

**STRENGTH at sea**

**DCNS**



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# DCNS

## DCNS a world leader in naval defence and innovative player in energy.

DCNS is a world leader in naval defence and an innovative player in energy. The Group's success as an advanced technology company with global reach is built on exceptional know-how and unique industrial resources. DCNS's success as an advanced-technology company with global reach is built on exceptional know-how, a vast array of industrial resources and a naval shipbuilding heritage stretching back to 1631 when Cardinal Richelieu set up France's first naval shipyard. After giving the country the ships it needed to become a maritime power, the shipyards expanded steadily while developing their know-how and introducing innovations. DCNS designs, builds and supports submarines and surface combatants as well as associated systems and infrastructure. The Group proposes services for naval shipyards and bases. It also develops solutions in civil nuclear engineering and marine renewable energy. Committed to sustainable development, DCNS was one of the first defence contractors to achieve Group-wide certification to ISO 14001. In recognition of the success achieved by its Filières du Talent knowledge sharing programme, DCNS was awarded the Trophée National de l'Entreprise Citoyenne (national award for corporate citizenship) under the patronage of the French Senate.

### Almost 400 years' experience in product innovation

- 1624: French Levant and Ponant fleets (Flotte du Levant & Flotte du Ponant) founded.
- 1858: La Gloire – the world's first iron-clad, steam-powered battleship – laid down.
- 1899: Narval, an ancestor of the modern-day submarine, launched.
- 1967: Le Redoutable, France's first SSBN, launched.
- 1980: Design work begins on La Fayette stealth frigate with design features later emulated worldwide.
- 2001: Charles de Gaulle nuclear-powered aircraft carrier enters service.
- 2006: BPC Mistral – first of a new warship class that is ideal for a wide range of civil, military and humanitarian missions – delivered.
- 2007: First cut FREMM frigate Aquitaine
- 2010: First cut first Gowind® OPV made to perform the whole range of maritime security missions



## The sea, home to DCNS products for almost four centuries

DCNS's key strengths include the ability to deliver innovative products that are among the most sophisticated in the world, yet tailored to the specific needs of each customer. The Group's product portfolio includes:

- naval systems for surface combatants including FREMM multimission frigates, Horizon air defence frigates and Gowind OPV/corvettes, as well as next-generation mine warfare systems and UXVs (aka drones);
- submarines, from Barracuda SSNs and Le Triomphant-class SSBNs to the Scorpene family of conventional-propulsion submarines (SSKs) or Andrastra;
- services, including guaranteed-availability through-life support, modernisations, upgrades, repairs and maintenance for warships;
- underwater weapons, including MU90 lightweight torpedoes and F21 heavyweight torpedoes and torpedo defence systems;
- simulators for initial and ongoing crew training;
- civil nuclear engineering services, including equipment design, development and maintenance;
- innovative solutions in marine renewable energy (MRE) now being explored or developed by the Group's MRE incubator, including floating wind farms, marine current and tidal stream generators, ocean thermal energy conversion (OTEC) and wave power systems.

Technologically complex programmes are DCNS's core area of expertise. The keys to managing complexity begin with a talented workforce and training in the relevant technologies combined with people management and team-building skills to bring together DCNS centres, customers and industrial partners. For over ten years now, DCNS has been managing its industrial activities on environment-friendly lines. The Group was the first major European defence contractor to achieve ISO 14001 certification through a single environmental management system for all centres, demonstrating both our vitality as an industry leader and our commitment to environmental protection. Our teams are working to reduce the environmental impact of DCNS products. Our eco-design initiative takes environmental considerations into account throughout each vessel's design lifecycle – from construction to operation, through-life support and decommissioning.

### **DCNS at a glance:**

Heritage: almost 400 years  
Revenue (2010): €2.5 billion  
Order intake (2010): €46.9 billion  
Staff: 12,500  
Customer base: over 50 navies.

## Championship, an ambitious growth strategy

With a proven track record in complex programmes, extensive industrial resources and exceptional talent, DCNS – always at the forefront of technological innovation – boasts contractor expertise across a range of areas offering excellent growth opportunities.

DCNS has undergone a profound transformation, changing in just a few years from a government administration to an efficient and profitable stand-alone company with an ambitious growth strategy for the years ahead. More specifically, the Group aims to double revenue over the next ten years.

