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For immediate release

**Subject:**

**British Engineering Firm to Kick-start the Green Hybrid Revolution on Water**

**The Overview**

REAPsystems have pulled together a consortium of British Engineering firms to develop a clean and green hybrid electric engine for both new and existing boats, demonstrating that British Engineering continues to innovate and pioneer technology advances.

With this project we are kick-starting the green revolution on water: we are starting with Venice Lagoon which is crowded with thousands of boats using polluting diesel engines. Once proven in Venice, the technology will roll-out globally.

**British Engineers take up the challenge**

Whilst ‘clean & green’ technology is now making good progress in the automotive industry, such a revolution has still lagged far behind in the marine world. *“The industry has been caught by a circular argument. There’s been nothing that the customers can buy off the shelf – so they won't ask for it. At the same time, the big manufacturers are not offering greener solutions as there’s no queue of customers. The risk for manufacturers to offer such products is high. And frankly, there seems no need for them to change because their business works as is.”* explains our founder, Dr Dennis Doerffel. We want to break through this vicious cycle that prevents the revolution of 'clean & green' technologies.

**The REAPsystems drop-in hybrid electric engine**

REAPsystems are creating a clean drop-in hybrid diesel electric engine that can be installed by any boat builder and fitted into all existing boats. Starting with a Venice water taxi to demonstrate the technology.

This hybrid system uses the latest diesel engine technology paired with a high-power, compact and efficient electric motor & inverter as well as a modern lithium-ion battery and advanced system control unit.

This is a parallel hybrid configuration, where both units – the diesel and the electric - are connected to a conventional sterndrive. In the city, the engine can be 'clutched out' to allow pure electric drive. Here, at low speed and where it matters most, we will benefit from all the advantages of the electric motor: no noise, no pollution, no vibrations and no fuel consumption. During medium to high speed, the diesel engine automatically and smoothly takes over. During diesel operation, the electric motor works as a generator, recharging the batteries and pushing the engine into a more efficient engine loading. During fast transients of the diesel engine, the electric motor may also assist in order to reduce exhaust emissions.

Apart from the environmental benefits mentioned above, we estimate an average fuel saving of at least 50% if compared with current diesel engine boats.

The electric motor is very responsive, it can operate down to zero rpm and change smoothly from forward to reverse rotation. This gives the driver impressive manoeuvrability and more controlled and safe operation in the confined spaces of Venetian canals - all without gear changes.

As a drop-in and compact solution the hybrid electric drive-train can be installed into all existing diesel boats by any boat builder either as a replacement or as an add-on to an existing diesel engine. There is virtually no compromise on passenger or cargo carrying capabilities.

The diesel engine only runs when high output is required. This is what they are designed for. No need for long, inefficient and damaging idle operation. In short, it will run less and better, increasing engine life, reducing emissions and minimising maintenance.

The hybrid system comprises two systems in one. Hence, the operator will benefit from high reliability and peace of mind backup. If there is an issue with the diesel system, it will be possible to get home with the electric system or if there is any issue with the electric system then the conventional and proven diesel system can be used.

**Our technology partners**

To make the project a reality REAPsystems have partnered with other specialist British organisations, such as Southampton University, RIB maker Scorpion RIBs and CAN based Engine Displays manufacturer CANtronik – all experts in their field.

Dave Winwood – Managing Director of CANtronik says *“As a keen sailor, advances in technology that benefit the marine environment are always interesting to me as an individual and to us as a business. We are pleased to be able to support REAP’s pioneering technology and take part in the development.”*

**Why we’ve chosen Venice?**

**Big Impact:**

Venice, a unique and irreplaceable UNESCO World Heritage City has 550 water taxis and buses serving its tourist industry of 32 million visitors a year, plus approximately 20,000 engine-driven private boats circulating in the Venice lagoon for recreational purposes. Therefore Venice suffers from alarming levels of air and noise pollution, as well as the vibration of these engines. With REAPsystems' drop-in hybrid electric solution, the city, its residents and visitors will benefit from clean air, clean water and a quieter environment; its taxi operators will enjoy lower fuel consumption, operating costs and overall cost of ownership plus greater reliability and longer life without sacrificing performance; drivers and their passengers will also enjoy the comfort of a hybrid taxi boat with minimum noise, vibration and emissions.

A 'drop-in' Hybrid-drive system for easy installation in Venice's existing water taxis means that the current fleet can be quickly and easily converted by any boat builder.

**Great Proving Ground:**

One of the reasons for the slow uptake of clean hybrid technologies in the marine market is the high reliance on the reliability of the engine. Also, the cost of training staff world-wide for maintenance, repairs and operation for any new technology is significant. Venice represents a tough testing ground to prove the reliability and longevity of our hybrid solution. A standard 9 metre water taxi typically has a long, hard 20 hour day. There are many boats in a very confined area, which means that the cost for training maintenance staff can be limited.

**Very Suitable Scenario for Hybrid Technologies:**

Our parallel hybrid engine is most suitable for varying operations that require low speed or idle periods for extended lengths of time as well as high-speed operation for some time. Venice needs both: quiet, low vibration, low emission and good manoeuvrability at low speed inside the canals of the city as well as fast taxi runs with several people on board to the airport.

**Setting the Standard - Great Timing:**

The local authorities are currently working on new legislation concerning pollution from water-borne traffic. We hope that with our Hybrid-drive demonstrator operating in the lagoon, proving its environmental benefits, together with our partner in Venice, we can influence the legislation to favour the uptake of this green technology and set the standards.

**Longer goals for our drop-in hybrid engines**

Our short-term aim is to develop a hybrid electric taxi-boat prototype that will be demonstrated and endurance tested in Venice this year, then to influence the new regulation on vehicle emissions to be imposed by the local authority.

Following this, we will get the hybrid engine into production and roll-it out to Venice and other places. Then, we will develop variants of this technology. So that we can cover a wide range of applications and crafts. In order to achieve this, we will work with our partners and with existing manufacturers of engines. Other applications include work-boats such as wind farm support vessels, patrol craft, small passenger ferries and fishing boats, survey vessels and private tenders.

**Getting the public involved to help make this a reality**

We want to involve the public - get people interested and excited about this technology and demonstrate how it can help our environment and health as well as reducing our oil dependency. *“Our crowdfunding campaign is a complete reversal of the usual commercial approach. We involve the public on our journey. This way we can kick-start the hybrid revolution together.”* says our founder, Dr Doerffel.

Link to how to get involved: <http://www.reapsystems.co.uk/get-involved-with-project-venice/>

For more information or to arrange an interview with Dr. Dennis Doerffel please contact:

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