Safe handling of greener fuels

Fuel systems for dual fuel engines

FUELTECH

PART OF G&O MARITIME GROUP

Integrated maritime technology

FuelTech A/S is a global engineering company, working towards a climate-friendly world fleet.

We develop and produce integrated fuel systems that enable ships to operate on greener, alternative fuels while maintaining a safe operation.

We offer solutions across the entire product lifecycle - and with over a decade of know-how and more than 1500 units currently in order or operation, we have earned the trust of our customers worldwide.

Maritime Fuel Systems

2,000,000+
running hours on dual-fuel

1,500+
units in order or operation worldwide

1,100+
vessels with FuelTech equipment

Fuel types

We engineer the technology between tank and engine for safe handling of following fuels:

- Methanol
- Ethanol
- Ammonia
- LPG
- Methane
- Ethane

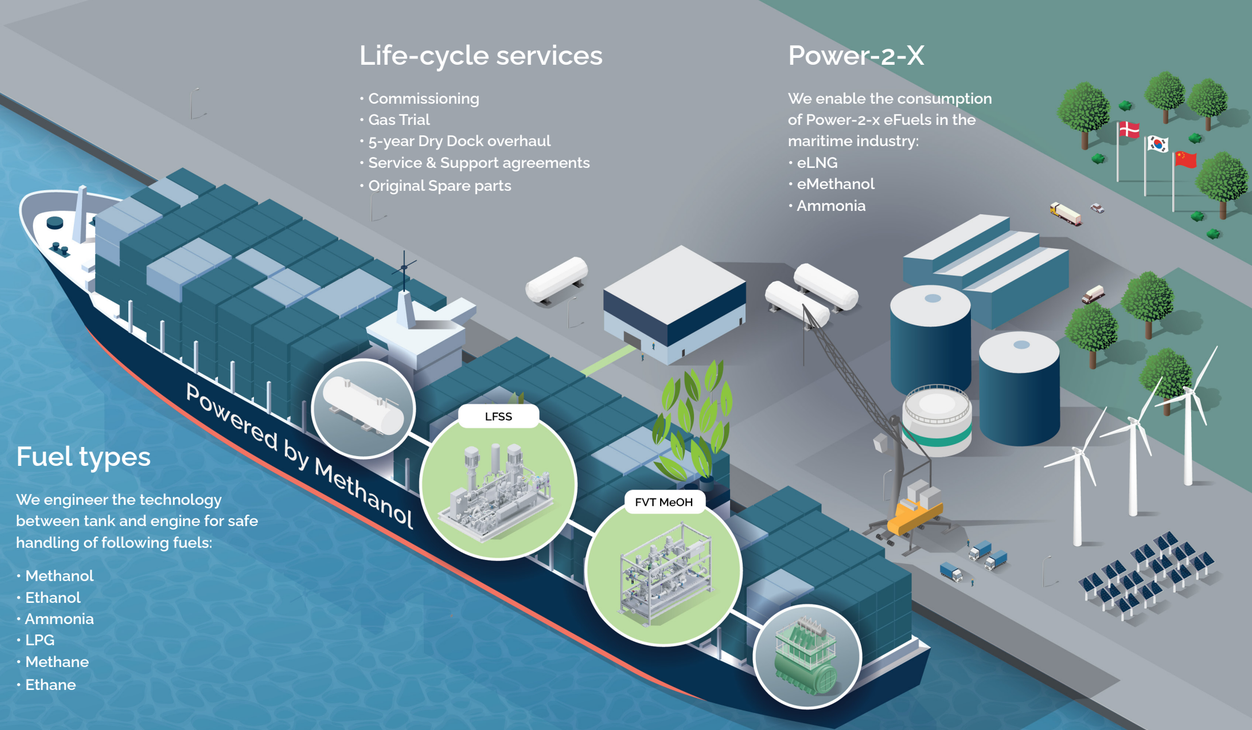
Life-cycle services

- Commissioning
- Gas Trial
- 5-year Dry Dock overhaul
- Service & Support agreements
- Original Spare parts

Power-2-X

We enable the consumption of Power-2-x eFuels in the maritime industry:

- eLNG
- eMethanol
- Ammonia



Engine types

Our products support following engine types:

- Dual fuel low pressure engines
- Dual fuel high pressure engines

Working toward decarbonization

Decarbonization is a crucial step in mitigating the harmful effects of climate change and achieving a more sustainable future. This involves the transitioning from carbon-intensive energy sources, such as fossil fuels, to cleaner, low-carbon alternatives produced from renewable energy sources.

When talking about decarbonizing the maritime industry, power-to-x-to-power is essential to investigate, as it is an effective way to control the carbon footprint. Power-to-x-to-power is a transformation concept, converting electricity made from wind turbines or solar power into carbon-neutral fuels through electrolysis, which can be used for vessel propulsion.

X-2-power: We are realizing fuel potentials

Among all fuel alternatives under discussion, methanol, ammonia, and other power-to-fuel solutions have been identified as the most promising fuels for shipping, as it reduces emissions significantly or completely.

At FuelTech, we provide solutions making it possible for ships to utilize these fuels - safely. Our primary objective is to help the maritime industry decrease fuel emissions to comply with the rising requirements from IMO and UN to minimize SOX, NOX and CO2 emissions. By doing so, we contribute to our customers' global competitiveness.

Learn more about how we empower change in maritime sustainability:

Our commitment to enabling greener fuels aligns with the International Maritime Organization's target of reducing vessel-related emissions, and we are confident that our innovative solutions will play a key role in shaping a more climate-friendly future for the shipping industry.

