



Press release

## GTT, TotalEnergies, LMG Marin and Bureau Veritas reach a new milestone in liquefied hydrogen transport

**Paris – 31 January 2024.** On the occasion of the Hyvolution Summit 2024 trade show, GTT, TotalEnergies, LMG Marin and Bureau Veritas announced the success of their Joint Development Project (JDP), which resulted in two Approvals in Principle (AIP) from Bureau Veritas.

The first approval concerns the design of a cryogenic membrane containment system for liquefied hydrogen (LH<sub>2</sub>) developed by GTT. The second is for the preliminary design of a 150,000 m<sup>3</sup> Large-Scale LH<sub>2</sub> Carrier equipped with the GTT containment system.

These approvals are part of the JDP announced in April<sup>1</sup> 2023, paving the way for the maritime transport of hydrogen. The ability to transport very large volumes of hydrogen in liquefied form, at -253°C, is one of the technological challenges to be met to establish a reliable, efficient and competitive hydrogen supply chain and, therefore, to enable an energy transition towards a carbon-free future.

Faced with these challenges, TotalEnergies, GTT, LMG Marin and Bureau Veritas have joined forces to develop an innovative large-scale LH<sub>2</sub> carrier concept. This collaboration testifies to the exceptional synergy between key players in French industry to meet the challenges of hydrogen shipping on a global scale. Each member has contributed specific expertise and know-how, demonstrating a collective commitment to finding solutions to the climate challenge:

- TotalEnergies specified the design codes, the vessel's limits in terms of dimensions and capacity, the requirements for the propulsion mode and the associated CO<sub>2</sub> emissions on the shipping routes envisaged;
- GTT designed the membrane containment system and the cargo management system, taking into account the constraints associated with liquefied hydrogen;

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<sup>1</sup> See the press release issued on April 27, 2023.



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- LMG Marin developed the 150,000m<sup>3</sup> vessel design, adapted to the specifications, operational profile and incorporating the membrane containment system;
- Bureau Veritas carried out a risk assessment, reviewed the designs in line with the latest regulatory requirements, and ensured that they met Bureau Veritas rules.

**Philippe Berterottière, Chairman and CEO of GTT, declares:** *"Alongside TotalEnergies, LMG Marin and Bureau Veritas, we are proud to have met this ambitious technological and environmental challenge for the maritime transport of liquefied hydrogen. GTT's ability to design a breakthrough technology suitable for large vessels is a major step forward for the development of the hydrogen industry."*

**Karine Boissy-Rousseau, Director of Green Gases at TotalEnergies, comments:** *"This joint development project has enabled us to gain a better understanding of the liquefied hydrogen supply chain and the associated challenges. We have reached a major milestone in the development of this sector, and the complementarity between TotalEnergies, GTT, LMG Marin and Bureau Veritas has made a major contribution to this."*

**Vincent Rudelle, Managing Director of LMG Marin France, underlines:** *"This project illustrates the ability of French industry, with TotalEnergies, GTT, LMG Marin France and Bureau Veritas, to play a leading role in the transformation of the maritime world and energy supply. With the emergence of previously unexplored energy vectors, a whole global supply chain needs to be built, and the conclusions of this JDP provide an initial outline of the maritime aspect. With the development of this innovative vessel of almost 290m, transporting 150,000 m<sup>3</sup> of cargo at -253°C in a carbon-free way, LMG Marin France confirms its ability to address the most innovative issues, and thus reinforces its position as a leader in the decarbonisation of the maritime sector."*

**Matthieu de Tugny, President of Bureau Veritas Marine & Offshore, concludes:** *"We are very pleased to be able to award these two AIPs, which testify to the quality of the technical work carried out on innovative subjects, and to the availability of the latest technology."*



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### About GTT

GTT is a technological expert in containment systems with cryogenic membranes used to transport and store liquefied gases. For 60 years, GTT has been designing and providing cutting-edge technologies for a better energy performance, which combine operational efficiency and safety, to equip LNG carriers, floating terminals, land storage, and multi-gas carriers. GTT also develops systems dedicated to the use of LNG as fuel, as well as a full range of services, including digital services in the field of Smart Shipping. The Group is also active in hydrogen through its subsidiary Elogen, which designs and assembles electrolyzers notably for the production of green hydrogen.

GTT is listed on Euronext Paris, Compartment A (ISIN FR0011726835 Euronext Paris: GTT) and is notably included in SBF 120, Stoxx Europe 600 and MSCI Small Cap indices.

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### About TotalEnergies

TotalEnergies is a global multi-energy company that produces and markets energies: oil and biofuels, natural gas and green gases, renewables and electricity. Our more than 100,000 employees are committed to energy that is ever more affordable, cleaner, more reliable and accessible to as many people as possible. Active in more than 130 countries, TotalEnergies puts sustainable development in all its dimensions at the heart of its projects and operations to contribute to the well-being of people.

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### About LMG Marin

LMG Marin is an independent ship design, naval architecture and engineering office located in Norway, France, and Poland, with more than 80 years in business. With a workforce of about 90 engineers, the company emerged as a leading partner for innovative, low carbon and carbon-free ship designs. World firsts of LMG Marin references include largest zero-emission battery-powered ship, first deep-sea cargo ship featuring a kite-assistance, liquid-hydrogen powered ship, etc...

LMG Marin France is based in Toulouse where a growing team is daily dealing with innovative and ambitious projects with worldwide applications.

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### About Bureau Veritas

Bureau Veritas is a world leader in laboratory testing, inspection and certification services. Created in 1828, the Group has more than 82,000 employees located in nearly 1,600 offices and laboratories around the globe. Bureau



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Veritas helps its 400,000 clients improve their performance by offering services and innovative solutions in order to ensure that their assets, products, infrastructure and processes meet standards and regulations in terms of quality, health and safety, environmental protection and social responsibility.

Bureau Veritas is listed on Euronext Paris and belongs to the CAC 40 ESG, CAC Next 20 and SBF 120 indices.

Compartment A, ISIN code FR 0006174348, stock symbol: BVI.

For more information, visit [www.bureauveritas.com](http://www.bureauveritas.com), and follow us on [Twitter](#) (@bureauveritas) and [LinkedIn](#).

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