



Marine Service GmbH



PIONEERING SOLUTIONS

LNG Shipping & Bunkering • LNG Fuel Gas Supply Systems • Offshore Wind Power • Marine Consultancy

LNG Shipping & Bunkering

LNG Carriers •
LNG Bunker Vessels •
LNG Terminals • FSRUs

Since the 1960s, Marine Service has been involved in the gas industry with LNG, LPG and LEG carrier design consultancy, plan approval and construction supervision for more than 85 LNG carriers as well as floating and land-based LNG terminal consultancy services for a wide range of international clients.

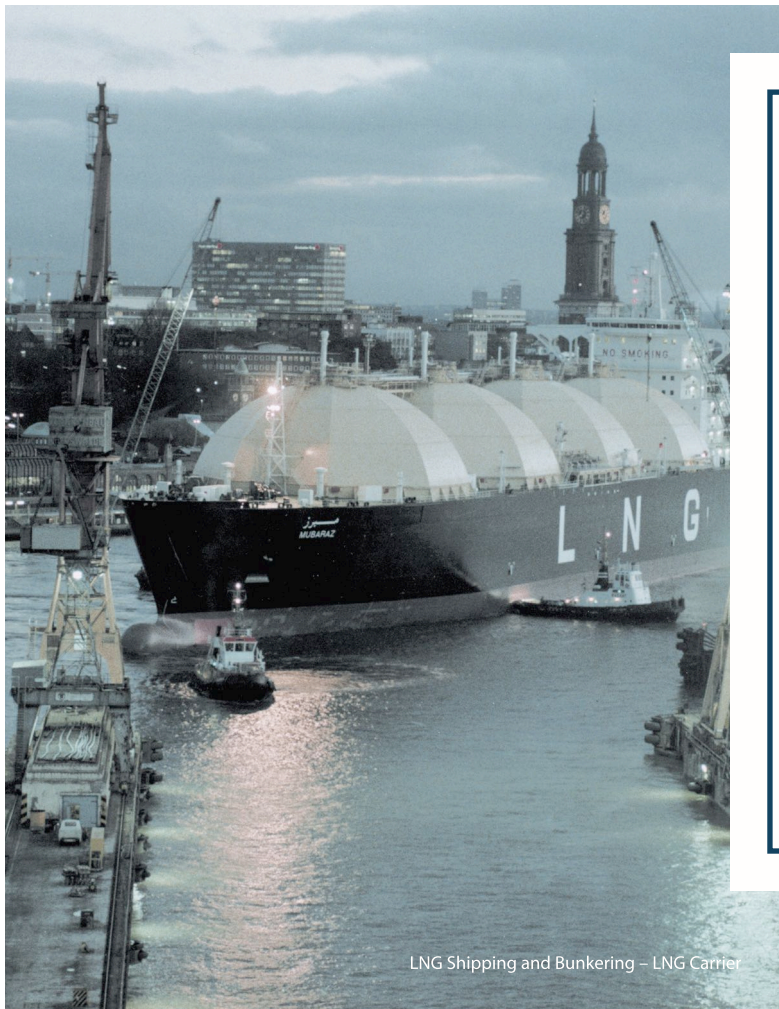


LNG Shipping and Bunkering – FSRU Conversion

Marine Service has experience in projects ranging from LNG bunker vessels to large LNG, LPG and LEG carriers.

For liquefied gas to find its way from the tanker to the land-based distribution network or to other ships, LNG terminals are needed for handling. With its work on service packages in and around terminals, Marine Service contributes to the development of a sustainable energy cycle, both for land-based LNG terminals and for FSRUs.

In addition to LNG as a fuel, Marine Service is also working on projects with other green fuels such as hydrogen, Bio-LNG and synthetic methane.



LNG Shipping and Bunkering – LNG Carrier

Marine Service provides services including:

- Project management
- Construction supervision of newbuildings or conversions
- Plan review and approval
- Concept design and system layout, FEED studies and consultancy for retrofittings or newbuildings of FSRUs and LNG carriers
- Cryogenic design and calculations
- Feasibility studies and concepts
- Specification and tendering procedures (tender specification and evaluation/contract specification)
- Consultancy concerning rules, environmental aspects and energy efficiency
- Safety and concept analysis (HAZID, HAZOP, FMECA)
- RAM studies (reliability, availability, maintainability)
- LNG terminal design support (for small-scale and large-scale applications)
- Mooring and ship/shore interface studies
- Equipment specification and tendering processes (outline-, tender- and contract specification)



LNG Fuel Gas Supply Systems

In 2018, Marine Service GmbH successfully delivered the LNG Fuel Gas Supply System for the "AIDAnova", which is the world's first cruise vessel operating solely on LNG both at sea and in port. For this achievement, Marine Service GmbH was awarded "Partner of the Year" by the MEYER Group.



LNG Fuel Gas Supply Systems – AIDAnova



As of 2020, Marine Service is involved in the delivery of fuel gas packages for 16 cruise liners.