Louise Andreasen | CEO of FuelTech A/S

Watch the
data sheet

Fuel Valve Train for methanol and ethanol

The Fuel Valve Train is designed to control flow of methanol and ethanol from the low-flashpoint fuel supply system to the engine. The unit supports larger two-stroke engines with fuel consumptions of up to 19,000 kg/h with an additional option of water mixing supply of up to 6,700 kg/h.

In case of shutdown, the Fuel Valve Train will disengage the fuel supply to the engine and send excess fuel from the Fuel Valve Train to the drain. A nitrogen purge system is incorporated into the Fuel Valve Train to purge the system and the engine while preventing the fuel from reaching any safe areas.

With the added water mixing feature our customers comply with the Tier III regulations while operating in Emission Control Areas (ECA) established to limit NOx emissions without need of a SCR system.

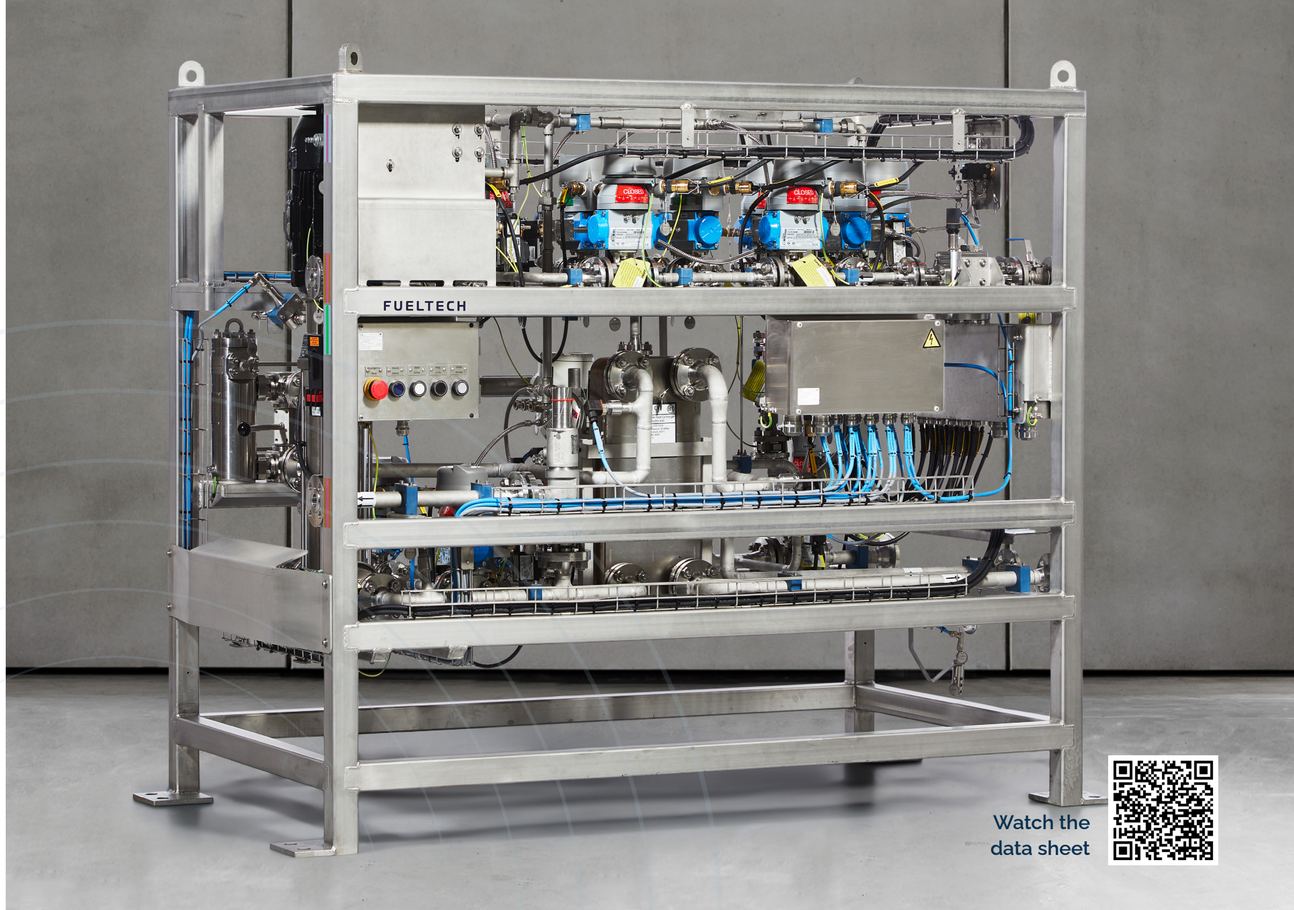
Everllence Certificate of Approval
No.: 0942.0

Low-flashpoint Fuel Supply Valve Train for methanol and ethanol

The Low-flashpoint Fuel Supply Valve Train (LFSVT) is an integrated solution that combines a Low-flashpoint Fuel Supply System (LFSS) with a Fuel Valve Train (FVT). The solution is engineered for methanol and ethanol fuel utilization and designed to fit 4-stroke main and auxiliary engines.

The LFSVT assumes overall control of crucial parameters including flow rate, temperature, and safety, thereby encompassing a comprehensive range of functions.

The engine load signal supplied from SaCos controls the internal pump speed under specific engine load conditions. The goal is to minimize the amount of bypass fuel through (1PVC5662) to <10% and thereby optimize the energy use. To ensure adequate fuel flow to the engine a minor buffer/bypass is needed when the engine load changes.



Enabling the world's first ammonia-powered vessel

An ammonia-driven ship engine along with an essential fuel supply system is now a reality through the innovation project AEngine – for the first time, true green shipping is now possible.

