

# Eco-sustainable propulsion made in Italy

EPS –Electric Propulsion System AND ELECTRIC Sail Drive are the latest new products from Transfluid, a company specialising in industrial transmissions that in recent years has been making a name for itself in hybrid (HM SERIES) and electric (EPS SERIES) propulsion for dry land and marine applications. Product manager Gianluigi Taroni explains the system and its potential.

Transfluid was founded about 60 years ago and over time has specialised in industrial power transmission, gaining a leading role internationally. The evolution of the market has led Transfluid to develop products also outside its core business and four years ago it decided to develop a new product for new markets, hybrid propulsion both for marine and dry land use. “This project was developed with precise guidelines,” says Gianluigi Taroni. “The first was certainly to create systems using standard elements of industrial production. So nothing built specifically for a customer but something that could be repeated in the market and guarantee after sales service. The other fundamental guideline was to produce a range of products that could satisfy a wide spectrum of customer needs. In 2014 came the project for the parallel hybrid system, with the electric motor, as well as parallel installation, that is not installed on the propulsion line but externally, functions alternatively or in parallel with the internal combustion engine.”

## How does the system work?

“It’s very simple: the electric motor is powered by batteries and connected by a “splitter power drive” to the propulsion line, the hybrid HM module is between the diesel engine and the transmission. There are three different operating modes: when the clutch is opened the electric motor drives the propeller; when the clutch is closed the diesel engine drives the propeller and at the same time can generate energy to recharge the batteries; finally the electric motor can work at the same time as the diesel engine functioning as a booster, combining the two power sources.”

## Where does the efficiency of this hybrid system lie?

“There are three key words that sum up the pluses of the system: simplification, integration, accessibility. Simplification means a hybrid system with all its components that can be installed by the boatyard using traditional logic. All the components are connected to the traditional system and so the yard can operate in a linear way, without having to tackle extremely new problems for which it often does not have specific competences. For this reason Transfluid offers a complete package including all components that make it possible to have a “plug and play” hybrid system. Integration of energy on board is an important factor in the hybrid system and the possibility of integrating the potential of the hybrid system with the energy needs on board, both electrical and hydraulic, are a strong point of the application. Thinking of the

## HYBRID MODULE



A series of hybrid Transfluid modules. The module is designed to be coupled with any internal combustion engine, and so long as it has an SAE flywheel housing and any kind of transmission in accordance with the SAE standard.



Gianluigi Taroni, Transfluid Marine Product Manager & Hybrid specialist.

integration of hydraulic energy, for hoists, thrusters, stabilising fins, gangways or other elements, the hybrid system, if of a suitable size, makes it possible to integrate a hydraulic pump in the

module. This solution makes it possible to use hoists and other elements with the internal combustion engine switched off, making the boat fully operational even in zero emission mode. A concrete example of this aspect is the 12 m goods transport boat that supplies hotels and restaurants – it’s called “mototopo” – in Venice, where we have integrated the hybrid system that at the same time handles the hydraulic hoist for loading and unloading pallets. As to the integration of electrical energy, it’s clear that the batteries are a power reservoir for all the systems on board. The hybrid module is the principal source, since it can count on the optimisation of the energy generated using excess power in the propulsion phase of the main engine, integrated by energy from any solar panels present. The result is clear, you can use a boat with all services operational even in zero emission mode, anchor all night with air-conditioning on with no noise or vibration. Besides not having direct consumption, you can use all services regardless of the generators and



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so rationalise the use of energy. Accessibility of the system is thanks to an evolved and simple software interface. The user has the controls of the various phases in the diesel engine command lever, so there is perfect integration between the functions available: diesel mode, electric mode, generator and booster. To date the Transfluid hybrid system – installed on more than 18 vessels – is the ideal system for work boats such as taxis, passenger ferries, fishing boats, barges, tugs, goods transport vessels etc that need to reduce consumption, noise and polluting emissions, or for pleasure boats that want to improve comfort, reduce vibrations and noise and also navigate in protected or restricted waters, increasing performance while reducing consumption. As concerns the yachting sector, we have collaborated with several yards, including Bavaria for the E40 displacement yacht. This boat has

particular manoeuvrability and reliability and above all simplicity, because it is handled in a traditional way although it has an innovative propulsion system."

### What's the latest news?

"In 2015 we presented at the Electric & Hybrid Marine World Expo in Amsterdam fully electric propulsion: EPS – Electric Propulsion System. Though maintaining the traditional logic of propulsion on board, we wanted to create a totally electric propulsion system that could be powered by batteries and possibly by a generator. This kind of propulsion should be considered a mirror of diesel propulsion, allowing the yard to choose whether to install a diesel engine or an electric motor without changing the design, the installation criteria or the propeller. At the 2016 addition we presented the Electric Sail Drive transmission for sailing boats with a power of up to 35 kW connected to electric motors produced by ourselves. In this case too, without modifying any installation on board, we install the electric motor connected to the Sail Drive transmission instead of the diesel engine. The weight of an electric motor with its battery is comparable with the weight of a diesel engine with its tank. Finally, today Transfluid proposes itself in the marketplace as an industrial manufacturer of systems for hybrid and electrical propulsion, with a broad range of solutions both in terms of power and in type of transmission; the decision to supply a plug and play system makes this the ideal partner for yards, because they can concentrate their energies and technical resources on the boat and purchase the hybrid system as an accessory that will be integrated in the propulsion line."

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Seguici su

#### LUBRIFICANTI

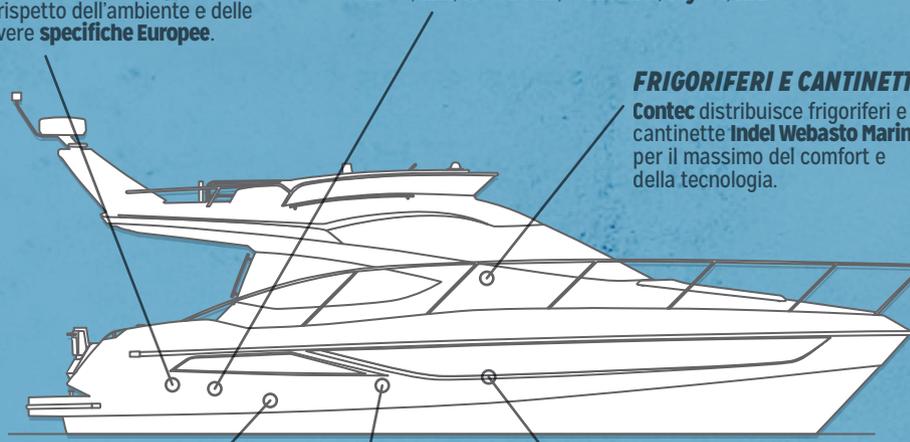
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