



Sustainability Report 2022 Summary

MAN Energy Solutions
Future in the making



Building a
sustainable
future

Moving Big Things to Zero



Dear Readers,

“Moving Big Things to Zero”: This mission states that we do not measure our business success solely regarding financial indicators. We are convinced that we can only be successful in the long term if we, as MAN Energy Solutions (MAN ES), add value to our environment, our climate, and our society.

As a provider of climate-friendly energy solutions, we therefore want to leverage the enormous potential that our products offer for reducing greenhouse gas emissions. But our sustainability efforts go beyond decarbonization: other fields of action in which we again achieved a great deal last year include circular economy, care in the supply chain, and employee development. We have briefly summarized our detailed **Sustainability Report 2022** for you below: Read the essential facts about the strategic approaches and activities in our four focus areas here.

Decarbonization



Decarbonization through our products and solutions

Climate change, and with it the need for decarbonization, is arguably the greatest challenge of our generation. MAN ES strives to reduce its own CO₂ emissions and offer products promoting decarbonization. There is great potential here: if all the industries we supply were to use our CO₂ reduction technologies without exception, global greenhouse gas emissions would fall by around 10 percent.

We aim to be a leader in the global avoidance, reduction, and compensation of CO₂ emissions. By 2030, sustainable products and solutions will account for the majority of our business. To achieve this, we are investing in developing hydrogen technologies and offering CO₂ capture, recycling, and storage (CCUS) solutions to help decarbonize industries where emissions are hard to reduce.

Our retrofit solutions for existing products and plants are key in the maritime energy transition. Thus, we not only extend the service life of engines and thus promote the circular economy, but also reduce CO₂ emissions, for example, by upgrading to alternative fuels. This way, we contribute to decarbonizing ships and power plants with long life cycles. Regulatory requirements such as the Energy Efficiency Existing Ship Index (EEXI) and the Carbon Intensity Indicator (CII) of the International Maritime Organization are fostering this development.

Examples of activities in 2022 include the continuation of the development of the ammonia engine, which we see as a critical technology for the maritime energy transition. This engine should be available by 2024. Since 2022, we have

offered a solution that reduces the methane slip in LNG engines by up to 50 percent. LNG is regarded as a bridging technology for transitioning from fossil fuels to future fuels, because it produces 25 percent fewer emissions.

In general, we also saw a significant increase in interest in low-emission solutions for shipping last year and were able to commercialize our climate-friendly fuel technologies increasingly. A notable example is the LGIM methanol engine, of which more than 100 engines have been sold. Another pillar of our strategy is the construction of large-scale heat pumps that use various heat sources efficiently and with low emissions. They are virtually emission-free when powered by electricity from renewable sources. The market for heat pump solutions is growing strongly,

particularly in the industrial sector and district heating. There is great potential here for our solutions.

A lighthouse project in 2022 was the realization of the new combined heat and power gas engine power plant of Stadtwerke Frankfurt (Oder). The combined heat and power plant is powered by five MAN 20V35/44G gas engines. In addition to 51 MW of electrical energy, they also provide 50 MW of district heating. In addition, MAN ES installed a hot water boiler with a capacity of 20 MW, increasing the plant's total thermal capacity to 70 MW.

Decarbonization at our sites

We have committed ourselves to reducing CO₂ emissions at our production sites by 50 percent by 2030 compared with 2018. This commitment includes all direct and indirect emissions, administrative areas, and the operation of test stands. We are continuously working to reduce our energy consumption and increase efficiency to achieve this. At the same time, we are maximizing the share of energy from renewable sources by purchasing 100 percent renewable electricity for our European sites and using our own photovoltaic plants in China (2022) and India (2023).



Circular economy



Alignment and strategy

A circular economy uses resources and energy sparingly and efficiently by creating long-lasting material cycles. This way, we minimize environmental impacts, especially CO₂ emissions and waste. Important measures here include our product and lifecycle upgrades, retrofits, and the comprehensive service provided by our MAN PrimeServ brand: They increase the service life of our products while reducing CO₂ emissions. Right from the development stage, we gear our products and solutions toward maintainability, reparability, and the possibility of subsequent retrofitting.

We particularly focus on maritime applications. As ships often run for over 25 years, retrofits for “old” engines play a decisive role. Our propulsion system for around 22,000 ships currently offers excellent potential for climate-friendly retrofits that could reduce up to 86 million metric tons of CO₂ emissions per year if operated with alternative, environmentally friendly fuels such as methanol or ammonia. This situation has generated strong demand for our retrofits for marine engines in the existing fleet and from equipment in power plants or industrial applications.

We also succeeded in terms of circular economy in our business area in 2022. For example, we have linked lean management at our main site in Augsburg more closely with our sustainability claim. This process reduces cost, conserves resources, and minimizes waste in production and administration. We also integrate environmental and climate protection aspects into the assessments of our production processes and promote the exchange of experience and positive examples of resource conservation and energy saving between our sites.

Responsibility in the supply chain



Alignment and strategy

As a large manufacturing company, we have a significant responsibility for our external supply chain and our business operations. Of course, we fulfill this responsibility by complying with regulatory standards. In addition to that, we follow through through with more extensive voluntary commitments. We implement these through programs and initiatives.

In 2022, our work in this area was strongly influenced by the newly introduced “Act on Corporate Due Diligence in

Supply Chains,” which came into force in Germany on January 1, 2023. For example, we reviewed and adapted the relevant MAN ES policies and instructions relating to the values to be protected within a Groupwide project. In addition to high occupational health and safety and environmental protection requirements, this enables us to ensure that human rights violations such as slavery, discrimination, or child labor do not occur internally or externally. In 2022, 58 MAN ES sites and subsidiaries were surveyed to identify potential weaknesses. Another focus

was on aligning the requirements of the new law with our existing measures, processes, and initiatives and aligning the two. A core element that was already developed in 2021 is the four-phase risk management process, which takes many existing measures, supplements them with the actions required by the new legislation, and combines the two into a new system. In 2022, the focus was now on the practical implementation of this concept.

People empowerment



Alignment and strategy

MAN Energy Solutions is running the “Performance 2023” program until the end of 2023. It aims to sustainably secure the company’s future viability and drive forward its transformation into a provider of climate-friendly solutions for the maritime industry, the energy sector, and industrial production. Thus, “Performance 2023” also influenced the strategy, goals, and activities in human resources in 2022. The main focus is to closely involve employees in the change process and to support them individually.

The German qualification initiative launched in 2021 and continued in 2022 played an essential role in this process. Its task is to secure core competencies in the company and develop future-oriented skills. We expanded many of the measures implemented in Germany in 2021 in the following year of 2022.

The international training initiative “Driving Change@MAN ES,” which we rolled out in the fall of 2022, provides executives worldwide with skills in dealing with change. The “Future Makers” initiative, part of the transformation process, was implemented in Germany and internationally in 2022 to involve employees in the transformation.

Another focus in 2022 was on diversity: MAN ES strives to create a culture of diversity and acceptance to create optimal working conditions for all and increase its attractiveness as an inclusive employer. Further strengthening the diversity of the workforce in terms of age, gender, origin, disability, ideology, and other aspects was therefore brought into focus. This commitment includes, for example, creating an inclusive environment with tailored working conditions and removing organizational barriers. MAN ES has also set itself the goal of increasing the presence of women both in the company and management.



Curious to dive deeper?

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Our detailed Sustainability Report for 2022 awaits you [here](#).