As part of the global efforts to reduce CO2 emissions in shipping, FuelTech has, in collaboration with MAN Energy Solutions, DTU–Technical University of Denmark, and the Norwegian classification company DNV, developed an ammonia-driven ship engine together with a vital fuel supply system.

The full-scale ammonia marine engine is the first of its kind in the world, and during the testing phase combustion was carried out on a MAN B&W two-stroke 4T50ME-X type engine. This yielded positive results with particularly promising data regarding pilot oil quantity and combustion stability, giving rise to a new type of ship engine, while the supply system ensures the safe handling and provision of ammonia as fuel onboard the ship.

"*To achieve true zero-carbon shipping, ammonia is the most viable fuel. Until now, the technology to safely handle ammonia as a fuel has not been in place, but it is now, and it's a huge step in the right direction for the maritime sector that the ammonia engine and the associated supply system are now a reality,*" says Louise Andreasen, CEO FuelTech.

The joint project, AEngine, hereby represents a significant and groundbreaking milestone in the quest for green shipping and the road toward a carbonfree future.

Strong collaborations driving the success of the AEngine project

The world's leading developer of low-speed engines for large commercial ships, MAN Energy Solutions, leads the AEngine project, while FuelTech is responsible for developing the supply system and FVT (Fuel Valve Train) which enables ammonia to be safely transported from the fueltank to the engine. FuelTech has already developed similar supply and safety systems for more than 570 ships running on alternative fuels, such as methanol, LPG, and LNG.

The strong results of the first test are directly affected by the strong collaboration in the AEngine project.

New technology moves closer to commercialization

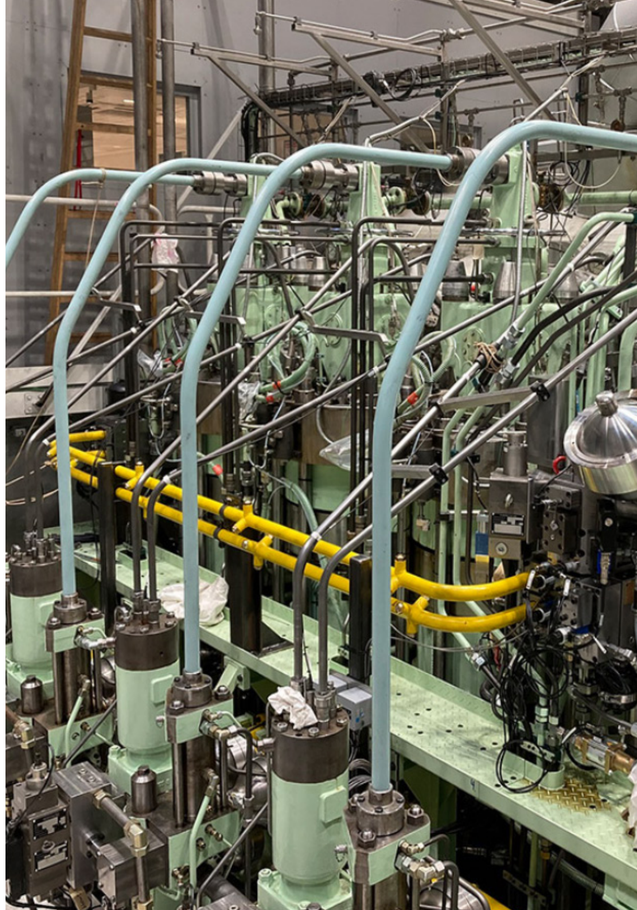
The completed ammonia engine is expected to be delivered in late 2024 or early 2025, and the technology is also intended to be implemented on ships on the existing fleet.

"With this groundbreaking new technology, we can contribute to greener shipping. Just as we have seen increasing support for green methanol recently, we see tremendous potential in ammonia, which will undoubtedly become a significant player within the next few years, especially when large container ships adopt it. This will result in a considerable CO2 reduction for the planet," says Louise Andreasen.

Why ammonia is one of the most promising fuels for the future

- Low-carbon powerhouse: Ammonia offers minimal carbon emissions, a game-changer for greener shipping.
- High energy density: Efficient energy storage in a compact space, perfect for long-distance voyages.
- Global availability: Widely accessible, reducing reliance on fossil fuels.
- Retrofit-friendly: Adaptable for existing ship engines, streamlining the transition.
- Hydrogen potential: A gateway to hydrogen propulsion, expanding clean energy options.

Image of the engine from MAN Energy Solutions »