The first priority is to maintain the Group's status as the French Navy's benchmark partner. The second is to expand into highly competitive sectors including naval defence exports, civil nuclear engineering and marine renewable energy. The prime condition for success is to improve Group performance by 30% over the next three years. Growth and higher performance will create value and jobs for the Group as well as our partners, suppliers and subcontractors. Growth and higher performance will also put the Group in a stronger position for future European alliances.

To meet this unprecedented growth target, DCNS must increase revenue in the following expanding markets:

- **Naval defence exports** (new shipbuilding and services). This market segment represents potential demand exceeding €3 billion per annum, particularly in Asia, the Middle East and Latin America. Leveraging its portfolio of tailorable, advanced-technology products and services meeting the latest defence and security needs of navies the world over, DCNS aims to become the world's leading export naval shipbuilder; in May 2010, DCNS decided to self-fund the construction of highly innovative OPV. One of the keys to winning new business in the corvette/OPV sector is to achieve 'sea-proven' status attested by a world-class navy; a feat that is all the more challenging when the vessel in question combines innovations and unmatched efficiency. Hence the decision to make the proposed OPV available to the French Navy for three years.
- **Civil nuclear engineering**. In this fast-growing market, DCNS is simultaneously positioning itself as a prime contractor for subassemblies, an equipment manufacturer and a service provider. In ten years time, the Group aims to achieve annual revenue in this segment of €300 to €400 million. DCNS is also proud to present the Flexblue innovative concept, a small nuclear-powered subsea power plant.
- **Marine renewable energy (MRE)**. Although still at an early stage, this market offers excellent prospects and is expected to expand to several billion euros per annum over the medium term. The first step is to increase R&D investment and contribute to projects to build prototypes and demonstrators. DCNS has set up an MRE incubator in Brest to win new business in this sector.

To turn these advantages to maximum account, the Group aims to improve overall performance by 30% over the next three years by rolling out a performance improvement plan based on six transformation guidelines:

1. New organisation;
2. Work differently;
3. Reinvent production processes;
4. Involve suppliers in the Group's performance;
5. Significantly improve safety at work;
6. Develop management culture.

Our confidence in our capacity to meet these ambitious targets is based on our capacity to successfully take on the biggest challenges, from industrial projects to new visions of our business.

## Gowind® OPV/corvettes enforce sovereignty efficiently

The Navy will be able to demonstrate the new vessel's worth and operational capabilities in actual operations. Gowind OPVs offer users up-to-date assets.

DCNS-designed ocean-capable Gowind® OPV/corvettes give navies state-of-the-art assets for current and emerging missions: from police operations to combat missions, in littoral and blue-mission water missions.



Gowind® OPV/corvettes are affordable and configurable. In addition to excellent seakeeping and at-sea availability, all variants share the following key features:

- easy-to-operate and easy-to-maintain ship and systems
- unmatched capabilities for action at sea and operations by special forces, including a quick launch and recovery stern ramp for two RHIBs or USVs
- flight deck for helicopter or UAV
- 360° panoramic vision from bridge
- remotely operated, day/night proportional response capability to deal with asymmetric threats
- SATCOM and other communications channels to stay in touch with maritime surveillance networks.

The combat system can be tailored to the customer's requirements, from 'security' level up to full combat capability.

The family currently comprises four versions.

Gowind® Control is ideal for patrol and sovereignty missions in EEZs and littoral waters, including the fast deployment of special forces and commandos.

Gowind® Presence has the range, endurance and intervention capabilities, including a helicopter hangar for blue-water control missions.

Gowind® Action combines anti-air and anti-surface sensors and effectors, an efficient robust high-endurance mission management system (MMS) and interoperability.

Gowind® Combat has a full-scale MMS for full-scale multi-threat missions, including a full ASW suite with towed array sonar and improved stealth and survivability.

DCNS can also propose Gowind® variants tailored to customer needs (e.g. length, displacement, etc). DCNS has developed the Gowind® designs by drawing on expertise in integrated platforms and systems, as well as lessons learnt from client navies worldwide.

The OPV design can be developed in all naval shipbuilding. The DCNS industrial solutions can be adapted to the local context.

