Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

SUSTAINABILITY REPORT 2024



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Letter from the Management

Welcome to the first edition of Pfannenberg's Sustainability Report, showcasing the focus and activities in our journey towards sustainability

Dear customers, partners and other stakeholders,

As a family-owned technology company with over 70 years of history, we at Pfannenberg have always seen responsibility as inseparable from innovation. Our products protect people, machines and the environment – and we believe this protection must be actively extended into the future.

With this first Sustainability Report, we want to provide you with transparency about our journey and our ambitions. Sustainability at Pfannenberg is not an initiative – it is becoming part of how we think and operate. Whether through our Green Series of energy-efficient cooling units, our commitment to eliminate high-GWP refrigerants or our growing efforts in circular packaging and logistics – we act where we can make a real difference.



We are particularly proud of our efforts to reduce emissions across our entire value chain. Our targets are clear: a reduction of Scope 1–2 emissions by 63% and Scope 3 by 60% by 2035. With innovative products, like our award-winning compact chiller for mobile battery energy storage systems, and strong cooperation with customers and suppliers, we are confident we will reach these goals.

At the same time, we see sustainability as a social and ethical responsibility. We work hard to ensure fair working conditions, compliance and respectful collaboration – not just within our company, but across our entire supply chain.

This report also reflects the hard work of our global team. We are grateful for their commitment – and at the same time for the trust you place in us. Together with you – our customers, partners and all stakeholders – we aim to shape a future that is not only technologically advanced, but also worth living in.

We invite you to walk this path with us.

Sincerely,

Dr Tobias Merl (CEO)
Pfannenberg Group

Jan Möbius (COO)
Pfannenberg Group

Operating in the field of electro-technology for industry, we are established all over the world – ready with innovative solutions for protecting people, machines and the environment.

From Hamburg **to the World**

Pfannenberg, founded in in 1954, is a medium-sized company headquartered in the north-German city of Hamburg. Our production sites are located in Hamburg (DE), Fidenza (IT), Suzhou (CN) and Lancaster (US), with additional sales subsidiaries in Rotherham (UK), Singapore (SG), St. Petersburg (RU) and Indaiatuba (BR).

This report covers the EMEA region, thus, our operations in Germany, Italy and the UK.

Together with our expert sales associates and subsidiary companies, we have established a far-reaching sales network covering all international markets. Using successful custom solutions, we act as a solid, flexible and reliable partner.



The first industrial flashing light (left, invented 1962); the first industrial filterfan (right, invented 1958)

Protecting People, Machines and the Environment

has been our aim for over 70 years.



Pfannenberg‘s Patents: Driving Innovation and Sustainability

At Pfannenberg, our dedication to innovation and sustainability is exemplified by our extensive portfolio of over 220 patents worldwide. These patents span our core competencies in thermal and signaling solutions.

Pfannenberg‘s robust patent portfolio underpins our unwavering commitment to innovation. By developing and protecting technologies that promote energy efficiency, safety and environmental stewardship, we aim to contribute positively to a more sustainable industrial landscape.

An example of our patents is the 4th generation filterfan. Thanks to flow-optimised fins and rotor blades, the Filterfans 4.0 reach a particularly high airflow, IP 55 degrees of protection and a lifetime extending to 300% longer than conventional filter media. The patented 4-corner fastening system enables safe and quick installation and replacement.

Our patented technologies are integral to products designed for industrial applications, including technologies like cooling units, heat exchangers and signaling devices. These innovations contribute to reducing energy consumption and minimising environmental impact across various sectors, such as renewable energy installations, automotive, manufacturing, food processing and others.



4th generation filterfan with fluted filter mat

Our business unit **Thermal Solutions**



We manufacture a comprehensive range of products and systems for the thermal management of electrical enclosures in our business unit Thermal Solutions. The broad range of products to choose from includes filterfans, cooling units, air/water and air/air heat exchangers, chillers, heaters, thermostats and hygrostats.

A speciality in this business area is our Green Series DTI/DTS 6000. The series provides our customers with high energy savings of up to 11% (depending on the unit) through renewed unit optimisation and is therefore noticeably more cost-efficient. Additionally, the series uses less refrigerant. The refrigerant requirement could be reduced by up to 50%. This minimises the use of resources, lowers the Global Warming Potential (GWP) and supports the objectives of the European F-gas Regulation.

More about our Thermal Solutions





THE SMARTER E AWARD 2024

Pfannenberg Europe was named as winner of The smarter E AWARD 2024 in the category "Energy Storage" for the Compact Chiller VLV 12 application. The chiller was honoured for its outstanding performance and efficiency. Our innovative solution, specifically designed for liquid-cooled batteries in stand-alone portable Battery Energy Storage Systems (BESS), ensures efficient and sustainable operation of mobile BESS power plants. This supports the replacement of diesel generators in various environments, including events, construction sites and electric vehicle charging stations.



