EURONAVAL

Daily 2

Nov. 5, 2024

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General Thierry Burkhard, Chief of the Defence Staff

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The defence and intervention frigate (FDI) is 100% digital, a first for the French Navy.

Naval Group's latest French frigate has a specific digital architecture, including two cyber-secure data centres, one in the bow, the second in the stern.

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Seeing through the FOG

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The first Dronathlon

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The former combat swimmer Philippe Hartz is at Euronaval to present his project to compete in the solo, round-the-world sailing race, Vendée Globe, in 2028...

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Interview of the day

General Thierry Burkhard, Chief of the Defence Staff

@ Marine Nationale - Défense

Euronaval is an international exhibition; what makes it an important event for you, General, in your position?

Like all major defence exhibitions, Euronaval is a forum, where we meet and talk. It's an opportunity for users of equipment to directly meet the people who design it. And for naval manufacturers, it's an opportunity to truly identify the needs of their customers.

To me, as Chief of the Defence Staff, the discussions we have are vital, because they allow us to make headway and understand each other better.

read the rest of the interview

Watch the Highlights

Day 1 in pictures









Industry – Cybersecurity

FDI, the first «natively cyber-secure» ship

The defence and intervention frigate (FDI) is 100% digital, a first for the French Navy.

Naval Group's latest French frigate has a specific digital architecture, including two cyber-secure data centres, one in the bow, the second in the stern. They feature the same computer cores, unlike those used for other ships, and host, virtually, the IT applications needed to operate the ship and its combat system.

© Naval Group

Among the equipment guaranteeing cyber security, the Netans navigation data distribution system from Exail has been adapted to the FDI to meet its specific requirements. It focuses in particular on protecting the flow of navigation data, its integrity and reliability, and acting as a barrier against any cyber attack. Between the sensors and data recipients, Netans manages several dozen different interfaces, while protecting the data from interception or manipulation. Advanced functions constantly monitor potential anomalies such as jamming or GNSS decoys. The system can trigger alarms or reject certain data if necessary to ensure real-time, cyber-secure transit.

The list of cyber requirements formulated by the French Defence procurement and technology, DGA, and Naval Group is very complex, but «we have met them», explains Jean Lagaillarde, Product Manager at Exail, «and the Netans version has been adapted to meet these very specific needs, but I can't tell you any more than that.»

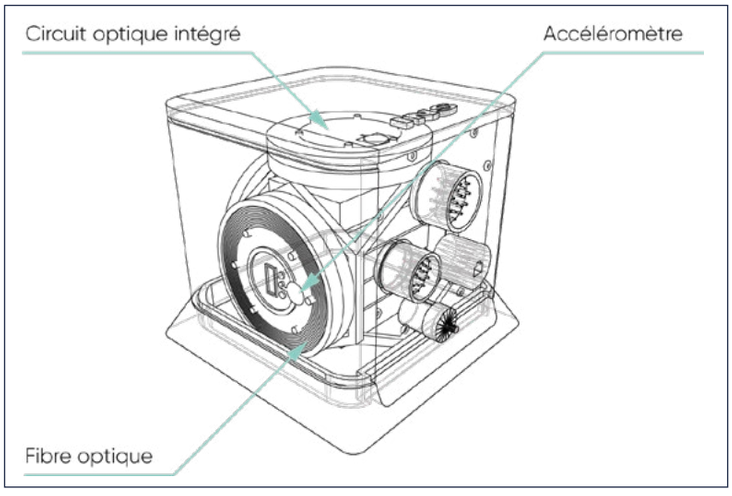
These new ships, which are resilient in the face of cyber threats, should help to set the standard for future innovations. And Exail intends to be part of it.

Aude Leroy

Innovation

Seeing through the FOG

No mechanical movement, highly reliable, resistant to extreme environmental conditions, the fibre-optic gyroscope (FOG) has already been selected by more than 50 navies around the world.



© Exail

In a small room at Exail's Lannion site in Brittany, two winding machines whirr away under the watchful eye of operators. Like a spinning frame, these machines spin an optical fibre thinner than a human hair. This thread is the result of a complex, specialised process that involves transforming a silica glass tube, 3 cm in diameter and 70 cm long, into... an optical fibre more than 50 km long!

