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Methanol's Emergence as a Marine Fuel Industry's Biggest Story of 2023

Riviera's Marine Propulsion editor, John Snyder, has highlighted developments in marine propulsion, engine technology and fuels that shaped shipping's path to net-zero emissions in 2023.



Snyder notes that methanol as a marine fuel emerged as the biggest story of 2023, with a contracting spree pushing the orderbook to 205 newbuilds as of mid-December, according to DNV Alternative Fuels Insight. Overall, 51.3% of the ships on order have the capability of burning an alternative fuel, with LNG representing 40.3%, methanol 8.0%, LPG 2.2% and battery/hybrid 0.8%.

MI member **Maersk's** container ship *Laura Maersk* served as the poster child for methanol in 2023, making its maiden voyage from South Korea to Copenhagen in September. Bunkered with green methanol produced by MI member **OCI HyFuels**, the 2,100-TEU box ship was proof positive that a ship could operate on the low-carbon fuel, advancing methanol's viability as an alternative to support shipping's decarbonisation.

Despite Maersk's success, the price, availability and scalability of low- and zero-carbon fuels continues to obscure a realistic commercial path ahead for shipowners.

Maersk and other deep-pocketed liner companies called for the end of fossil-fuel only newbuildings along with other regulatory measures to speed decarbonisation at COP 28 in Dubai.

Meetings at IMO headquarters in London in July set more definitive goals for greenhouse gas (GHG) emissions reduction, setting indicative check points for 2030 and 2040, while striving for net-zero by or about 2050.

Ambitions were outlined to increase the uptake of zero or near-zero GHG emissions technologies, fuels and energy sources, with goals of reaching at least 5%, striving for 10%, of the energy used by international shipping by 2030. More information is available [HERE](#).

ONE Orders 12 Methanol Dual-Fuel Container Ships

Ocean Network Express (ONE), the world's sixth-largest container carrier, has placed orders for the construction twelve 13,000 TEU methanol dual-fuel containerships.



These will be the first methanol-dual fuel vessels in ONE's fleet, marking a significant step in the company's green strategy.

ONE has signed contracts for the vessels with Chinese shipbuilders Jiangnan Shipyard and Yangzijiang Shipbuilding. Each shipyard will construct six vessels, with deliveries commencing in 2027.

The vessels will be equipped with state-of-the-art energy efficiency technologies such as optimized hull form, waste heat recovery systems, and a bow windshield. Selected vessels will also feature an air lubrication system and shaft generator, which will contribute to enhancements in fuel efficiency and the reduction of greenhouse gas (GHG) emissions.

“Our decision to invest in methanol-dual fuel vessels aligns with ONE's Green Strategy as part of our key initiatives,” said Jeremy Nixon, CEO at ONE. “Upcoming new fleet is pivotal in achieving our goal of deploying the first alternative fuel ships by 2030 and marks a significant milestone in our journey towards a greener and more sustainable maritime industry.”

The transition from conventional fuel to alternative fuels is a key pillar of ONE's Green Strategy, which aims to achieve net-zero GHG emissions, encompassing Scope 2 and 3 emissions, by 2050.

More information is available [HERE](#).



Clarksons Hails 'Hugely Significant' Year for 'Alternative Fuel Capable' Newbuildings



Some 45% of all newbuilding orders placed in 2023 were for vessels that will be able to use alternative fuels, according to Clarksons Research.

Releasing its latest Green Technology Tracker, global head of Clarksons Research Steve

Gordon detailed that in 2023 some 539 newbuilding orders involved alternative fuel capable vessels, which equates to about 45% of all orders placed in gross tonnage terms.

By comparison, last year's figure is slightly down on the around 55% of newbuildings which were contracted with alternative fuels in 2022 but up on the 31% figure for 2021.

Gordon said the largest share of alternative fuelled orders in 2023 remained LNG dual fuel ships with 220 orders, of which 152 were non-LNG carriers.

But he also flagged an increase to 125 orders of methanol dual-fuel vessels.

The research chief said there were also 55 new orders involving LPG as a fuel and, more recently, four with ammonia.

"Reflecting future 'optionality', there are 579 in fleet and newbuilds that have LNG 'ready' status, 322 that are ammonia 'ready' and 272 that are methanol

‘ready’,” he said.

Gordon said the uptake has also spread across shipping sectors, with 83% of container ship newbuilding capacity ordered this year — rising to 94% including orders with “ready” status — and 79% of car carriers, or 98% including “ready” orders, contracted with alternative fuel capability.

But he said the share alternative fuelled orders was much lower in the bulk carrier and tanker sectors.

