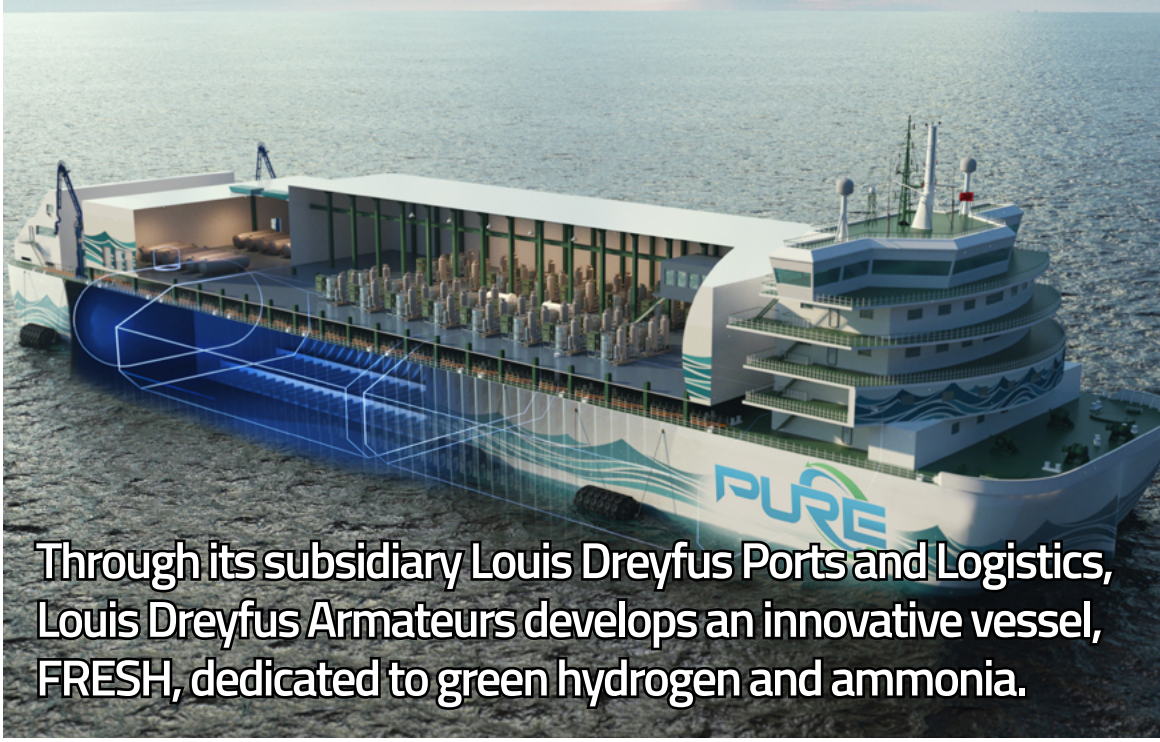
PRESS RELEASE

December 2022



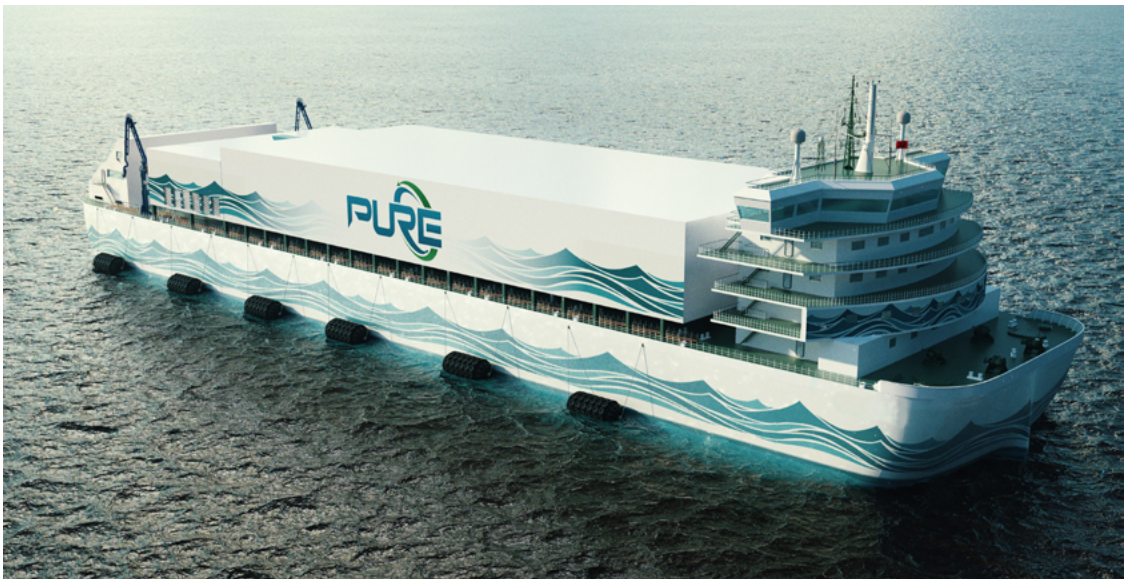
Through its subsidiary Louis Dreyfus Ports and Logistics, Louis Dreyfus Armateurs develops an innovative vessel, FRESH, dedicated to green hydrogen and ammonia.