Installed in a gyroscope, it is through this fibre that information is transmitted, via the reflection of photons forming a beam of light. FOGs use these light beams to measure rotation speeds. The absence of mechanical movement and vibration means no noise, no wear (no moving parts) and a mean time between failures (MTBF) of around 500,000 hours.

FOGs can withstand extreme environmental conditions (from the depths of the ocean to the farthest reaches of space) and are qualified to resist magnetic interference, extreme temperatures and violent shocks.

All this technology is the result of 30 years of R&D to guarantee maximum reliability and increased resilience, all at a relatively low cost to users because the equipment is durable and maintenance-free. To ensure that its FOGs provide high accuracy for navigation, cutting-edge algorithms have been developed in-house by Exail and optimised by AI.

The system, which is integrated into the company's inertial navigation systems, has already been selected by more than 50 navies around the world.

Aude Leroy

The first Dronathlon

From 7 to 11 October, the French Navy organised the first Dronathlon, in partnership with the French Defence procurement and technology agency, DGA, and the defence innovation agency, AID. Of the 40 groups of companies that replied to the call for tenders to take part, only ten were selected to demonstrate the performance of their multi-domain drones. They were tested on realistic scenarios developed by the Naval Combat Centre. The event took place at Saint-Mandrier, near Toulon, in the Mediterranean.

©THALES

On the morning of Friday 11 October, a group of companies comprising Thales, Marine Tech, Drone-Act and PILGRIM Technology, was given two hours of operations to prove what it could do. No rehearsals were allowed. The group carried out its demonstration in two parts, one from land and the other at sea.

The objectives were to detect, identify, characterise and precisely geolocate a weapon system, radar emissions, enemy patrols and underwater and surface contacts. Four types of

drones were used.

For the first part, a land/surface tactical situation was established, and the points of interest (POIs) were identified by a Drone-Act UAV, carrying the Curco RESM (Radar Electronics Support Measures) payload from Thales, allowing it to listen to radar emissions, in radio frequency, over a wide electromagnetic band (electronic warfare).

The NX-70 Spy'C drone then took over to identify and confirm these POIs. A VTOL design, like the Drone-Act UAV, it provides imagery intelligence (IMINT) via an EO/IR camera, capable of detecting personnel at 100 metres, a vehicle at 300 metres or an AIDS module at 300 metres. These images were sent to a remote operator (industrial) for analysis.

The second part of the demonstration involved the dropping of a Thales acoustic buoy (Sonoflash-type mockup) by a Horus UAV from PILGRIM Technology. The buoy landed on the water after a parachute drop and started listening to establish a tactical submarine/surface situation.

The Navy is due to receive the Sonoflash buoy from 2025. Sonoflash is capable of interfacing with any type of aerial platform: maritime patrol aircraft, helicopter or UAV. Thales' FLASH IG dipping sonar then came into play, in this case a recoverable prototype. Its mission is to listen for and detect submarines. Aboard an RSV (Remote Survey Vehicle) AUV from Marine Tech, it can change position to track a potential target.

All the information and analyses were transmitted to a joint industry/Navy C2 centre for real-time monitoring of position, contacts of interest, etc.

«We achieved our demonstration objectives», declared Josepha Glorget, UAV project manager at Thales. Especially since on that Friday morning, the weather conditions were particularly severe, with winds up to 100 km/h and a 2-metre swell.

The results of this first Dronathlon are intended solely for the French Navy. The winners will be announced this Tuesday afternoon at 4 pm, in the Brest Room, by Admiral Vaujour, the Chief of Staff of the French Navy, and Thierry Carlier, the deputy director general of the DGA.

Aude Leroy

Dronathlon: Athanor demos smart AIS on drones

Athanor Engineering, a maritime safety and security expert, deployed its smart AIS at the first edition of the Dronathlon in October.