Our business unit **Signaling Solutions**



Pfannenberg stands for standard-compliant signaling, warning and alarm devices. Visual and audible signaling devices serve security, fire protection, building, industrial process, disaster warning and hazardous area applications, light art and illumination projects.

We are the first manufacturer to make it possible to use the spatial performance of signaling devices for planning. By visualising the capacity of each signaling device to cover the whole room, we ensure the highest levels of planning and safety quality. In this way, we can also determine the cost and energy consumption per cubic metre of a signaling area. This allows us to provide solutions for our customers which exactly meet their requirements and ambient conditions.

More about our Signaling Solutions





Solutions in **future-driven Industry Sectors**

Our knowledge of supply chains and specific demands makes us a sought-after partner of leading companies in different transformative industries. Some examples:

Energy
Pfannenberg solutions are used in all phases of the energy market worldwide to maintain the operation of critical electrical components – from production to storage, large-scale transport and distribution. We contribute, for example, to wind farms, solar parks, smart grids, battery energy storage, hydrogen power, electrical vehicle charging stations and much more.

Recycling
Our thermal management products and signaling devices ensure both smooth machine operation and safety for on-site employees in the demanding recycling sector.

Infrastructure
We offer and produce products and integrated solutions for applications in the construction sector (buildings, roads, tunnels), transportation (airports, shipping and cranes) and in the wastewater industry.

Manufacturing
For thermal management and cooling of plants and machines, we ensure that all technical and economic aspects are considered to achieve higher operational security (reliability), energy savings and cost optimisation.

Medical
We offer a broad spectrum of components and solutions for tablet and capsule visual inspection systems, vial and syringe fillers and blister sealing machines, to name a few.

Learn more about the different industries



Advancing Thermal Solutions for **the Green Hydrogen Market**

At Pfannenberg, we recognise the critical role that sustainable energy sources play in shaping a cleaner future. As part of our commitment to environmental responsibility, we are actively developing innovative thermal management solutions for the rapidly growing green hydrogen market. This initiative aligns with our broader strategy to drive business growth in sustainable sectors while contributing to the global energy transition.

Green hydrogen is a key enabler of decarbonisation across industries, and ensuring its efficient production requires cutting-edge thermal solutions. By addressing the unique challenges of this emerging market, Pfannenberg plays a vital role in supporting its sustainable expansion.

Currently in the conceptual phase, our work in this field focuses on optimising cooling systems for hydrogen production, storage and transportation. While we already offer individual thermal management solutions tailored to specific needs, we are also continuously developing new technologies to enhance efficiency, reliability and sustainability in hydrogen applications. Through collaboration with industry partners and ongoing innovation, we remain committed to developing future-proof solutions that contribute to a cleaner and more energy-efficient world.

ESG-Management

Operating in the field of electro-technology for industry, we take responsibility for providing our customers with a high degree of quality and reliability.

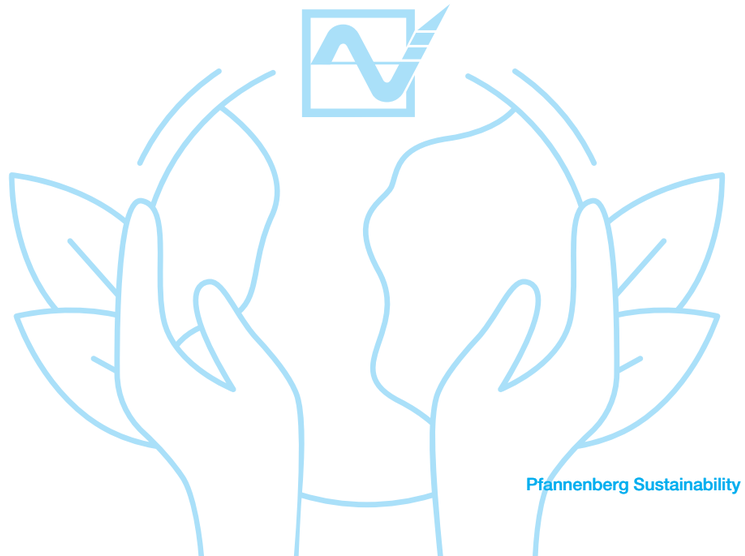
Our "Pfannenberg Way" creates value for customers, our company, the environment and people.

How we manage **Sustainability**

Sustainability – for us structured along Environment, Social and Governance (ESG) – is an integral part of our operations in EMEA at Pfannenberg. Jan Möbius, Chief Operating Officer (COO) and member of the Executive Board, coordinates ESG and holds responsibility on behalf of the management. This includes responsibility for the management of impacts and sustainability reporting as well as driving strategic decisions on goals and organisational changes.