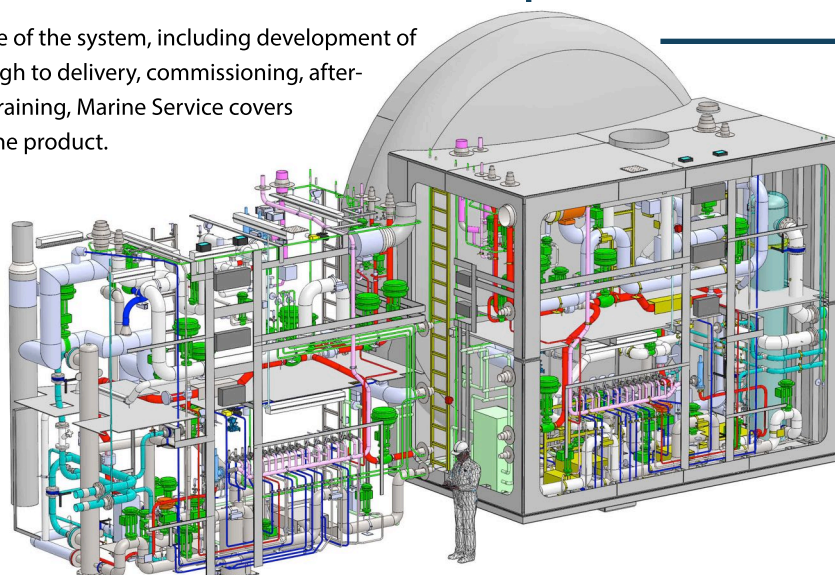
Marine Service offers customized LNG Fuel Gas Supply Systems for all kinds of vessels such as cruise vessels, ferries, tankers, bulk carriers, work boats and container vessels.

Marine Service Fuel Gas Supply Systems can be designed to the highest levels of redundancy and availability.

From the planning stage of the system, including development of automation, right through to delivery, commissioning, after-sales service and crew training, Marine Service covers the whole life cycle of the product.

Marine Service provides services including:

- Complete turnkey LNG Fuel Gas Supply Systems including all automation and process control systems
- Commissioning and installation supervision for newbuildings or conversions
- LNG crew training
- Safety and concept analysis (HAZID, HAZOP, FMECA)
- After-sales and logistical support



LNG Fuel Gas Supply Systems – TCS Render



Offshore Wind Power

Offshore wind power is playing an increasingly important role as an indispensable part of the regenerative energy mix.

More than fifteen wind farms in the North Sea have been connected to the land network with the support of Hamburg-based Marine Service up to 2020.



Marine Service provides services including:

- Specification development
- Assistance in tendering and contract negotiation
- Design and drawing review/approval
- Creation of operating and maintenance concepts and manuals
- Fire protection concepts for authority approval
- Safety and concept analysis (HAZID, HAZOP, FMECA)
- RAM studies (reliability, availability, maintainability)
- Construction supervision/site management

Providing engineering services for HVDC converter platforms is one of Marine Service's core competencies and, with its multi-disciplinary capabilities Marine Service is a reliable and highly skilled partner.

Marine Service provides expertise in design, engineering and review of structures and support systems as well as associated technical services. Side by side with platform owners, operators and builders, Marine Service provides support from specification development, risk assessments and safety studies, right through to plan approval and construction supervision.



Cold testing of an LNG vaporizer

Marine Service has vast experience in the design, engineering and construction of a wide range of ship types and marine equipment. Our engineering staff consists of highly qualified and experienced naval architects and mechanical, marine and electrical engineers as well as cryogenic and automation specialists. With the customer's requirements as a starting point, Marine Service engineers design solutions compliant with the complex marine and onshore regulatory framework. Reliability, operability, maintainability and value for money define Marine Service's solutions for the marine industry.

Marine Service provides services including:

- Project management
- Plan approval and construction supervision
- Ship inspections
- Concept designs for newbuildings and conversions
- Commercial, technical and feasibility studies
- Fleet optimization studies
- Due diligence for investors
- Tendering and tender evaluations
- Advisory services for shipbuilding contracts
- Advisory services for charter parties and LNG sales and purchase agreements
- Energy efficiency concepts



MS-designed LNG tank container for test bed application

MS as part of a strong shipping group

In the tradition of its founder Dr. Karl-Heinz Krämer, who drove technological innovations throughout his life and made Marine Service a worldwide pioneer in maritime LNG, LPG and LEG technology, Marine Service is helping to shape the future business of its customers.

This Hamburg-based family-owned company has been dealing with ship design as well as the development and project coordination of ship newbuildings for more than 60 years and has benefited significantly from the expertise of the group's own shipping company, Chemikalien Seetransport GmbH (www.cst-shipping.com).

Through its pioneering spirit and technological capabilities, Marine Service pursues the goal of contributing to the efficient use of energy and achieving a cleaner world.

Close cooperation with universities and the development of young engineers are integral parts of our company culture.

In addition to its business activities, the Krämer family is widely engaged in charity. Inspired by Nelson Mandela, the late Peter Krämer founded the Peter Krämer Foundation and started the "Schools for Africa" initiative.

The project has helped to build around 3,000 schools and has improved the educational situation of about 30 million children up to 2020. It is one of the most successful private initiatives in the education sector worldwide.

For more information on how the Peter Krämer Foundation improves the lives of African children, please visit the foundation's website:

www.pk-stiftung.de



Nelson Mandela (l.), Peter Krämer (r.)

Marine Service GmbH | Mattentwiete 1 | D-20457 Hamburg

D-20457 Hamburg • Phone: +49 (0)40 – 36903 0 • Fax: +49 (0)40 – 36903 264

www.ms-de.eu

