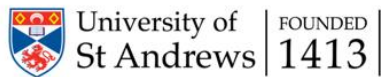




HySeas III

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KONGSBERG



Deutsches Zentrum
für Luft- und Raumfahrt
German Aerospace Center
Institute of
Networked Energy Systems



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Ferguson Marine to develop World-first Renewables-Powered Hydrogen Ferry – HySeas III



£25 million investment has transformed Ferguson Marine into one of the most advanced shipyards in the world, leading the way with quality production and Innovation

At Today's Smart Shipping Symposium hosted by the City of Glasgow College Faculty of Nautical Studies, Jim McColl OBE, Chairman and Chief Executive of Clyde Blowers Capital announced that Port Glasgow-based **Ferguson Marine Engineering Limited** has successfully led a European consortium in a bid for EU funding support to pave the way for the building and launch of **the world's first sea-going car and passenger ferry fuelled by Hydrogen.**

The supported development is expected to cost around €12.6 million of which €9.3million has been awarded by the European Union's Horizon 2020 research and innovation fund.

The vessel's fuel will be produced from renewable electricity marking a paradigm shift towards entirely emissions-free marine transport.

HySeas III, jointly led by shipyard, **Ferguson Marine** and the **University of St Andrews**, includes **Orkney Islands Council**; **Kongsberg Maritime** (Norway); **Ballard Power Systems Europe** (Denmark); **McPhy** (France); **DLR** - German Aerospace Center; and **Interferry** (Belgium/US) the global trade association for ferry operators and suppliers.

Employing Ballard technology, already proven across millions of miles of road transport, the initial objective is to construct and prove the vessel's modular drive train onshore, testing for stress and durability under conditions employing real-world data from existing vessels.

Orkney

The successful test will allow a vessel to be constructed, in the already assured knowledge that such a vessel can operate safely and efficiently around Scotland's challenging coast. The vessel is planned to operate in and around Orkney - which is already producing hydrogen in volume from constrained - and hence otherwise wasted - renewable energy.



Destination Kirkwall: The current Shapinsay ferry with the chosen route for HYSEAS III project in the background. HYSEAS III will combine with Surf N Turf hydrogen project to provide the replacement vessel with a Hydrogen fuelling facility

Chief Naval Architect Chris Dunn of Ferguson Marine said, "Over recent years Ferguson Marine has been at the global forefront of green marine propulsion technology development. This exciting project is yet another positive step on that journey and puts us firmly on track to deliver the world's first zero emission, hydrogen fuel cell powered commercial ROPAX ferry in 2020."

Ferguson Marine Chief Executive, Gerry Marshall, added “We now have one of the most innovative and competitive shipyards in Europe which is capable of delivering ground-breaking projects for Inverclyde, Scotland and beyond. HySeas III is a living example of how it can be possible to lead the world in marine technology.”

Project Coordinator, Dr. Martin Smith from the University of St. Andrews said, “This is a very exciting stage to be at now. This opens the real possibility of Scotland and her key European partners delivering another world-first not simply in ship-building but also in building sustainable local sources of fuelling in parallel.”

Jim McColl OBE, whose Clyde Blowers Capital now owns the once-threatened shipyard, commented, “Ferguson’s was the last full-service commercial shipyard on in the River Clyde. Since taking over in 2014, we have invested £25 million to bring the yard up to the world-class standards with a new, skilled workforce, that has provided the confidence in leading this hugely important, ground-breaking project.”

Innovative partnership

Previously in 2012, Ferguson’s launched the MV Hallaig, the world’s first ever battery hybrid ferry. The redeveloped yard achieved another first in November 2017 when it launched the MV Glen Sannox, the first UK ferry build with dual-fuel capability (marine diesel & LNG). The Glen Sannox’ sister vessel is currently under construction at the shipyard.

The University of St Andrews, the 3rd Oldest University in the English-speaking world, is home to world-class research and development in hydrogen, battery and other energy technologies. A key part of the development aspect is the transferal of knowledge and expertise into real-world applications - not least in stretching the boundaries of what has previously been thought of and achieved.