At the end of 2024, the Supervisory Board was composed of four non-executive members. Dr Peter Köhler is Chairman of the Supervisory Board. The composition of the Supervisory Board reflects strategic requirements, the company's targets, corporate culture and ownership. The members of the Board have in-depth knowledge in their respective fields. Together, they ensure that the Supervisory Board has all the necessary expertise at its disposal. The Supervisory Board monitors management practices and ensures that the environmental and social impacts of the company's activities are considered. The Board delegates specific responsibilities to the Executive Board to ensure that impacts are managed effectively and plays a key role in reviewing and approving sustainability reports to ensure transparency and accountability.

A team of staff from quality management, environmental management and marketing communications currently leads the set-up and development of sustainability across the company. We thereby take a step-by-step approach to integrate different aspects and business units. Our governance structure for sustainability management is currently still being developed. Nevertheless, we strive to integrate as much as possible into our regular business functions and practices to effectively manage the broad range of sustainability topics. Processes derived from our certified environmental management systems and guidelines such as our Supplier Code of Conduct characterise this area. We have set ourselves a clear goal for the reduction of CO_2 emissions (see page 16), and within our Operations Vision we manage other topics. Over time, we will expand strategic goal setting in ESG.



Our **Stakeholders**

We identified our stakeholders as part of our ISO certification process (ISO 14001). They are groups that have special significance for Pfannenberg‘s business activities. Our stakeholders include customers, suppliers, workforce and the public. During our regular audits, we document and examine their expectations and concerns. We incorporate our stakeholders’ concerns when identifying and updating our material topics and ensure that they influence our decision-making processes. There are currently no vulnerable groups or groups in need of protection among our stakeholders.

Our customers,

including many large internationally active companies, require long-lasting, energy-efficient products and reliable services. They increasingly demand transparency on our sustainability efforts as well as alignment with political frameworks, for example regarding climate protection and supply chain responsibility. We have established sound processes to adhere to customer questionnaires and respective requirements.

Our suppliers

play an essential role in stable and sustainable supply chains. Reliability and partnership are core values in our relationships. We have initiated a sustainable supplier management system.

Our workforce

expects Pfannenberg to be an attractive, reliable employer with high standards of occupational health and safety and opportunities for progression. We have established transparent communication and a set of measures for employees.

The public

comprises various institutions and individuals, for example at our sites and in our business environment. Their expectations are very diverse and multifaceted. At Pfannenberg, we want to act reliably and openly as well as with commitment and integrity.

Our **Material Topics**

In several analyses, we compiled sustainability topics relevant to Pfannenberg’s business. This included (during fiscal years 2023 and 2024) several workshops with executives, an analysis of customer questionnaires and matching with the Corporate Sustainability Reporting Directive (CSRD) framework as well as activities of competitors.

Across the ESG structure, eight material topics currently guide our sustainability management.



Environment

Four topics relating to "Environment" are in our focus as they are relevant to customers, to our operations and to the public:

- Climate Action
- Waste and Packaging
- Refrigerants and F-gas Regulation
- Green Factory

Climate Action

Our Responsibility for Climate Protection

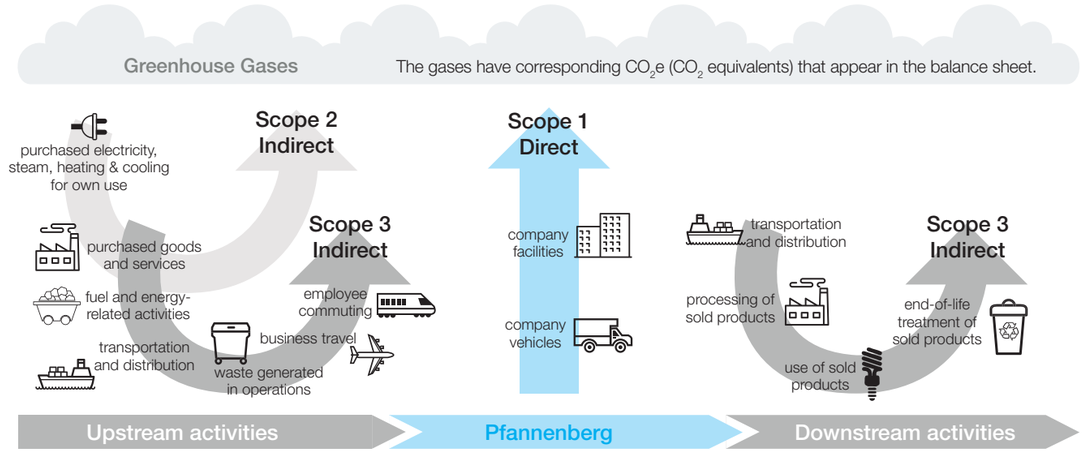
Due to the nature of our business activities, we deeply care about environmental aspects. With a base year of 2021, we calculated our corporate carbon footprint for the German site in accordance with ISO 14064. In 2022, we included our second European production site in Italy and measured the carbon footprint in more detail in accordance with the GHG Protocol. For the 2024 corporate carbon footprint, we included our sales site in the UK and now display a full EMEA footprint. It clearly shows that Scope 3 is the most relevant category with a share of 99.7%. Nevertheless, we strive to reduce our Scope 1-2 emissions as well as they are under our direct influence.

