

GSC develops principle design for ammonia-fueled Panamax bulk carrier -Awarded ClassNK's Approval in Principle-

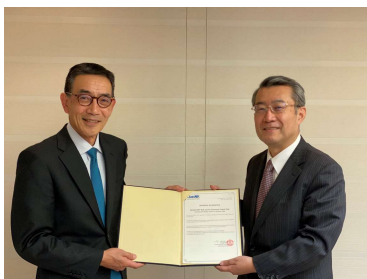
Planning and Design Center for Greener Ships (GSC)*1 has become the first in Japan to develop zero-emission ships in cooperation with member shipbuilders in Japan and be awarded an Approval in Principle (AIP) for ammonia-fueled Panamax bulk carrier from ClassNK on 20th January 2022.

While ammonia has widely gathered attention in the international shipping sector as a non-carbon fuel for realizing zero emissions, GSC has been developing the principle designs for ammonia-fueled ships in various types and sizes, including Panamax bulk carrier, a major type of ship used in international bulk shipping and also one of the top products in Japan's shipbuilding industry.

GSC adopted sufficient safety measures following ClassNK's guidelines for ammonia-fueled ships. As the capacity of ammonia fuel tanks is significantly larger than that of heavy fuel oil, GSC also minimized the adverse impacts on cargo capacity and endurance by carefully arranging the fuel tanks. In addition, this design concept considers future application to larger ships such as Cape size bulk carriers and also to "ammonia-ready" LNG-fueled bulk carriers.

Utilising this GSC's basic design, shipbuilders in Japan can speed up the development of various ammonia-fueled ships including bulk carriers. The GSC's design is also expected to assist shipping companies in accelerating the introduction of actual zero-emission ships from early on.

Through the planning and designing of new ships, GSC is working to contribute to the sustainable development of the Japan's maritime industry by promoting the realisation of zero emissions in the international shipping sector.



AIP granting ceremony

From left

Mr. Hiroaki Sakashita, President & CEO, ClassNK

Dr. Hiroyuki Yamato, Representative Director GSC



Ammonia-fueled Panamax bulk carrier's image 1

Overview of ammonia-fueled Panamax bulk carrier

PRINCIPAL PARTICULARS		
LENGTH	(O.A.)	abt. 228.9 M
LENGTH	(B.P.)	225.45 M
BREADTH	(MLD)	32.26 M
DEPTH	(MLD)	20.10 M
DEADWEIGHT		abt. 80,400 MT
MAIN ENGINE		MCR 8,000 kW
SERVICE SPEED		abt. 14.2 KNOTS
NH ₃ FUEL TANKS		2,500m ³ x 2sets



Ammonia-fueled Panamax bulk carrier's image 2



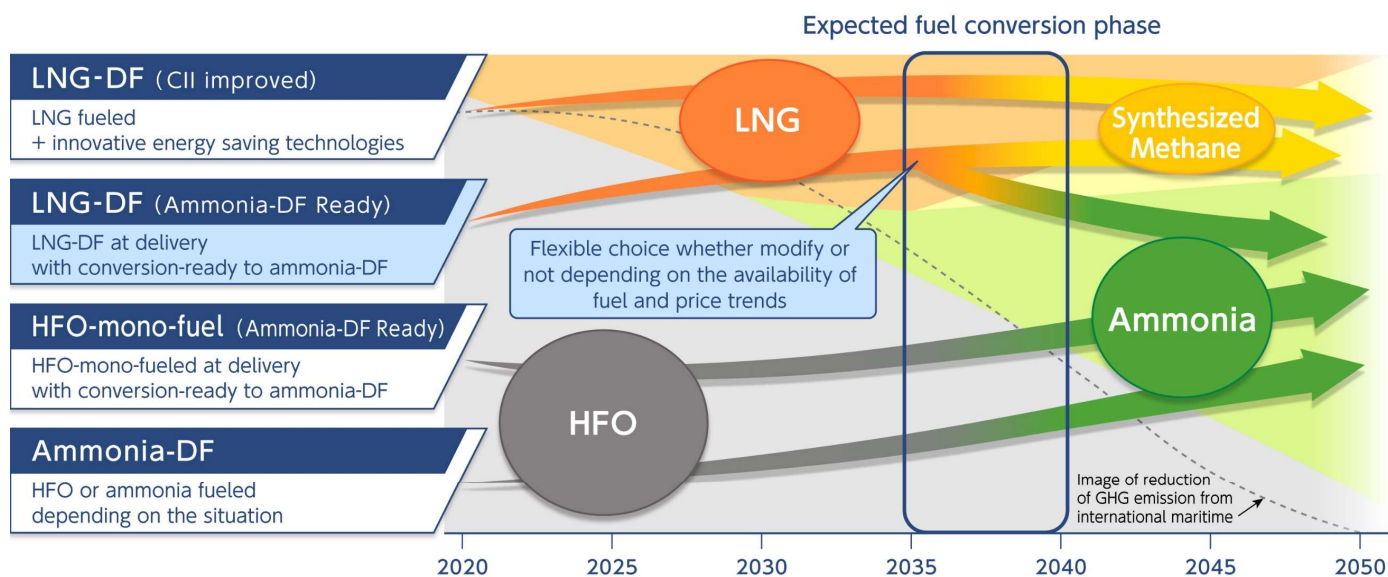
Ammonia-fueled Panamax bulk carrier's image 3

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* 1 Planning and Design Center for Greener Ships (GSC) was established in October 2020 by interested major shipbuilders in Japan as a core organisation that continuously plans and disseminates the most advanced ships by aggregating the power of the shipbuilding industry and accumulating current and future technologies for environmental protection. Based on this vision, GSC engages in surveys as well as research and development related to the commercialisation of advanced environment-friendly ships.

GSC is currently working on four new concepts of use of alternative fuels in anticipation of future scenarios towards 2050, based on its own evaluation of potential regulations on GHG reduction together with the future supply of alternative fuels, such as ammonia and synthesized methane.



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Member companies and organisations (as of January 2022):

Imabari Shipbuilding Co., Ltd., Japan Marine United Corporation, Mitsubishi Shipbuilding Co., Ltd., Mitsui E&S Machinery Co., Ltd., Naikai Zosen Corporation, Namura Shipbuilding Co., Ltd., Nippon Kaiji Kyokai (ClassNK), Onomichi Dockyard Co., Ltd., Oshima Shipbuilding Co., Ltd., Shin Kurushima Dockyard Co., Ltd., Shin Kurushima Sanoyas Shipbuilding Co., Ltd., Sumitomo Heavy Industries Marine & Engineering Co., Ltd.

(In alphabetical order)

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