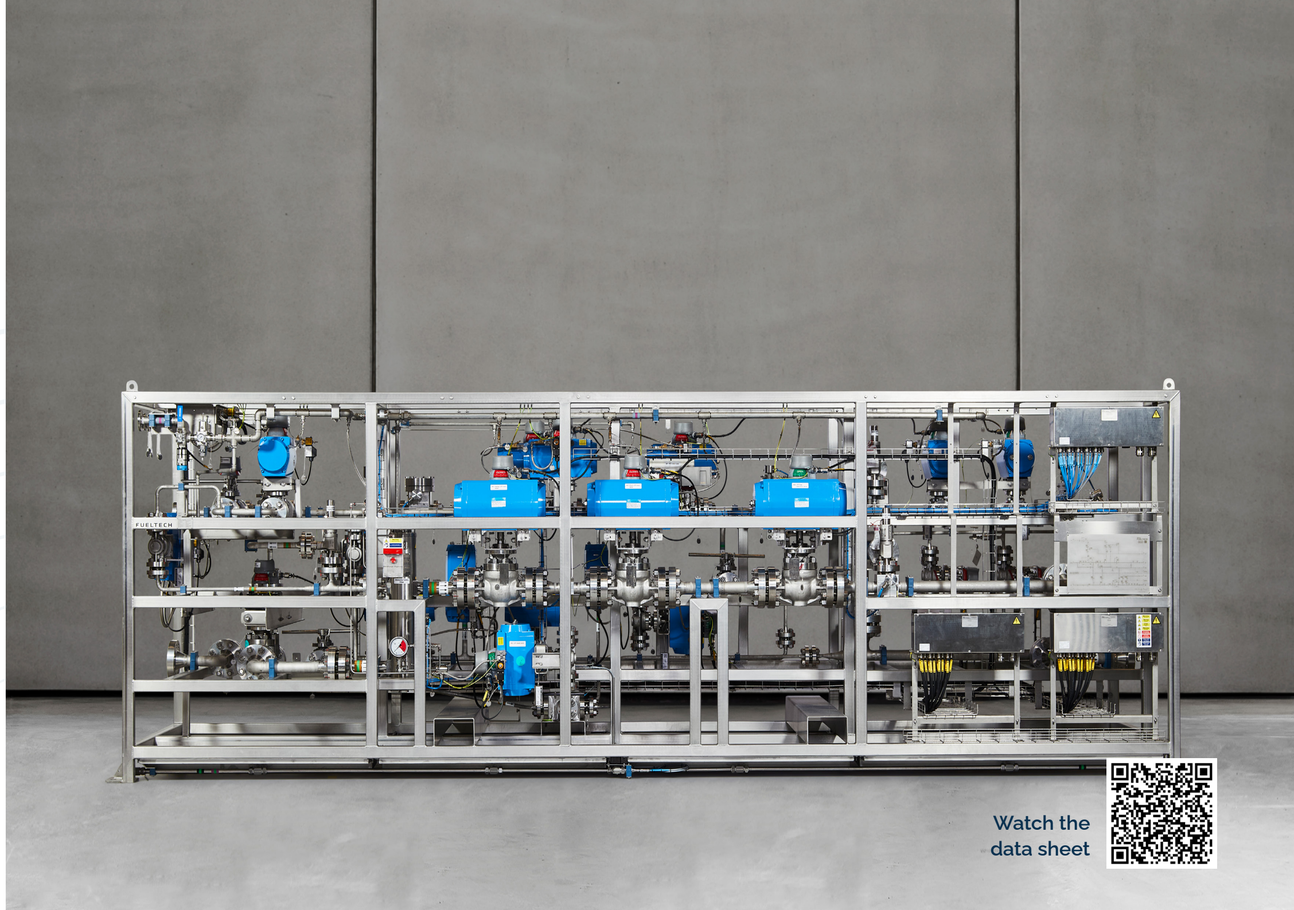


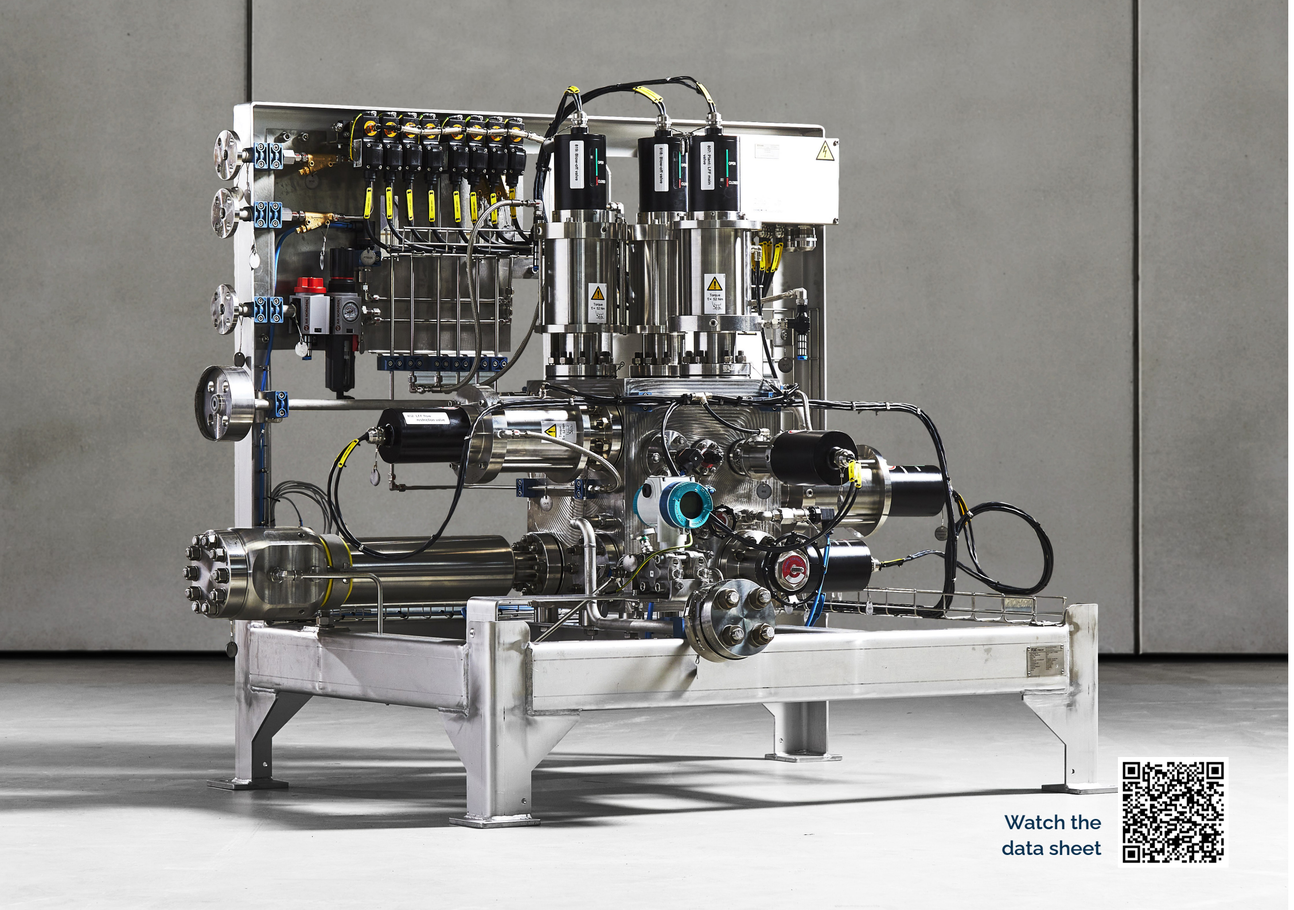
Fuel Valve Train for ammonia

The Fuel Valve Train is a block and bleed valve configuration designed to provide isolation capability between the ammonia fuel supply system and the dual fuel engine.

In case of a normal or emergency shutdown, the Fuel Valve Train will disengage the fuel supply to the engine and send excess fuel from the engine to the recirculation system or vent system.
A nitrogen purge connection is incorporated into the Fuel Valve Train. This is needed in order to purge the engine, and is designed to prevent back flow of fuel to the nitrogen source.

The benefits of the Fuel Valve Train include filtration of media as well as temperature and pressure monitoring between the fuel supply system and the engine. The Fuel Valve Train is controlled by the engine control system.