Dr. Smith from The University, along with Jim Anderson at CMAL (Caledonian Maritime Assets Limited) initiated the HySeas programme in 2012. Support from Scottish Enterprise allowed the idea to be taken from an early feasibility study to the point where the focus can now shift into test and delivery.

Dr. Smith previously played a leading role in the introduction of hydrogen buses into Scotland, a development which is now set to move beyond Aberdeen with Dundee currently following and other Scottish cities considering fleets of their own.

European Backing

Support will be provided by Horizon 2020, the EU’s largest ever Research and Innovation programme to date with a budget of c.€80 billion over 7 years (2014 to 2020).

The HySeas III project formally begins on the 1st of July.

Transport Minister Humza Yousaf said:

“I’m delighted to see Ferguson Marine Engineering Ltd (FMEL) play their part in winning this landmark bid.

“It’s exciting to see the FMEL shipyard getting involved in such an innovative project, joining forces with other public and private sector partners from across Europe to take forward the plans for the world’s first vehicle and passenger hydrogen ferry.

“The Scottish Government published our Climate Change Plan earlier this year, setting out a package of policies and proposals to continue delivering Scotland’s high ambitions in this area and recently set out proposals to increase our climate targets from 2020 – 2050 through the Climate Change Bill. HySeas III is the kind of ground-breaking project that fits those ambitions.

“This project will also help showcase the skills and facilities on offer at the shipyard. I will be following it with great interest and look forward to seeing Scottish expertise delivering a world first.”



This project has received funding from the European Union’s Horizon 2020 research and innovation under grant agreement No.769417

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HySeas III Consortium Members

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www.fergusonmarine.com

University of St Andrews

<https://www.st-andrews.ac.uk>

Ballard Power Systems Europe A/S was founded in January 2007 and is recognized as one of the leading players in the commercial application of heavy duty fuel cell solutions. Headquartered in Hobro (Denmark), our activities are focused on these business areas: Backup Power for critical infrastructure; Heavy Duty Motive application for Zero Emission Transport; and Fuel cell Bus Service in Europe.

Ballard Power Systems Europe employs 50 highly skilled people and has modern production facilities. The company is owned 100% by Ballard Power Systems Inc. in Canada - the world leading provider of low temperature PEM fuel cells. For motive and marine customers Ballard offers flexible, scalable solutions for a wide range of motive application duty cycles and power requirements.

“We are ready to support the de-carbonization of ships with true zero emission power solutions!”

Kristina Fløche Juelsgaard,

Business Development Director, Ballard Power Systems Europe

www.ballard.com

Kongsberg Maritime AS, Norway delivers systems for dynamic positioning and navigation, marine automation, handling systems, safety management, cargo handling, subsea survey and construction, maritime training, satellite positioning, and autonomous solutions. Our systems enhance efficiency and safety throughout the whole maritime technology spectrum and we offer additional competence in providing turnkey engineering services within the shipbuilding and floating production sectors.

Kongsberg Maritime is a wholly owned subsidiary of Kongsberg Gruppen (KONGSBERG). KONGSBERG is an international technology corporation that delivers advanced and reliable solutions that improve safety, security and performance in complex operations and during extreme conditions. The Group is a customer focused organization with a worldwide performance culture. KONGSBERG works with demanding customers in the global defense, maritime, oil and gas and aerospace industries.

“We are excited to contribute realizing the world’s first sea-going hydrogen-powered RoPax ferry.”

Morten Stanger

Vice President Merchant Marine Sales, Kongsberg Maritime AS

www.km.kongsberg.com

Orkney Isles Council/Orkney Ferries, with its reputation for innovation in renewable energy and low carbon projects, is delighted to have been chosen as the location for the HYSEAS III hydrogen ferry opportunity.

The perfect ferry route for trials; the proven ability to produce hydrogen from wind and tidal energy; expertise in small RoRo ferry operations; and hosting the renewable energy organisations which have already chosen Orkney as a place to work, all combine to make Orkney with its people the ideal place to turn this project from an ‘idea’ to operational ferry.

“I am delighted that this exciting project has chosen Orkney as the place to test and, hopefully, operate the worlds first Hydrogen RoRo ferry. We very much look forward to working with our partners from across Europe and, in time, the Scottish Government, as we move from concept to an operational ferry over the next few years”.