DCNS is also proposing various associated maintenance and service solutions for cost-effective operations.



## **OPV Gowind L'Adroit : An highly innovative OPV self-funded by DCNS**

L'Adroit is an ocean-capable vessel made to perform the whole range of maritime security missions. Designed and built in a very short time, this Offshore Patrol Vessel brings about many shipboard innovations. It is designed for simplicity and for easy customising to the client navy's requirements including local in-country shipbuilding under technology transfer agreements.

### **A great industrial investment to address new challenges**

The DCNS group decided in 2009 to self-fund the construction of a revolutionary vessel with the aim of demonstrating the efficiency of this innovative concept. The French Navy will operate L'Adroit worldwide for three years, thus enabling DCNS to give a sea proven status to the design of its GOWIND® family of vessels.

### **A platform for key innovations**

The ship and its mission system have been designed as a whole.

Thanks to the panoramic bridge and an integrated mast, L'Adroit crew collect reliable data over 360 degrees. The short superstructures of the ship leave a lot of space for aviation facilities and an ingenious rear ramps system used for the deployment or rapid recovery of a helicopter, drones and Rigid Hull Inflatable Boats (RHIB).

Sophisticated algorithms resulting from DCNS vast experience in Management Systems provide the ship and its crew with accurate information. The POLARIS® system gathers and processes data coming from the ship's sensors, from remote sensors (including those of the UAV/USV) and also from other OPVs connected through the extended surveillance network. As an option, the mission system may include MATRICS®, a ship borne Maritime Surveillance System (MSS) designed by DCNS and featuring, for instance, the unique capability to automatically detect any suspicious behaviour on the part of other ships.

L'Adroit is the first ever vessel to be designed and built with full provisions for unmanned aerial and surface vehicles.

### **A shipbuilding success story**

This OPV's design, construction and trials have been performed by a dedicated team of up to 100 people, all volunteers to develop and apply new methods and solutions not previously introduced at Lorient shipyard, which up to now had specialised in the construction of much bigger surface combatants. Less than 2 years after the initial idea was first mooted, DCNS succeeded in launching L'Adroit, geared up for maritime security duties, simple to operate and easy to maintain thanks to affordable innovations.

DCNS involved a great number of industrial partners in this bold venture, mostly French and European companies ready to take on the challenge of addressing maritime security needs.

### **A success story reproducible everywhere**

Design standards make it possible to build DCNS OPV in any shipyard in the world with tailor made local industrial solutions. Any nation may seize this opportunity for a transfer of technology (TOT) to get an affordable solution for maritime security.



## Key features

With a length overall of 87 metres, the Adroit will offer three weeks' blue-water endurance, a range of 8,000 nautical miles and a top speed of 21 knots. The design includes full provision for an organic helicopter and reduced crewing by a complement of 30 as well as space for an additional 30 passengers.

## L'Adroit at sea

Programme start: September 15, 2009

First plate cutting: May 7, 2010

Launch: May 18, 2011

Builder sea trials: summer 2011

Worldwide demonstration tour in partnership with the French Navy: Early 2012

### Building standards

- BV 2000
- Stability : IMO A.534 et A.749
- MSC 266.84, COLREG 1972.
- MARPOL Appendix I, IV, V & VI
- Military standards for aviation

### Flexible propulsions systems

- 2 shaft lines with variable pitch propellers
- Electrical propulsion (low speed) as an option
- Bow thruster
- 3 diesel generators

### Aviation and drones

- Operation of a 10 t class helicopter
- Shelter for 5 t class helicopter
- 30 m<sup>3</sup> of JP5
- Helicopter handling means
- Deployment and recovery of 1 t class UAV
- Launch and recovery of up to 9 m USV
- Mine warfare as an option

### Habitability arrangements

- Yachting quality • Crew : 30 people
- Passengers capability : 29 people
- 120 m<sup>2</sup> bridge grouping in one place ship control, operational command and aviation control
- Second bridge

## The OPV Gowind L'Adroit partners

### Thémys

The OPV Gowind L'Adroit is equipped with a NACOS IBNS (Integrated Bridge Navigation System), and associated navigation sensors. A GMDSS station, a FB500, and a Secure + Warship AIS. THEMYS is involved in the design, the integration, and the qualification of COTS equipments aimed at military applications.

