

Your naval
partner

A large, modern French Navy ship is shown in a dry dock, undergoing major overhauls. The ship's hull is a dark grey color, and its complex superstructure is visible. Several workers are seen on the ship's deck and on the dock, indicating active maintenance work. The background is a hazy, overcast sky.

Major overhauls for the French Navy

STRENGTH at sea

DCNS

An unequalled expertise

For over 3 centuries, DCNS made its mark as a major company for the maintenance and repair of ships, conventional diesel electric and nuclear submarines. Focus on this activity which requires cutting edge expertise.

Aircraft Carrier Charles-de-Gaulle: an overhaul operation conducted as per schedule and within budget.

The overhaul of the aircraft carrier Charles-de-Gaulle (PACDG) started on the 1st of September 2007 and was to last 15 months, a minimum duration for a nuclear powered ship. It took two years for DCNS to prepare and organise this technical stop involving 2.5 million working hours, 600 dedicated DCNS employees and many subcontractors. Beside the technical challenge and the human venture this project consisting in ensuring the maintenance of the ship in a record time represented, DCNS had to make do with budget restrictions. To cut down costs, a meticulous preparation, partnerships with highly competitive companies and the contribution of the 1,000 male and female crew members proved necessary. Worn elements from the two reactors were packed

and transported to the nuclear plant section of the secret Base (INBS). The two steam generators, measuring 10 metres in height and weighing 80 tonnes, were transported by barge. The nuclear boiler plant underwent a complete survey with an in-depth analysis of its vital components. Below the flight deck, the meticulousness of the

The meticulousness of the DCNS intervention was almost surgical!

DCNS intervention was almost surgical! Only a robot could examine down to the most minute details a tunnel 65 m long, 40 cm wide and 30 cm high. It showed us the necessity to change some 2,500 m of cables and all the pulleys from the tunnel forming part of the COGIT system.

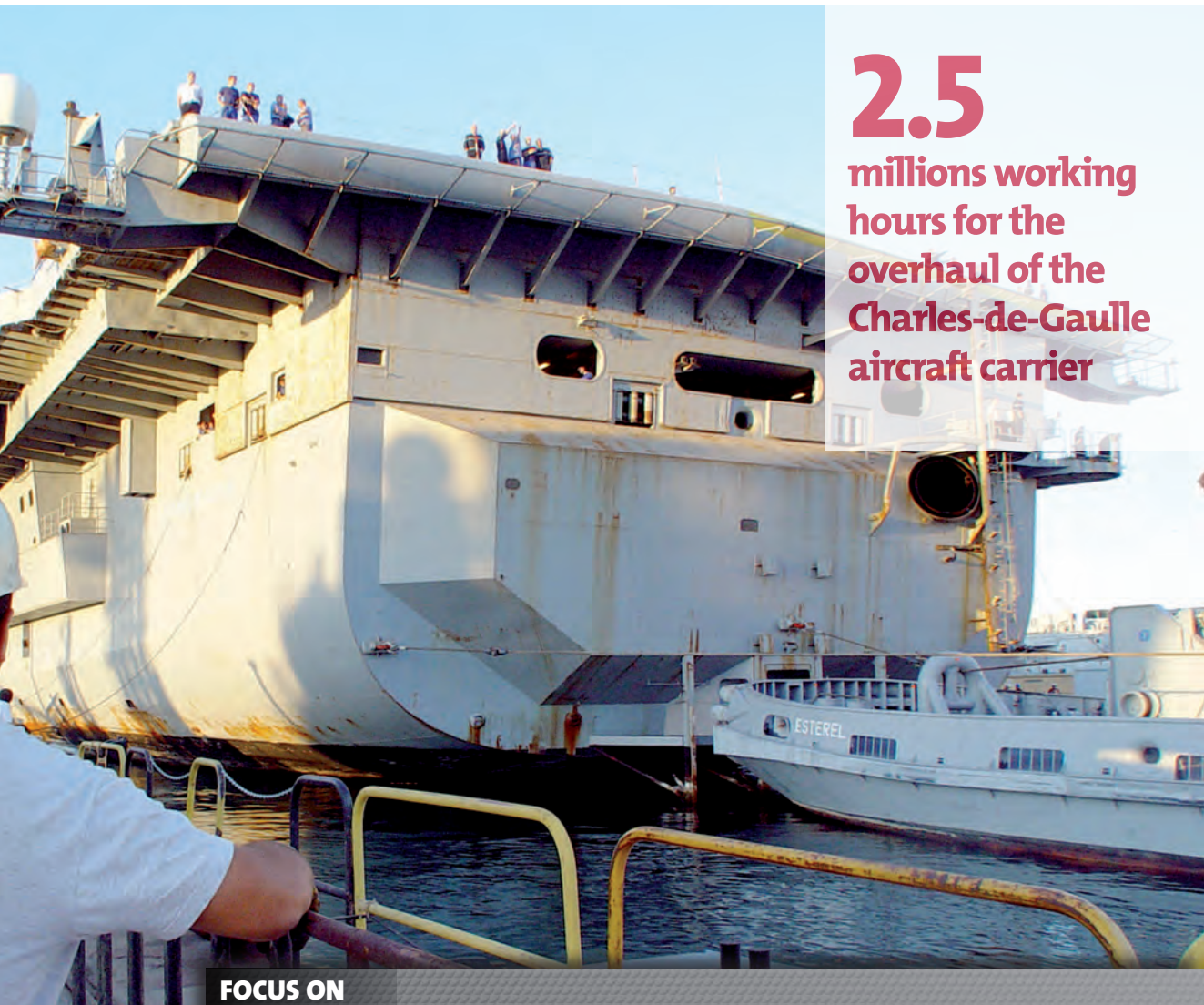
Key tasks included:

