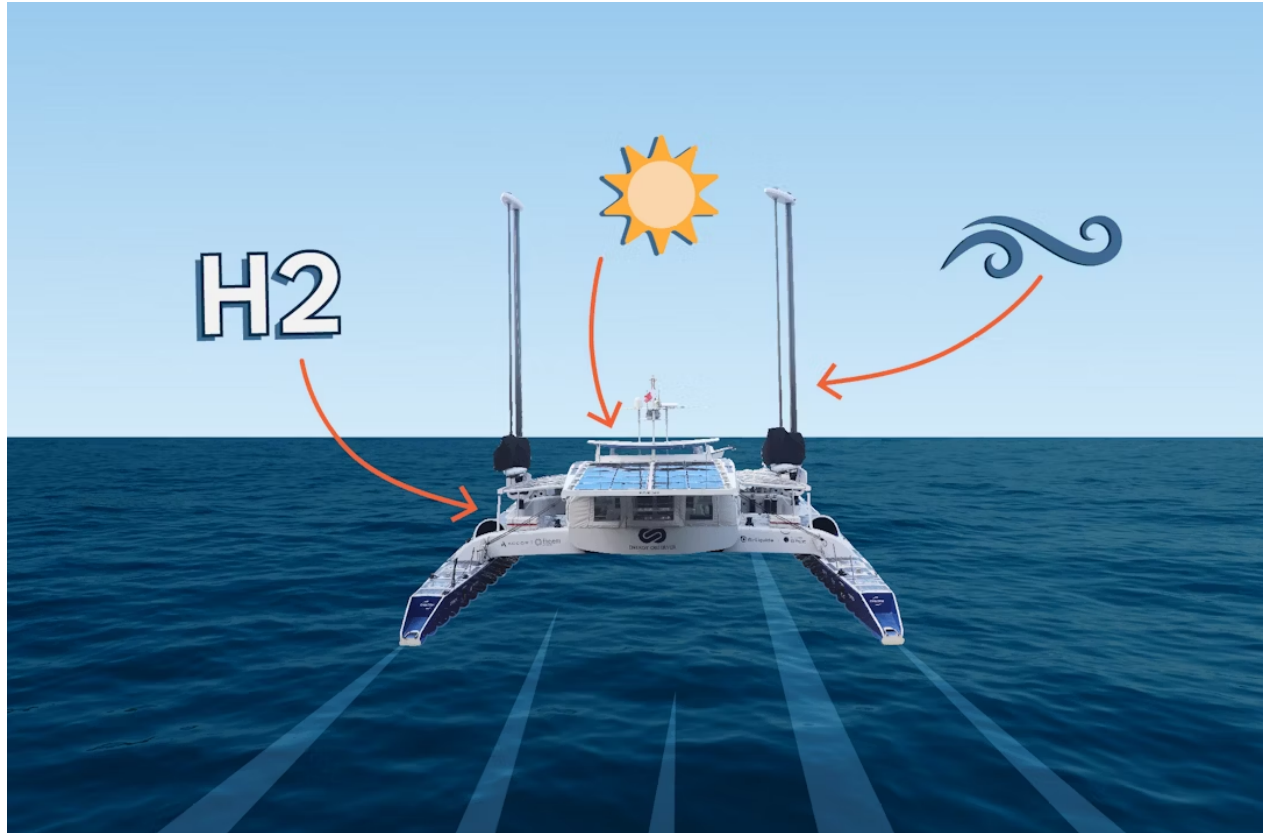


BLOG Published April 25, 2024 • 2 minute read

Exploring Hydrogen R&D At Sea



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Third Way's carbon management team recently hopped aboard the [Energy Observer](#) for a look at the world's first renewable and hydrogen-powered vessel. A converted racing boat, the Energy Observer offers a glimpse at the many opportunities to deploy clean energy resources to meet diverse needs.

The Energy Observer is powered by a combination of solar, wind, and hydrogen. This floating R&D lab is a zero-emission, maritime microgrid. It alternates between consuming and storing the energy it generates, based on the availability of renewable energy at that moment.

For example, when the Energy Observer is docked on a sunny day and its lithium-ion batteries are nearly fully charged, the boat will redirect surplus solar energy towards powering the onboard electrolyzer which uses electricity to split water into hydrogen and oxygen. The hydrogen is then compressed for long-term storage and can be converted into electricity using fuel cell technology to

power the vessel when conditions are not ideal or when the batteries are low. Fuel cells convert chemical energy into electricity with minimal emissions, and in the case of hydrogen fuel cells, the only products are electricity, water, and heat. The vessel is an impressive combination of maximizing clean energy innovation while minimizing energy waste.

Victorien Erussard, a master mariner, first came up with the idea of the Energy Observer when his diesel-powered boat broke down in the middle of the Atlantic Ocean during a transatlantic race. In 2013, Victorien purchased a catamaran and began working with scientists and engineers to convert the racing boat into the world's first renewable and hydrogen-powered vessel. In June 2017, the Energy Observer began its first expedition, launching from Saint Malo and circumnavigating France. Since then, the boat has traveled thousands of miles, collected millions of data points, and undergone several technological updates, all while serving as a global ambassador for clean hydrogen.

In terms of wider application, clean hydrogen has the potential to decarbonize hard-to-abate sectors of the US economy, such as heavy industry and transport, while creating good quality jobs for hundreds of thousands of Americans. Congress and the Biden Administration have taken major steps to help realize this potential with the enactment of the Bipartisan Infrastructure Law (BIL), which established the \$8 billion Regional Hydrogen Hubs Program to drive clean hydrogen initiatives, and the Inflation Reduction Act (IRA), which created the 45V Clean Hydrogen Production Tax Credit as a major financial tool to boost clean hydrogen project development in the US. The US has positioned itself to be a global leader in clean hydrogen with BIL and IRA, however, more investment is needed through the hydrogen value chain in order to secure US leadership in this competitive space.

Here's a closer look at some of the clean energy technology aboard the Energy Observer:

