system initiates either automatic interference operation, as per pre-defined rules in the C<sup>2</sup> engine, or manual operation by the operator. When the threat reaches the neutralization area, the hostile drone is neutralized by activation of directional GNSS and RF Inhibitor/Jammer system, or by a laser beam.

Rafael, in partnership with Raytheon USA, has also developed the **David's Sling**. Now already operational by the Israeli Air Force, David's Sling is an affordable and lethal solution against long-range artillery rockets (LRAR), short-range ballistic missiles (SRBM), cruise missiles (CM) and traditional air defense threats. The system provides optimum protection for the homeland as well as for forward deployed forces.

The David's Sling Weapon System is composed of a radar array, a Battle Management and Command Array, as well as an Interceptor Array, with the "**Stunner**" interceptor. The interception array is composed of four Missile Firing Units – each one carrying 12 "Stunner" interceptors. "Stunner" is an advanced innovative interceptor that provides a low-cost solution against a large variety of threats. The Stunner's seeker detects and tracks the most challenging targets in all weather conditions and maintains precision aim-point selection at endgame.

The Stunner's lethal hit-to-kill effects ensure a wide margin of tactical overmatch against a broad spectrum of air and missile defense threats.



# Israel Shipyards to build Corvettes in Greece

ONEX Neorion Shipyards based in Syros Island, Greece, and Israel Shipyards based in Haifa entered a teaming agreement to jointly propose a next generation corvette design for the Hellenic Navy. Both shipyards will be cooperating closely in the international development and promotion of the new corvette with production which would take place both in Greece and Israel. Israel Shipyards in an exclusive interview with the GREEK DEFENCE NEWS presents its products and explains how the Hellenic Navy will benefit from local production of the most advanced corvettes and will gain a high level of independence.

**GREEK DEFENCE NEWS:** Is no doubt Israel Shipyards Ltd is an exceptional shipbuilding unit with regard to expertise and capability for designing, developing, and manufacturing various types of vessel and has been providing seaworthy solutions for the Naval and commercial marine markets. Can you give us some background on how the company got started? What are the values of your company?

**ISRAEL SHIPYARDS:** Israel Shipyards Ltd. was established in 1959 as a Governmental owned company, for design, construction, and maintenance of Naval and Commercial vessels. During the 1960's it started to develop and construct the SAAR 4 class Missile boats for the Israeli Navy, as a result of the need for independence in the country's Naval capabilities, after the French embargo imposed on the State of Israel as a result of the Six Days War. Until the late 1980's it has one main customer – the Israeli Navy. Then, as a result of Israel receiving the FMF from the USA, the workload for the Israeli Navy was significantly reduced. The shipyard was privatized in 1995, and the major change was the change of focus – to export to worldwide customers, as we are doing till nowadays.

Israel Shipyards values include our full support to our customers and offering them customized innovative turn-key solution while leaning on the operational feedback received from the Israeli Navy and the state-of-the-art combat systems produced by Israeli defense companies.

We believe in listening to our customers, being extremely flexible to find the best solutions to their needs and being fully transparent to our customers/partners.

**GREEK DEFENCE NEWS:** Where does Israel Shipyard Ltd stand today, and what have your strategic priorities been recently?

**ISRAEL SHIPYARDS:** Today Israel Shipyards is developing different types of Naval vessels for Navies, Coast guards and other Maritime Law Enforcement units, including Fast Patrol Crafts for “Brown waters” and for Paramilitary missions, as well as Corvettes and Fast Missile boats for “Blue waters”. We will continue offering our combat-proven vessels with a high level of flexibility and advanced combat systems alongside with new designs.

**GREEK DEFENCE NEWS:** Could you tell us about Israel shipyards Ltd, approach towards developing new products? What R&D initiatives has the company pursued to remain competitive in the marketplace?

**ISRAEL SHIPYARDS:** The need for a new product will usually come from analyzing the ever-changing market needs, or, it can come from the requests of the Israeli Navy.

Our approach is to find the most cost-effective solution that will enable customers to use this solution without increasing too much their budget burden.

We do our utmost to follow the need for long-lasting solutions at an achievable cost.

While developing a new product we will look for a major upgrade of the propulsion system, trying to aim for full independence of the vessel and its crew and keep the operation and maintenance activities as simple as possible, in order to make it easier for the crew of the vessel.

**GREEK DEFENCE NEWS:** The agreement between ONEX NEORION Shipyards and Israel Shipyards is a very positive and symbolic development, which is part of the overall framework for strengthening Greece's cooperation and strategic relationship with Israel. Can you please tell us how the Hellenic Navy can be benefited from that?

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**ISRAEL SHIPYARDS:** The cooperation with ONEX Company includes a major effort of T.o.T. (transfer of Technology), and sharing knowhow.

With that focus, the HN will benefit from local production of the most advances Corvettes and will gain a high level of independence as they will not be waiting for other countries to offer and construct the needed vessel.

