

ENGINEERING
TOMORROW

Danfoss

Sensing Solutions | Marine and Offshore

Exceed requirements and customer expectations with smart solutions

Danfoss pressure transmitters, temperature sensors, switches, and valves.

10

international maritime certifications - your guarantee for safety at sea



Rough waters call for **tough controls**

With the global economic growth and increase in population, the need for shipping tonnage grows day by day. This is great news but it also raises challenges in terms of achieving higher energy efficiency and reduced emissions. In this brochure, you will find a wide range of smart controls enabling a reliable, energy efficient, and safe operation under tough conditions.



Engine and propulsion system

The engine and propulsion system is the heart of the ship. And to achieve optimum performance and longevity of the engine, it is essential to monitor and control temperatures and pressure.

Additionally, high propulsion efficiency is also achieved with accurate control of pressure and temperature under all operating conditions.

- ✓ Ensures a reliable and safe operation under any conditions
- ✓ Brings down the operational costs
- ✓ Prolongs the engine lifetime



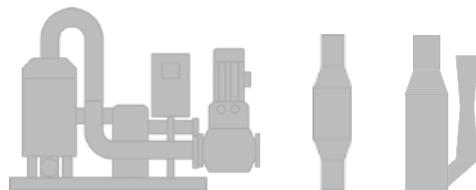


Exhaust gas treatment systems

The environment in exhaust gas systems is extremely harsh and only the most robust controls survive the constant exposure to acidic gases. Danfoss specializes in pressure and temperature control components for exhaust gas treatment systems optimized for acidic marine environments.

As a result, applying our components will help you comply with the stricter limits for emissions of sulfur while achieving a reliable operation and long service-life.

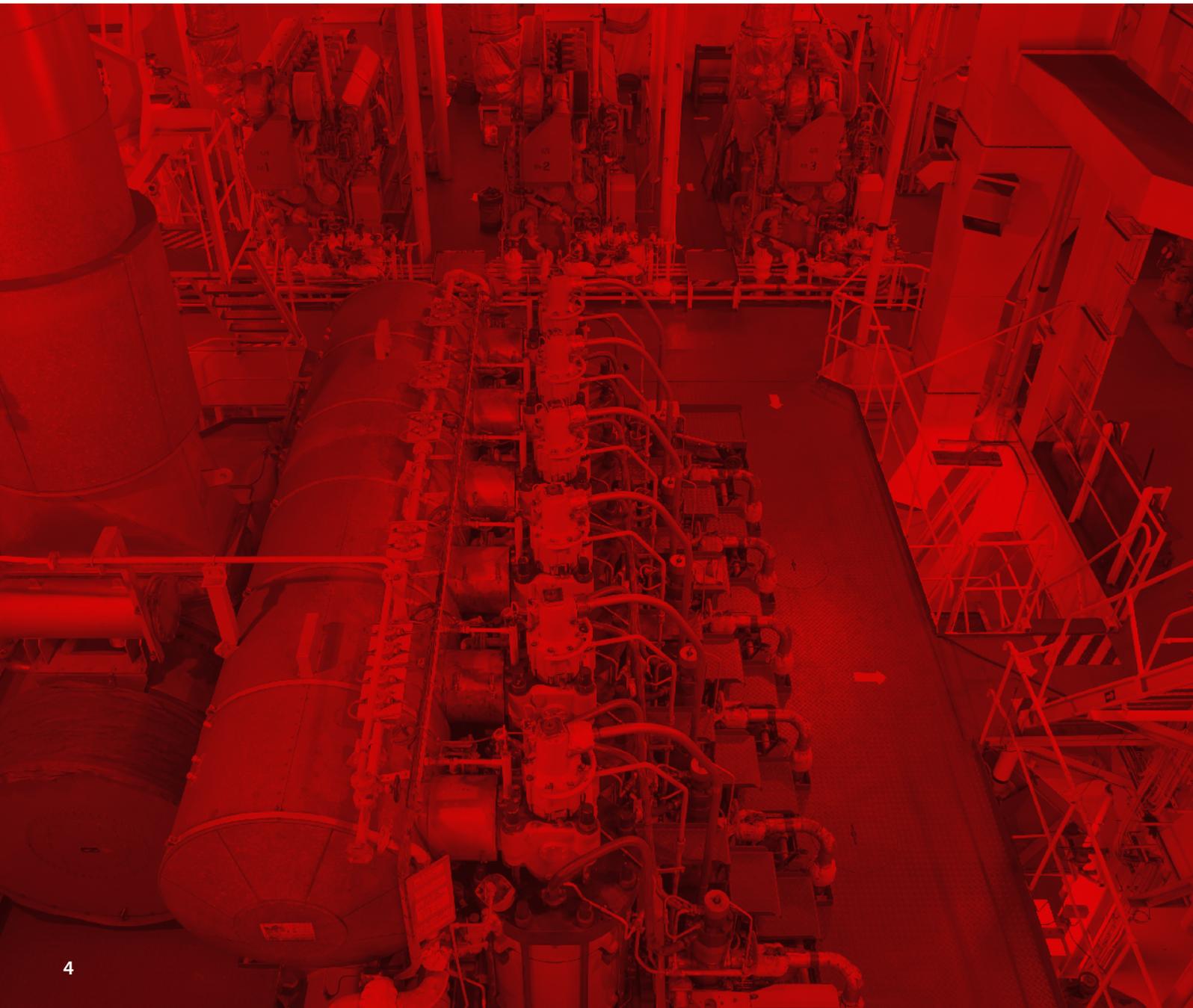
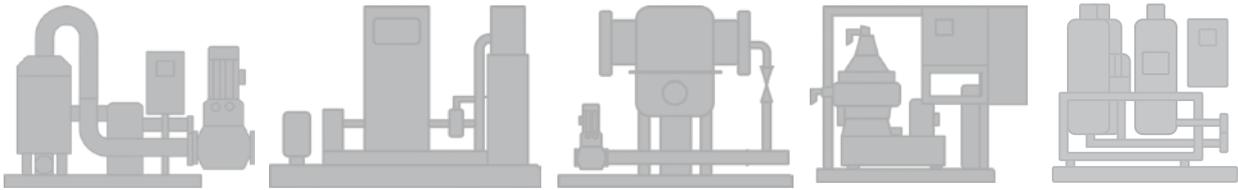
- ✓ Safe and reliable control of exhaust gas systems
- ✓ Ability to withstand harsh and acidic environments
- ✓ Expert knowledge of exhaust gas treatment systems