Corporate Carbon Footprint 2024 Pfannenberg EMEA

CO_2e emissions 2024	**Total EMEA**	**Hamburg** (Germany)	**Fidenza** (Italy)	**Rotherham** (UK)
Scope 1-2	1.66	1.52	0.12	0.02
Scope 3	683.62	601.46	81.40	0.76
Scope 1-3	685.28	602.98	81.52	0.78

All figures in 1,000 t CO_2e; UK: sales only, Scope 2: location-based

Overview of Scopes and Emissions across the Value Chain



High Share of Scope 3 Emissions

Over 95% of our total GHG emissions fall under Scope 3. The largest part comes from the utilisation phase of our products, refrigerant use and materials such as plastics.

This highlights the importance of considering emissions across the entire product lifecycle – not just within our operations. Our response is to reduce emissions generated during product use. Therefore, we have launched targeted initiatives:

- **Energy-efficient design:** New products are developed to consume less energy while maintaining performance.
- **Support for renewable energy use:** We encourage customers to operate our products with green electricity.
- **Longer product lifetimes:** Durable, repairable and upgradeable designs help reduce emissions per usage cycle.
- **Transparency tools:** We provide digital tools, like the Energy Efficiency Calculator, that help customers monitor and reduce their operational emissions.
- **Customer education:** We offer guidance on low-emission usage practices.

Looking ahead, we recognise our responsibility to reduce emissions beyond our direct control. By improving product efficiency and collaborating with our customers, we aim to significantly lower Scope 3 emissions and support global climate goals.

Our Carbon Footprint Goals

We have already committed to reducing our emissions in accordance with the Paris Climate Agreement by 2035. By substituting existing energy sources and applying sustainable energy such as solar panels, we are ensuring Pfannenberg's sustainable and future-oriented energy supply. The electrification of the company fleet and other measures within our Green Factory approach further contribute to fulfilling our reduction goals in Scope 1-2. The aim is to continuously minimise our emissions to realise a climate-neutral CO_2e balance at the production sites in the long term.

As previously stated, part of the Scope 3 emissions derive from refrigerant use and materials such as plastics. Each year, we draw up a refrigerant balance sheet to assess the climate impact of the refrigerants used and have set a goal for the use of alternative refrigerants. We also intensified our efforts to analyse emission reduction potential from different materials and are in the process of drafting measures for emission reduction in our supply chain.

We plan to conduct the process of SBTi approval for our Carbon Footprint goals in accordance with the 1.5-degree target of the Paris Climate Agreement.

Our Carbon Footprint goals:

Scope 1-2:
-63% until 2035

Scope 3:
-60% until 2035

Product Carbon Footprints

As Scope 3 plays such an important role in our footprint, we strive to better understand how to measure and improve the footprint of our products. Together with the German Association of the Electrical and Digital Industry (ZVEI), we participate in different projects to increase transparency in product carbon footprints (PCFs).

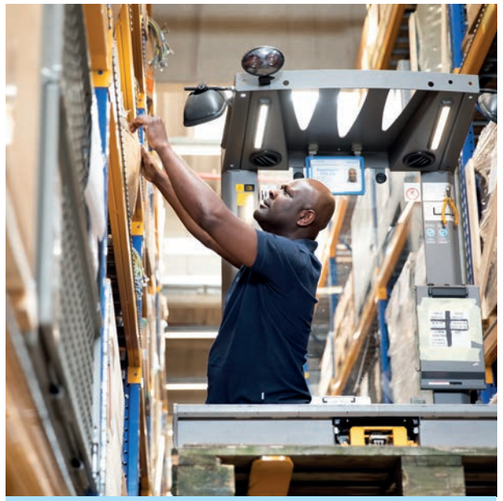
As part of a ZVEI pilot, we calculated the PCF value (cradle-to-gate) for a PF66000 with an amount of 37.1 kg CO_2e. At that time, we participated in the ZVEI-Show-Case PCF@ControlCabinet and exhibited two products in the demonstrator at Hannover Messe 2022.



ZVEI-Show-Case PCF@ControlCabinet at the Digital Summit 2002

Pfannenberg was part of the accompanying DPP4.0 project of ZVEI. The Digital Product Passport (DPP) for Industry 4.0 is an industry-ready tool for documenting and providing product information in a human- and machine-readable format accessible to various parties such as companies, authorities and users.

