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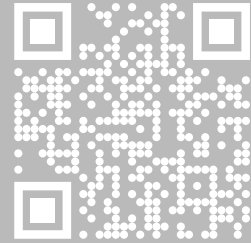
Messer Sustainability Report 2022





Discover many
practical examples
of how people use
our Gases for Life!

gasesforlife.de/en/



Practically everywhere: our Gases for Life

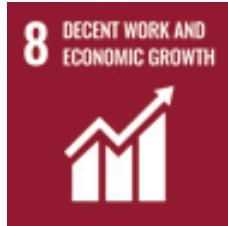
For many aspects of our life, industrial gases are just as important as water and electricity. We produce oxygen, nitrogen, carbon dioxide, hydrogen and many other gases on an industrial scale and make them available – often in combination with innovative application technologies – for numerous processes and products.

125 Sustainable

What might seem like a generic leitmotif for a sustainability report actually accords very well with the importance that Messer places on sustainability: Ever since the establishment of our industrial gases company 125 years ago, we have consistently focused our attention on the conservation of natural resources, environmental protection and the search for more efficient processes.

Messer's stated goal is to keep its CO₂ footprint as small as possible. At the same time, we are helping our customers reduce the emissions generated by their applications. We do so through the impact of our gases applications and by supplying gases efficiently. We consistently realize eco-friendly potentials such as the use of hydrogen as an alternative to fossil fuels or the recovery of carbon dioxide.

We continued to pursue our efforts toward greater sustainability once again in 2022 – and many of those efforts have been successful. Where they have fallen short, we keep looking for ways to become even better. Because at Messer we believe that perseverance and the diligence to constantly challenge existing solutions are preconditions for greater sustainability. It's what we've been working toward for 125 years now, and we'll also continue to do so in the future.



UN Sustainable Development Goals

In 2015, under the aegis of the United Nations, the international community adopted Agenda 2030. It lays out 17 global goals together with the call to implement measures to achieve those goals. In essence, they seek to permanently preserve the natural basis of human existence and to enable people everywhere to live in dignity. Messer aligns its business activities with the 17 UN Sustainable Development Goals, which also form, in turn, the substantive framework of this Sustainability Report.



Strategic Integration of Corporate Responsibility

16 PEACE, JUSTICE
AND STRONG
INSTITUTIONS





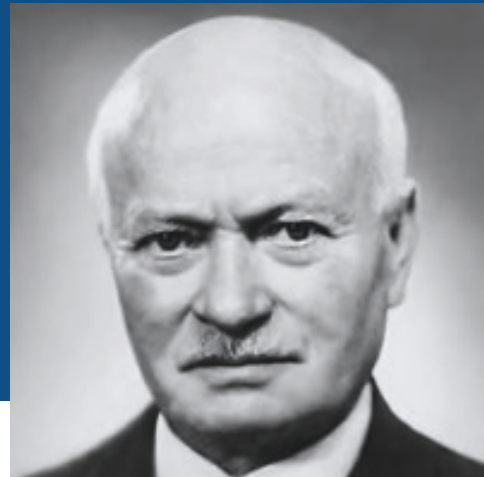
Stefan Messer, Chairman of the Supervisory Board of Messer SE & Co KGaA, and Bernd Eulitz, CEO of Messer SE & Co. KGaA

The Management Board's commitment to sustainability

As the world's largest privately held company specializing in industrial, medical and specialty gases, we have clearly defined guidelines relative to ESG (Environment, Social, Governance), which are lived by everyone on our team. Our mission statement plays a key role here, combining our vision, our mission and our values. It also highlights the demands of our customers and our shared responsibility for the environment, people and progress.

Even in that bygone era, Adolf Messer documented his personal business philosophy – in rhyme no less:

*"Head without heart is but a dead letter.
Heart without head is hardly better. Where
joy and blessings are to thrive, must head
and heart together strive."*





The Management Board of Messer (from left to right): Helmut Kaschenz, Chief Financial Officer (CFO), Virginia Esly, Chief Operating Officer Europe (COO Europe) and Bernd Eulitz, Chief Executive Officer (CEO).



Environmental protection

Messer gases and know-how make a contribution to the UN's declared aim of achieving climate neutrality by 2050. To that end, we are minimizing our own CO₂ footprint and helping our customers reduce CO₂ emissions in their applications. This is made possible thanks in part to the effectiveness of our gas applications and an efficient supply of gases.

In our view, green hydrogen can serve as a lever to decarbonize industry and mobility. Based on our H₂ expertise, we are focusing on the particularly economical on-site production of green hydrogen, on tailor-made refueling solutions for hydrogen, and on an operator model using fuel cell electric buses in local public transportation.

Strategic Integration of Corporate Responsibility

Messer's activities are oriented toward the global economy, the environment and society, along with the changes needed in those areas. With regard to the business and social environment, we act sustainably and responsibly. In addition, we invite others to measure us against our own objectives, innovations and traditions.

Social entrepreneurship and diversity

The Messer team stands for courage, ambition, self-confidence, solidarity, success and respect. One of our social commitments in 2022 took the form of the "MesserAid" assistance program, which supported many social projects for people affected by the war in Ukraine.

Our Diversity Management is included in our strategic sustainability process via a Key Performance Indicator (KPI). In 2022, we supported

mutual awareness and understanding to promote a respectful and unbiased culture at Messer.