Fuel, oil, and water treatment systems

To achieve safe and high-efficient ship performance, it is important to keep systems clean from harmful contaminants. At Danfoss, we offer a wide range of sensors and switches that monitor the operation of the support systems and trigger alarms in case of failures that may endanger the engines or other main systems.

- ✓ Reliable and predictable operation of vital ship support systems
- ✓ High up-time and long service-life of support systems
- ✓ Expert knowledge on marine fuel, oil, and water treatment systems

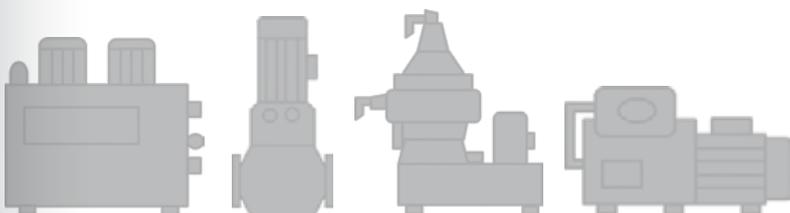




Auxillary systems

Starting a 3-storey tall engine requires a huge momentum. Therefore, ship engines rely on compressed air. Accurate control of pressure and temperature in the compressed air systems, as well as in other auxiliary systems including pumps, separators, and power packs is a matter of safety.

- ✓ Safe and reliable operation of compressed air systems
- ✓ High uptime and long service-life of compressed air systems
- ✓ One-stop-shopping for marine-approved sensors, switches, transmitters, and valves



The world's biggest ships rely on tiny components



Ensure safety onboard

Reliable performance even under tough conditions

Trusting cooling and lubricating systems to work is one thing. Controlling them with sensors, mechanical switches, and alarms is quite another. Danfoss controls let crews lift performance reliability to the next level – whether seas are calm or there is a storm on the horizon.