Watch the data sheet

Gas Valve Train for methane

The Gas Valve Train is designed to supply 2-stroke dual fuel engines with methane, both in the initial slow pressure build-up scenario, and in the normal supply condition.

The unit will moreover block the gas supply to the engine in case of normal or emergency shutdown, and bleed through the vent header. The unit comes with an option of an integrated spoolpiece filter, to ensure no impurities will enter neither the Gas Valve Train nor the engine.

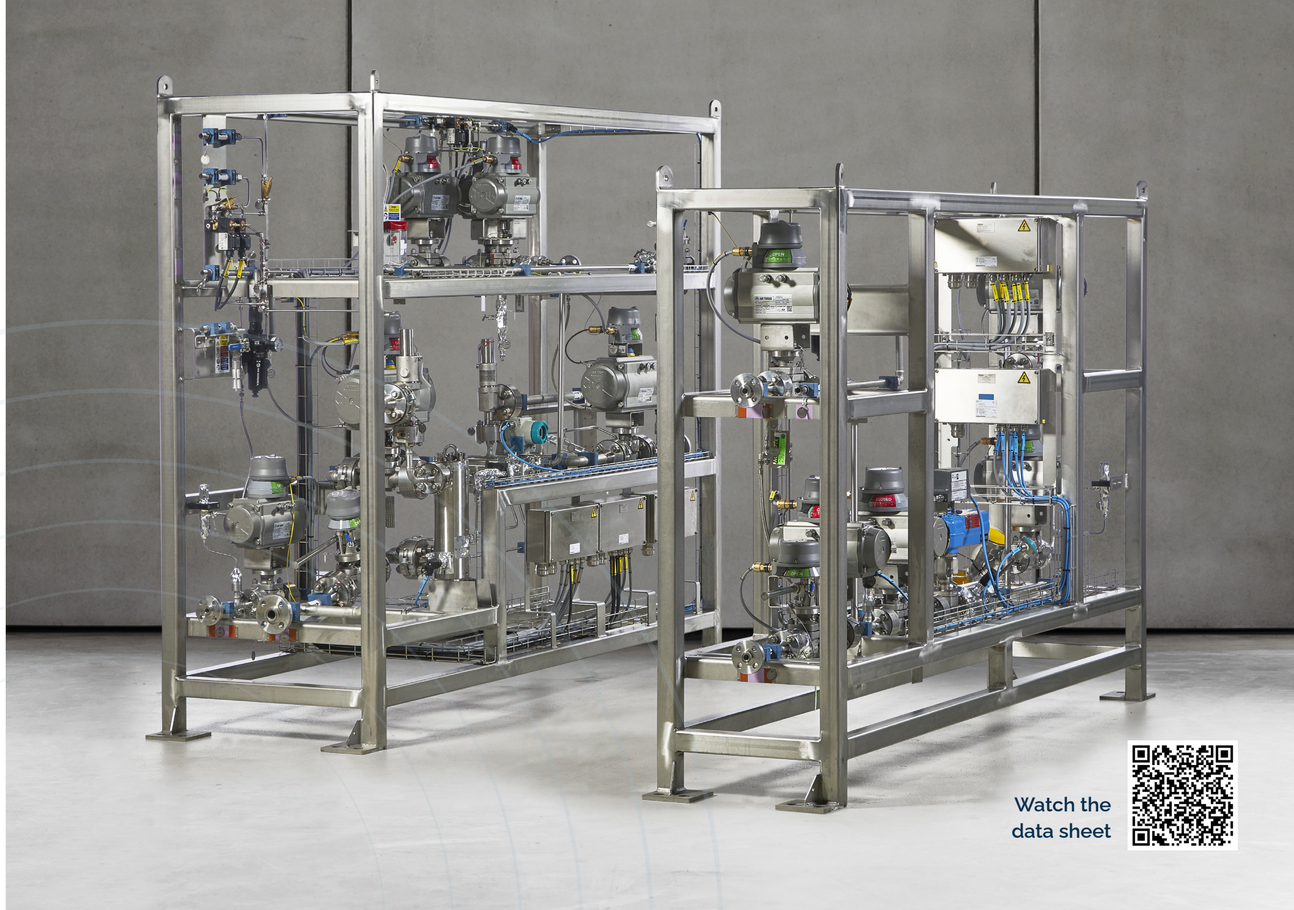
The unit has a simple design and is easy to maintain. It carries the experience of its predecessors, while playing a role in the future engines that are meeting the stricter emission regulations.