- replacement of fuel rods in each of the vessel's two reactors (64 fuel rods replaced for two reactors)
- inspection of the steam generating plant
- overhaul and inspection of the

propulsion system, from steam turbines to propellers

- stripping and repainting of the 11,000-sq.m hull
- resurfacing of the 7,800-sq.m flight deck
- overhaul and inspection of catapults, arresting gear and other flight deck systems
- replacement of three cooling plants
- upgrades to accommodate Rafale combat aircraft to standard F3
- modernisation of command information and communication systems to the latest standards, including telephony-over-IP and internet access





2.5
millions working
hours for the
overhaul of the
Charles-de-Gaulle
aircraft carrier

FOCUS ON



Availability

As the case for the formula 1 racing cars stopping at the stand, a nuclear attack submarine should remain idle for as short a period as possible. These last few years the adoption of rigorous working methods and the quality of the work performed have led to a considerable reduction in the time spent at the dock, in spite of the increasing complexity of the task. Today, submarines sail on average 220 days a year.

Exporting Maintenance

DCNS HAS BEEN CARRIED OUT, MAJORS OVERHAULS FOR THE FRENCH NAVY FOR MANY YEARS. AS A DESIGN AUTHORITY FOR COMPLEX SHIPS SUCH AS FRIGATES, AIRCRAFT CARRIER, SSN AND SSBN SUBMARINES, DCNS GARANTEES OPERATIONAL EFFICIENCY AND SAFETY

Nuclear attack submarines (SSNs): rigor, discretion and full control of the nuclear environment

Epitome of high technology, the maintenance of nuclear attack submarines requires a dedicated environment to meet security and safety requirements. That is why INBS facilities have been made available to DCNS. In this workshop dedicated to the maintenance of steam generators, DCNS concentrates all nuclear activities. Maximum safety, savings in time and money are key words with respect to the maintenance of SSNs whose unavailability periods last from three to five weeks depending on operational needs. DCNS ensures the maintenance on the basis of calendar requirements, repairs broken down equipment, and provides the ship with on board spares and electronic PCBs. While DCNS has proved capable of entering into partnerships with rigorously selected firms bringing highly specialised skills, it has kept nuclear power, diving control system, weapon systems and other tactical elements (propulsion, boiler plants...) as its own preserve.