### Schiebel

The CAMCOPTER® S-100 Unmanned Air System is highly versatile and fully autonomous and unrivalled on the market ;it is the only such system to have successfully completed over 200 hours flight time and 500 deck landings on various "single landing spot" vessels. It can be fitted with a wide variety of payloads; the focus is a state of the art day and night EO/IR sensor, with either a Mode S or IFF Transponder, as well as an airborne communications relay. It can also carry the PicoSAR radar, is ROVER compatible and harpoon capable for shipboard operations in high sea states. As an option it can be fitted with emergency floats to perform missions at sea. It can carry an external fuel tank raising its endurance to 10 hours. Its airworthiness has been recognised by EASA and its unique capability will dramatically enhance the overall capability of the DCNS OPV Gowind L'Adroit.

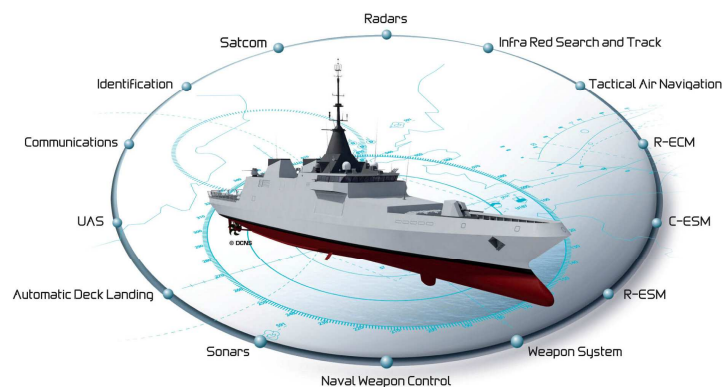


### Thales

L'Adroit draws on Thales expertise for maximised maritime surveillance and automatic detection of suspect behaviour.

The systems installed on board the OPV ensure intelligence-gathering functions: listening, interception, radio and radar analysis (Altesse and Vigile LW systems). The integrated operational communications systems notably enable interoperability with the Carrier Vessel Battle Group and ground control centres (internal communications over IP, HF radio, V/UHF radio and satellite, and Partner management system).

To meet the vessel's self-protection needs and for the extended defence of the naval fleet, Thales supplies a wide range of solutions that are adapted to the full Gowind family: radar surveillance, weapon systems, electronic warfare, optronic search and track, submarine detection, operational communications and UAV systems.



## CAMKA

The solutions provided by CAMKA System make it possible to perform operations which could not have been performed as such onboard.

Remote maintenance (Thanks to a communicating camera, a shore based expert offers guidance to a technician onboard the OPV)

Telemedicine

Shore based Criminal Investigations or the enforcement of legal actions

Objectives are the optimisation of the operational availability and an extended range of missions.



## FLIR



FLIR SYSTEMS is pleased to contribute to the OPV program with the supply of a gyrostabilised platform FLIR TALON, including the following items

-IR Camera – 640x480 InSb, zoom 18x (Field of view 21.7° to 1.2°)

-EO camera – CCD Zoom 25x (Field of view 23.1° to 0.9°)

-Laser Range Finder, range 25Km

-Laser Pointer option

-IMU/GPS – Geosatellite positioning and plotting

This multi-axis stabilised system makes it possible to Detect, Recognize and Identify targets night and day, over a very long range.

Interfaces allow the system to work with RADAR, Fire control, AutoTracking and video Processing

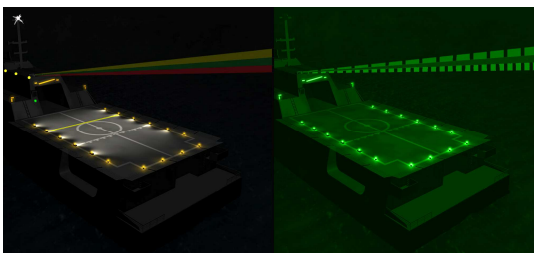
This system is maritized and qualified to military environments of the MIL-STD1553 type

## Marc SA

As the holder of a mutualized contract for rented facilities management and the deployment of scaffolding at all DCNS metropolitan plants, MARC SA got involved in the OPV Gowind L'Adroit program and contributed an access plan for the various levels at which work was going on.

