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World's First LPG-Retrofit Announced

LPG carrier's low-speed main-engine converted to dual-fuel running; owner, BW LPG, further enhances already strong green credentials

MAN PrimeServ, MAN Energy Solutions' after-sales division, has announced the successful conversion of the main engine aboard the LPG carrier, 'BW Gemini', from an MAN B&W 6G60ME-C9.2 type to an MAN B&W 6G60ME- LGIP dual-fuel type capable of operating on fuel oil and LPG. The BW Gemini is part of the fleet of Oslo-listed BW LPG – the world's leading owner and operator of LPG vessels.

The successful conversion – and start of gas and sea trials – will make the BW Gemini the world's first commercial vessel to be propelled by a two-stroke LPG dual-fuel engine. The conversion is the first of 12 ordered by BW LPG for a series of vessels in its fleet.

BW LPG chose retrofits over newbuildings for a number of reasons. Pontus Berg, Executive Vice President, Technical and Operations, LPG, said: "Retrofitting allows us to minimise our carbon footprint – the process emits up to 97% less carbon dioxide compared to a newbuilding construction. Retrofitting also means that we do not add additional tonnage that the world does not need. In addition, BW LPG's fleet is already widely recognised amongst charterers for its efficiency, and so retrofitting 12 of its vessels to dual-fuel LPG would help to further reinforce the company's strong reputation in this area."

Dr Uwe Lauber, CEO of MAN Energy Solutions, said: "The industry is moving towards a zero-carbon future and there is a strong global push towards sustainability. As we pass the 2020 sulphur cap and get closer to future IMO targets in 2030 and 2050, companies that show strong corporate commitment to sustainability will become more commercially attractive. In this context, this retrofit project represents an important milestone and case study for the future of our industry."

Wayne Jones OBE, Chief Sales Officer and member of the Executive Board, MAN Energy Solutions, said: "MAN PrimeServ's dual-fuel expertise helped BW LPG to get a clear picture of the economics involved in this ambitious retrofit project. Although it requires significant upfront investment, the returns will be positive in both financial and environmental terms, and showcase perfectly BW LPG's commitment to action on sustainability. It also displays the adaptability of MAN Energy Solutions' technology and how retrofitting our engines can future-proof them to handle whatever alternative fuels come to prominence in the decades ahead."

Background

MAN Energy Solutions announced the first four BW LPG retrofit orders for its new MAN B&W ME-LGIP LGP-powered engine in September 2018 in advance of the

official launch of the engine at its Research Centre Copenhagen, and exchanged the contract publically with BW LPG during the event.

Subsequently, in February 2020, the type approval/parent engine test was performed at licensee STX works in Korea with the TAT approved by all classification societies.

The BW Gemini docked at Yui Lian Ship Yard in Shenzhen, China in early August 2020 for conversion. Due to pandemic restrictions, the MAN PrimeServ project team collaborated in great part remotely to push the conversion forwards.

Sea trials are scheduled for October 2020 with the LPG carrier due to re-enter commercial trading upon their successful completion.

Business case

With LPG as a marine fuel, the BW Gemini's output efficiencies rise by around 10% against fuel oil, which will in turn generate notable gains in total voyage fuel-economics. This, along with other advantages, secures LPG's position as a long-term, sustainable marine fuel.

Cost-wise, LPG is also a better option than compliant fuel oil, with high lifetime savings prospects. By leveraging LPG as a marine fuel, BW LPG's vessels benefit from savings due to lower fuel consumption and full dual-fuel flexibility, which guards against price sensitivity to post-2020 fuel price fluctuations. Furthermore, the ability to use LPG cargo as a supplemental fuel source also reduces time and fees for fuel bunkering.

Harnessing LPG propulsion translates into cleaner, more efficient engines that are cheaper to maintain. In addition, the fuel flexibility of dual-fuel engines ensures full redundancy for uninterrupted operations.

PrimeServ

MAN PrimeServ contributed a vast amount of dual-fuel technology knowhow, which, in combination with BW LPG's own substantial experience in the gas-shipping business, meant that the initial business case could quickly be formed, and the project approved.

MAN PrimeServ's research showed that a retrofit would be the most environmentally friendly solution. A retrofitted vessel generates 35 times less CO₂-emissions compared to a newbuild vessel; and compared to 2020-compliant fuels, using LPG as a fuel would reduce SO_x by 99%, CO₂ by 15%, NO_x by 10%, and particulate matter by 90%.

Jens Seeberg, Head of Retrofit & Upgrade, MAN PrimeServ Two-Stroke, said: "This is an exciting project that has involved many parts of MAN Energy Solutions' worldwide organisation. Our Retrofit Department in particular has enjoyed

cooperating with BW LPG, which has been very open during the entire process. As we push towards a maritime energy transition, new fuels and technology are beginning to impact the market and there is no doubt that retrofitting engines already active in the field will become more and more commonplace in time.”

About BW LPG

BW LPG is the world's leading owner and operator of LPG vessels and currently owns and operates 51 Very Large Gas Carriers (VLGC) and Large Gas Carriers (LGC) including two VLGC newbuildings with a total carrying capacity of 4,159,213 CBM. With four decades of operating experience in LPG shipping and experienced seafarers and staff, BW LPG offers a flexible and reliable service to customers. With a global presence in nine countries, BW LPG operates out of Singapore and is incorporated in Bermuda.



The ‘BW Gemini’, a VLGC from the BW LPG fleet, has had its MAN B&W 6G60ME-C9.2 main engine retrofited to an MAN B&W 6G60ME- LGIP dual-fuel type, capable of operating on fuel oil and LPG. The conversion is the first of 12 for a series of LPG carriers owned by BW LPG (picture courtesy BW LPG)

MAN Energy Solutions enables its customers to achieve sustainable value creation in the transition towards a carbon neutral future. Addressing tomorrow's challenges within the marine, energy and industrial sectors, we improve efficiency and performance at a systemic level. Leading the way in advanced engineering for more than 250 years, we provide a unique portfolio of technologies. Headquartered in Germany, MAN Energy Solutions employs some 14,000 people at over 120 sites globally. Our after-sales brand, MAN PrimeServ, offers a vast network of service centres to our customers all over the world.