We consistently continue to develop the potentials of our internationally and multi-culturally staffed teams. We want to raise the share of women in the first and second levels of management by 30 percent by 2030. To our way of thinking, mixed-gender management teams are a prerequisite for achieving well-balanced and profitable collaboration at the strategic level.

Governance

Messer is an international corporation that lives the values of a privately held company. The following corporate values undergird our commitment at all levels – from Management to Messer’s functional, specialist and production departments:

Integrity: We conduct our transactions with honesty and integrity, and expect the same of our employees, stakeholders and business partners.

Compliance: We comply with all applicable laws and regulations as well as our own values, internal guidelines and standards.

Responsibility: We hold ourselves accountable for our actions and decisions, and we expect our employees to do the same.

Continuous improvement: We endeavor to continuously improve our governance systems and our compliance performance.

Transparency: We communicate transparently with our employees, customers, stakeholders and other interest groups about our governance measures and successes.



Environment

- Climate
- Scarcity of resources
- Water
- Biodiversity



Social

- Employees
- Safety and health
- Demographic change
- Food security



Governance

- Risk and reputation management
- Supervisory structures
- Compliance
- Anti-corruption

Our materiality matrix

The basic topics of Messer's strategic sustainability process are defined by our day-to-day and long-term activities. We also rely on the 17 Sustainable Development Goals of the United Nations as a guide.



corporate.messer-group.com/en/web/guest/strategic-integration-of-corporate-responsibility

Responsibility of the company

Anchored to our corporate values are customer and employee focus, responsible action, corporate responsibility, and open communication, along with trust and respect. To make those values and our development measurable and comparable with regard to sustainable action, we have been using Key Performance Indicators (KPIs) for sustainability since 2014.



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Our Management Board

On February 1, 2022, Bernd Eulitz assumed his new role as Deputy CEO of Messer SE & Co. KGaA. Bernd Eulitz previously served as CEO of a German MDAX company. He looks back on more than twenty years of experience in the industrial gases sector. On April 27, 2023, Bernd Eulitz took over the role of CEO.

Helmut Kaschenz was appointed Chief Financial Officer (CFO) of Messer SE & Co. KGaA effective January 1, 2022. He took over the position from Dr. Uwe Bechtolf, who left the company of his own accord effective December 31, 2021.

On January 2, 2023, Virginia Esly was appointed to the Management Board as Chief Operating Officer Europe (COO Europe) for Messer's European business. She has more than twenty years of experience in the industrial gases sector and is the first female Member of the Management Board in the history of the world's largest privately held company specializing in industrial gases.

Messer Compliance Management System

The Messer Compliance Management System (Messer CMS) emphasizes our shared understanding of our fundamental values. It is the binding framework of action for resolving conflicts of interest and ensuring compliance with applicable laws, regu-

latory requirements and the policy guidelines within all business units of the Messer Group. The purpose of the Messer CMS is to foster a relationship with our stakeholders based on fairness, solidarity and trust. It helps those in charge establish and implement our value system. Moreover, the Messer CMS is designed to prevent potential infractions in advance if possible. Clearly committed to the Messer CMS, our managing directors and senior management demonstrate their full support.

Messer Americas has adopted the Code of Conduct and also applies its own Code Supplement as well as a Supplier Code of Conduct. Other guidelines include a guideline on compliance with antitrust law, a guideline on anti-corruption, a compliance guide for business partners and a data protection guideline for North America.

Employees can use appropriate hotlines to report infringements of applicable law or the Messer Code ("compliance infringements"), as well as justifiable cases of suspicion, to managing directors and senior management at any time. The latter ensure prompt remedial action. Messer received 5 such reports in 2022, as compared with 16 in the previous year.

68.75

**percent fewer infringements
against the Messer Code**



Sustainable, documented supply chain

A sustainable supply chain is a prerequisite for Messer's economic success. Relationships between Messer and its key suppliers play a crucial role here.

Data privacy

Messer undertakes to comply with applicable data privacy regulations. Appropriate structures are designed to guarantee a consistently high level of data privacy.

**Learn more and see
further examples of
the strategic integration
of CR!**



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MESSER



Gases for Life



Sustainable business



Groundbreaking for the new air separation unit in McGregor, Texas, USA. It will be Messer's first air separation unit to draw all its electrical power from a local renewable energy source.



Messer is continuously investing in state-of-the-art CO₂ recovery units. They ensure greater sustainability and optimize product supply for the customers.

Start-up of another CO₂ recovery plant

In October 2022, Messer in France started up its new CO₂ recovery plant in Lacq in southwest France. The CO₂ recovered in Lacq is a by-product obtained during the production of bioethanol from maize. Our 11.3-million-euro investment in the construction of the new CO₂ recovery plant will allow us to further diversify our CO₂ procurement, making us less reliant on traditional, energy-intensive CO₂ sources such as ammonia production. The additional production capacity further secures Messer's long-term, reliable supply of CO₂ for its customers in France and Spain.



High-tech from the past: An air separation unit built by Adolf Messer GmbH and operated in Finland for decades has been located in our industrial gases museum in Bad Soden, Germany, since 2005.



Messer's strategic orientation

In 2021, Messer Group GmbH was transformed into a limited joint-stock partnership (KGaA) and has since traded under the name of Messer SE & Co. KGaA. The KGaA legal form allows us to ensure that Messer is geared to the future as a global group with enhanced operational and organizational scope. It ensures continued control and influence on the part of the shareholder family. The new legal form will allow the family's fiscal and financial objectives to be achieved with even greater flexibility in future.