He said: “Overall today, 6% of global fleet capacity is alternative fuelled capable — up from 2.3% in 2017 — which we project will increase to nearly a quarter of all fleet capacity by the end of the decade.”

Gordon described 2023 as “a hugely significant year in the shipping industries decarbonisation pathway”.

He highlighted new regulations entering into force and a net-zero commitment agreed upon at the International Maritime Organisation.

“While we remain only at the start of a vital and unprecedented fleet renewal investment programme, a start has been made with 49% of current orderbook tonnage now alternative-fuelled.” More information is available [HERE](#).

10 89,000 DWT Methanol Fueled Bulk Carriers Ordered in China

On January 4th, Fujian GuoHang Yuan Yang and Wuhu Shipyard signed a contract for the construction of four + six 89,000 DWT methanol dual-fuel bulk carriers.

China Classification Society (CCS) was invited to attend the signing ceremony and issued GDA type approval certificate to GuoHang Yuan Yang.



This ship is an innovative net-zero emission intelligent ocean-going cargo ship. During the ship type development process, CCS worked closely with Air China Ocean Shipping and Shanghai Jiahao Ship Design Co., Ltd. to carry out research on the overall performance of the ship, hull structure, new fuel system, intelligent system, etc. A lot of technical research and ship type optimization work has been carried out.

More information is available [HERE](#).



M2X and SCGC Partner to Reduce Methane Emissions, Streamline Production of Methanol from Stranded Gas



M2X

In Florida, MI member **M2X Energy**, a startup company with process technology that converts stranded natural gas into low-carbon methanol, and SCG Chemicals (SCGC),

a petrochemicals company that is committed to developing sustainable chemicals and clean energy solutions, have strengthened their existing relationship by announcing a joint development program to optimize key chemical transformations within M2X's modular process.

By leveraging the extensive catalyst R&D and manufacturing expertise of SCGC and the deep process design and engineering knowledge from M2X Energy, this collaboration aims to streamline the catalytic steps to form methanol from syngas intermediates. The partnership seeks to identify novel catalyst formulations that can increase catalyst activity, lower byproduct formation, and improve catalyst lifetime.

If successful, the use of tailored catalysts in M2X units will increase the value of the as-formed products, reduce process and maintenance requirements, and improve system reliability and uptime, the partners said.

“Building on the momentum of our recent field demonstration, this partnership with SCGC could further intensify M2X's process, through better catalysts.

This work enables refinements to our compact, transportable plants that utilize stranded gas that is often otherwise flared or vented,” said Paul Yelvington, Chief Science Officer at M2X.

More information is available [HERE](#).



Bahri Chemicals to Time-Charter Stena Provident and Stena Progressive in a 5-Year Agreement with Proman



MI member Proman, the world's second largest methanol producer, and Bahri, a global leader in logistics and transportation, have announced a five-year agreement for Bahri Chemicals, a Bahri business unit, to time-charter twomethanol-powered ships, Stena Provident and Stena Progressive, to transport

various products globally.

The vessels were officially named during a ceremony hosted at Guangzhou Shipyard International (GSI) in China in November 2023 where both ships were built. The vessels are the final two of an initial six-strong methanol-fuelled tanker fleet commissioned through the partnership between Proman and Stena Bulk.

The state-of-the-art IMO IIMeMAX ships are highly efficient dual-fuel tankers with Marineline coating that can be used to ship a wide variety of cargo, bulk products, and chemicals.

Since the delivery of the Stena Pro Patria in 2022, the first vessel of the IMO IIMeMAX fleet, operational efficiency has been demonstrated by the low EEDI (Energy Efficiency Design Index) value. Phase 3 of the EEDI requires all vessels built from 2022 to achieve at least a 30% reduction in carbon intensity (grams CO₂ per ton-mile) by 2025, and the Stena Pro Patria has already delivered 11% below this level, setting a new benchmark for methanol-fuelled tankers.

Anita Gajadhar, MI Board Chair and Executive Director of Marketing and Logistics at Proman, credited the long-standing and fruitful relationship between the two companies and the proven capabilities of methanol as a cleaner fuel as key to the deal. She also highlighted the record-breaking number of methanol dual-fuel ships due for delivery in the coming years, adding “Methanol is increasingly becoming a mainstream marine fuel and Proman is committed to time-chartering our vessels to enable others to gain operational experience of using methanol as a fuel, to realise the immediate air quality benefits and emissions reductions it brings, and to understand its value and role on the pathway to a lower-emission future”.

More information is available [HERE](#) and [HERE](#).



