



Global Marine Applications

Decarbonizing the Future of Shipping

DESIGN | ENGINEERING | MANUFACTURING | PROJECT MANAGEMENT | INSTALL | COMMISSIONING | TRAINING | LIFECYCLE MAINTENANCE



www.ChartIndustries.com/Marine

Perspectives:

Naval Architects

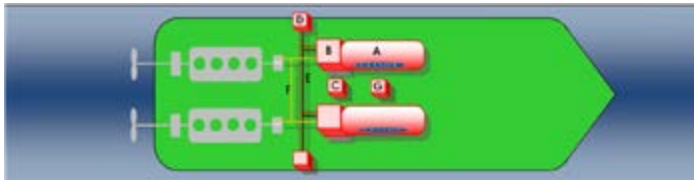
From the initial stages of design for an LNG or dual fuel powered ship, consider using Chart's expertise, knowledge and history of LNG fueled blue water and brown water vessels.

- One supplier for storage, vaporization, VJ piping, and fueling systems
- Proven experience with design and engineering onboard re-liquefaction Floating Liquefied Natural Gas (FLNG) and more
- Talk to our dedicated marine engineering team to assist with designs early in the process

Vacuum Insulated Tank with Valve Containment Room



Typical LNG Ship Fuel Solution



- A Vacuum insulated tanks
- B Coldboxes
- C Water-Glycol systems
- D Bunker stations
- E Piping for LNG bunkering
- F Double walled gas supply lines
- G Gas Control System and Gas Safety System

Shipowners

Since 2005 Chart has delivered 45+ onboard fueling projects

Norway	Car & passenger ferries	3 vessels	DNV	Fuel system
	Fish feeder	1 vessel	DNV-GL	Fuel system
Sweden	Chemical tankers	4 vessels	DNV	Fuel system
USA	LNG transport barge	1 vessel	ABS	Piping & offload skids
	Offshore supply vessel	3 vessels	ABS	Fuel system
Spain	LNG Bunker Vessels	3 vessels	BV/LR	Bunkering ships
Australia	Fast ferry	1 vessel	DNV	High pressure fuel system
	IGF code semi trailers	1 vessel	DNV	World's only IGF tailers
Germany	LNG power barge	1 vessel	BV	Power system
China	Inland waterway barges	17 vessels	CCS	Fuel system
	Inland waterway ships	2 vessels	CCS	Fuel system
	Sea going chemical tankers	2 vessels	CCS	Fuel system

LNG Powered Vessel



LNG Ship Fuel Solutions



Port Authorities

With the rapidly growing number of LNG fueled vessels on the oceans, ports need to consider investing into shore-side infrastructure.

- Be part of the energy transition of the shipping industry with Chart
- Clean Port Power
- Optimize the LNG fueling solution with small- to mid-scale systems

Small Scale Shore Bunkering



LNG Bunkering and Distribution Terminal



LNG Producers and Carriers

LNG is the simplest transition to zero emissions, offering a 23% reduction in greenhouse gas emissions over typical marine fuel. Chart has the experience to be part of the solution to manage the thermodynamics of this cryogenic fuel.

- LN₂ Storage and vaporizer systems for Floating Liquefied Natural Gas (FLNG)
- Vaporization Equipment for Floating Storage and Regasification Unit (FSRU)
- Onboard storage systems for bunkering vessels

LN₂ System on FLNG Vessel



BAHX and Cold Boxes for FLNG



Chart City

Chart is a recognized global brand for the design and manufacture of highly engineered equipment used from the beginning to end in the liquid gas supply chain. Our products and know-how are critical components in the separation, delivery and end-use of liquid gases across a multitude of applications in industry and for energy. You probably don't know, but Chart technologies are integral to many of the processes and items we take for granted every day; all the way from carbonated beverages through to life-saving medical equipment and marine systems.



Take a digital tour of Chart City.



- 1 LNG and hydrogen liquefaction
- 2 LNG bunkering and receiving terminals
- 3 Satellite LNG Stations
- 4 Air cooled heat exchangers
- 5 Vaporizers
- 6 Cryogenic bulk storage tanks
- 7 Mobile cryogenic trailers and trucks
- 8 LNG and hydrogen vehicle fuel tanks
- 9 Marine LNG fueling systems
- 10 ChartWater™
- 11 Turn-key oxygen systems
- 12 MicroBulk delivery systems
- 13 Chart CO₂ cylinders and supply systems
- 14 LNG/CNG/hydrogen fueling stations
- 15 LNG and hydrogen fueling dispensers
- 16 Axial flow fans
- 17 Specialty heat exchangers and reactors
- 18 Brazed aluminum heat exchangers
- 19 Cold Boxes
- 20 Chart Lifecycle
- 21 Packaged gas systems
- 22 Liquid nitrogen dosing systems
- 23 Cryogenic ISO containers
- 24 Chart Parts distribution center
- 25 Vacuum Insulated Pipe (VIP)
- 26 Chart process technology
- 27 Safety and process valves
- 28 Carbon capture
- 29 Turboexpanders

Glimpsing our Cleaner Future

Chart is working to create new pathways to hydrogen fueling by developing Liquid Hydrogen (LH₂) bunkering, marine tanks and on-board fuel systems.

Chart Marine is proud to be a consortium partner working to develop the first hydrogen fuel cell-powered harbor work boat, HyZET-Hydrogen Zero Emission Tug. The maritime fuel cell design and feasibility study for the commercial harbor craft is funded by the California Energy Commission (CEC).



HyZET — Hydrogen Zero Emission Tug



Contact us to learn more

Chart Europe

www.chartindustries.com/marine

marine@chartindustries.com

Global Specialist +33 644 210 908

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