

Engines and Systems



# Setting a Course Towards “Energy Transformation in the Maritime Sector”



# The engine industry is focusing on energy transformation in the maritime sector – with a view to creating a climate-neutral and clean shipping industry

At the Paris climate summit, the international community set a clear course towards a CO<sub>2</sub>-neutral world. Countries such as Germany are playing a particularly active role in this discourse, and public discussion is of course focused on road transport. However, the solution put forward for private transport – namely complete electrification – cannot succeed in the maritime sector, and so alternatives need to be found. In its “Maritime Agenda 2025”, the German government is therefore planning “to support the introduction of new fuels and propulsion systems that contribute to lowering air pollutant and greenhouse gas emissions”. And, in light of this, it has already started implementing its first concrete measures. For example, the Federal Ministry for Economic Affairs and Energy launched its cross-programme funding initiative entitled “energy transition in the transport sector: sector coupling through the use of electricity-based fuels” in February, which is to be explicitly used to fund “maritime technologies”.

As a manufacturer of drive technology being affected by this, the large engines industry welcomes these measures earnestly. In our view, it is essential that the steps needed to achieve the target of climate neutrality be taken now – even though the image of what our world will be like in 2050 is admittedly still fuzzy from today’s perspective.

We would therefore like to exploit the momentum created by the 10<sup>th</sup> National Maritime Conference in 2017 to discuss with the policy-makers and all involved parties ways to achieve a climate-neutral future and to start exploring these new approaches. We would like to join forces with them as we set out on this journey and help shape a climate-neutral and clean future in the maritime sector. With this in mind, we are looking forward to a fruitful discussion, which we intend to support with our dialogue paper on “energy transformation in the maritime sector”. Please feel free to contact us!



A handwritten signature in blue ink that reads "U. Lauber".

Dr Uwe Lauber  
Chief Executive Officer  
MAN Diesel & Turbo



A handwritten signature in blue ink that reads "Andreas Schell".

Andreas Schell  
Chief Executive Officer  
Rolls-Royce Power Systems



A handwritten signature in blue ink that reads "Frank Starke".

Dr Frank Starke  
Managing Director  
Caterpillar Motoren



A handwritten signature in blue ink that reads "M. Wernli".

Dr Martin Wernli  
Chief Executive Officer  
Winterthur Gas & Diesel

# VDMA's ten propositions for a sustainable shipping industry

The energy transformation is a reality – but it will only succeed if it is economically viable, too. Based on the resolutions made at the Paris climate summit, the world agreed in principle on the goal of CO<sub>2</sub>-neutrality from 2050 onwards. In view of this, the transport sector is being pulled more sharply into focus – and with it the shipping industry. As a manufacturer of drive technology being affected by this, the large engines industry, together with the policy-makers, intends to set out on the path towards climate neutrality and to engage in dialogue about the right solutions with all stakeholders. The aim of our ten propositions on “Energy Transformation in the Maritime Sector” is to make a lasting contribution to the success of this endeavor.

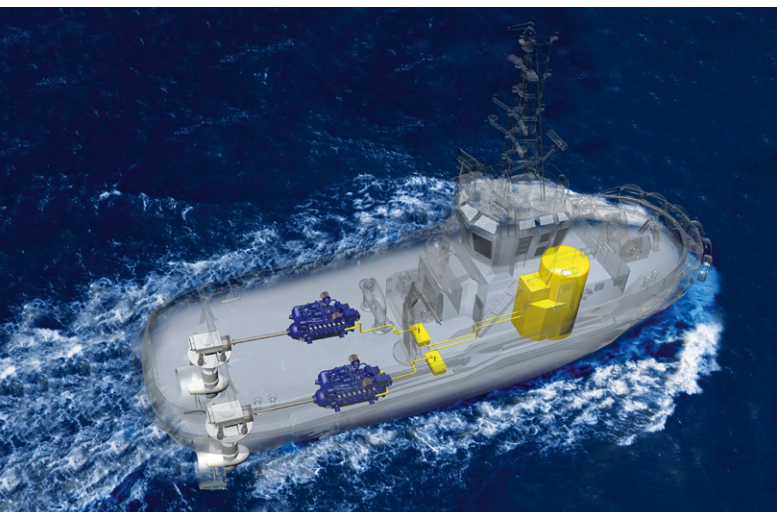
## 1. The industry has a vested interest in making shipping more sustainable.

Our aim is to promote shipping that has a lower impact on the environment and produces fewer pollutants. Shipping is already the most efficient mode of transport in the world – but that is not enough for us. Fuel consumption and therefore

emissions of carbon dioxide (CO<sub>2</sub>) per tonne of transported goods is much lower on a ship than when they are transported by truck or airplane, for example. However, emissions of air pollutants – such as soot particles, nitrogen oxides and sulphur oxides – are sometimes much higher in the shipping industry. Changing this is a matter of major concern for the industry.

## 2. Clear course towards clean funnels worldwide.

Harmful emissions created by shipping traffic come in for criticism time and time again – and rightly so. Technologies to lower these emissions are already available or are being developed, and the industry is investing huge sums in this all over the world. We call upon politicians to campaign for a further reduction and harmonisation of emission limits at an international level. The maritime sector is reliant on the introduction of international binding regulations implementing an improved state of the art. Measures limited to a single locality or region will simply lead to distortion of competition, at the expense of the European industry and ship owners alike – and at the expense of the environment.