With three decades of experience in the French Navy under his belt, Henri de Foucauld, CEO of Athanor Engineering, is familiar with the obstacles posed by Automatic Identification Systems (AIS): «*The International Maritime Organisation does not require military vessels to carry an AIS in order to avoid having to broadcast their position and identity at all times. But not having one is also significant because it raises suspicions that the ship has something to hide.*»

In 2016, he founded Athanor Engineering, the only French manufacturer to have developed a smart AIS, capable of broadcasting false positions, generating false identities and

false boats and identifying deception by other parties. During the first edition of the Dronathlon, organised by the French Navy from 7 to 11 October in partnership with the

French Defence procurement and technology agency, DGA, and the defence innovation agency, AID, Athanor installed its identification equipment on board three uncrewed surface vehicles (USVs), through its participation in three consortiums. «*The AIS made it possible both to pick up the maritime traffic around the USV and to transmit a slightly offset position of the latter, so that it would be difficult to spot*», explains de Foucauld. The equipment took part in several scenarios close to the coast and in the open sea.

«*During the exercise, our AIS functioned well, with no surprises. We generated around thirty fake vessels to saturate traffic. The maritime patrol aircraft, which was there to identify our drones, had to go to each of the positions to check them.*» Although it was not the first time that the system had been tested, Henri de Foucauld was enthusiastic about the event: «*It was very interesting to work with several partners and to develop an operational solution that we could test in fairly realistic conditions. The weather also added some extra interest, enabling us to check the functionality of the equipment in rough sea and wind*», he remarks.

S. Rose Joannis

UAV-based In-Service Support

Unmanned aerial vehicle manufacturer Delair is co-developing a drone with Naval Group and the French Navy's Fleet Support Service (SSF) to carry out In-Service Support (ISS) of surface vessels. A first in France.

©Delair

It's still a prototype, but it's showing great promise. In fact, two of them are due to be delivered in July — one to Naval Group and another to the SSF. Designated P.A Drone until now, it will be called the «Shipdrone» when it goes onto the market.

Its purpose is to carry out different types of mission to optimise the ISS of French warships. «This is the first sovereign French solution», explains Stephan Guérin, Head of Sales Navy Defence & Civil Market at Delair. «Equipped with LIDAR and photogrammetry technology, this drone is capable of creating one digital twin with a point cloud and a second with a set of photos. And it will be possible to work on both at the same time thanks to SEEBYL, a software package specially developed to support warship ISS. Shipdrone therefore combines hard and digital data: one tool to capture data, another for 'data-visualisation' and AI to optimise it.»
In continuous development, the UAV can automatically re-

calculate its flight plan to avoid passing too close to personnel working on board at the same time.

«Delair will not become an ISS operator in the military naval sector. But it will be the first building block enabling ISS specialists to optimise data analysis and help the experts to save time», explains Stephan Guérin. «Structural algorithms will detect, for example, whether there is corrosion. If so, what type? If there is deformation, what type? In the future, if we want to upgrade the boat's structures, we will be able to simulate them on orthofaçade drawings: it will be easier to integrate a new gun turret into the digital twin, for example.»

It will be possible to optimise all the ship's optronic systems. For example, the three DALAS laser landing aid systems for the Rafale were tested and qualified for the first time in a single day by the Shipdrone. Stephan Guérin explains that the sea trials will continue, «but with the certainty that the DALAS units work, there are no nasty surprises for the final tests with the Rafales.» This would mean much higher cost and a lot more time. UAV-based ISS can also be used to look at the radiation pattern of an onboard radar, to check that it has no weak points along the antenna axis or that it still meets its initial commissioning specifications.

«It's a real Swiss Army knife in support of the boat's performance», and inspections can be carried out at the quayside, in dry dock or at sea. It can also be used for verifications.
The Shipdrone will ultimately be equipped with eight motors and will be able to carry payloads of between 5 and 10 kg. These payloads will be both passive and active (camera, LIDAR, etc.). The camera payload is covered by a specific development, undertaken by SONY, to optimise geo-triangulation

of the photos to the nearest centimetre, and eventually with millimetre accuracy.
This UAV does not yet feature in Delair's catalogue. Once in production, the solution could be exported as a service, marketed either by Delair or by Naval Group, but still operated by Delair.