Councillor Graham Sinclair,

Chair of the Development and Infrastructure Committee. Orkney islands Council

<http://www.orkney.gov.uk>

The DLR Institute of Networked Energy Systems Oldenburg, Germany develops technologies and concepts for future energy supply based on renewable energy sources.

The Institute’s three departments – Urban and Residential Technologies, Energy Systems Technology and Energy Systems Analysis – work on system-related issues for intelligent and efficient linking of the electricity, heating and transport sectors. Systems of all sizes and levels are being investigated, ranging from individual installations and “smart” buildings to networked residential districts and cities. The Institute also evaluates energy systems at national and international levels, using its own network structure models and technology assessment methods. The technology assessment group identifies the potentials and recommended actions through the economic, ecological and sociological assessment of energy technologies and systems.

“Marine transportation is a part of the energy system which still needs to be decarbonised. Our assessments support the transition of this sector in a sustainable direction by techno-economic and ecological as well as market potential assessments of fuel cell powered ferries. Therefore the complete process chain will be analysed including the production of hydrogen on the basis of grid-connected renewable power sources.”

Dr. Thomas Vogt,

Head of Department, DLR Institute of Networked Energy Systems

<https://www.dlr.de>

McPhy contributes to the deployment of clean hydrogen throughout the world, in the framework of the energy transition, and as a leading supplier of hydrogen production, storage and distribution equipment. Thanks to its wide innovative and competitive range dedicated to the hydrogen energy, zero emission mobility and industrial hydrogen markets, McPhy provides turnkey solutions to its Clients. These solutions are tailored to our Client applications: renewable energy surplus storage and valorization, fuel cell car refueling, raw material for industrial sites.

As a designer, manufacturer and integrator of hydrogen equipment since 2008, McPhy has three development, engineering and production units based in Europe (France, Italy, Germany). The company's international subsidiaries ensure a global sales coverage of McPhy's innovative hydrogen solutions.

"Hydrogen is simply unavoidable if we are to succeed in the energy transition for a better, cleaner and safer future. By land, rail, air or by sea, hydrogen shows itself an efficient, reliable and competitive energy.

This is what we aim to demonstrate during this specification phase, and we're proud to bring our expertise and our "Augmented" electrolyzers and hydrogen stations - for boats, but also in the future for hydrogen trains or buses - to contribute, alongside the HySeas consortium, to design the project's landside infrastructure.

We are delighted to be part of this unique project which opens up the future of decarbonized sea freight."

Pascal Mauberger,
Chairman and CEO, McPhy
<https://mcphy.com>

Interferry has a membership of more than 230 operators and suppliers in 37 countries, and is the only trade association representing the worldwide ferry industry. Interferry represents the industry on regulatory issues and facilitates networking and information exchange on key developments – not least regarding eco-friendly alternative fuels. The association's main role in HySeas III will be to communicate progress industry-wide via its website, internal news bulletins, social media and cooperation on media relations.

"The potential for hydrogen as a ferry fuel will feature at our 43rd annual conference in Cancun, Mexico, this October, which underlines our support for this important project. It's a very timely collaboration, given that the International Maritime Organization reached an accord in April requiring a 50% reduction in maritime CO2 emissions by 2050. Hydrogen raises the extremely interesting possibility of a long-range, CO2-free option."

Johan Roos
Regulatory Affairs Director, Interferry
<http://www.interferry.com>

HySeas III support

Scottish Enterprise/Scotland Europa

“The HYSEAS project has put Scotland in a world leading position regarding the development of sustainable marine transport and will play a vital role in supporting the ambitions of the Scottish Government to enable our transition to a low carbon economy.

“Scottish Enterprise is pleased to have been able to support the HYSEAS consortium all the way through its development, from initial feasibility to successfully bidding for this Horizon 2020 funding from the European Union.

“We look forward to continuing to support the HYSEAS partners in working towards the launch of a first renewable energy powered ferry, which we believe will lead to substantial new manufacturing opportunities and export growth potential for Scottish companies”.

Andy McDonald

Sector Director Energy & Low Carbon Technologies, Scottish Enterprise:

<https://www.scottish-enterprise.com>