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Pioneering a Decarbonised Future: NYK and Partners Attained Approval-in-Principle from ClassNK for Ammonia Fuelled Ammonia Bunkering Vessel Designed by LMG Marin AS (a member of the Seatrium Group)

Singapore, 25 February 2025 – A groundbreaking step in the advancement of sustainable maritime energy has been achieved with the issuance of an Approval-in-Principle (AiP) certificate for an ammonia fuelled ammonia bunkering vessel designed through the collaboration of Nippon Yusen Kabushiki Kaisha (NYK) and its partners (consortium). Seatrium, through its wholly-owned subsidiary, LMG Marine AS (LMG Marin) provided critical engineering expertise for the vessel's design, which will now be submitted to the Maritime and Port Authority of Singapore (MPA) for evaluation.

Through this latest initiative, the consortium aims to address the industry's urgent need to decarbonize and create a viable value chain for ammonia as a marine fuel. This collaborative effort underscores their collective commitment to fostering a greener, more sustainable maritime industry.

Leading the Green Transition

The AiP certification validates the ammonia fuelled ammonia bunkering vessel design's compliance with stringent safety, technical, and environmental standards, solidifying the consortium's leadership in the development of alternative fuels for maritime use. By enhancing the feasibility of ammonia as a future fuel, this project positions the consortium at the forefront of the maritime energy transition.

Tsutomu Yokoyama, Executive Officer, NYK Line, commented: "This Approval-in-Principle represents a critical milestone in our efforts to accelerate the adoption of clean ammonia as a sustainable marine fuel. With the rich ammonia expertise of NYK and our partners, as well as the great technical capabilities of Seatrium, we are setting new benchmarks for safety and efficiency while paving the way for a cleaner maritime future."

LMG's Role in Engineering Innovation

Seatrium's technology company, LMG Marin supported the consortium's initiative with its vast technical capabilities and proven track record in designing complex maritime systems. LMG Marin provided cutting-edge design capabilities, leading to a Hazard Identification Study (HAZID) for design validation. The comprehensive HAZID conducted was instrumental in fulfilling the requirements of the AiP to ensure optimal safety, performance, and operational reliability. Through this concept design phase, safety philosophies on the safe use of ammonia for the ammonia fuelled engines in the engine room were developed to ensure compliance with the International Maritime Organisation's interim guidelines for the safety of ships using ammonia as fuel, approved by the Maritime Safety Committee 109 in December 2024.

Also, the vessel design incorporates the consortium's two key features to ensure safety and operational reliability: ammonia fuel dual-fuel engines from IHI Power Systems and a

bunkering boom by TB Global Technologies. The engines significantly reduce GHG emissions using ammonia as a fuel. They are also installed on the world's first commercial-use ammonia-fuelled tugboat, Sakigake, delivered in August 2024. The bunkering boom features a unique technology called the High Speed Ammonia Purging Emergency Release System (ERS), which enables a reliable and efficient disconnection between vessels in an emergency.

Aziz Merchant, Executive Vice President for Engineering, and Technology & New Product Development, Seatrium, and Chairman of LMG Marin, commented: "We are honoured to contribute to this industry-leading initiative led by NYK and its partners. The use of ammonia as a non-fossil-based marine fuel is a key distinction in this project. Collaborating on this visionary project reaffirms Seatrium's commitment to advancing sustainability and supporting global decarbonization goals."

A Step Forward for Singapore and Maritime Innovation

The design for this ammonia fuelled ammonia bunkering vessel will be submitted to the MPA for evaluation, showcasing Singapore's role as an innovation hub in sustainable maritime solutions. This vessel, if brought to fruition, will be the first bunkering vessel of its kind. It will contribute significantly to Singapore's marine decarbonisation efforts, creating a positive ripple effect across the global maritime industry. The design is an essential contribution to developing the infrastructure needed for ammonia bunkering, a crucial component in reducing greenhouse gas (GHG) emissions in global shipping.



AiP certificate presentation ceremony, presented to LMG Marin (a member of the Seatrium group) by ClassNK. (Photo Credit: Seatrium Limited)

In picture (from left to right):

Mr. Aziz Merchant, Executive Vice President, Engineering and Technology and New Product Development, Seatrium, and Chairman of LMG Marin ,
Mr. Takahiro Rokuroda, General Manager, Next Generation Fuel Business Group, NYK,
Mr. Yasushi Seto, Managing Director, Regional Manager of Southeast Asia and Oceania ,ClassNK



Illustration of the Ammonia-Fuelled Ammonia Bunkering Vessel (AF-ABV) designed by LMG Marin. (Photo Credit: Seatrrium Limited)

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About Nippon Yusen Kabushiki Kaisha (NYK)

NYK is a global logistics company that focuses on various forms of marine transportation, such as global logistics business and bulk energy transportation, among many other related businesses. Since its establishment in 1885, we have walked alongside the history of Japan, a maritime nation.

On March 10, 2023, the NYK Group released its medium-term management plan “Sail Green, Drive Transformations 2026 — A Passion for Planetary Wellbeing.” The NYK Group is promoting growth strategies with ESG at the core, based on the Group’s basic philosophy of “Bringing value to life” and a new corporate vision for 2030, which reads, “we go beyond the scope of a comprehensive global logistics enterprise to co-create value required for the future by advancing our core business and growing new ones.”

Website: <https://www.nyk.com/english/>

About Seatrium Limited

Seatrium Limited provides innovative engineering solutions to the global offshore, marine and energy industries. Headquartered in Singapore, the Group has over 60 years of track record in the design and construction of rigs, floaters, offshore platforms and specialised vessels, as well as in the repair, upgrading and conversion of different ship types.

The Group’s key business segments include Oil & Gas Newbuilds and Conversions, Offshore Renewables, Repairs & Upgrades, and New Energies, with a growing focus on sustainable solutions to advance the global energy transition and maritime decarbonisation.

As a premier global player offering offshore renewables, new energies and cleaner offshore & marine solutions, Seatrium is committed to delivering high standards of safety, quality and performance to its customers which include major energy companies, vessel owners and operators, shipping companies, and cruise and ferry operators.

Seatrium operates shipyards, engineering & technology centres and facilities in Singapore, Brazil, China, India, Indonesia, Japan, Malaysia, the Philippines, Norway, Saudi Arabia, the United Arab Emirates, the United Kingdom and the United States.

Discover more at www.seatrium.com.

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