Louis Dreyfus Ports and Logistics (LDPL) has developed an innovative seagoing Floating Renewable Energy Solution for Hydrogen vessel (FRESH) capable of storing and supplying renewable energy in the form of hydrogen using green ammonia.

This initiative is supporting the world economy efforts to lower its carbon intensity by shifting to renewable energies such as solar and wind. The intermittency of these energies requires the power generation plants to include expensive battery energy storage systems (BESS) or to use high energy density energy carrier like hydrogen. The latter solution is far more economical at utility scale but also allows the international export of green electrons in the form of hydrogen or a hydrogen carrier such as ammonia, which can be transported from the green energy production regions to the demand centers in Europe, Northeast Asia, or North America.

Hydrogen and ammonia, for green energy

One of the key advantages of green hydrogen is that it can be converted back into electricity using a fuel cell or directly injected in a combustion engine. Ammonia is equally attractive as this known product is relatively easy to store and transport using dedicated seaborne vessels. Not only ammonia can be used as is to make urea and fertilizers, but it can also be dissociated into hydrogen and nitrogen using readily existing, conventional reactors and separation technologies. The resulting hydrogen can again be used in fuel cells to generate electricity for mobile or stationary applications.



ABOUT LDPL

LDPL is a 100% subsidiary of Louis Dreyfus Armateurs (LDA) Group. For more than 165 years and worldwide presence with over 2,600 staff and 80 vessels, LDA is a family-owned Group. LDA has been offering its clients tailor-made industrial maritime solutions with high added value activities and integrated services, from ship design and ship management to maritime operations. Through its values (Innovation, Reactivity, Know-how, Commitment), LDPL offers maritime transportation and logistic services (port management, transshipment & cargo handling, shallow water transportation, 4 PL Logistics, transportation of heavy lift and specialized cargoes, forwarding activities, logistics engineering).

Louis Dreyfus Armateurs

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FRESH vessel, an innovative concept resulting from LDPL's R&D

To enable said global renewable energy supply chain, Louis Dreyfus Ports and Logistics (LDPL) has developed an innovative seagoing Floating Renewable Energy Solution for Hydrogen vessel (FRESH) capable of storing and supplying renewable energy in the form of hydrogen using green ammonia. To develop its novel concept, LDPL has assessed different technology providers and collaborated with specialized engineering companies, such as TTOE. LDPL has partnered with Korean Register (KR) classification society to review and approve FRESH as this novel concept is not covered by existing classification prescriptive rules, to ensure that its level of safety is in line with the marine industry practices. The partners have inked a memorandum of understanding on September 6th 2022, sealing their agreement to collaborate and develop a fit for purpose technical and regulatory compliant framework ahead of the industrialization and commercialization of FRESH by 2025. On 1st November 2022, another major milestone has been reached, whereby the KR has awarded an Approval in Principle (AiP) to LDPL, underscoring the safety and technical viability of FRESH.

Pioneering stakeholders and long-term partners

Mathieu Muzeau, Managing Director of the Transport and Logistics division at Louis Dreyfus Armateurs (LDA) said *"we are extremely proud to be at the forefront on the energy transition thanks to FRESH. We believe that our innovation will enable a new and global import and export supply chain centered around renewable power sources and green hydrogen and ammonia as energy carriers. Given their long-standing leadership in the field, LDA's choice to partner with the Korean Register was obvious as we seek to bring safe and reliable vessels in the context of the accelerated decarbonization of the wider maritime industry. The AiP that LDA has secured today is a demonstration of the strength of our collaboration with the KR and the viability of our new vessel for future commercial use".*

Commenting the signature of the MOU and the AiP, Hyung Chul Lee, KR Chairman & CEO, added: *"the Korean Register takes pride in its decade-long partnership with LDA. I am convinced that the combination of our competencies, talented people and shared vision about safety will bring to the fore a unique technology that will advance the logistics of decarbonized energies. FRESH is going to revolutionize the last mile logistic of hydrogen delivery and enable the maritime sector to play a pivotal role in the decarbonization of other hard-to-abate industries."*

Signature of the memorandum of understanding, on September 6th 2022, ©Louis Dreyfus Armateurs

For any request for visuals, videos or texts, please contact padam RP : +332 51 86 19 06.

ABOUT KR

Founded in 1960 and a member of the International Association of Classification Societies (IACS) since 1988, Korean Register (KR) is one and only internationally recognized classification society headquartered in the Republic of Korea. KR has been granted the Recognized Organization (RO) status by more than 80 flag Administrations such as the Republic of Korea, Panama, Marshall Islands, etc. to undertake statutory surveys and issue the relevant certificates in accordance with the various international conventions.

With a network of more than 60 exclusive offices located in the major international ports such as Singapore, Shanghai, Busan, Hamburg, New York, etc. KR has been delivering comprehensive technical services to our customers in a wide range of industrial sectors including ship classification, energy & environment, third-party certification and naval services. KR is also fully committed to developing the state-of-the-art technologies which are in line with the industry 4.0 and designed to protect our precious environment.

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