Fuel Valve Train for liquefied petroleum gas

The Fuel Valve Train for liquified petroleum gas is a solution facilitating the use of LPG for 2-stroke dual fuel engines. The unit consists of two sub-systems namely the Supply Valve Train (SVT) and the Return Valve Train (RVT).

The SVT is placed between the low-flashpoint fuel supply system (LFSS) and the engine, and its main functionality is to handle liquified petroleum gas supplied to the engine safely. The RVT is placed between the engine and recirculation tank for the purpose of reusing the fuel. Additionally, the RVT is designed with blow-off valves providing an extra safety function.

Using LPG as fuel ensures compliance with the 2020 emission regulations. By transitioning to LPG, your vessels can achieve full compliance with regulations related to SOx and ECA area regulations.



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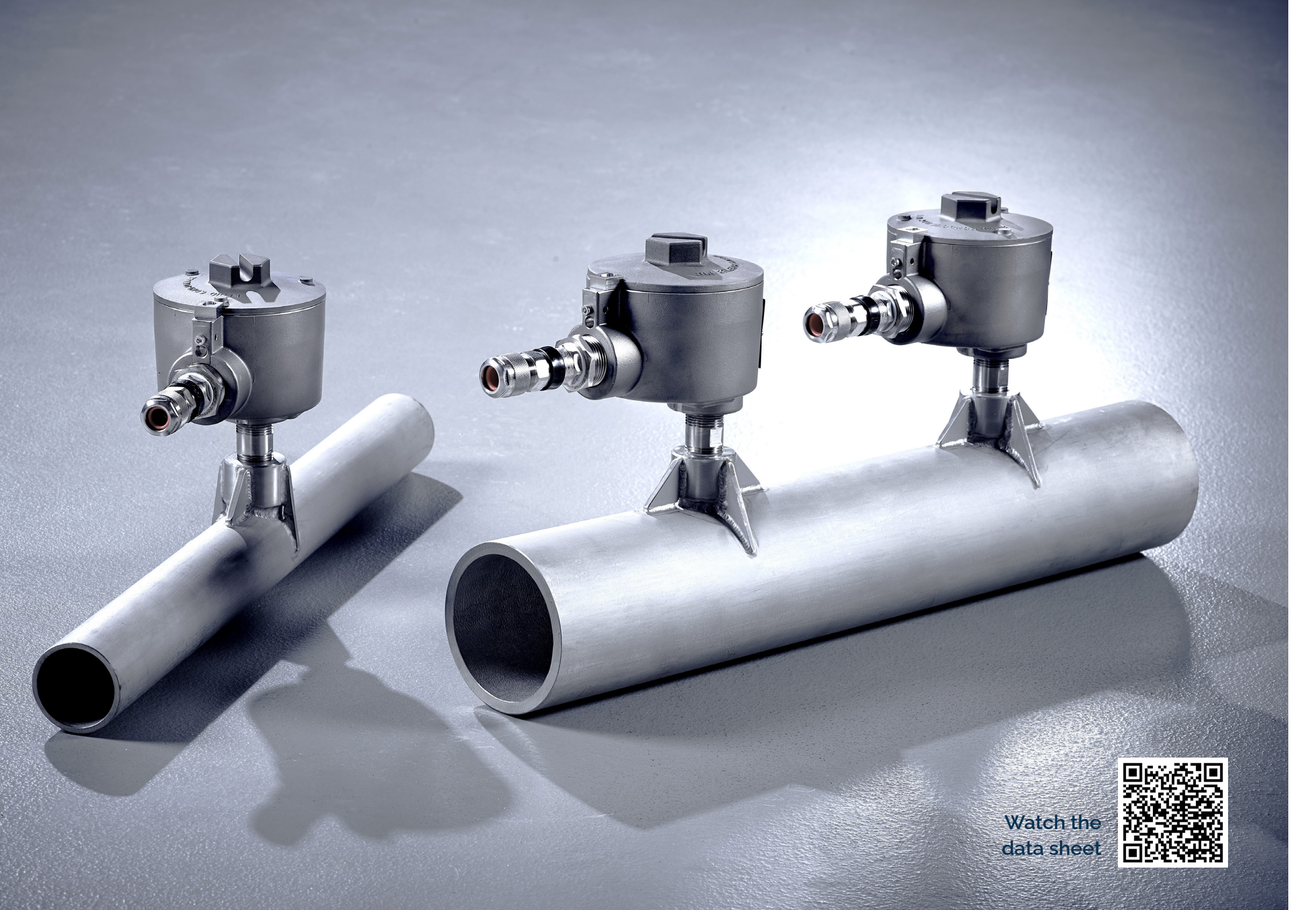


Flow Switch System for monitoring airflow

The Flow Switch System is designed for monitoring and ensuring adequate air-flow passing through the outer piping of double wall piping systems.

The system consists of a number of separate flow switch units mounted in one or several pipes depending on system type. Each unit is a single instrument set up to detect air flow. The instrument is equipped with two field adjustable alarm set points and relay outputs.