More about DPP4.0



Pfannenberg's Commitment to Green Logistics

At Pfannenberg, our dedication to integrating sustainability into our daily operations includes our logistics activities. We took a significant step in our logistics processes by partnering with UPS for our parcel shipments, starting in 2021. Switching to a logistics partner advanced in sustainability and CO_2 management enables us to reduce our net carbon footprint.

In order fulfilment, we were able to take further steps toward digitalisation and sustainability with our freight forwarders. We are now sending the documents required for our shipments to the USA and China to our freight forwarders digitally, instead of enclosing them in paper form with the shipment.



Our new PV system

The new photovoltaic (PV) system on the roof of the plant 2 production hall in Hamburg has been successfully commissioned. It will cover approximately 17% of our energy needs directly on-site and thus contribute significantly to reducing our energy costs.

Furthermore, we are setting a strong example for environmental protection: with the new system, we will save more than 174 tons of CO_2e annually.

Our own Energy Balance

We monitor the consumption of electricity and gas with our energy monitoring software. In the year under review, the total energy consumption in EMEA was 3.7 GWh. Our current focus is aimed at energy efficiency at our production sites and the UK sales site. In our branches, we have only a limited influence on the energy infrastructure, as we do not own the properties in question. Moreover, the impact there is comparatively insignificant, because these sites are purely offices.

Energy Balance 2024 Pfannenberg EMEA



Energy category	Split and unit	Total	Hamburg (Germany)	Fidenza (Italy)	Rotherham (UK)
Energy consumption: primary and secondary energy	Total (MWh)	3,667.3	3,162.55	490.23	14.56
	Share of renewable energies from total energy consumption (%)	34.8	18.1	12.8	4.0
Energy consumption: primary energy	Total (MWh)	2,273.41	1,922.18	342.43	8.8
	Natural gas / liquefied petroleum gas (MWh)	2,273.41	1,922.18	342.43	8.8
Energy consumption: secondary energy	Electricity (MWh)	1,393.93	1,240.37	147.80	5.77
	Electricity from renewable energy sources (MWh)	636.15	573.05	62.52	0.58
	Electricity share of renewable energy sources (%)	32.8	46.2	42.3	10.0



Energy-efficient for the Future: the Green Series

With the new Green Series, we are setting completely new standards in terms of energy efficiency for the DTI/DTS 6000 units.

- **Less energy consumption:** Energy savings of up to 11% (depending on the unit) through renewed unit optimisation also bring more cost-efficiency.
- **Less refrigerant:** The refrigerant requirement could be reduced by up to 50%. This minimises the use of resources, lowers the Global Warming Potential (GWP) and supports the objectives of the European F-gas Regulation.
- **Future proof:** All units of the new Green Series are already certified according to UL 60335 listed. The addition of the word "listed" facilitates certification, as the units do not have to be approved as part of the overall system.
- **Intelligent commissioning:** By using a jumper, a simple change between 400 V and 460 V is now also possible quickly and easily for the three-phase units. The connector plug is fully recessed in the now centrally placed connection area.

Energy Efficiency Calculator

Beneficial for the environment – beneficial for our customers.

With the knowledge of the respective cooling capacity, load case, energy price and number of existing cooling units in an existing application, the Pfannenberg energy efficiency calculator is able to provide a diagnosis of how much savings are possible by using the Green Series cooling units.

Cost savings



Very high

Energy savings



Medium

Calculate your saving here:



Aerzener Maschinenfabrik praises Pfannenberg for achieved Energy Savings

We are committed not only to providing product recommendations, but also to offering comprehensive consulting services to our customers. In collaboration, we successfully identified and realised energy-saving potential for Aerzener Maschinenfabrik GmbH, a German company founded in 1864, and today a leading international supplier of twin-shaft rotary lobe machines.

To accurately assess the energy-saving potential in AERZEN's climate control systems, detailed calculations were conducted, followed by an on-site inspection. As a result, over 70 cooling units were identified and replaced with more energy-efficient models from our Green Series within three weeks.

The company deliberately chose cooling units from Pfannenberg's X-Series to maximise efficiency and sustainability.

The projected energy savings initially convinced Aerzener Maschinenfabrik to implement the solution. After the X-Series had been in operation for over a year, it was found that the forecast regarding energy savings had even been exceeded.

Read the whole case study about Aerzener Maschinenfabrik

Waste and Packaging

Waste in Production and Packaging

We strive to reduce the generation of waste as much as possible for the sake of resource conservation. The main activity that causes waste is packaging waste that we receive from the upstream value chain. In that area, we have almost fully switched to paper and cardboard and some packaging wood, and we are on the way to fully eliminating Styrofoam. Waste is also produced by work carried out in production and in the offices. Our Waste Management Officer manages this area, and it is covered by our ISO 14001-certified environmental management system at our European production sites in Germany and Italy.

