esco POWER

CASE STUDY – FRENCH NAVY 26M VSP

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DIESEL POWER	VOLVO D13 441kW/ 1900 RPM X 2
PHT MODEL	PHT700A901 X 2 ratio 1.7
	E-PROPULSION 80kW E-MACHINES X 2

8x FRENCH NAVY VESSELS TO RECEIVE ESCO POWER PHT - PARALLEL HYBRID TRANSMISSION TO ENABLE VERY SLOW SPEED AND PRECISE OPERATION

S.E.E. MERRÉ Shipyard in Nantes was commissioned by the Ministry of Armed Forces to build and deliver eight 26-meter Vedettes de soutien à la plongée (VSP) Diving Support Vessels, designed by the French naval architecture firm Neuman. These vessels will replace the navy's nine Dionée-class diving tenders, with entry into service scheduled between 2023 and 2025.

The VSPs will support dive operations with a primary focus on detecting and disposing of sea mines. Constructed from aluminum to avoid the magnetic properties of steel, which could trigger mines, the vessels offer improved safety for these sensitive missions. They feature a hybrid propulsion system with an Esco Power Parallel Hybrid Transmission (PHT700A901), which allows for seamless switching between diesel and electric modes. Thanks to PHT's unique built-in ratio feature (electric motor speed is reduced by the PHT ratio at the entry to marine gear) the vessels are able to start in electric mode and accelerate smoothly from a complete standstill at 0 knots.

Equipped with two 440 kW diesel engines, the vessels can reach speeds of up to 13 knots and cover a range of 250 nautical miles. Two 80 kW electric motors enable slow-speed operation as low as 1 or 2 knots, ideal for precise and safe mine disposal.

Each vessel provides comfortable accommodation for up to 6 crew members and 16 divers. The eight boats will be delivered to Toulon, Brest, Cherbourg, and the Saint Mandrier Navy stations.

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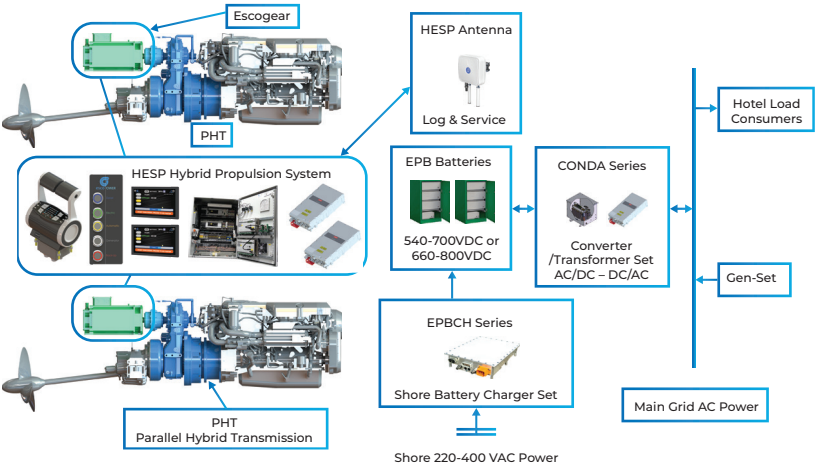
Esco Power Parallel Hybrid Solution Overview



Parallel Hybrid Solution by Esco Power

PHT	Parallel Hybrid Transmission, to be installed between marine diesel engine and marine gear, brings diesel and electric power on one driveline
HESP	Hybrid Electric Solution Package, Complete hybrid command, control & command system, including E-machines, frequency drives, control & command screens, command station, mode select panel, software with various modes: diesel, electric, automatic, generation single and cross-mode, includes commissioning
HESP Antenna	Optional feature to ensure remote access & system updates and service
Escogear	Flexible Coupling to connect PHT secondary output to E-machine
EPB Batteries	Battery system, including BMS with operational voltage matching offered E-machines: 540-700VDC or 660-800VDC, with rack or frame mounting solution, power & communication cables, includes commissioning
EPBCH Series	Battery Shore Charger Set
CONDA Series	Converter/Transformer Set, to install between our EPB Battery System and the vessel grid 230/400VAC, making the batteries system available for on-board consumers as to charge it with Gen-set & shore charger connected to the on-board grid

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