PRESS RELEASE

RINA Approves First MR Tanker to Exceed IMO 2050 Targets Using Fossil Fuels

Piraeus, 17 February 2022 - RINA has announced the Approval in Principle (AiP) of Swedish designer FKAB Marine Design's hydrogen powered MR Tanker, the first AiP of a design using currently viable technology and fuels that achieves IMO 2050 targets. Conceived by the class society and designed by FKAB, the propulsion is based on combining the ship's fuel (LNG) with steam to produce hydrogen and CO_2. The MR LNG/hydrogen-fuelled vessel is the result of a joint project with ABB and Helbio (a subsidiary of Metacon AB).

Antonios Trakakis, Greece Marine Technical Director at RINA, said, "To meet CO_2 reduction targets, shipping is faced with the challenge of having solutions which either rely on fossil fuels, but which still require technology to mature, or on new, zero carbon fuels, the availability of which is still far from being guaranteed. This new design enables the use of hydrogen as a fuel today without the need for bunkering and storage on board and exceeds IMO 2050 targets for 70% reduction of carbon intensity."

The MR tanker design is based on combining LNG with steam in a Helbio gas reformer to split LNG molecules into hydrogen and CO_2. Hydrogen is then directly used to fuel the internal combustion engines and fuel cells in a hybrid marine power system by ABB. The CO_2 is captured by splitting the LNG molecules, rather than from exhaust gas.

Any solution that aims to reduce a ships' CO_2 emissions today should ensure a competitive Carbon Intensity Index (CII) rating, which has increasingly stringent rating thresholds towards 2030, throughout the whole service life of the vessel, not only when getting closer to 2050. This may prove to be a substantial limitation for conventional ships built with the intention of being retrofitted after 10-15 years from delivery.

Using this design, hydrogen usage can be progressively increased to maintain a top CII rating throughout the life of the ship, reducing CO_2 emissions in a parallel slope with the applicable regulations. The ship can meet full decarbonisation targets by either running the engine on 100% hydrogen, or by producing all the power needed by fuel cells. In this way, the owner can decide the rate of CO_2 reduction.

Carbon disposal will be a vital technology for the future to meet global decarbonization goals across all sectors. The concept will not require onshore carbon disposal technology to be available before 2032.

Andreas Hagberg, Head of Sales & Marketing Department at FKAB, commented, “The concept is revolutionary because it does not require any portside hydrogen infrastructure. The hydrogen is created onboard the vessel and all necessary equipment can be easily fitted on deck, so ship owners can convert existing vessels. The fuel cells have been specifically developed to produce more power and fewer emissions.”

CO_2 is liquefied by the cryogenic steam from the LNG and can be used as the inert gas for the tanker. No additional bunkering, aside from normal LNG, is required. The hydrogen produced can be used to power the main engine, or fuel cells, or a hybrid of the two. The AiP covers the hybrid option.

Trakakis concluded, “Now that the concept has been brought to the real world through an immediately applicable CII A rated design, this opens the door to reduce emissions in a much shorter timeframe. The AiP is for an MR tanker, but the technology can be applied to a wide range of vessel types and sizes.”

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About FKAB
FKAB Marine Design is a 60-year-old family-owned company delivering ship designs prepared for the future. We are based in Uddevalla (HQ), Gothenburg & Shanghai and our clients are shipowners, shipyards, governments and authorities from all over the world. Our designs are optimized with focus on operation, low fuel consumption, low environmental impact and ready to meet future demands. We are part of the projects from the first sketch to delivering the complete design to the shipyard. During the years we have developed proven designs for Product and Chemical tankers coated and stainless steel, Bunker vessels, LNG and LPG Gas carriers, General cargo vessels, Dredgers, Ferries, Rescue boats, Navy vessels, Push barges & Container feeders.

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About RINA
RINA provides a wide range of services across the Energy&Mobility, Marine, Certification, Infrastructure & Real Estate and Industry sectors. With net revenues in 2020 of 495 million Euros, over 4,000 employees and 200 offices in 70 countries worldwide, RINA is a member of key international organizations and an important contributor to the development of new legislative standards. www.rina.org

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