At the end of May 2023, an agreement was signed with the previous minority shareholder, CVC Capital Partners Fund VII. The goal is to become sole owner of the joint venture Messer Industries. It includes Messer's companies in North and South America as well as Western Europe. With the acquisition of these shares, the completion of which is expected by the end of 2023, Messer is embarking on a new chapter in its 125-year company history. The plan is to combine all of Messer's activities worldwide under one roof, in order to implement a sustainable growth strategy in the coming years as an integrated gases specialist. At the same time, after more than four years this will mark the end of the successful collaboration between Messer and CVC, which had been a temporary arrangement from the start.

125 ^{1898 – 2023} success Story

In parallel, Messer is bringing in GIC, a global institutional investor, as a partner who will become a long-term minority shareholder of Messer. The proceeds from this investment will be used to finance the purchase of shares in Messer Industries. As a long-term investor with many years of experience collaborating with family businesses the world over, GIC supports the Messer family's strategy for sustainable, profitable growth.

The transaction between Messer and CVC as well as the entry of GIC remain subject to the usual regulatory approvals.

Messer sees considerable worldwide growth potential in the years ahead. Moreover, the company intends to pursue even broader diversification of its offering with a focus on particularly promising sectors or through partnerships in the course of the green energy transition. With its strategic initiatives, Messer expects to achieve significant increases in sales and earnings in the coming years and sees a good chance of more than doubling the business volume by the end of the decade. The regional

economic activity of Messer SE & Co. KGaA is concentrated mainly in Eastern Europe and Asia. The Asia region represents the world's largest industrial gases market with the highest growth rates. Messer Industries has regional and product-specific business operations in North and South America as well as Western Europe. What unites them all is the focus on safety, customer orientation and profitable growth. We aim to achieve appropriate payment for our products through a team culture geared towards efficiency, success and motivation, and a high level of employee and customer satisfaction, as well as innovation.





Sustainable growth through investment

Investment projects form an important basis for sustainable growth in the long-term industrial gases sector. In 2022, we expanded our specialty gases capacities, invested in new air separation units – including one of the largest in Europe – and invested in our first production unit that covers its energy demand with solar power. We expanded our CO₂ capacities and also our CO₂ recovery capacities and built several new generators in China.

Sustainability orientation and optimization through ratings

In order to be able to make an objective assessment of Messer's status quo in terms of sustainability and climate protection compared to other companies, and to identify concrete optimization potential, Messer decided to undergo an independent assessment: first as part of a "Sustainability Performance Overview" by EcoVadis, and second through the "CDP Score Report- Climate Change 2022".

Learn more and see further examples of sustainable business!



corporate.messer-group.com/en/web/guest/sustainable-business

Enhancing efficiency through digital improvements

Many Messer entities have strategically and technically reoriented their IT infrastructure, continued to pursue their digitalization strategies, and have already achieved major milestones.

Based on modern, globally established standards, the new standardized and flexibly scalable IT structure is an important prerequisite for improved business processes and greater efficiency, as well as more flexible and agile working. Messer also raised employee awareness of cybercrime and phishing attacks, especially through training courses and regular internal communications.

Engagement in industry associations

Messer SE & Co. KGaA is a member of the European Industrial Gases Association (EIGA). The Brussels-based EIGA represents nearly all companies throughout Europe that produce and market gases for industrial, medical and food processing applications. The association's work focuses on achieving the highest possible safety and environmental standards in the production, transport and use of gases. Messer is also a member of the International Oxygen Manufacturers Association

(IOMA). Messer employees are represented in all the governing bodies of these two gases associations as well as on the German Industry Committee on Eastern Europe, in the German Eastern Europe Business Association, and in the German Asia-Pacific Business Association.

Messer SE & Co. KGaA is a member of the German Welding Society (DVS e.V.). The DVS is a not-for-profit, technical and scientific association based in Düsseldorf, and Messer employees' engagement in it sees them sitting on expert committees, supporting research projects and maintaining contacts with expert groups in technologically advanced fields.



Our subsidiaries are actively involved in various industrial associations at a local level. The list of associations of which Messer in America is a member includes the following: American Chemistry Council (ACC), Compressed Gas Association (CGA), Chemistry Council of New Jersey (CCNJ), Texas Chemical Council (TCC), California Large Energy Consumer Association (CLECA), Indiana Energy Consumers, West Virginia Large Energy User Group, West Virginia Manufacturing Association, Pennsylvania Energy Consumers Association and Ohio Energy Group.

The Messer Team





Participants in the company conference held in Ljubljana, Slovenia, in 2022.

More investment in continuous training and education



In 1978, 63 students from the Schule am Ried middle-and-high school in Bergen-Enkheim, Germany, participated in practical vocational training at Messer. In terms of school policy and education, the program was deemed a success.

Technical training courses like this one at Messer in Vietnam are an example of Messer's comprehensive continuing education activities in 2022.

179

euros per person for advanced training



The worldwide Covid-19 pandemic has changed how people think about continuing education: as in 2021, we also used an extensive offering of virtual webinars to provide continuing and advanced education for employees once again in 2022. Participation in paid seminars in 2022

averaged 14.2 hours per person. Expenditures for advanced training increased considerably: on average, a total of 179 euros per person were spent on advanced training, which was 65.4 euros more per person than in 2021.

