

LNG gas supply and bunker systems

Natural gas is an environmentally friendly power source that contributes to profitability. Our dual fuel propulsion and liquid natural gas (LNG) supply systems reduce emissions, raise fuel efficiency and power density and keep operation economical. The possibility to switch over seamlessly from gas

to diesel operation and vice versa ensures full flexibility in terms of costs and emissions. As we supply both the engines and the complete fuel gas supply system equipment, we can work with ship designers to perfectly integrate holistic propulsion solutions.

Benefits at a glance

- Clean burning gas, fewer NO_x emissions
- Increased fuel efficiency
- Lower operating costs
- Flexibility and fuel independence
- One point of contact for all components, training and support



The sophisticated world of LNG

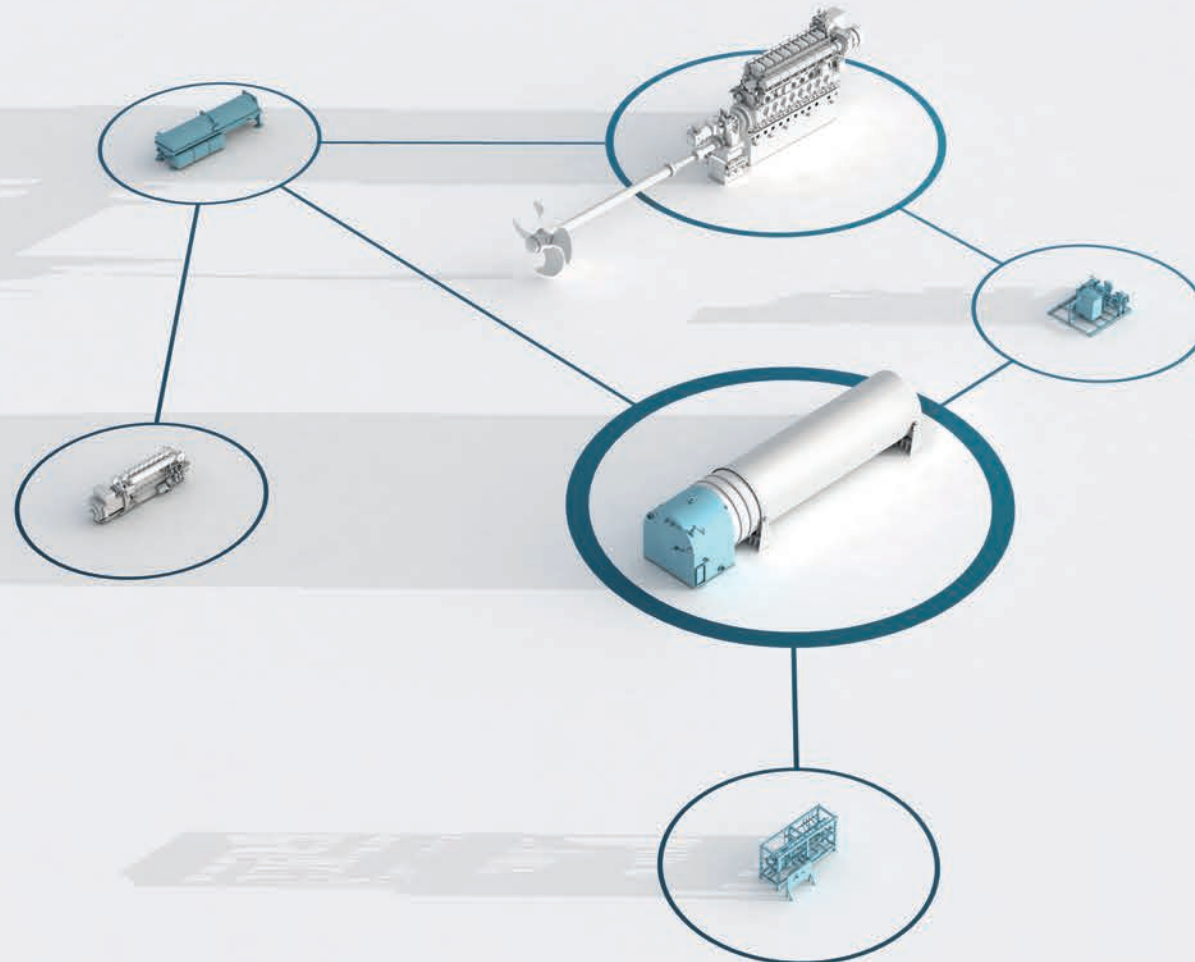
Navigating very competitive and highly regulated markets