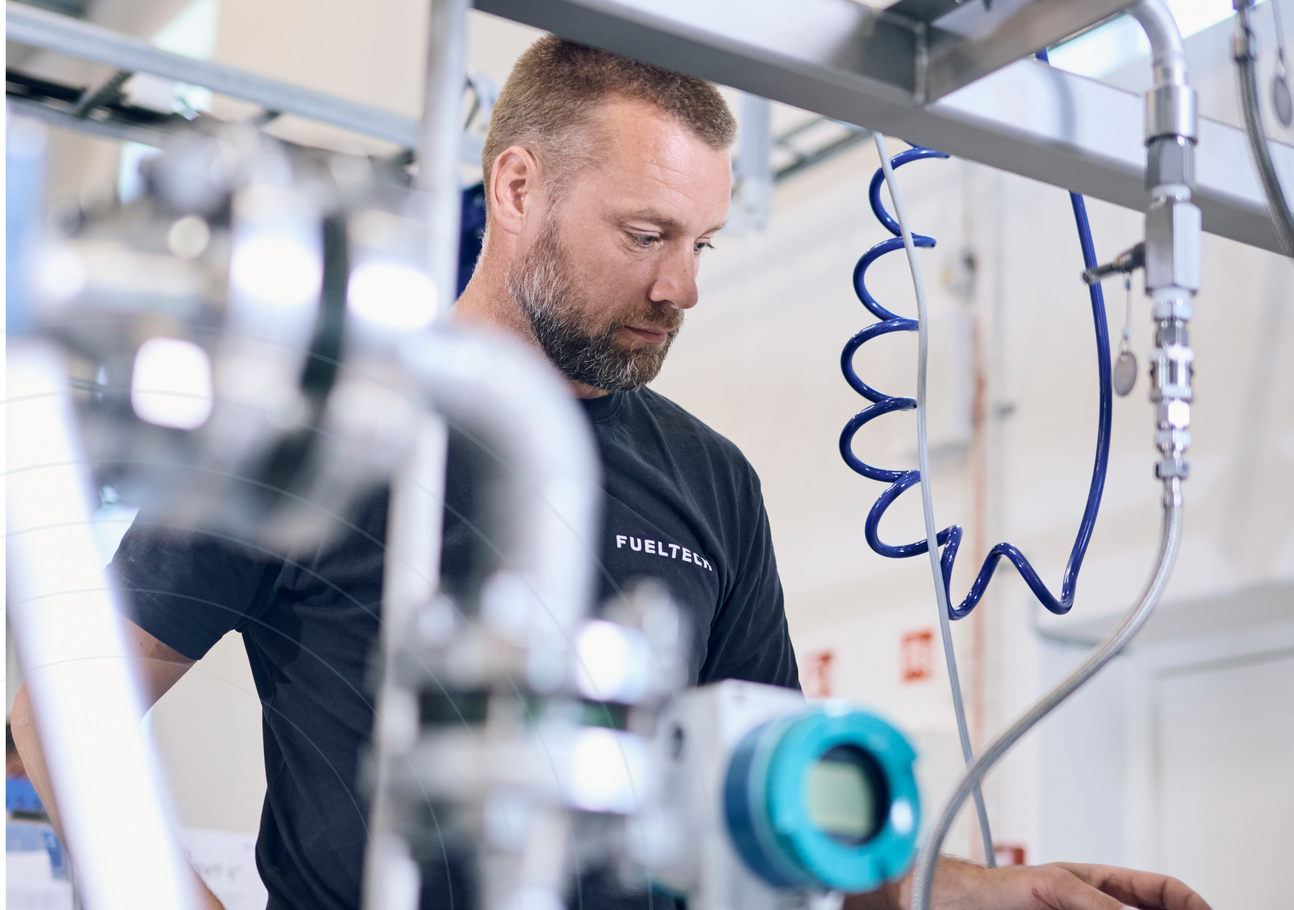
One relay output is used to monitor the flow, the second is used to monitor a second flow or the temperature level. The double wall piping is required when the gas piping is passing through a non-hazardeous area.

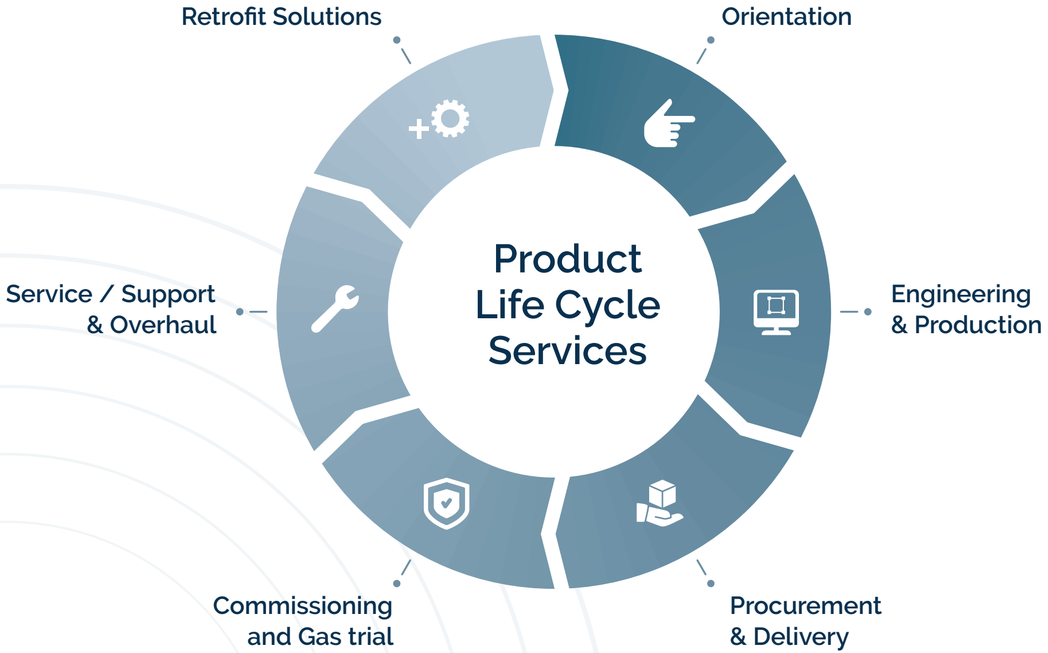
Periodic and proactive maintenance

We know that it is crucial to avoid downtime. Our supervisors are committed to ensure increased availability and stability of your equipment while securing a safe operation.

