

# Transfluid hybrid and electric systems: a guarantee for the future

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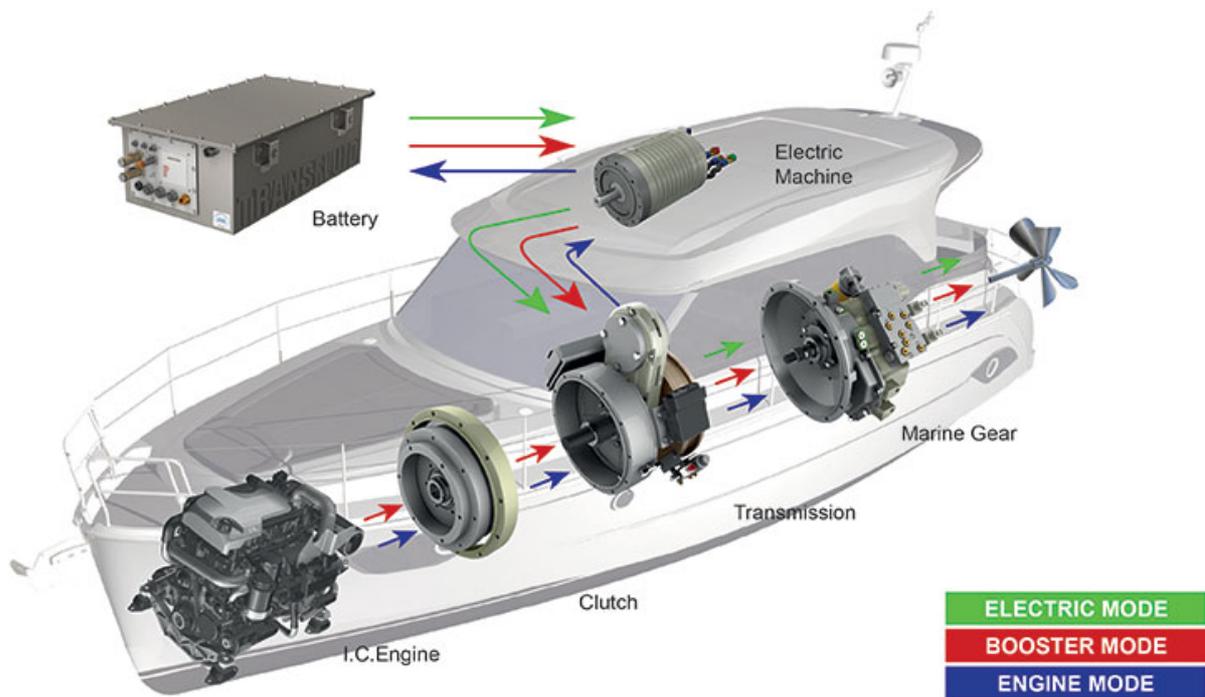
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Transfluid is able to offer a complex hybrid propulsion system made up entirely of Transfluid-branded components, including the wiring that connects them in a proprietary network managed by its own software and control unit.

The Transfluid hybrid system is proof that industry is ready, offering both hybrid and electric propulsion solutions with a wide range of engines to suit any type of application. The system can be installed on both new, retro-fitted and on-the-water boats. The module is installed between the internal combustion engine and the transmission, with the electric machines manufactured by Transfluid, mounted parallel to the propulsion axis line, in a very limited space and respecting the SAE coupling standards used by engine and transmission manufacturers.

Hybrid modules, batteries and electric engines have all obtained the DNV Type Approval. The Transfluid hybrid system makes it possible to optimize the efficiency of propulsion modules installed on board, the combustion engine and the electric machine, allowing each mode to be used at its most efficient point, so that consumption can be optimised for each operating profile.



The Transfluid systems makes it possible to reconcile eco-friendly navigation, obtained in electric mode, with long-range navigation, always in total safety, using the internal combustion engine, during which it is of course possible to use the electric machine to recharge the batteries in “regeneration” mode.

The electric motor is powered by a high-efficiency lithium battery bank (LiFePO<sub>4</sub>). It is possible to increase the range with the support of an on-board generator, with a lower power rating than the main diesel engine, which acts as a range extender which can supply energy to the propulsion batteries even when sailing electrically.

The shipyards will be able to allow their customers to plan eco-friendly, silent and cost-saving navigation, features that can also be extended to workboat operations such as loading and unloading, passenger transport, etc.

Transfluis manufactures PMSM Permanent Magnet Synchronous Machines with natural or forced convection air cooling and liquid cooling. These solutions ensure high efficiency and simplicity with limited weight and dimensions. The PMSM electric machine is controlled by an Inverter (Frequency Drive) which allows the electric machine to work both as a motor and as a generator. The perfect integration of the range of electric machines with the Inverters allows a compact installation of the system, as well as making management simple and effective at any stage of operation.

Electric motors have found a wide application in both work and recreational boats, an eco-friendly solution for both new and on-the-water boats.

Most of the boats in the Dutch canals use systems under the Bellmarine brand, owned by Transfluid, a brand that has been a leader in electric propulsion in the Netherlands for several years and is also well-established on the European market, where Transfluid electric motors are used.