

Mistral, Tonnerre and Dixmude Landing Helicopter Docks (LHD) benefit from major technological advances: The “All Electric Ship” concept and the Pod Electric Propulsion.



In 1997, the French Navy launched the building of two LHDs: Mistral and Tonnerre. These vessels of commandment and task force landing are capable of performing various missions, for instance helping the population in natural disaster situations. These two vessels have successfully operated for some years now and pod electric propulsion performances fully meet with Navy's expectations.

In 2009, the French Navy decided to order a third LHD, the “BPC 3” now called Dixmude with reference to the famous first world war battle. To optimize both investment and operating costs and to reduce the delivery time, the French DGA (Direction Générale pour l'Armement) has decided to equip the vessel with the same sea-proven technology that has been implemented on the Mistral and Tonnerre.

A tried and tested solution for the merchant marine applied to a military programme

Converteam's experience in electrical propulsion and especially in pods was a key driver in the company's selection as a supplier of the entire propulsion system for the LHD programme. The LHDs are the first military vessels to implement the “All Electric Ship” concept and be fitted with pods.

The propulsion architecture adopted by Converteam for the LHDs is derived from the systems used for merchant vessels and cruise ships. The configuration includes, for each ship, two 7MW – 156rpm steerable pods, four power converters and their transformers, a set of harmonic filters, a redundant field drive system and the overall control system.

Each pod houses a dual-winding synchronous motor powered by two converters that are transformer fed at 6.6kV. The main power units are grouped together in the propulsion rooms on each side of the well deck and can be easily accessed for maintenance or routine servicing.

Levers on the bridge enable precise and flexible control of the ship's steering and thrust. Redundant control modes can be implemented from controls located in the engine control station and in the propulsion rooms.

Main milestones of the programme:

- Delivery of the Mistral: 1st half of 2006
- Delivery of the Tonnerre: 2nd half of 2006
- Delivery of the Dixmude: 1st half of 2012.

Pod electric propulsion offers significant advantages:

- Increased manoeuvrability which is essential for navigation in shallow water and the embarkation / disembarkation phases.
- Reduced operating costs (less fuel consumption)
- Space savings
- Improved availability



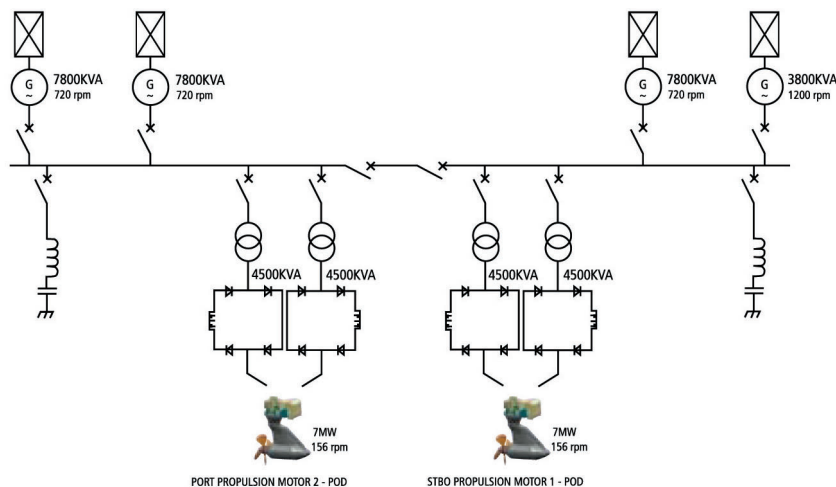
| 2 pod units 7MW each

An optimized architecture, reduced costs and improved availability

The principal advantages of the pod solution are: a simplification of the ship's global architecture, no shaft line and steering gear, reduced costs over service life and excellent availability.

The LHD programme proves Converteam's ability to meet the requirements of military ships. Pods were chosen for the LHDs as a result of the decision to rely on civil developments in this field. Such an approach reduces procurement costs and industrial risks and allows the Navy to possess products meeting the most stringent requirements. It also allows a reduction in number of the crew.

A further determining factor in the choice of the Converteam solution was the company's international structure and the ability to meet the requirements for availability of the ship (350 days a year). Converteam offers its customers a wide range of services during the ship's service life (integrated logistic support, remote diagnostics, maintenance operations, interventions, etc.).



Technical characteristics of the ship

- Length 199.5m
- Max. width 32m
- Displacement at full load 22,000t
- Max. speed 18.8knots
- Propulsion 2 electric pods
- Crew 160
- Operational capacity 6 landing spots, 16 helicopters carried, integrated communications network, operations management system and close protection system

Technical characteristics of the propulsion system

- Number of pods 2
- Power rating 7MW at 156rpm
- Pod rotation n x 360° in manoeuvres limited to +/- 35° in transit
- Network voltage 6.6kV
- Cooling Water and forced air

Converteam SAS
Parc Techn'hom - BP 40437
24, Avenue du Maréchal Juin
90018 Belfort cedex - France
Tel.: +33 (0)3 84 98 10 56
Fax: +33 (0)3 84 98 10 08
marine@converteam.com

Germany Tel.: +49 30 76 22 0
UK Tel.: +44 (0) 1788 563 563
USA Tel.: +1 412 967 0765
Brazil Tel.: +55 31 3330 5800
China Tel.: +86 21 6414 6080-8000
India Tel.: +91 124 4220 300
Norway Tel.: +47 67 83 82 50
Russia Tel.: +7 (499) 270 27 11