A Dutch first: Refueling hydrogen at a solar island

Test setup in IJzendoorn offers shipping sector a sustainable alternative.

IJzendoorn, 28th of January, 2021

Powering ships by hydrogen, refueled at seaworthy floating solar islands? If it is up to SolarDuck and Voyex, this will become a reality for the shipping sector. A prototype of such a solar-island will soon be on display on the Waal near IJzendoorn, a Dutch first. The Province of Gelderland supports this innovation with a subsidy of €350.000. Dekker will facilitate the project by offering space.

To make inland shipping more sustainable, SolarDuck and Voyex announced a R&D-partnership to enable emission-free sailing by using hydrogen. It's safe, easy, economic and technically feasible. Also there won't be a need for fuel transport because refueling takes place right at the source: the floating solar island on the Waal on which testing will commence in April 2021. “The innovative power lies in combining technologies”, according to Koen Burgers, CEO of SolarDuck. “If upscaled, a solar island at sea and on rivers can offer the shipping sector a sustainable alternative.”

The test setup at Dekker in IJzendoorn will be the first of its kind in the Netherlands. SolarDuck will supply the solar island: 4 linked platforms containing 39 solar panels each. These modular platforms are suited for the rough conditions found at sea, but will first be tested on the Waal to look at the effects of strong currents and heavy winds. “At the beginning of April, the entirety of the solar island will be towed upstream from Gorinchem to Dekker's riverport in IJzendoorn. A unique event in itself!”, Burgers assures.

The floating solar island, which produces 65 kilowatts of peak power, is connected to a 10 kilowatt electrolyzer that produces hydrogen. The hydrogen is bonded to a 'Liquid Organic Hydrogen Carrier' (LOHC), an oil-like liquid which serves as a binding agent, or carrier, for the produced hydrogen. “This 'hydrogen-oil 'can be transported at room temperature, under the same atmospheric conditions as fuels such as diesel”, Wiard Leenders, CEO of Voyex explains. Furthermore, part of the test setup is the manner in which the hydrogen is released from the oil and subsequently used to generate power on board. "The carrier itself can be reused", Leenders adds. This means that the entire energy grid up to and including the sailing on safe hydrogen is within reach.

The project is aptly named “The Atoll”, referring to the movie “Waterworld”, in which an artificial man made island supplies in its own energy needs. Both companies have the long-term ambition, although within their own respective angle of approach, to produce hydrogen using floating solar islands at sea to supply both the shipping sector and other heavy-duty applications.

It won't come as a surprise that they inquired about a test location at Dekker in IJzendoorn. Dekker encourages the use of hydrogen for the transport sector. “Our floating sand extracting plants have already been made much more sustainable, however we are still looking for a solution for our fleet,” according to Gert Pomstra, group director of Dekker. “We wholeheartedly support the innovation of SolarDuck and Voyex, and hope this will contribute to making inland shipping more sustainable.”

The total size of the project is approximately €1.000.000. The Province of Gelderland awarded it with a subsidy of €350.000.

End of press release

For the press:

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Illustration of The Atoll, by: Dewi Wesselman

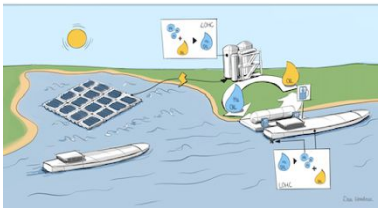

Photo of the initiators.

From left to right: Gert Pomstra (Group Director Dekker), Koen Burgers (CEO SolarDuck), Wiard Leenders (CEO Voyex). Photographer: Dekker Groep

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More information on the organisations involved:

SolarDuck: Building the World's leading Offshore Floating Solar-company
SolarDuck originated from the Dutch maritime industry. Maritime solutions play a critical role in solving a number of global challenges, such as the ability to generate clean energy. In a changing world with decentralizing energy markets, floating solar energy located at sea will become an important source of energy. Therefore SolarDuck is developing technology to make floating solar energy at sea a possibility. The solution, protected by 2 patents, is innovative, highly scalable and suitable for integration with utility services with added value, such as hydrogen production.
www.solarduck.tech

Voyex: Enabling the World to use hydrogen safely and easily
Voyex wants to enable the world to use hydrogen as a zero-emission fuel. Hydrogen will play a major role when it comes to energy transition. Until now, storage and transport of hydrogen still entails the necessary risks and costs. Voyex offers a solution in the form of 'hydrogen oil', a Liquid Organic Hydrogen Carrier (LOHC) technology for the European market. This technology binds hydrogen to a liquid binding agent and can be released when desired. Refuelling and transport is comparable to that of diesel or gasoline. A system with the benefits of fossil fuels, but without environmental burden on our planet. LOHC is suitable for ships, trucks, buses or power generators, amongst others. Voyex works closely with its Chinese partner Hynertech to develop EU markets.
www.voyex.nl

Dekker Groep: nature-inclusive and sustainable sand and gravel extraction
Dekker Groep is a Dutch family business which was founded over 100 years ago. The company supplies aggregates for the construction of houses, roads and dikes and has its own inland shipping fleet. Dekker, with over 200 employees, is active in the Netherlands, Belgium, Germany and France. The head office is located in IJzendoorn, in the floodplains of the river Waal. Its core business is nature-inclusive and sustainable sand and gravel extraction along rivers. Dekker transforms agricultural floodplains into water-rich nature, with opportunities for increasing biodiversity, flood protection, energy transition and recreation. This is how Dekker works on the future of the Netherlands.
www.dekkergroep.nl