

# Next-gen multitaskers: European multirole frigate programmes

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**The number of frigate programmes under way in Europe and the accompanying level of investment in new capabilities highlights the important role this ship type continues to play in regional navies. Alex Pape reports**

In recent decades frigates have formed the backbone of many a European navy and at any one time there are normally several replacement projects under way in the region. Recent acquisition programmes include the Franco-Italian FREMM multimission frigates, the Spanish Navy's F-100 ships, and the Royal Danish Navy's Iver Huitfeldt-class air-defence frigates. The German Navy is also nearing the introduction into service of its new Type 125 Baden-Württemberg-class frigates following delays.

As of 2018, the next round of new frigate projects has been placed under contract in France, the United Kingdom, and Italy, and in the latter countries construction has begun. Further projects in Belgium, Germany, Spain, and the Netherlands are making progress towards final approval by their respective governments, while the United Kingdom has restarted the acquisition process for its Type 31e general-purpose frigate programme after terminating its first attempt.



*The French Navy's new FTI on order from Naval Group will feature a distinctive hull form, new AESA radar, and a new concept for equipment hardware and software integration. (Naval Group)*

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All told, 43 frigates are planned in the above-mentioned countries alone – representing a major investment in naval capabilities for the next 50 years that also includes replacing the final ships designed in the Cold War. Built primarily in the 1980s and 1990s, these ships – including the La Fayette-, Type 23 Duke-, Maestrale-, and M-class frigates to name but a few – have proven versatile and been heavily tasked in the post-Cold War security environment, taking part, for instance, in anti-piracy missions off the Horn of Africa, and embargo enforcement and maritime security missions in the Mediterranean.

The French Navy is in the final phase of a complete renewal of its frontline surface combatant fleet. After several changes to numbers and schedules in recent years, eight Aquitaine-class FREMM frigates (including two modified for air defence) are set to be completed by 2022, with the final remaining ‘legacy’ frigates due to be replaced by 2030. Under an order awarded to Naval Group in April 2017, five new FTI frigates displacing around 4,000 tonnes will be delivered from around 2023 at 18-month intervals to replace the La Fayette class.

Conceived as a more affordable alternative to building additional 6,000-tonne FREMM frigates, the FTI class nevertheless aims to deliver a wide range of capabilities, including anti-submarine warfare (ASW), air-defence, anti-surface warfare (ASuW), and the ability to embark a small staff group or special forces.

According to Naval Group, changes since the first presentation of the design in October 2016 have been limited. The topside has changed somewhat, and bridge and hangar wings have been added to improve self-defence armament firing arcs. The ship will retain its distinctive inverted bow shape.

Moreover, on the technology front the ship will mark a number of firsts for the French Navy, including an integrated mast and combat information centre (CIC) module, called PSIM, that will be assembled, integrated and tested separately from the ship.

“We can start full combat system integration earlier and do not have to wait for power, and other infrastructure is ready on the ship. We can also start training the crew earlier,” Naval Group’s surface ships business development senior manager, Hervé Boy, told *Jane’s*. The FTI PSIM includes the new Thales Sea Fire 500 phased array radar system and one of two data centres to be installed on the ship.

“[The FTI frigates] will be the first digital surface combatant,” Boy noted. Naval Group plans to use commercial off-the-shelf (COTS)-based computing centres hosting virtualised variants of assorted ship systems and components that to date have required dedicated hardware. “Every four-to-five years we can install new technology, and the navy will only have to change things in the datacentre, and [update] software.”

Another innovation hidden deep within the hull concerns the growing need for cyber defence. “The cyber defence suite will track all systems onboard and detect any fault or problem, and propose mitigating actions to the crew,” Boy said. This may include shutting down parts of the system using built-in redundancy, and sending information back to a shore-based centre for analysis. A new maintenance suite that monitors all equipment, provides solutions and interacts with shore headquarters is also planned. Both cyber defence and the maintenance suite are currently being implemented on a FREMM frigate and will have been trialled and tested ahead of installation on the FTI.

Contemporary threats have also led to new approaches in other areas, including a new short-range combat management system (CMS), dubbed the digital combat bridge, to address asymmetric

threats. “The new system will provide 360-degree vision, day and night; analyse all behaviour of air and surface tracks in close proximity to the ship; and anticipate possible suspect behaviour and provide solutions using non-lethal and lethal effectors.”

The remaining sensor and armament suite includes the Thales Kingclip Mk 2 hull-mounted sonar, a CAPTAS 4 Compact low-frequency active towed array sonar system, two eight-cell Sylver vertical launch systems (VLSs) for MBDA’s ASTER air-defence missile family, a Leonardo 76 mm gun, MBDA’s MM 40 Exocet Block III anti-ship missiles, and launchers for the Eurotorp MU90 lightweight torpedo. Aviation facilities will be sized for an NH90 Caiman helicopter and a 700 kg class unmanned aerial vehicle (UAV).

In Italy, seven of ten new 6,700-tonne Bergamini-class FREMM frigates being acquired to replace considerably smaller Lupo- and Maestrale-class frigates had been delivered by April 2018 and work on the final ships is expected to be completed in the early 2020s. A class of up to 16 large patrol ships with varying levels of armament are planned to replace 24 remaining destroyers, frigates, corvettes, and patrol ships approaching the end of their service lives. The first phase of the PPA (multipurpose ocean patrol ship) programme comprises up to 10 ships, of which seven were contracted in 2015.

The PPAs are designed to be fast and manoeuvrable with the help of a combined diesel and gas (CODAG) propulsion system featuring two MTU 20V 8000 diesel engines and an Avio/General Electric LM2500+G4 gas turbine plus low-speed electric drive system.

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