In addition to the Shipdrone, Delair also offers the SeaSam Hullscan, a remotely-operated vehicle (ROV) that inspects the hull to check for buildup of foreign matter and the condition of paintwork. This system also offers a high degree of precision, so it saves fuel and considerably reduces costs. Equipped with a lithium battery, available in several sizes, the Hullscan can perform a detailed inspection of the hull in 4 or 5 hours. Already on the market, notably in the commercial maritime sector, its success story continues. Around forty units will be sold in 2024, with around sixty expected next year. Unlike the Shipdrone, this ROV was originally a civil product included in the company's catalogue. It has also enjoyed success on the export market.

Aude Leroy

Special reports - Environment

ABB leading the way in marine energy savings

ABB is making inroads into the marine sector with its modular power system, Onboard DC Grid™, which delivers significant energy savings.

read the article

Navy electrification under way

An electric propulsion system designed by Swedish-Swiss company ABB is the first step towards reducing CO2 emissions in the navy.

read the article

Hull Vane: an underwater wing to reduce fuel consumption

To reduce CO2 emissions and improve performance, the Royal Netherlands Navy (RNLN) asked Hull Vane to retrofit its fleet. And after a year of operations, the results are in.

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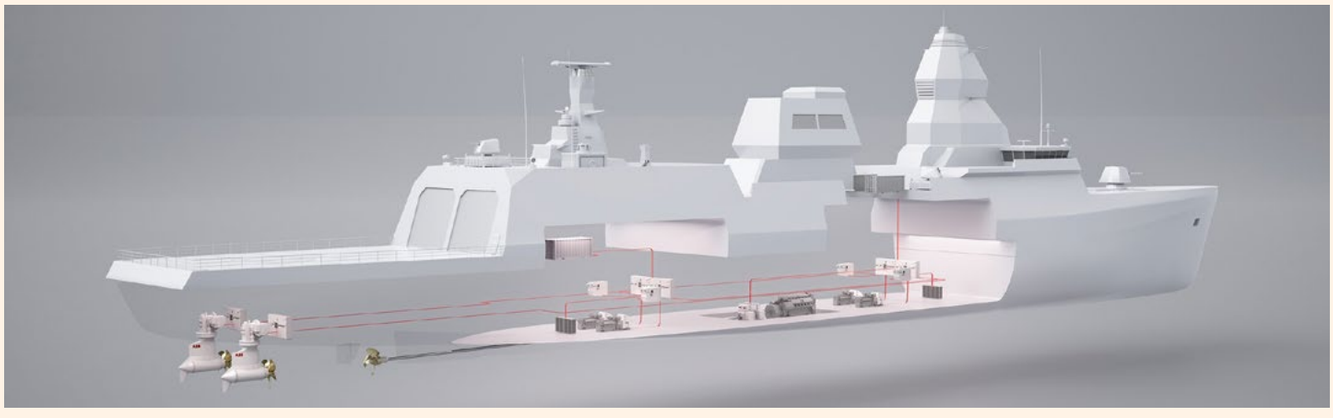

©ABB

Eleven years after it was installed for the first time, ABB's modular power system, Onboard DC Grid™, has established itself as a must-have energy-saving feature for commercial vessels. Over the past two years, the system has begun to make inroads into the Navy and Coast Guard sector.

Recent breakthroughs in this demanding market include ABB's first contract in May 2022 with Damen Naval to supply Onboard DC Grid™ for four frigates under construction as part of the German Navy's F126 programme.

Following this agreement, the Swedish-Swiss company secured a second order to supply its system for four new anti-submarine warfare (ASW) frigates.

The ships — two of which will be built for the Royal Netherlands Navy and two for the Belgian Navy — are scheduled for delivery between 2028 and 2031, with the first ship entering service in 2029. «ABB's Onboard DC Grid™ is expected to re-

duce emissions, increase operational range, enhance safety and save weight and space», said Sindre Saetre, Senior Vice President at ABB Coast Guard & Navy.
Specifically, Onboard DC Grid™ is part of ABB's proposed modular power system platform that can reduce a vessel's fuel consumption by up to 59%. Onboard DC Grid™'s contribution to this reduction can be up to 27%. The same platform including Onboard DC Grid™, offers a space saving of 44% and a weight saving of 31%.