### **3. The shipping industry requires its own technology compass.**

Combustion engines, and in particular diesel engines, are already seen by many as obsolete, and other technologies such as electric drives and fuel cells are viewed as an alternative. However, a technological standard like this is rather short-sighted. This is particularly true of an industry where battery technology can physically only constitute a supplement to traditional ship engines, rather than an alternative: large tankers cannot sail across oceans running on electric engines alone. Shipping sets its own technological requirements and limits instead. A distinction therefore needs to be made between the relevant energy sources: fossil fuels can be replaced with CO<sub>2</sub>-neutral fuels in the long term, whereas modern diesel and gas engines are also reliable technologies, even in the long term, which can be run on a CO<sub>2</sub>-neutral basis using renewable fuels. Political standards need to be geared towards intended objectives rather than promoting specific technologies or even prescribing them.

### **4. Shipping needs to play an even greater role in the climate policy solution.**

We support the resolutions made at the Paris climate summit and the goal of making energy use CO<sub>2</sub>-neutral by 2050. To this end, we need framework conditions that permit alternatives to conventional drives. The industry has already shown that such alternatives are technologically feasible: power-to-gas and power-to-liquid processes convert electricity from renewable energy into gaseous and liquid synthetic fuels. These are CO<sub>2</sub>-neutral and also burn much more cleanly than fossil fuels. The first step in this direction is the use of LNG. As a fossil fuel, liquefied natural gas is not only much cleaner than heavy fuel oil, but also helps to reduce the amount of CO<sub>2</sub> produced by shipping. Increased use of LNG also opens doors to long-term alternatives:

synthetic LNG created from renewable energy (power-to-gas) can be used to fuel shipping on a CO<sub>2</sub>-neutral basis in the future.

### **5. No transformation without generally binding regulations and sanctions.**

Any regulations aimed at lowering harmful emissions and CO<sub>2</sub> emissions require enforcement – in other words, efficient and effective monitoring and sanctioning by the authorities. A lack of sanction mechanisms will lead to distortion of competition, at the expense of the European industry and the environment.

### **6. Shipping as an icebreaker for global CO<sub>2</sub> pricing.**

The course towards a CO<sub>2</sub>-neutral future must be set today. To this end, the required research and development projects need to be launched and necessary investments made. A major obstacle to investment in efficient and clean drives is the low cost of fuel where a price has not been set for the CO<sub>2</sub> emissions produced. We therefore propose the development of a concept for internationally harmonised pricing of CO<sub>2</sub> for the shipping industry. A global price for CO<sub>2</sub> would spur on investment and innovation and reduce emissions further, without further impacting the maritime sector that is under a great deal of pressure. In addition, an instrument like this is technology-neutral and therefore promotes competition to produce the best, most efficient concepts, instead of relying on individual technologies.

## **7. The European shipbuilding industry is a driver of innovation.**

Our industry is currently undergoing a huge amount of upheaval – beyond the challenges described. Alongside the ongoing optimisation of traditional technologies and the simultaneous development of cleaner gas engines, manufacturers are investing in technologies such as those used to hybridise drive systems. The combination of combustion engines with (battery) electric systems and looking at the system as a whole rather than individual components harbours huge potential for increasing the efficiency of ship engines. In doing so, we are also making a major contribution towards lowering harmful emissions and greenhouse gas emissions. Every litre of fuel saved will reduce these emissions. Our products for both maritime and inland water shipping already bears testimony to the fact that the European industry is a driver of innovation and is reliant on clear, long-term political framework conditions.

## **8. Shipping 4.0 offers new opportunities and solutions.**

Industrie 4.0 is also finding its way into the shipping industry in the form of Shipping 4.0 – in other words, a more efficient configuration of logistics chains and the extensive analysis of data on ship and engine operation. This will enable further efficiency potentials to be leveraged. The same applies to the further development of production itself. The European industry has already commenced this – and is set to invest more funds in this area.

## **9. Political acknowledgement must follow practical actions.**

Political initiatives to introduce the measures described above require courage and perseverance, but will be worthwhile. The approaches outlined will promote innovation, especially in the European industry as the world's leading manufacturer of high-tech products, creating jobs in the process. Doing nothing is not an alternative – and not only in terms of environmental policy. In the long term, this would lead to a decline in investment, and ultimately to the loss of jobs and further climate damage. We instead hope to promote the technology roadmap outlined below

1. exhaust gas purification and hybridisation,
2. use of LNG gas engines,
3. gradual replacement of fossil fuels with synthetic gas

together with the policy-makers.

## **10. We offer dialogue.**

We intend to address current political and social challenges and make our contribution towards the energy transformation. We already offer a number of the technologies needed to achieve this – but they can only be deployed and developed in collaboration with all stakeholders. For this reason, we wish to engage in dialogue with the policy-makers, environmental groups, the public, customers, companies and our partner associations in the maritime industry. Together with them, we hope to find a common path towards a CO<sub>2</sub>-neutral future. We intend to launch these discussions in Germany initially – but we are aware that the solutions for our global industry need to be implemented at European and international levels as well.

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