Diversity and equality

Messer is committed to diversity and equal opportunity. Our forward-looking and sustainable Human Relations policies ensure a level playing field for professional success, respect for cultural differences, and promote interaction throughout the workforce. For Messer, diversity is essential to innovation and sustainable business success; mutual trust and respect are deeply rooted corporate values that form the basis of our corporate culture. Our salaries are based on function, market, performance, education, experience and number of years of service, as well as any collective wage agreements or comparable collective wage agreements and adjustments for inflation. It goes without saying that our remuneration policy makes no distinction among genders.



Structural Integration of Diversity Management

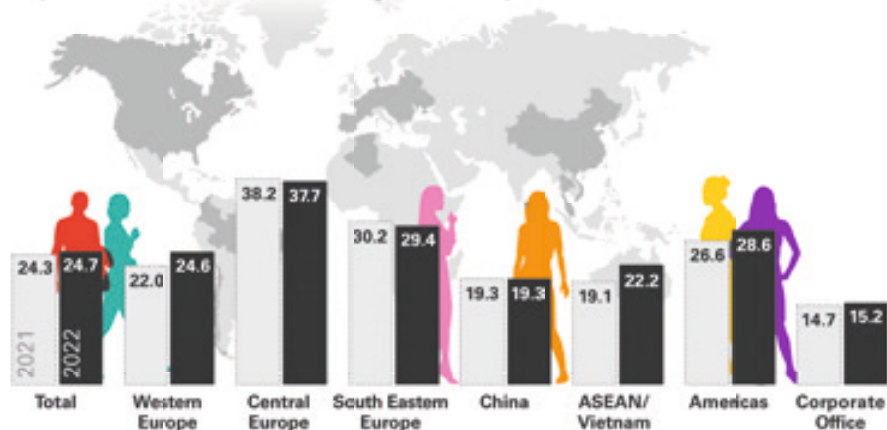
The goal of our diversity management program is to create a respectful work environment that is free of prejudice, regardless of the employees' gender, nationality, ethnic or social origin, religion, ideology, disability, age, sexual orientation or gender identity.



Diversity, equality and equal opportunity form the basis of our sustainable business success.

Mixed management teams

Proportion of women at first and second management levels in percent



Diversity management goals and actions

The share of women in the first and second levels of management will be raised over the long term, with the goal of establishing mixed-gender management teams with a 30-percent share of women by 2030.

On December 31, 2022, Messer employed 11,259 people; on December 31, 2021, that figure was 11,025. The share of women was 27.8 percent, which was slightly below the 28.1 percent share of the previous year. The share of women in first and second level management positions was 24.7 percent versus 24.3 percent in 2021.



The #LivingRespect logo graphically signifies our commitment to diversity and tolerance.

Learn more and see further examples of the Messer Team's commitment!



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Unconscious bias training

Since 2021, Messer has organized a training program against unconscious biases for the international management team and the English and German-speaking workforce. Unconscious biases and prejudices are considered to be among the greatest barriers for diversity strategies. The training uses examples to illustrate the problems that “fast thinking” can create – both in private life and at work. Building on that foundation, participants have been trained in techniques designed to help them make more conscious decisions, and therefore better ones.

Satisfaction of our employees

In 2022, the average length of service of our employees since joining Messer was 10.1 years versus 9.7 years in 2021. Staff turnover increased slightly from 10.1 percent in 2021 to 13.3 percent in 2022.

Education, advanced training and know-how transfer

Messer is committed to the education and training of talented young professionals, who represent an important investment in the competitiveness and capability of our company. Some of that training takes place at various locations, supplemented by multi-week assignments abroad. In 2022, the training quota at Messer increased slightly to 1.4 %. Particularly in Western Europe, at Messer in Belgium and Spain, as well as in Southeastern Europe, at Messer in Hungary, training offensives led to further growth.



Since 2019, the Messer Group holds the Total E-Quality Award for Equal Opportunity, which was extended for an additional three years in 2022.



Messer is a signatory to the “Diversity Charter,” an initiative that promotes diversity in companies and institutions.

CEO **ACT!ON** FOR DIVERSITY & INCLUSION

In the USA, Messer is a signatory to the “CEO Act!on for Diversity & Inclusion” charter, the goal of which is to promote measurable actions and useful changes in the workplace.

Open dialog and know-how transfer

Open dialog and in-house transmission of expertise are important to us. That’s why we promote the establishment and maintenance of cross-regional and intercultural networks. In 2022, network meetings were no longer held 100 % virtually. Notwithstanding this, we were able to strengthen our international professional networks. In all, employees participated 33,033 times in site conferences or network meetings designed for strategic integration or know-how transfer. By contrast, that figure was 20,509 in 2021.

12,524

more instances of participation in site conferences and network meetings than last year





Safety and health



3 GOOD HEALTH
AND WELL-BEING



EIGA awards for accident-free work

In 2022, the EIGA (European Industrial Gases Association) recognized a total of 15 European Messer locations for their yearslong record of accident-free work. That recognition ranged from two “Gold Two Star Awards” for 25 years without an accident to “Bronze Awards” for 5 years with zero accidents.



15

European Messer locations received awards from the EIGA in 2022.



Safety first: To enable his customers to handle the explosive gas acetylene safely, Adolf Messer developed many safety systems for acetylene generators. He filed the first patent applications in 1902 and 1903.



To reinforce a genuine safety culture in the team, we continuously review and optimize the associated measures.