- **Robust design**
- **Highest quality standards applied**
- **Lowest fail rate**



Enable prevented and predicted maintenance

Keep the machinery running with intelligent maintenance

Preventive maintenance keeps engines running more efficiently, eliminates downtime, and extends the life of marine equipment. Moreover, it minimizes the risk of unexpected breakdowns at sea and costly offshore maintenance. And with a broad range of Danfoss controls, it is easier than ever to base service procedures on real-time information to nip potential issues in the bud.

- **Reduce downtime**
- **Predictable product lifetime**
- **Application simulations**
- **Real-time information**



Increase efficiency

Smarter machinery controls increase machinery efficiency

Smother combustion means better engine efficiency and lower fuel consumption. Danfoss controls contribute to this ongoing effort all around the engine room 24/7.

- **Precise and accurate measurements**
- **Increased engine efficiency**
- **Customized solutions**



Comply with environmental regulations

Minimize airborne emissions from ships

As emission regulations continue to become more and more strict, marine applications increasingly rely on advanced electronic controls to fine-tune performance.

- **Enable to fine-tune performance**
- **Achieve the highest precision**
- **Fulfill all required marine and environmental standards**



Enjoy a **safe and efficient trip** with **intelligent control**

If the engine is the heart of a ship, then the components are the pulse. A pulse that is vital for monitoring and controlling pressure and temperature around the ship – all to ensure a smooth operation. At Danfoss, we offer a wide range of innovative and reliable components, which makes your equipment run smarter, faster, and more efficiently.

Our zero-defect policy is your guarantee for a constant and high-performing quality. We use the same production processes and quality assurance standards worldwide in accordance to ISO/TS 16949:2009. It makes it possible for us to offer you best-in-class components. Every time. Everywhere.

Our zero-defect policy

is your guarantee for best-in-class components – every time

Achieve your business goals with the best components.



Pressure transmitters **Outstanding vibration and shock resistance for a long lifetime**

- ✓ Wide pressure ranges from 40 mbar up to 600 bar
- ✓ Excellent EMC immunity, ensuring a failsafe measuring signal
- ✓ Precise and reliable regulation with accuracy deviation down to 0.3%



Scan QR code and see full product portfolio



Temperature sensors and transmitters

Precise temperature measurements and quick response time

- ✓ Optimized sensor design enabling precision measurements up to 400° C
- ✓ Customized design to meet application requirements
- ✓ Easy replacement of sensors on system in operation with exchangeable inserts



Scan QR code and see full product portfolio



High temperature sensors

Energy efficient operation in harsh environments

- ✓ Optimized sensor design enabling precision measurements up to 800° C
- ✓ Robust design to withstand high vibration levels
- ✓ Easy replacement of sensors on system in operation with exchangeable inserts



Scan QR code and see full product portfolio

Pressure and temperature switches

Flawless operation in heavy-duty applications

- ✓ Outstanding vibrations stability up to 20G
- ✓ Long-term reliability with more than 400.000 cycles
- ✓ Optimum flexibility with extensive pressure range

Scan QR codes and see full product portfolio



Pressure switches



Temperature switches



Solenoid valves

Easy control and regulation of fluids

- ✓ Excellent resistance against corrosion and cavitation with stainless steel orifices
- ✓ High differential pressure capability up to 40 bar
- ✓ Maximized flow through the orifice