In the year under review, the total volume of waste (Germany and UK, excluding Italy) was around 494 tons, with just 0.2% hazardous waste. More than 90% of our waste is recycled or recovered. Our aim remains to continually and further reduce the amount of waste.

As for plastics, we search for alternative plastics that both meet the approval requirements and support recycling. A pilot project with grass granules was tried, but did not work out successfully.

We are also searching for ways to reduce the use of hazardous substances. We are working on introducing substitutes and replacing components in flashing lights so that they will not contain hazardous substances in the future.





Pfannenberg eliminates **Styrofoam in Packaging**

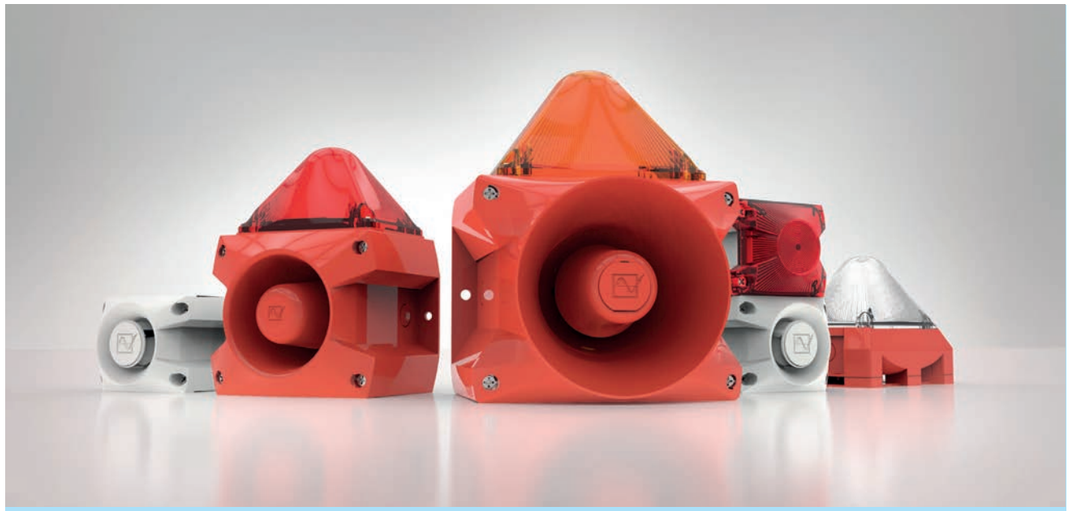
We have taken a significant step towards eliminating Styrofoam from our packaging materials. This initiative aligns with our broader strategy to minimise waste, improve recyclability and contribute to a circular economy.

Styrofoam, while lightweight and protective, poses significant environmental challenges due to its non-biodegradable nature and limited recycling options. By transitioning to more sustainable alternatives, such as recyclable cardboard, moulded pulp, or other eco-friendly materials, we aim to significantly reduce plastic waste and improve the environmental footprint of our packaging processes. This also enhances the recyclability of our packaging for our customers, making disposal easier and more sustainable. By continuously optimising our logistics and packaging methods, we ensure that product protection remains a top priority while considering environmental improvements for ourselves and our customers.

Facilitating Customer Recycling

Pfannenberg has implemented an international concept for recycling, disposal and recovery: we provide customers with the platform to return products at the end of their life cycle. For this purpose, we compiled a document in different languages with measures and regulations to be observed when recycling and disposing of Pfannenberg products. On our website, the Recycling, Disposal and Recovery Concept can be downloaded in several languages. In the future, more attention needs to be drawn to the crucial role our customers play in recovery, reuse and recycling at the end of the useful life of our products.

Read our Recycling, Disposal and Recovery Concept in English here



For selected product series of Pfannenberg signaling technology, we offer a **10-year warranty and an easy replacement process** in the event of a warranty claim. The warranty period begins on the date of invoice and applies worldwide. If a warranty defect is reported to Pfannenberg within the warranty period, Pfannenberg will deliver a new or reconditioned replacement device free of charge.

Refrigerants and F-gas Regulation

Managing Refrigerant Use

Refrigerants play a major role in our Thermal Solutions business unit as they are part of most products. Pfannenberg products such as filterfans, thermostats, hygrostats and heaters, for example, do not contain refrigerants. Reducing F-gases in our products is also one way of driving decarbonisation forward.

We draw up a refrigerant balance sheet to assess the climate impact of the refrigerants used. To do this, we analyse the effects of different refrigerants on global warming, using the GWP figure as a basis. We pass the data obtained over to the relevant government agencies and report the CO_2 equivalents put into circulation on the EU's F-gas Portal.

Total refrigerant use by Global Warming Potential (GWP) 2024 Pfannenberg EMEA

GWP	Share of total refrigerant use
1	0.4%
3	0.1%
631	4.2%
1,397	0,7%
1,430	92.6%
1,725	2.0%

Total: 9,191.5 kg

Reducing GWP

To reduce the emissions of refrigerant gases, especially those with high global warming potential, we use and test alternative hydrofluorocarbons (HFC). We are also planning the development of HFC-free products.