Safety and health are topics of vital importance to Messer. Safety is our license to work – the prerequisite, without which we would not even be able to operate as a commercial enterprise. We see it as our duty to provide the highest level of safety – to our teams in the plants and in the technical and administrative workplaces, to the people who manage our logistics and operate our vehicles, and to our customers who use our gases.

Safety of our employees

Our network of safety officers studies and documents all safety-related incidents at Messer. Information and training materials help further improve the safe handling of our products and applications along with the safe work practices of the employees at the various workplaces.

The number of reported industrial accidents with loss of working hours at Messer decreased from 48 in 2021 to 47 in 2022. The employees' rate of lost time accidents per million hours worked (accident frequency rate) decreased slightly from 2.18 in 2021 to 2.05 in the year under review. The number of working days lost per million hours worked (industrial accident severity rate) rose from 69.15 in 2021 to 70.07 in 2022. A total of 96 reportable industrial accidents were recorded in 2022, which was 15 more than in the previous year. The accident frequency rate of reportable industrial accidents per million hours worked increased from 3.67 to 4.20. Unfortunately, we suffered one death among Messer's workforce last year.

Safety awards

Messer is an active member of EIGA (European Industrial Gases Association), IOMA (International Oxygen Manufacturers Association) and AIGA (Asian Industrial Gases Association), as well as CGA (Compressed Gas Association). Our experts regularly exchange experience and knowledge, because protecting our employees, ensuring the safe manufacture, use and handling of our products, and acting responsibly are all important parts of our corporate values.

Internally, we recognize outstanding achievements in the area of SHEQ with the “Messer SHEQ Award”. In 2022, it was presented at our international SHEQ meeting for the period 2020 to 2021. The “Best Performer” award went to Messer Croatia Plin d.o.o.. Messer France S.A.S. won the “Best Improver” award. Dr. Udo Kohl, SVP Corporate SHEQ, and Stefan Messer, at that time CEO of Messer SE & Co. KGaA, personally presented the awards to Hrvoje Rogic, Head of SHEQ Messer Croatia, and Olivier Bagel, Director SHEQ Messer France, who accepted the awards on behalf of their teams.

EIGA awards for safety performance (relative to 2020 through 2022):

“Gold Two Star Award” Messer in Croatia was honored with a “Gold Two Star Award” for 25 years of accident-free work at the Kutina production site. Messer in the Czech Republic was also pleased to receive a “Gold Two Star Award” for 25 consecutive years with zero accidents at the Kladno filling plant.

“Gold Star Award” Messer in France earned a “Gold Star Award” for 20 consecutive years of accident-free work at its Gondecourt filling plant. The same award was also presented to Messer in Hungary for the Ölbő CO₂ plant.

“Gold Safety Award” EIGA presented two “Gold Safety Awards” to Messer in Bulgaria – one each for the Sofia and Vratsa site, respectively – both of which have operated without an accident for 15 consecutive years.

“Silver Award” Messer in Serbia received “Silver Awards” for ten consecutive years with zero industrial accidents at each of its two production sites in Bor and Kraljevo. The same award was also presented to Messer in Hungary for the Győr filling plant.

“Bronze Award” For five years with zero accidents, the “Bronze Award” was presented to: Messer in Romania, Resita production site; Messer in Serbia, Novi Sad plant; Messer in Bosnia-Herzegovina, Rajlovac filling plant; Messer in Hungary, Dunaföldvár plant, Messer in Spain, Vila-Seca site; and Messer in Poland, Środa Śląska filling plant.

Safety of our customers

The safety of the people who work with our industrial gases is of paramount importance to Messer. That is why we are also raising awareness of the safe handling of gas cylinders among our customers. New video clips provide basic information on the contents, transport, handling and connection of gas cylinders. To accompany the videos, "Pocket Guides" bundle safety-relevant information in a compact print format.

The safe handling of gas cylinders is one of the fundamentals that we communicate in the context of work safety.



Safety of our logistics and vehicles

In addition to compliance with statutory regulations, Messer uses a proven transport safety concept. In Europe, by signing the European Road Safety Charter, we have also undertaken to focus specifically on the safety of our fleet. The safety measures we have developed for logistics at the national and international level include a constant exchange of experience between logistics and safety personnel, with the aim of further improving safety in this area.

While Messer's American companies use their own personnel to transport gases, subsidiaries in other regions entrust this task primarily to external companies. Those firms are also responsible for training their drivers as required by law. We supplement this with a driver training program developed by Messer Corporate Logistics. It is supported by an on-board computer system, which has been in use since 2019 and records safety-related driving data. In addition, based on driving data and integrated sensor technology, it prompts drivers to adapt their driving style during the journey. This makes our transports even safer and helps reduce fuel consumption.

The on-board computer system helps to reduce the absolute number of accidents and further improve the accident frequency rate, as do appropriate supplier management, training and manuals for driving personnel with individually tailored content for the operation of bulk, cylinder or service vehicles, and technical aids.



18

**fewer preventable accidents during
cylinder gas transport worldwide**

■

In 2022, the number of preventable accidents during the transport of our cylinder gases worldwide was 56, compared with 74 in the previous year. This improvement is reflected in the accident frequency rate per million kilometers driven, which fell from 2.13 in 2021 to 1.59 in the reporting year. The number of preventable accidents involving the transport of liquefied gases was 161 in 2021, compared with 193 in 2022. This trend is confirmed by the frequency rate per million kilometers driven: from 0.8 in the previous year, it increased to 0.96 in 2022.



Messer's American companies use their own personnel to transport gases and conduct all required safety training on their own.



