

## Port decarbonization: the first high-power hydrogen barge for the electrification of docked ships

**Améthyste, ArianeGroup, Cetim, HDF Energy, Rubis Terminal and Sofresid engineering have teamed up to develop the multi-service power barge ELEMANTA H2, designed to supply electricity and hydrogen to large ships, reducing their polluting emissions by more than 80% during port calls.**

**Rouen, July the 4<sup>th</sup> of July 2022** – The partners of the ELEMANTA H2 project announce the signature of a Memorandum of Understanding (MoU) to deploy mobile solutions providing, from green or low-carbon hydrogen, cold ironing services in addition to the electrical grid, for container ships, cruise ships or tankers. ELEMANTA H2 will also enable hydrogen bunkering to meet the refueling needs of future hydrogen powered ships. This collaboration of French experts aims to valorize skills and know how in various fields, from naval architecture to hydrogen technologies, from the management of port infrastructures to the development of industrial asset integrity management software.



### Decarbonization of the maritime sector

Maritime transport accounted for 13.5% of total EU greenhouse gas emissions in 2018. Almost 77% of European external trade and 35% of EU internal trade is carried out by sea or river<sup>1</sup>. In order to reach the European Commission's target of a 55% reduction in greenhouse gas emissions by 2030<sup>2</sup>, the maritime and inland waterway transport sector must accelerate its energy transition. ELEMANTA H2 aims to contribute to the decarbonization of port activities.

### A synergy driven by French players

The partners have identified the River Port of Rouen and more specifically the Rubis Terminal as a pioneer site, as it is strategically located between the Grand Port Maritime du Havre and the ports of Paris. With the support of Normandie Energies and the port operator HAROPA, a demonstration barge will integrate a multi-MW hydrogen fuel cell system manufactured in France, by HDF Energy. In addition, a high-pressure green hydrogen storage system will cover the need for autonomy during port calls. Sofresid Engineering will carry out the architecture and the integration of the equipment of the barge, which will be mobile to move as close as possible to the need and maximize its utilization rate. A risk analysis based on innovative tools will be covered by Améthyste. Finally, Cetim will take in charge the quantification of the environmental gains brought by this zero-emission power-barge solution.

### An ambitious project labeled by the Pôle Mer Bretagne Atlantique

The ELEMANTA H2 demonstrator offers a low-carbon alternative to diesel generators that currently power these ships at berth, reducing CO<sup>2</sup> emissions by more than 85% and all nitrogen oxide (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>) emissions during port calls. The power barge will be commissioned in 2025 for a 20-year operating period. The ELEMANTA H2 Rouen project,

<sup>1</sup> Source: European Environment Agency

<sup>2</sup> Announcement by Ursula Von Der Leyen, President of the European Commission, during her inauguration speech



approved in April 2022 by the Pôle Mer Bretagne Atlantique, has been selected by the call for expression of interest Corimer 2022 launched by BPI France.

### **The ELEMANTA H2 power-barge of tomorrow**

The partners' objective is to standardize and replicate this solution, with higher power levels, in the main European ports, which will thus become part of future major hydrogen hub projects. In the long term, the use of liquid hydrogen or the addition of hydrogen bunkering services, a skill provided by ArianeGroup, could significantly increase the quantity of energy on board to offer a better service. Finally, the use of locally produced hydrogen reduces the impact of the volatility of the international fossil fuel markets and thus strengthens French energy sovereignty and the resilience of these activities.

**Agnès Gaillard, President of Améthyste:** « Améthyste is delighted to be a partner in this project with strong human and environmental values. Améthyste's expertise in digital integrity management will enable the Elemanta H2 partners to share the same reference system with risk management at the heart of the construction and operation of the barge ».

**Arnaud Hibert, hydrogen technology sales manager at ArianeGroup:** « With more than 40 years of experience with Ariane rockets, which onboard systems and infrastructures use liquid hydrogen, ArianeGroup will support the evolution of the ELEMANTA concept towards higher power applications and an additional bunkering service ».

**Christophe Champenois, Major H2 project manager of CETIM:** « With its HyMEET project, the CETIM puts its mechanical expertise at the service of the hydrogen sector to accelerate the decarbonization of industry and heavy mobility. CETIM's contribution to the ELEMANTA H2 project through the risk's analysis and life cycle assessment of this demonstrator for the maritime and river sector is an outstanding illustration of this ».

**Damien Havard, President of HDF Energy:** « HDF is proud to bring its expertise in hydrogen technologies for the development of the Elemanta H2 barge. Thanks to its high-power fuel cell mass production plant, HDF has solutions adapted to the major challenges of the maritime sector decarbonization ».

**Stéphane Simon, Director Rubis Terminal Rouen:** « Rubis Terminal acts for the development of the energy infrastructure of tomorrow. Mobile, flexible and responsive solutions such as Elemanta H2 are concrete and technically achievable options in the short term for which we are committed ».

**Stéphane Lotode, Director of the Green Energy branch at SOFRESID ENGINEERING, French subsidiary of SAIPEM:** « In 2019, SOFRESID ENGINEERING won an innovation award for its ELEMANTA concept, the result of our expertise in the naval and energy fields. Today, we are proud to present its natural evolution: ELEMANTA H2 POWER BARGE, a modular solution for the decarbonization of the maritime and waterway sectors ».