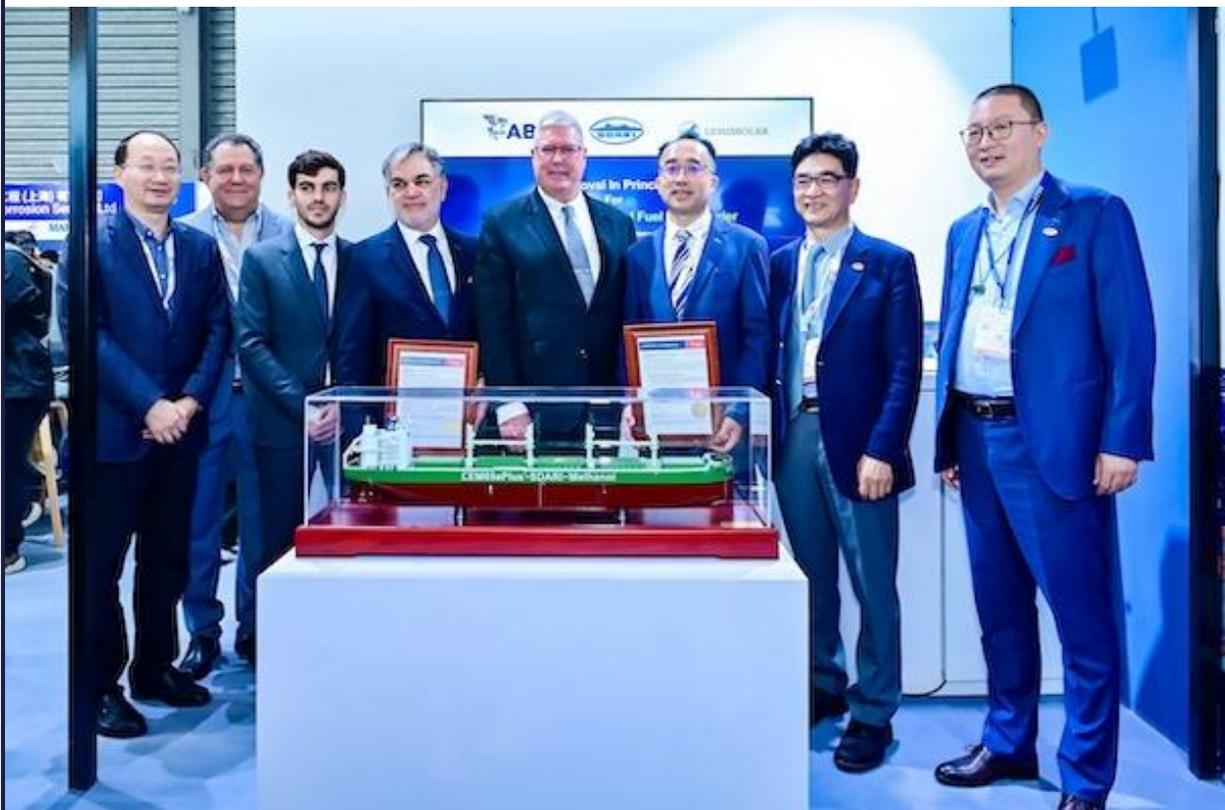
China Shipbuilding Industry's First Methanol-Fueled Ultramax Bulk Carrier Receives ABS Approval

Lemissoler Navigation Ltd. and Shanghai Merchant Ship Design and Research Institute (SDARI) received ABS approval in principle (AIP) for its design of a 65K DWT methanol-fueled ultramax bulk carrier, the first such methanol vessel for China's shipbuilding industry.



“ABS understands and is deeply involved in supporting clients with decarbonization solutions. Getting to net zero by 2050 is an ambitious target for the industry, requiring more renewable energy options, zero-carbon fuels, carbon-neutral fuels and carbon capture technologies. Lemissoler and SDARI's new design using methanol is an important piece of the puzzle to create a more sustainable shipping industry,” said Christopher J. Wiernicki, ABS Chairman and CEO.

The design explores the feasibility of using methanol as fuel to accelerate the reduction of carbon emissions to reach the IMO's net-zero target by 2050. With the implementation of EU ETS and FuelEU regulations, the vessel, when burning green methanol, will have a greater potential to reduce the cost related to carbon emissions. The vessel has been thoroughly optimized and its preliminary Energy Efficiency Design Index (EEDI) was reviewed and indicated that the vessel exceeds EEDI Phase 3 standards. ABS completed design reviews based on class and statutory requirements. More information is available [HERE](#).



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