As it will be similar vessel to the vessel that the Israeli Navy is currently planning to put into service – there will be an option of sharing maintenance activities between the two countries and supporting each other in know-how and even in spare parts and training.

**GREEK DEFENCE NEWS:** How do you place Israel shipyards Ltd, in the global market?

**ISRAEL SHIPYARDS:** Israel Shipyards Ltd. is a medium-sized shipyard, focusing on supplying its customers with a “full package” of modern and combat-proven vessels, with the most advanced

combat systems. The main point for us is efficiency – the highest possible ratio of firepower to displacement.

**GREEK DEFENCE NEWS:** Are there any new developments you can share with our readers concerning export activities?

**ISRAEL SHIPYARDS:** Israel Shipyards is currently in process of getting orders for its newly designed Naval vessels from Navies in four continents, and I strongly believe that some good news in this respect will be published shortly.

**GREEK DEFENCE NEWS:** What are Israel shipyards Ltd, ambitions for the future?

**ISRAEL SHIPYARDS:** To become the supplier of choice for friendly countries, while sharing know-how and development efforts with highly reputed partners from these countries.



## SHOW DAILY FOCUS ON DEFEA 2021

## TAVOR 7

Due to the dynamic changes in the battlefield and the necessity of a potent 7.62mm cartridge weapon with superior performance, granting the troops an innovative, powerful, accurate and reliable weapon that can be rapidly and easily deployed in all combat situations- IWI created the TAVOR 7 7.62X51mm Assault Rifle.

TAVOR 7 is a bullpup configuration system – rear center of gravity enabling a rapid acquisition of the target and providing the ability to fire the weapon with only one hand. Furthermore, due to the bullpup configuration, the weapon's overall length can be significantly reduced without modifying the barrel length, allowing maneuverability in CQB / confined spaces and at the same time, being lethal for long ranges.

TAVOR 7 is a battle-ready innovative weapon, built to be durable and robust, designed in close collaboration with the IDF to create a weapon with outstanding performance and accuracy in all environmental conditions with enhanced human ergonomics. TAVOR 7 is made of superior steel and high strength impact modified polymer; it has a rotating bolt system ensuring maximum safety for the user.

TAVOR 7 can be easily adapted, depending on the operational requirements, military, or law enforcement tasks – vehicle patrol & use, CQB & confined spaces, under cover missions – short and medium combat engagement, custom police operations, VIP protection, etc. TAVOR 7 is a fully ambidextrous platform; the ejection side can be swapped rapidly and easily from side to side by the user. It is equipped with mil standard 1913 Picatinny rails on all sides allowing 100% compatibility with any available sights and/or accessories.

Highly efficient & reliable modular battle rifle

- Designed for minimum operator and armorer level maintenance, thus reducing life cycle costs
- 100% interchangeability, reducing the overall costs of the system
- All the metal parts of the weapon are corrosion resistant

- Body built of high strength impact modified polymer
- Hammer-forged, chrome-lined, free-floating barrel, for enhanced accuracy & life cycle
- Hard-anodized monolithic aluminum MIL-STD 1913 Rail
- The rifle is equipped with a significantly efficient jump compensator for better shooter stability
- Uses any NATOMIL STD 7.62 Steel / aluminum / polymer magazine
- Optimized ergonomic design
- Pistol grips can be changed or modified
- Fully Ambidextrous weapon:
- Safety Lever, Magazine Release, Bolt Catch: can be converted by the user from side-to-side ejection port, bolt and charging handle
- Non reciprocating charging handle
- Enlarged trigger guard for easier access and hand protection

### FEATURES

- Short-stroke gas piston
- Simple field stripping into only 2 parts, easy to clean and no need for special tools
- Detachable replaceable barrel
- 2 different barrel lengths to choose from – 17" and 20"
- 4 position gas regulator – RegularExtremeSuppressorClosed (for special operations)
- M-LOK fore end, provided MIL-STD 1913 accessory rails at the 3 and 9 o'clock positions
- Covered MIL-STD 1913 accessory rail at the 6 o'clock position

### TECHNICAL DATA

- Caliber: 7.62X51mm
- Rifling: 4 RH Grooves, 1:12" twist
- Barrel length (mm): 432(17")
- Total length (mm): 730
- Weight (approx. Kg) (w/o magazine): 4.1
- Rate of fire (approx. Rd./min): 600~900



# **EODH**

**The Protection Experts**

## **HOPLITE**

High Mobility Tactical Vehicle 4x4



**See us at Hall 3 booth D5**

### **INNOVATIVE & MODULAR DESIGN, HOLLISTIC PROTECTED, MULTI-MISSION CAPABLE**

The HOPLITE 4X4 HMTV has been designed under NATO STANAGs and EU Directives and it's capable to work in extreme ambient conditions. It's built on a unique heavy duty blast frame on top of which sits a fully protected cabin that is optimized for maximum internal space and mission flexibility.

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