Having FuelTech performing your service provide you with numerous benefits, including direct access to high quality technical expertise and support from our certified Supervisors, access to the latest technology as well as greater accountability and reliability.

To ensure predictive and proactive maintenance, we additionally offer Long Term Service Agreements and Spare Part Agreements on your equipment. These agreements ensure the best performance of the system thus preventing costly downtime, and thereby increasing uptime. FuelTech offers a dedicated person to handle all sparepart and overhual coordination.

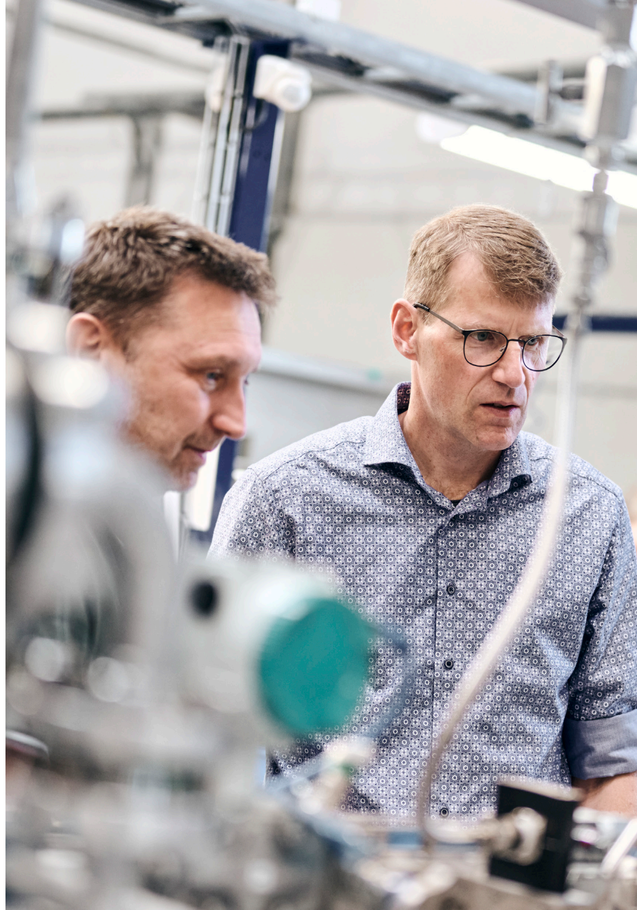




We are with you every step of the way

For FuelTech, product lifecycle services encompass services, tools, and resources throughout the entire system lifecycle.

This begins in the initial orientation phase and continues all the way through to the engineering, operation and modernization of your system. No matter where in the lifecycle you currently are, we want to support you with our scalable and tailor-made solutions from a single source.



Our values

Responsibility

We take responsibility for helping our customers.

Fair play, ethics, and loyalty have top priority between us and the customers we serve. We want to provide an experience that exceeds customer expectations and provide the best possible result.

Persistence

We persist until we achieve.

We show persistence when we work with our partners. We know that this is a vital trait to ensure the success of our partnerships. A job is only finished when it is tested, documented, and delivered.

Alliances

Building strong, mutually beneficial alliances is the key to success.

We aim to build up close alliances with our customers and suppliers. Only through learning processes and partner relationships can the optimal solution be obtained.

Quality

We ensure top quality to compete on global scale.

We use our experience to help customers take projects from initial ideas to quality results. This is done through highly structured, transparent and traceable processes.

Innovation

We believe in the power of innovative ideas.

We encourage the spirit of innovation and knowledge-sharing across the company. It is this innovation and thinking differently that push the boundaries and affects change in the maritime industry.

QHSE

To ensure a high level of quality for all solutions supplied by FuelTech, we have a thoroughly prepared quality management system including procedures, instructions, templates, and tools. Our quality management system is based on ISO standards, and we are certified according to ISO 9001, 14001, and 45001.

ISO 9001

Quality in everything we do

To ensure a high level of quality for all solutions supplied by FuelTech, we have a thoroughly prepared quality management system including procedures, instructions, templates, and tools. Our quality management system is based on ISO standards and we are certified according to ISO 9001, 14001, and 45001.

ISO 45001

Safety and working environment go hand in hand

At FuelTech, we integrate health and safety as a natural part of our daily work. We are committed to ensuring that all solutions supplied by FuelTech are safe to operate, and that they meet all regulatory requirements and standards.

ISO 14001

We care for the environment

To ensure that we will be able to meet future needs without comprising the environment, FuelTech is certified according to ISO 14001 – Environmental Management. The ISO 14001 certification provides us with a basis for our active work with sustainability, as we focus on life circle management as an integrated part of our procedures and deliverables.

Sustainable development

Accelerating the green transition is crucial to prioritize facing our planetary challenge and get on the track for a 1.5 Degrees Celsius pathway. It requires ambition, action, and accountability.

To guide us on our journey toward becoming more sustainable, our former owner Eltronic Group has formed a sustainability roadmap, which also includes the sustainable development of FuelTech A/S. In the coming years, we will address our major focus points step by step.

Read Eltronic Group Sustainability report 2024 - 2025

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