Healthcare

Messer advises its customers from the medical sector, supplies gases as medicinal products or medical devices, plans, assembles and maintains supply systems and offers medical accessories and consumables as part of a complete service package in more than 20 countries.

Our activities in the pharmaceutical sector meet the relevant requirements at national, European and international level. This applies in particular to the requirements of European Good Manufacturing Practice (EU-GMP) and the specifications of the European Pharmacopoeia. As a medical device, our gases comply with the Medical Devices Regulation (EU 2017/745), the previously applicable Medical Devices Directives and the corresponding national laws.

We ensure continuous product and delivery quality through internal audits, a unified pharmacovigilance system, and validated workflows and computer systems.

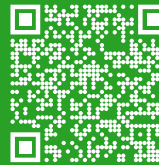


> 20

**countries receive complete
medical service packages**



**Learn more and see
further examples of
safety and health at
Messer!**



[corporate.messer-
group.com/en/web/
guest/safety-health](https://corporate.messer-group.com/en/web/guest/safety-health)

Environmental and climate protection





Primož Urek, Technical Manager at Messer in Slovenia, refueling a hydrogen-powered electric bus.

Eco-friendly transport refrigeration alternatives

Lighter and eco-friendlier: Trucks that use Messer's EcoLIN system need no diesel-powered refrigeration compressor. Even pure e-vehicles can use the EcoLIN system for efficient transport refrigeration.





Some food has to be kept cold on its way to the customer, and that was also true in the past. A predecessor of today's EcoLIN vehicles was used for this purpose. It still cooled the load directly, however, which required refilling with liquid nitrogen.

Trucks that transport frozen food generally use refrigeration units that generate noise and exhaust emissions because they are driven by the truck's diesel engine or by a separate diesel generator. Moreover, more and more cities are restricting diesel truck access. Cryogenic gases are a genuine refrigeration alternative with high cooling efficiency. Their use generates neither noise nor exhaust gases.

Developed by Messer, the EcoLIN system cools the entire storage compartment of a refrigerated truck with the cooling energy of liquid nitrogen. The gas flows from a tank through a heat exchanger where it vaporizes, indirectly cooling the truck's cargo area. As a result, there is no liquid nitrogen in the storage compartment, and that makes the application safe and simple.

Environmental and climate protection

As an energy-intensive company, Messer is particularly committed to environmental and climate protection. We see it as our responsibility to contribute to the sustainable use of energy.

Our core products, the air gases, are produced by air separation. Air is a mixture of gases, consisting primarily of nitrogen (78 %), oxygen (21 %) and the inert gas argon (0.9 %). The remaining 0.1 % is made up mostly of carbon dioxide and the inert gases neon, helium, krypton and xenon.

Air is typically separated into its components by means of distillation in air separation units employing cryogenic rectification. This process is fully electrified, so our energy requirements are substantial for electricity. We carefully monitor the specific electricity consumption of the production process and the emissions intensity of the electricity we purchase. The decomposition of ambient air into its constituent parts produces no toxic or environmentally harmful emissions itself, even in the case of a shutdown or disruption to operations.

Messer supplies “Gases for Life” to customers typically by means of on-site production at customers’ sites, by pipeline, in bulk form as cryogenic liquids, or in high-pressure cylinders (“packaged” products). With regard to specific products, application seg-

ments, and delivery modes, however, that supply mix varies greatly from region to region.

The delivery of bulk or packaged gases entails the use of heavy-goods vehicles. To minimize the resulting emissions, we carefully monitor the fuel consumption of our vehicles and the efficiency of our logistics. We are also considering the future use of alternative drive systems, when and where such systems will be authorized for use in the transport of dangerous goods.

Packaged products are gases held under high pressure in gaseous or liquid form in steel cylinders. Such cylinders are generally provided on a rental basis to our customers and recovered after use. After cleaning and inspection, gas cylinders are refilled and resupplied to customers. We keep our gas cylinders in circulation for at least 30 years.







2.4

percent lower greenhouse gas emissions than in the previous year




17.42

percent reduction in CO₂ emissions intensity versus the previous year



Greenhouse gas emissions

When calculating greenhouse gases, we distinguish between three categories in accordance with the GHG Protocol (GHG = greenhouse gas): direct emissions (Scope 1), indirect emissions from purchased energy (Scope 2) and other direct emissions in the upstream and downstream supply chain (Scope 3). We measure emissions in terms of CO₂ equivalents (CO₂e).

In 2022, the calculation of greenhouse gas emissions remained the same as in 2021. We calculated our Scope 2 emissions using a dual approach, which includes the location-based method and the market-based method. When calculating our Scope 3 emissions, we also covered additional categories recommended by a joint working group, which consists of industrial gas companies and industrial gas associations.

In fiscal 2022, the total greenhouse gases emitted directly and indirectly from our global production and logistics activities (Scope 1 and Scope 2) amounted to 5.33 million metric tons of CO₂e. This was 130,000 metric tons less than in the previous year, when the comparable figure was 5.46 million metric tons of CO₂e. That 2.4 percent reduction was mainly due to a decrease in electricity consumption and emission factors for electricity.



The CO₂ emissions intensity of our global activities (Scope 1 and Scope 2) was 1.28 metric tons of CO₂e per 1,000 euros of sales revenue in 2022. This is a significant reduction compared to the 2021 benchmark, which was 1.55 metric tons of CO₂e per 1,000 euros of sales revenue.