Where refrigerants are concerned, we are heavily dependent on our customers' wishes, as they specify which refrigerant is to be used in their orders. We are committed to more eco-friendly refrigerants and advise customers on the use of low-GWP refrigerants. Our goal is a 55% reduction of GWP in our product portfolio by 2027. We already have a range of alternative refrigerants for thermal solutions in our portfolio. Nevertheless, we are working on further innovative solutions for alternative refrigerants. To realise the potential and to achieve the goal, we want to convince customers to demand alternative refrigerants in our products. The cost of the refrigerant is a key factor for customers. Through our innovation, we want to improve the environment, but also work to make alternative refrigerants more affordable. Initial prototypes are currently under development to safely test products with flammable refrigerants such as propane.

> Our goal: **-55% GWP** in our product portfolio by 2027



Natural Refrigerants in Pfannenberg Products

From 1 January 2025, any self-contained refrigeration equipment must use refrigerants with GWP <150, according to the EU F-gas Regulation. New industrial chillers can thus no longer be installed with several currently used refrigerants. Pfannenberg is ready to support companies in finding the right liquid cooling solution with natural refrigerants. This includes the following alternatives:

R290
GWP = 3 PFAS-free

Fully compliant natural refrigerant with a GWP of 3 and PFAS-free propane. It is cost-effective and naturally occurring in good supply, has excellent thermodynamic properties as a refrigerant and can be used in a wide variety of appliances.

R32
GWP = 675 PFAS-free

Possible alternative for safety reasons and Battery Energy Storage System (BESS) market with a GWP >150 but PFAS-free. Despite exceeding the GWP limit, it could be used when it comes to applications where the flammability of natural refrigerants is an issue, or the application is Battery Energy Storage (as they are not covered in the current regulation).

R744
GWP = 1 PFAS-free

Fully compliant natural refrigerant with a GWP of 1 and PFAS-free carbon dioxide.

We already hold a patent for a CO_2-based cooling concept (R744). Due to technological costs and a lack of component availability, this has not yet gained market acceptance.

PFAS: Per- and Polyfluoroalkyl Substances – widely used long-lasting chemicals, whose components disintegrate slowly over time.

Green Factory

Our Approach to a Smart and Sustainable Factory

State-of-the-art production and office buildings with photovoltaic systems energy are a visible sign of our aim to reduce our ecological footprint. We also reinforce the environmental awareness of our employees through training and a variety of campaigns. However, our Green Factory approach includes much more. It is part of our Operations Vision to ensure sustainable delivery performance and quality.

We design our production areas to be as efficient and environmentally friendly as possible. By using innovative technologies, we optimise energy consumption and save valuable resources. Similarly, the supply chain is part of the Operations Vision. Topics such as the expansion of 24-hour delivery capability or digital ordering processes contribute to ensuring that we continue to meet our customer requirements in the future. The operation of a certified environmental management system (ISO 14001) at our EMEA production sites is an integral part of our Green Factory approach.



Pfannenberg Green Factory

As part of our Operations Vision, we are implementing various measures to make production processes more sustainable, more efficient and environmentally friendly. Specific approaches are being pursued in several areas:

Energy Efficiency in Production

- **Use of energy-efficient machines:** Modernisation of production equipment with a focus on low power consumption.
- **Recuperation systems:** Use of exhaust heat from machines to heat other areas.
- **Real-time monitoring:** Digital measurement of energy consumption to identify potential savings.

Sustainable Product Development

- **Eco-design:** Development of products that use fewer resources and are easier to recycle.
- **Modularity:** Replacement of individual components instead of entire units in case of defects.
- **Life Cycle Assessment (LCA):** Reduction of CO_2 emissions across the entire product life cycle.

Material and Resource Efficiency

- **Recycling and circular economy:** Take-back programmes for end-of-life products and reuse of materials.
- **Reduction of plastics and packaging:** Use of reusable packaging or biodegradable materials.
- **Local suppliers:** Shortening transport routes and reducing CO_2 emissions.

Digital Transformation & Automation

- **Smart factory concepts:** Intelligent control of production processes to reduce scrap and idle times.
- **Predictive maintenance:** Prevention of unplanned downtimes and inefficient energy use through early maintenance.

Climate Neutrality and CO_2 Compensation

- **Own electricity generation:** Installation of photovoltaic systems on company premises.
- **Green electricity:** Procurement of certified renewable energy.
- **Carbon accounting:** Calculation and gradual reduction of the company's carbon footprint.

