

Your naval
partner

FORMIDABLE

Customised partnership for Singapore

STRENGTH at sea

DCNS

Committed to a winning partnership

The contract linking DCNS and the Republic of Singapore, backed by the agreement with sub-contractor ST Marine of Singapore, is first in its league. Based on a 360° transfer of technology, it allows to precisely respond to the city-state's geopolitical challenges as well as its navy's specific requirements.

When Singapore tendered for a partner capable of contributing to developing its naval forces, its approach combined two complementary expectations: first, the upgrade should contribute to better protect the economical interests of the city-state ; second, the Republic wished to acquire the appropriate know-how and autonomy to build their own multimission frigates. In addition, the ships should be equipped with the very latest combat system and communication developments.

Adaptability is the key

The specificities of the tender implied strong industrial flexibility, with the commitment to build a partnership with the local shipbuilder ST Marine (Singapore Technologies Marine). Last but not least, the chosen partner should equip the frigates with a combat management system designed and supplied by the customer, thus demonstrating its adaptability to an imposed industrial organisation. As a result, DCNS was selected by Singapore for its made-to-measure transfer of technology programme allowing to deliver 6 Formidable multimission frigates within a short period. The first one

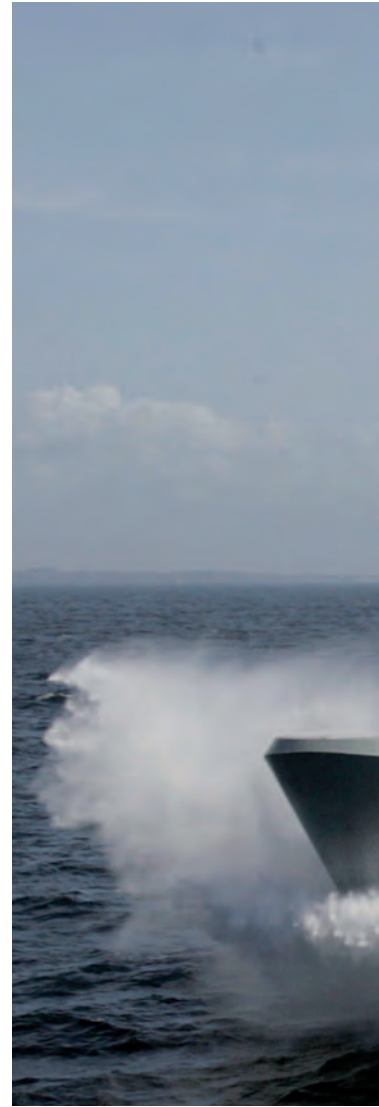
was to be built in France and 5 identical ones by ST Marine in Singapore. Nevertheless, DCNS was committed to full responsibility for the quality of all 6 frigates. DCNS' response drew on the Group's history of partnerships with the French and foreign navies as well as its strong commitment to a durable cooperation. Besides, the fact that the ship's design was submitted to formal approval by the Singapore authorities at every key stage raised additional challenge on the architects because of the potential impact on the overall schedule of the programme and the delivery of the frigates.

A made-to-measure programme

DCNS worked in close cooperation with the Singaporean shipbuilder, with the objective of transferring the multi-disciplinary know-how allowing them to build their own ships locally. Thus the agreement signed with ST Marine included a full transfer of technology programme including training of 150 Singaporean instructors over three years. Logically, the Lorient shipyards, where the first frigate was built, were used as training grounds for the Singaporean trainees. At the same time, the ST Marine shipyard in Singapore was being

A design realised in partnership and benefiting of DCNS' leading experience in stealth frigates

upgraded based on DCNS experts' recommendations, further to a full industrial analysis. On-going technical assistance as well as project management support were provided during the building of the 5 frigates in Singapore. A dedicated joint procurement team was also set up and provided with all necessary specifications to acquire equipment and materials. Last but not least, all technical documentation allowing shipbuilding, systems integration and trials were provided, bringing ST Marine's teams to full autonomy. However, DCNS remained fully responsible for both the design and the final quality and performances of all six Formidable frigates.





5

**frigates built in
Singapore**

460

**man-months of
training**

FOCUS ON



The Malacca Strait

Safety in the Strait of Malacca is a highly strategic issue for Singapore. The tens of thousands of vessels which pass through the strait each year carry about one-quarter of the world's traded goods. About a quarter of all oil shipments carried by sea pass through the strait, mainly from Persian Gulf suppliers to Asian markets such as China, Japan, and South Korea, which amounted, in 2006, to an estimated 15 million barrel per day.

Training for maximum autonomy

AS PART OF DCNS' TRANSFER OF TECHNOLOGY PROGRAMME WAS A LICENSE AGREEMENT ALLOWING ST MARINE TO BUILD 5 FORMIDABLE FRIGATES IN SINGAPORE. SUCH AGREEMENT REQUIRED THAT SINGAPOREAN STAFF WAS TRAINED TO ACQUIRE THE APPROPRIATE KNOW-HOW TO ASSEMBLE, TEST AND LATER MAINTAIN THESE HIGHLY SOPHISTICATED VESSELS.

Most of the training took place in Lorient shipyards but instructors were also trained at DCNS' main equipment suppliers throughout Europe as well as in Canada, with a prime objective: becoming fully familiar with all of the ship's technological and technical features in order to train and manage their own teams back in Singapore.

On top of all the traditional engineering and technical know-how (hull construction, welding, painting, electricity, piping, automation and information systems, propulsion systems, mechanics, inside fittings...), project management was part of the training programme, with specific classes on quality and supply chain management. Although the vast majority of instructors were provided with content within their core trade, future project managers were given a broader training. As a whole, 460 men-months of training were provided for over 3 years, ie. an average of 3 months for each of the 150 Singaporean trainees. At the demand of the Singapore authorities, DCNS also provided some design training to all for future upgrading of the frigates.





The city-state of Singapore's economy heavily relies on maritime traffic, making both the Port of Singapore and the Malacca Strait absolute economic necessities. Currently the world's busiest port both in terms of shipping tonnage and containers, Singapore hub is also critical for importing strategic natural resources the Republic lacks. As for the Malacca Strait, with over 500,000 vessels passing through it each year, it is the main shipping channel between the Indian Ocean and the Pacific Ocean and between Asia and Europe. Its safety, in which the power of Singapore's navy and specially the Formidable frigates play a major role, is therefore a very

Singapore's attractivity enhanced

The 6 newly designed **Formidable multimission stealth frigates will clearly contribute to enhancing sovereignty and boosting security, thus promoting Singapore's attractivity as the «garden city» of south-east Asia.**

strategic issue not only for Singapore but also for the global balance of the world economies.

The fact that the Formidable-class stealth frigate integrates the most advanced technological features developed is only a small brick to the partnership between DCNS and the Republic of Singapore. In addition to equipping Singapore naval forces with a new-generation surveillance and combat ship specifically designed to the requirements of the Republic of Singapore and featuring enhanced capabilities in propulsion and platform automation, DCNS is committed to support the navy on the long term.

The "Delta project" allows for all six generation multimission Formidable-class frigates to be fully operational by 2009, contributing to peace-keeping in south east Asia. Committed to success, the DCNS group engaged its full responsibility for their design and final quality.



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.

DCNS
36-42, rue du docteur Finlay
F-75732 Paris Cedex 15
+33 (0)1 40 59 50 00
www.dcnsgroup.com