With this technology, ABB has opted for a direct current (DC) power system. As a result, the frigates' Diesel generators will be able to operate at variable speeds, making it possible to use as few Diesel generators as possible without any risk of power outage. The aim is to reduce the overall operating time and therefore the fuel consumption of the power generation systems.

This summer, two additional ships for the German Navy's F126 programme currently under construction were added to the contract with ABB.

Paul Laquière

Navy electrification under way

An electric propulsion system designed by Swedish-Swiss company ABB is the first step towards reducing CO2 emissions in the navy.

©ABB

In 2025, a ship belonging to a national navy, which does not wish to be identified, will be equipped with an ABB electric propulsion system offering 20% fuel savings. «This project is the first of its kind on a navy ship», said Sindre Saetre, Senior Vice President at ABB Coast Guard & Navy. The technology is called Azipod®, a gearless steerable propulsion system in which the electric motor is housed in a pod on the outside of the ship's hull. Azipod® units can rotate 360 degrees, increasing the vessel's manoeuvrability, while reducing fuel consumption by 1/5th compared to conventional shaftline systems.

With Azipod®, ABB intends to play its part in the major challenge of sustainable energy transition in naval fleets.

To win over this demanding market segment, ABB can count on the results of its technology in the global ferry industry, and 80% of cruise ships are equipped with this electric propulsion system.

An independent study by marine consultancy Deltamarin found that the Azipod® electric propulsion system for fer**ries**

could save up to $1.7 million in annual fuel costs per vessel. A ferry powered by Azipod® would also reduce CO2 emissions by around 10,000 tonnes a year, according to the same study. This is equivalent to the amount of carbon dioxide emitted by around 2,200 private cars each year. A promising result for the naval world.

ABB will be holding a workshop between 1.30 pm and 2 pm in Hall B6, in the Brest cluster. They will also showcase their solution for electric propulsion and energy storage during a presentation between 10.45 am and 11 am in the same hall in the Cherbourg cluster.

Paul Laquière

Special reports - Environment

Hull Vane: an underwater wing to reduce fuel consumption

To reduce CO2 emissions and improve performance, the Royal Netherlands Navy (RNLN) asked Hull Vane to retrofit its fleet. And after a year of operations, the results are in.

©Hull Vane

Hull Vane bv is a Dutch company offering hydrodynamic solutions to enhance ship performance. The Hull Vane technology consists of an underwater wing-shaped appendage attached to the ship's hull that converts the energy of the stern wave into forward thrust. The boat's hull rises and the friction surface is reduced, increasing speed and reducing fuel consumption.

Hull Vane tested its technology on a series of four 108-m offshore patrol vessels (OPVs) operated by the RNLN. After a year in service, the results of the test indicate a saving of between 10% and 16% in fuel consumption and CO2 emis-

sions, depending on speed. Other analyses show improved manoeuvrability in waves. The vane can have a span of up to ten metres, depending on the size of the vessel.

©Hull Vane

The Dutch patrol vessel HNLMS Groningen was the first Holland-class vessel to be equipped with Hull Vane technology. Its top speed has increased by 21 knots, and fuel consumption savings of 10% have been recorded. At the same time, Hull Vane technology improves comfort on board and reduces the stern wave, making the ships less visible. These promising results from a company created just ten years ago have already caught the eye of other national navies.

Paul Laquière

Multilateral cooperation

DCI: an EU and NATO operator

Since receiving accreditation as an operator for both NATO and the European Union (EU) as part of the European Peace Facility (EPF) in July 2023, the DCI group now manages eight assistance measures for the EU and an equal number for NATO. The French company is now signing multilateral rather than bilateral agreements.

For example, Benin is the first country to benefit, via Défense Conseil International (DCI), from assistance under the EPF. Totalling EUR 11.7 million over two years, since September 2023, this intelligence, surveillance and reconnaissance (ISR) programme includes the supply of an observation aircraft – a second-hand Cessna, UAVs and operator training.

