

Converteam has been chosen by the Royal Netherlands Navy and Damen Schelde Naval Shipbuilding to equip a Joint Support Ship (JSS) with integrated electric power & propulsion systems. Converteam's electric package also includes an Energy Management System and thrusters electric systems.



In December 2009, the Netherlands' Defence Materiel Organisation (DMO) and Damen Schelde Naval Shipbuilding signed a contract for the supply of a Joint Support Ship (JSS). The ship to be built at Damen shipyards for the Royal Netherlands Navy will be delivered in July 2014.

A multi-functional platform

The JSS fulfils the operational requirements of the Royal Netherlands Navy for a robust multi-functional platform specifically designed for maritime support, strategic sea lift and sea-based missions in open ocean as well as in littoral waters. The JSS measures 205 meter in length and 30 meter in breadth and the ship's speed is approx. 18 knots.

The vessel will accommodate up to 300 crew. It will be outfitted with signature reduction measures, ballistic protection, blast resistant constructions and redundant and shock resistant systems.

An Integrated Vessel Energy Plant (IVEP)

Converteam's wide expertise in naval applications and in innovative propulsion systems has enabled it to offer Damen Schelde Naval Shipbuilding and the Royal Netherlands Navy a performant IVEP solution. Besides, they will benefit from all the "single source vendor" advantages: pro-activity, customized solutions, optimization of equipment, user-friendly interfaces, time and cost savings and global responsibility.

Diesel-Electric propulsion plant

The diesel-electric propulsion plant consists of two main electric motors of 8,900 kW each, two shaftlines with Fixed Pitch Propellers, two bow thrusters and one stern thruster.

Electric generation is ensured by means of five diesel generator sets of approx. 25MW in total, four distribution transformers, two switchboards - 6,600V - and four Uninterruptible Power Supplies (UPS).

A remote propulsion control system and an Energy Management System (EMS) are also supplied by Converteam. The EMS features two main functions:

- Control and supervision of the electric distribution system through a friendly interface
- Control of the electric ship load and management of the number of diesel generators in operation for optimization of the efficiency.

Integrated Electric Power & Propulsion systems offer:

- High efficiency
- Low noise and vibration levels
- Operating flexibility
- Increased availability
- Low maintenance time and costs

An integrated electric package including:

Power Generation

- 5 Generators totalling 24,900kW
- 2 Switchboards, 6,600V
- 4 Distribution transformers, each 2,500kVA
- 4 Uninterruptible Power Supplies

Main Electric Propulsion

- 2 Slow-speed induction motors, each 8,900kW
- 4 Propulsion transformers, each 5,400kVA
- 4 PWM MV7000 converters
- Remote propulsion control system

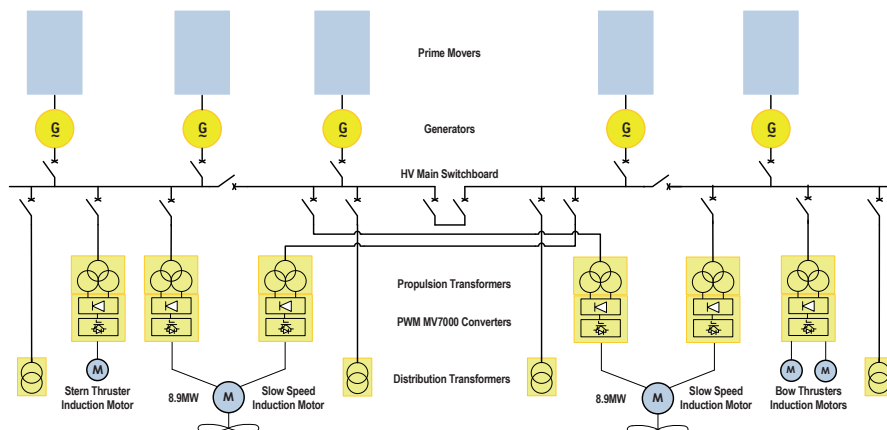
Thrusters

- 3 Induction motors (2x 1,250kW, 1x 750kW)
- 2 Transformers
- 2 PWM MV3000 converters

Energy Management System

Induction propulsion motors

Main propulsion electric motors are High Torque Density (HTD) induction motors. Their simplicity and robustness (squirrel cage rotor) offer a high level of reliability and availability. They are fed by PWM MV7000 converters.



Consequently, maintenance time and costs are reduced. Furthermore, induction motors have reduced acoustic noise and vibration levels that meet with ship requirements.

PWM* MV7000 converters

Thanks to the high-performance press-pack Insulated Gate Bipolar Transistors (IGBT), MV7000 converters' efficiency and availability are enhanced. In addition, the IGBT technology makes the converters easier to control and leads to a very compact design (less components).

A global high efficiency

The Induction motor/ MV7000 converter association offers a high efficiency due to the low level of current harmonics, which results in the following advantages:

- Reduced motor losses
- Reduced AC supply harmonic level
- Power factor optimization, close to 1 over the whole speed range (> 0.96).

Consequently, the motor efficiency is high, and no harmonic filters are necessary to be compliant with the maximum Total Harmonic Distortion (THD) allowed by the classification societies. In addition, the size of the generators is reduced (power factor: 0.9).

*PWM: Pulse Width Modulation



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