## LINKSrechts

Helicopter Visual Landing Aid Systems Full NVG compatible



The Product: Accurate visual information for unlimited use with the naked eye and with Night Vision Goggles. High reliability and endurance due to the use of solid state light sources (LEDs). Easy to integrate in ship design and easy to use thanks to a smart digital control system. Modular design allowing an adaptation or upgrade for all current and future missions. Designed for long service life and a low maintenance cost.

## Lacroix Defence & Security

The SYLENA Decoy Launcher System Range provides the best solution on the market for the auto protection of small/middle size ships against any missile threat, thanks to new decoy technologies (structural reflector, spectral IR effects).

Designed to thwart the counter-counter-measures of the most advanced seekers, these decoys produce radar and infrared signatures that are impressively ship-like.

For ships equipped with Anti-Submarine-Warfare detection, the SYLENA Range allows also the launching of anti-torpedo decoys.

Integration on board is optimized for adaptation to any type of ship.



## Sagem

EOMS NG is the sole multifunction optronic equipment on the market to perform InfraRed Search and Track (IRST) on the one hand, and on the other hand the identification, and when required, engagement of targets thanks to its embedded ballistic computer and naval gun control function. EOMS NG ensures the ship's close self-defense through a single system.

SIGMA 40D is a high performance ring laser gyro-based inertial navigation system delivering position data for navigation, as well as serving as an attitude and heading reference system for the stabilization of the ship's weapons and sensors.



## Terma

Terma Naval Surveillance Radar Systems for detection of small targets in harsh weather conditions: ideal for detecting illegal activities (drug and weapons smuggling, illegal immigration, piracy, illicit fishing, etc.)

-SCANTER 6000 Solid State X-band Radar, Monitoring Low Airspace, Search and Rescue, Navigation, Self-protection and Helicopter Control

-SCANTER 4100 2D Surface & Air Surveillance Radar used for instance as main radar on the OPV and for Helicopter Guidance functions

-SCANTER 2001 2D Surface Surveillance Radar used as surface surveillance radar on all kind of ships

# POLARIS - Compact and scalable Combat System

Latest member of the DCNS Combat Systems family, POLARIS is a sea-proven compact solution designed to fulfill Navies and Coast Guards' needs for surveillance, littoral zone protection and Economical Exclusive Zone protection missions. The system is well adapted to be installed on OPVs, FACs, FPBs, LPD/LHDs...

POLARIS offers scalable functionalities that are built for maritime situation awareness, interoperability and surface warfare management.

The functional core is a robust, optimized and capable tactical system, which takes benefit of DCNS Combat Systems already in service

Key features:

## **Performing, easy to use and easy to install compact system**

Flexible and easy to upgrade, Polaris is proposed for new programs and is also perfectly suited for modernizations and renovation programs.

It features the capability to interface a great number of surveillance and identification sensors (radar, AIS and ADS-B, video and infra-red cameras, radar and communication ESM equipments,...). The improved anti-surface warfare version provides the capacity to operate guns and Surface-to-Surface Missile systems.

## **Extended connectivity and interoperability**

Though it is compact, Polaris is the main node for networking a wide range of units or systems which contribute to the Maritime Safety and Security, among them:

- A Tactical Data Link (Allied or National Link),
- A Maritime Safety and Security system such as MATRICS,
- An Helicopter,
- Special Forces on board a RHIB,
- An Unmanned Air and/or Surface Vehicle,
- A Secure WIFI internal network.

## **Fast upgrading**

In case of emergency, for instance to join a combined operation, Polaris can be deployed in order to drastically increase the capabilities of a vessel for short term dedicated missions including the addition of a tactical data link to ensure interoperability with a NATO group.

## **Long Term Support**

DCNS owns all the expertise, industrial means and tools to provide long-term support during system entire lifecycle (maintenance, obsolescence management, technical facts recording and analysis, database updates...).

## **Experience**

In 2009, Polaris has been sea and combat proven on board a french Navy Frigate to conduct operations during her participation to the ATALANTE mission. And more recently, additional french Navy ships have been fitted with a version of Polaris.



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