The DCI instructors provide training on simulators or on training flights. "*These are multi-domain projects*", explains Thibauld de La Haye Jousselin, DCI's Director for Europe, Africa, the EU and NATO, "*which last two to three years on average, with budgets ranging from 1 to 40 million Euros [for the Lake Chad Basin Commission's Multinational Joint Task Force (MNJTF) battling Boko Haram]: we provide support with equipment and training.*" In addition to ISR, DCI's services extend from naval MRO to front-line medicine, by rehabilitating medical facilities, or even organising control rooms.

For NATO, DCI is supporting Mauritania, particularly in the retraining of military personnel "*who step back from active service […] so as to ensure that they do not fall prey to criminal organisations*", explains Thibauld de La Haye Jousselin;

in Moldavia, wedged between Romania and Ukraine, DCI is involved in the country's military recruitment campaign; in Bosnia, in addition to developing airborne surveillance capabilities using UAVs, the French company is contributing to improvements to air-ground communication equipment, in particular through an impact assessment for "*installing communication towers in valleys.*"

Aude Leroy

Facts and figures: over 14 months of implementation

EU assistance measures provided by DCI:
4 for Benin
1 for the MNJTF of the countries bordering Lake Chad
1 for the Republic of Côte d'Ivoire (RCI)
1 for Northern Macedonia

NATO Defence capacity building initiatives provided by DCI:
2 in Mauritania
2 in Jordan
2 in Bosnia
1 in Moldavia

Euronaval Talks 2

Seabed warfare - protecting national interests from space to the seabed

Four guests, from the navy as well as from the naval and space industries, discussed the capabilities nations need to best protect their national interests - from space to the seabed.

The explosion of the gas pipelines Nordstream 1 and 2 in the Baltic Sea on 26 September 2022 left no room for doubt: the seabed has become the latest domain for strategic competition. Beyond territorialisation – think Russia planting a flag on the seabed at the North Pole in 2007 – it is the protection of critical maritime infrastructure laying hundreds and thousands of metres below the surface that concerns nations.

Alix Valenti

read the full Talk 2

Interview

A combat swimmer with his sights set on the next Vendée Globe

The former combat swimmer Philippe Hartz is at Euronaval to present his project to compete in the solo, round-the-world sailing race, Vendée Globe, in 2028, and promote the 'Spirit of Defence'.

©Alexis Courcoux

After serving for twenty years as a combat swimmer in the French naval commandos (Commandos Marines), Philippe Hartz is returning to his passion for sailing or, more precisely, ocean racing. This confirmed Figaro racer and Marine Nationale - GICAN skipper is scouring the jetties in search of sponsors and partners to help him follow his dream of contesting the 2028 Vendée Globe with a competitive project.

Following in the footsteps of Éric Tabarly, the former army instructor is keen to promote the navy and, more broadly, the ‘spirit of defence’. “Today, the world has changed. We need a sovereign army. I want to convey my belief that defence is the key to sustaining world peace.”

After the end of his field missions four years ago, the seaman stepped out of the shadows “for a good cause”, with the blessing of his Staff. And while a former enlisted sailor racing in the Vendée Globe is nothing surprising, he would be one of the first to do it.

But before that, there is still a long way to go, starting with the Ocean Race Europe next spring. At his side, Hartz can count on his wife, who is managing his project, logistics and communications, and on the Naval Fusiliers base in Lorient which will host his shipyard, saving him an estimated €500,000 over four years.

Philippe Hartz is looking for sponsors, large or small, who are keen to promote the navy, the armed forces and Defence.
He will be presenting his project at Euronaval this Tuesday at 10.15 a.m. in the **Cherbourg Area**.

Paul Laquière

Exhibitors List

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  - Drones and robotic
  - Maritime safety and security
  - Artificial intelligence

Discover the exhibitors

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- TV - Round table
- TV - Interview
- TV - Focus
- Workshop
- Pitch
- Country Seminar

Discover the programme

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