Maritime transport of LNG has proven safe thanks to very high safety standards. However, building vessels for the LNG supply and bunkering industry represents a major investment in complex technology. Reliability, flexibility, capital expenditures, operating expenses and emission regulations are just some of the factors to be considered when investing in LNG technology.

Finding a way with the right cryogenic equipment

Our LNG solutions can be tailored to meet every requirement, from LNG technology for dual fuel propulsion to complete LNG handling systems, including carriers, floating storage and regasification units, and feeder and bunker vessels.

LNG, both as fuel and as cargo, has to be handled in a safe and cost-effective way. MAN provides all components, training and support for gas propulsion and supply. Our solutions are based on established technologies and are also environmentally compliant.



General competence

After our 2016 acquisition of Cryo AB, a manufacturer of cryogenic equipment with over 50 years' experience in cleaner burning LNG, MAN Energy Solutions created the MAN Cryo product brand – the perfect complement to our dual fuel engines. We offer holistic solutions for comprehensive engine and environmentally friendly fuel gas supply systems (FGSS), offshore and onshore bunkering systems, and stationary distribution systems for regasification or fuel filling – all from a single source.

System solutions

Onshore and offshore bunkering systems

With an onshore bunkering system, the export of LNG to the end customer takes place at the quay, pontoon or jetty. The standard concept of the onshore bunker system includes high-flexibility hoses, safety break-away couplings and a ship-to-shore safety system. We offer two offshore bunkering systems: A pressurized system has been designed for LNG supply up to 300 m³, and a pump system for supply in larger quantities.

LNG gas supply system

The LNG supply system consists of a vacuum-insulated storage tank, with auxiliary equipment including an LNG vaporizer, a pressure build-up unit and a bunker station. The purpose of the system is to fill, store and vaporize LNG and to supply natural gas to engines on a ship. The system is designed for minimum heat in leakage to guarantee maximum holding time. The gas is fed to the engines using the tank pressure. Hence, no pumps are needed and the maintenance costs are low.

Dual fuel propulsion

Our dual fuel systems reduce emissions, raise fuel efficiency and power density and keep operation economical. As we supply dual fuel engines with both the propulsion systems and the complete fuel gas supply systems, we can perfectly integrate all the components.

Key components

- **Dual fuel main engines**
Four-stroke high and medium speed propulsion engines with impressive fuel flexibility, efficiency power and reliability.
- **Dual fuel auxiliary GenSets**
Reliably deliver power at a low cost per kWh with full fuel flexibility.
- **C-type tank with tank connection space (TCS)**
The C-type tank contains the liquid LNG. The tank connection space or coldbox protects the LNG tank and includes equipment such as vaporizers and valves.
- **Bunkering station**
This is where LNG is transferred to the storage tanks.
- **Heat exchanger**
Heat exchangers warm the cryogenic liquid fuel, converting it into a gaseous state LNG that can be used by the engine.
- **Gas valve unit (GVU)**
The GVU is used to adjust the pressure of the gas supply.
- **Large vacuum-insulated pressurized storage tanks**
MAN Cryo storage tank solutions with a capacity of up to 2,000 m³ per tank, with a pressure of up to 8 bar.
- **Centrifugal pumps**
Stationary centrifugal pumps are used to transfer LNG to the customer.

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