Energy efficiency

The responsible use of all resources, especially energy, is very important to Messer. The specific energy consumption of all processes is a key performance indicator in this respect.

Another important goal is to keep reducing the specific energy consumption of our air separation units. In this respect, Messer is focusing on ever better utilization of existing units and is continuously investing in projects that help sustainably increase the energy efficiency of our units. Our Global Energy Officer (GEO) is responsible for these activities.

Examples of measures to improve energy efficiency in production in 2022 included:

- Replacement of outdated, inefficient units with modern technology
- Installation of on-site units to avoid liquid deliveries by truck
- Implementation of Aspen DMC advanced process control software on additional units



In 2022, a total of 336 solar panels were installed on the roof of the ASCO production facility in Eschlikon, Switzerland.

- Installation of solar panels on available roof surfaces

We use the energy coefficient to track the energy efficiency of our production. The energy coefficient indicates how much electricity was consumed per ton of product relative to a theoretical "reference unit." In 2022, the corresponding value worldwide was 102.5 compared with 101.1 in the previous year. The decline in energy efficiency can be attributed to strong fluctuations in demand, which meant that most units could not be operated in their optimal operating range as intended.

Energy and quality management

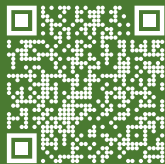
Messer's globally applied quality management system also reflects our commitment to environmental protection. In 2022, as in the previous year, 61 consolidated companies were certified according to ISO 14001 or RCMS. ISO 14001 is an internationally recognized standard that defines conditions to support organizations in establishing, implementing, maintaining and continuously improving environmental management systems. RCMS certification serves a similar purpose and function for our American production sites.

61

**of Messer's consolidated companies
were certified according to ISO
14001 or RCMS**



**Learn more and see
further examples of
environmental and
climate protection!**



corporate.messer-group.com/en/web/guest/environmental-climate-protection

Customer service

Meeting the requirements of our customers in a sustainable manner is very important to us. This also includes Messer continuously reducing its ecological footprint.

We achieve this through the impact of our gas applications on their production processes, through an efficient supply of gases – via on-site units, for example – and through the use of emission-free or low-carbon products such as green hydrogen.

In customers' industrial processes, our "Gases for Life" provide for greater safety, efficiency, quality, capacity and environmental compatibility and/or reduce the associated emissions and costs. To fully realize these potentials, we work closely with our customers, supply application engineering equipment and expertise, and help design and optimize processes. In addition, we provide our customers with process development support.

In 2022, Messer – excluding Messer Americas – was able to conclude new bulk contracts with an explicitly positive overall impact on the environment. They represented 21.9 percent of the total. Those newly signed contracts based on applications with a positive impact on the environment include:

- Further applications and installations using oxyfuel in Europe, especially in nonferrous metallurgy sectors
- Continued implementation of cryo-condensation units
- R&D: further development of oxyfuel and hydrogen-oxygen combustion technologies- both in our own competence center and through funded R&D projects- to support our customer needs

The installation of on-site units made it possible to replace bulk deliveries in 2022. This reduced carbon emissions by around 4.1 thousand metric tons of CO₂e, which corresponds to the value for 2021.

4.1

thousand metric tons of CO₂e less as a result of on-site units





For customers that use high-purity gases, noble gases and standard and customized gas mixtures, Messer also supplies the necessary fittings and gas supply systems.

Customer loyalty





Johanna Schirmacher, Food Applications Expert at Messer, tests the protective gas atmosphere in a package.

Extending shelf life to reduce food waste

Gases and gas applications are used to protect food from decay and help extend its shelf life. An important means of reducing persistently high food waste. In 2022, Messer was able to assist its customers with many such projects.



In 1984, a meat processing plant in Nuremberg, Germany, used a cryogenic tunnel freezer from Messer to cool pre-cooked sausages and then pack them in airtight packaging. This gave the products a shelf life of up to four months.

Making our customers' products and processes as economical, efficient and sustainable as possible, is one of our most important goals and a central aspect of our commitment to customer loyalty. By making targeted improvements to existing productions and applications in 2022, we succeeded in increasing the competitiveness and thus the economic success of our clientele in a variety of ways.



21.9

percent of our sales contracts in Asia and Europe have a positive overall impact on the environment



In 2022, many of our gases and gas applications not only enhanced performance but also helped protect the environment. By reducing energy consumption, for example, or replacing pollutants. For Messer in Asia and Europe, the aggregate share of our applications-related sales contracts with a positive overall impact on the environment was 21.9 percent in the year under review.

Satisfaction of our customers

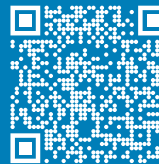
We measure customer satisfaction through systematic surveys and integrate the results into our management processes. With the Net Promoter Score (NPS) we have introduced an additional indicator for customer satisfaction analyses.

In Europe we conducted customer satisfaction surveys across eight portfolios at six Messer companies in 2022, namely in France and Spain as well as in Germany, Switzerland, Hungary and Serbia. A total of 13,454 companies were contacted. Subsequently, 853 questionnaires were evaluated and the results summarized by region. The ratings were made on a scale from 1 for "very dissatisfied" to 10 for "very satisfied."

The Western European companies received an average rating of between 8.1 and 9.0, compared with 8.4 and 9.0 in the previous year. Despite this slight deterioration, the overall result remains at a high level. The Central and Eastern European companies achieved an average rating of between 9.3 and 9.4. This result is also at a high level. Potential for improvement was identified and implemented for the individual countries to further increase customer satisfaction.