The refuelling and complex overhaul (RCOH) of nuclear-powered attack submarine (SSN) Perle

DCNS completes SSN Perle refit 3 weeks ahead of schedule. Fast, efficient work by the refit team allowed DCNS to refloat SSN after 15 months in drydock.

The refit involved:

- 1 million person-hours
- replacement or refurbishment of 63,000 components, including 15,000 for the nuclear powerplant

Early completion was made possible by the drive and cooperation of all concerned and the excellence of DCNS's dedicated project management team.

Key tasks included detailed inspection of the hull and reactor vessel, inspection and refurbishment of all systems and equipment, reactor refuelling (i.e. removal of irradiated fuel rods and loading of new ones), a range of modifications and the modernisation of key systems, including the boat's sonars.

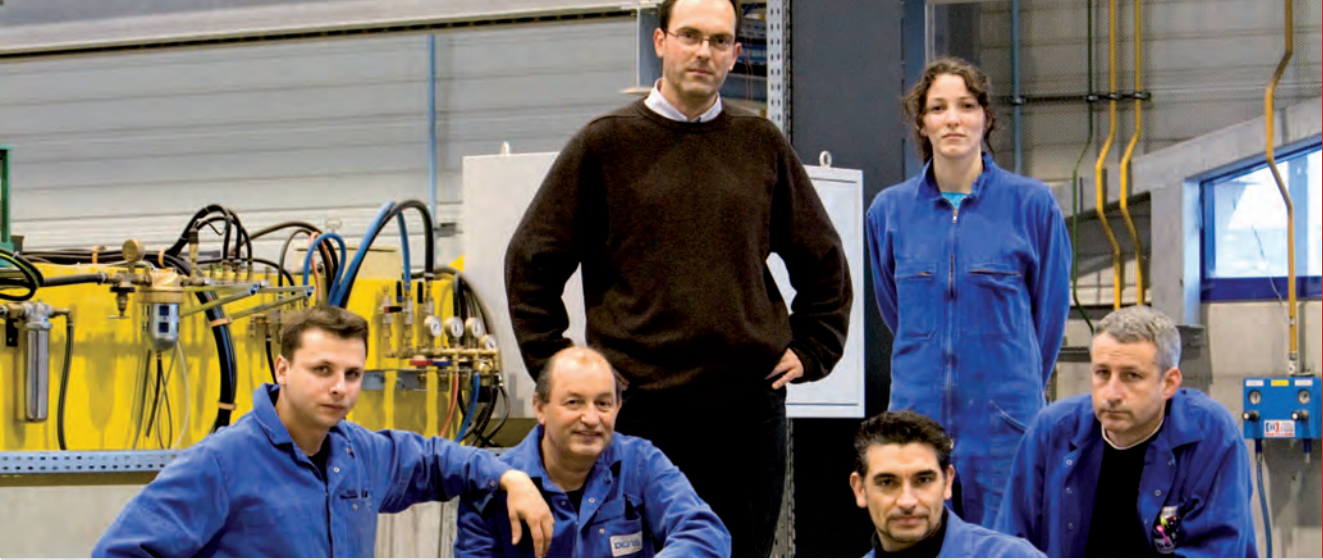
The programme involved around 1,000 Toulon-based employees on a full-time basis plus contributions by all DCNS centres and dozens of contractors.





World wide experts
dedicated
to international navies





STRENGTH at sea

DCNS is Europe's key global player providing high-value-added naval defence systems. The Group offers the world's navies a turnkey approach to warships, including all related equipment and services. As prime contractor, designer, builder, and integrator, the Group masters the overall value chain and life-cycle of naval systems, from initial design to full operational maintenance.

An international player

DCNS' capacity for innovation allows it to respond to the complex challenges of navies around the world by proposing cost-efficient integrated solutions, which are both interoperable (air/naval/land) and applicable to inter-allied operations.

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