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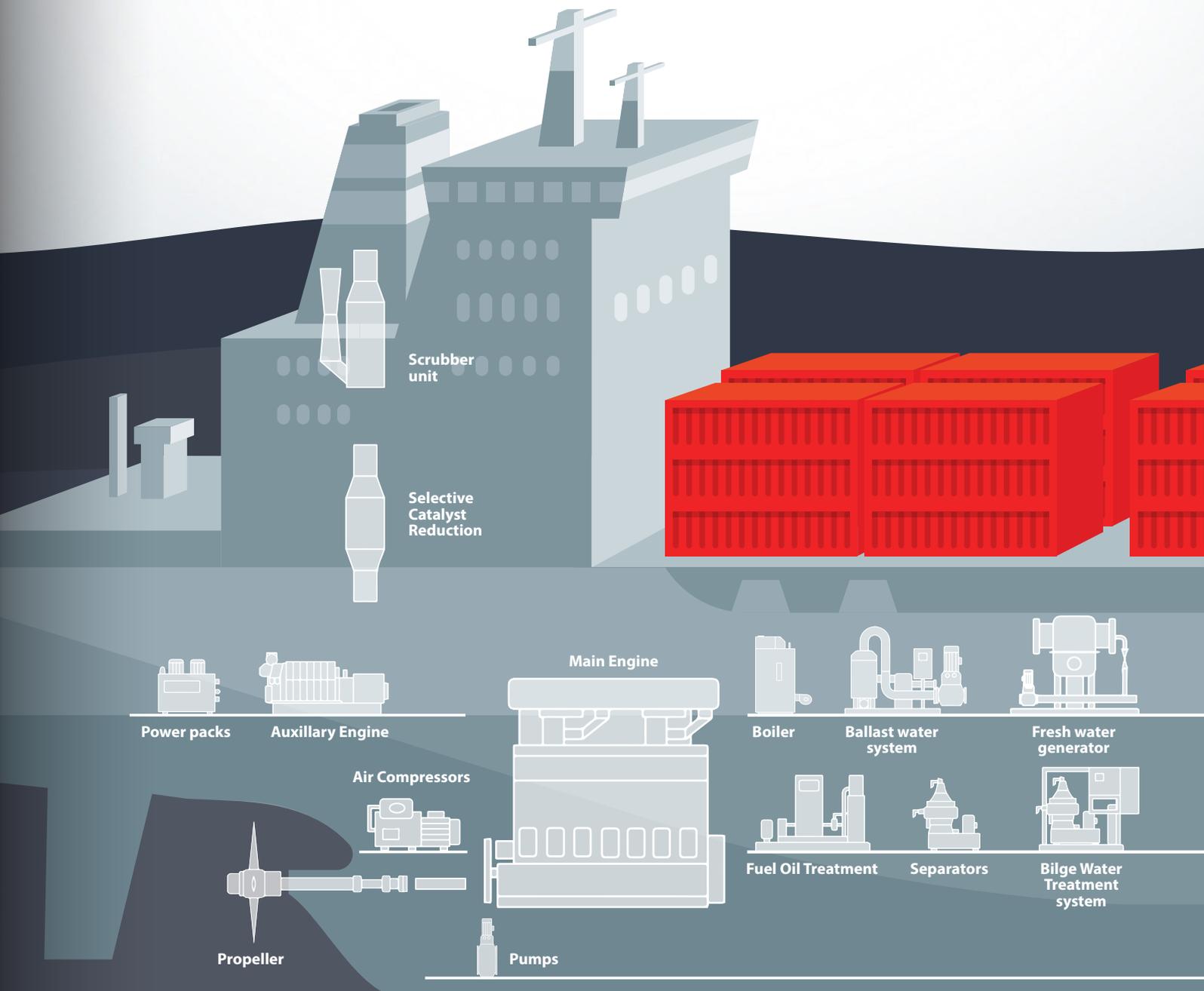


Danfoss **improves** the **efficiency, safety, and reliability** from fore to aft

Working in the harsh world of the marine industry, you need a partner who contributes to improving efficiency, safety, and reliability, while reducing both total cost of ownership and emissions.

For over 40 years, we have been building and consolidating successful relationships with ship owner-operators, shipyards, system integrators, OEMs, naval design engineers, and architects to make the marine industry safer and more efficient.

Today, we are represented in all major marine hubs with full marine certification and global service, which emphasizes our commitment to creating a more sustainable and competitive future for the marine industry.



Be part of our Danfoss marine world

We are present all over the world. In fact, take a look inside practically any ship and you will find Danfoss components playing a key role in saving fuel costs, improving safety on board, reducing emissions and product life cycle costs.

Maritime expertise across divisions

To serve the marine industry in the best possible way, several Danfoss divisions bring a particular range of technical know-how and benefits on board. On their own, each division is at the forefront of its field with industry-leading insight and innovation. Working together, the Danfoss divisions form a comprehensive array of components that help major ships around the world ashore safely and on-time.

Learn more at marine.danfoss.com



Sensing Solutions



High Pressure Pumps



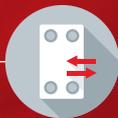
IXA Emission sensor



Hydroic Balancing and Control



Drives AC drives



SONDEX® Heat Exchangers



Semco Firefighting



Power Solutions Hydraulics



Industrial Refrigeration