In 2022, the US bulk business conducted a customer satisfaction survey. This focused on customer satisfaction regarding Messer's products, services, safety and brand awareness. The survey results showed above-average performance in overall satisfaction. The teams continue to focus on strengthening customer satisfaction and loyalty through speed, simplicity, consistency, relevance, transparency and personal contact.

**Learn more and see
further examples of
customer loyalty at
Messer!**



[corporate.messer-
group.com/en/web/
guest/customer-
loyalty](https://corporate.messer-group.com/en/web/guest/customer-loyalty)



Commitment to education and social justice





The Messer relief fund for Ukraine enabled Anastasia, a Ukrainian student, to buy a laptop. She passed her university entrance exam last summer.

Values: Essential and constant guides

Responsibility and a commitment to people who need help are typical Messer traits. The same is true of respect for colleagues. In 2004, the “Dubrovnik Agreement” was signed, which defined a vision, a mission and values by which Messer has acted ever since. In effect, a contractual document successfully served as the basis for forming a living corporate culture in which all employees have a major share. To this day, our values remain the compass and guiding principle for our activities, spurring our success across all fields and borders.

Hans Messer saw himself as more than just a businessman. He and his wife Ria believed in the “importance of voluntary commitment to the viability of society.”





Customer orientation

We are focused on the individual requirements of our customers and help them to improve their competitiveness and their performance.

Employee orientation

We train, develop and promote motivated and effective employees with integrity. We expect our employees to be resourceful and responsible team players.

Corporate responsibility

By responsibly managing our resources and applying the talents of our employees we are increasing the worth of our company in the long term.

Responsible behavior

We take our social responsibilities towards our employees and towards society very seriously:

- **Safety:** we are committed to the safety of our staff and the safe production, handling and use of our products.
- **Health:** we set working standards that ensure sound health and well-being for every individual.
- **Environment:** as a member of the wider society, we are committed to protecting the environment.

Excellence

Our actions are based on technical expertise, innovation, flexibility and the ability to make quick decisions.

Mutual trust and respect

We believe that cooperation is based on trust, sincerity, transparency and frank communication. We respect and abide by the culture and social customs of the countries in which we work.

Social commitment

The social year 2022 was dominated by the Russian-Ukrainian war, which escalated following a military attack by Russia in February 2022 and continues to this day. The Messer workforce also shares in the suffering of people affected by war and flight around the world.

Therefore, Messer has set up the international internal aid fund “MesserAid” for private donations from employees, management and the Supervisory Board as well as people associated with Messer. The company matched the amount of private donations received. The money donated from the aid fund will benefit our employees in Ukraine and their families, as well as other people affected. Part of the donation will be used to help our workforce rebuild and resume their lives in the country after the war hopefully ends soon.

On April 6, 1978, Dr. Hans Messer and his family established the private charitable foundation now known as the Dr. Hans Messer Foundation. The independent foundation is a shareholder of the Messer Group and promotes education, science and research throughout Germany.

In the social and health spheres, Ria Messer established a second charitable foundation in 2004 – today’s Ria Messer Foundation – in memory of her husband Dr. Hans Messer. The activities of both charitable foundations are independent of those of Messer.

298

actions for social causes were supported in all by our team



Learn more and see further examples of commitment to education and social justice!



corporate.messer-group.com/en/web/guest/commitment-to-education-social-justice

MesserAid is intended to have three benefits. Firstly, it helps the men, women and children affected. But the fund also encourages people to help themselves. Getting personally involved in helping others is a good way to combat the helplessness of just having to watch others suffer. Many colleagues at Messer have direct contact with refugees who are now living in their country. They help with the basic needs of these people, provide comfort, organize everyday life or actions that make children happy. To help here, support from MesserAid can be applied for. A committee examines the applications and releases the corresponding amounts. The individual initiatives are described under a specially created stream in Messer's internal communication app. In this way, all the people at Messer who have paid money into the aid fund are actively helping to alleviate need. And this is the third benefit of MesserAid: creating a sense of "we" through solidarity and deriving something positive from it yourself.

Messer deliberately refrains from communicating this commitment in social media and the local press and from making individual actions public. We are proud of the international Messer team, its willingness to help, social commitment and prudence.

In 2022, a total of 193 Messer locations worldwide got involved in the form of cash and in-kind donations, social events or social institutes. In all, our teams supported 298 actions for social causes.



Sustainability – It’s what we’ve been working toward for 125 years now, and we’ll also continue to do so in the future.

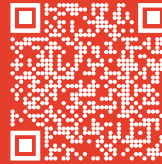
As a supplement to the information and key figures in this compact report, we are pleased to provide you with more detailed information concerning our 2022 financial year – on the internet and as PDF downloads.

**Discover our
annual reports
online!**



corporate.messer-group.com/en/web/guest/annual-report

**Discover our
complete
Sustainability
Report online!**

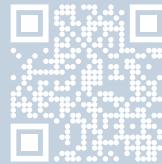


corporate.messer-group.com/en/web/guest/responsibility-sustainable

Our commitment to climate protection also extends to this sustainability report itself: with the climate initiative of the Printing and Media Industries Federations, we are supporting a CO₂ reduction project in Ghana that replaces inefficient charcoal cookstoves with energy-efficient cookstoves, called „Gyapa“. The initiative involves the manufacturing process as well as distribution activities.



**Learn more
about our climate
protection
commitment!**



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