Employees and Corporate Culture

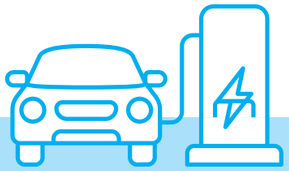
- **Green awareness training:** Educating employees on sustainable practices in the workplace.
- **Incentive systems:** Rewarding ideas that contribute to resource savings.
- **Green mobility:** Promotion of bicycle leasing, electric vehicle charging stations and use of public transportation.

Water Use and Management

Although we are a manufacturing company, water as a natural resource is not material for our business. We do not use any water in our production processes in Germany or Italy. Water is used solely for human consumption or personal hygiene. Any water used to irrigate green areas is taken from rainwater tanks or wells. Cooling and heating circuits are closed systems and therefore have no consumption.

In 2024, water use in EMEA was 2.633 m^3.

As we are aware of the importance of water as a valuable resource, we collect and monitor water use and manage water consumption accordingly.



Five new electric vehicles in the Pfannenberg fleet in 2024

With that, almost 30% of our company fleet in EMEA is now fully electric or hybrid. This is good news, as each electric vehicle saves an average of 166 g of CO_2 per kilometre compared to a combustion engine vehicle.

We aim to reduce average fleet emissions annually. In 2024, they were approximately 120 g CO_2 / 100 km.

Identifying and Managing Environmental Risks

We monitor and identify environmental risks in our operations. Examples are our ambitions to reduce plastics, the treatment of hazardous substances and our handling of refrigerants. Examples of measures we have taken to address environmental risks include the search for alternative materials to replace plastics, eliminating Styrofoam, and substituting hazardous substances in flashing lights. We have set ourselves targets for measures to manage environmental risks in the future, such as our goal to substitute high-GWP refrigerants with natural refrigerants. The effectiveness of these measures is continuously monitored, for example in quality management and product development.



Sustainable Manufacturing Efficiency through Innovation and Automation

At Pfannenberg, sustainability is a core principle in manufacturing. A prime example is the integration of our new injection moulding machine that demonstrates how automation and technological advancements can lead to greater efficiency and reduced environmental impact.

The introduction of the machine has significantly optimised our production process. With a 20% reduction in cycle times and a lead time reduction of at least 50%, we have achieved a more resource-efficient and energy-conscious workflow. This improvement not only increases productivity, but also directly contributes to sustainability by lowering energy consumption and minimising material waste.

A key factor in this success is the machine's automated material handling, which ensures seamless transitions between production stages. This automation eliminates unnecessary delays and inefficiencies, leading to a more sustainable use of energy and raw materials. Additionally, the integration of the injection moulding machine into our foaming processes allows for a continuous and waste-reducing production flow, further enhancing our environmental responsibility.

Further investment in additional automated processes, which can now take place in-house, has also enabled transport routes and costs to be saved and short throughput times and low stock levels to be realised.

Beyond technological advancements, we ensure that our workforce is equipped to operate advanced systems efficiently through ongoing training and upskilling initiatives. We reinforce our long-term vision of combining innovation with sustainability by integrating state-of-the-art machinery like this. We at Pfannenberg are thus further solidifying our role as a leader in sustainable industry practices.



Social

The well-being of employees and other parties working with us is a top priority. We manage a range of social aspects across two topics:

- Occupational Health and Safety
- Working Conditions and Human Rights

Occupational Health and Safety

Managing Health and Safety

The health and safety of our workforce is essential: we are responsible for ensuring that our employees are protected against accidents and other potential risks at work.

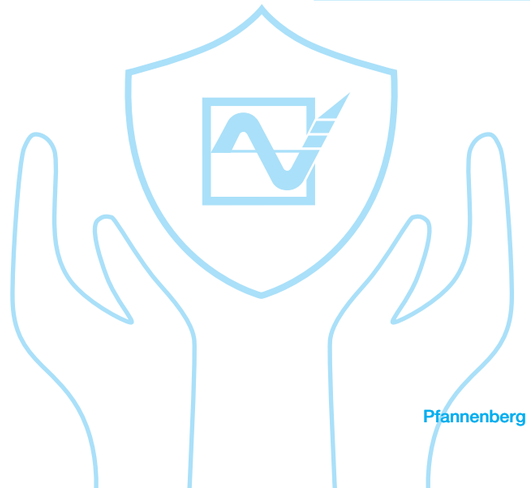
Currently, we are developing an internal health and safety management system. Our occupational health and safety structures ensure clear organisational and operational procedures. The system is based on our health and safety policy. The respective department directors and line managers are responsible for health and safety across our organisation. The local company guidelines for health and safety cover our own workforce as well as subcontractors and third parties.

We document and analyse both reportable and non-reportable data on accidents at work, such as those for employees, temporary workers and some contractors. In 2024, we had 41 reportable accidents and 4 lost-time injuries. We consider an accident at work as reportable if it results in an absence of more than three days; otherwise, it is classified as an injury. To reduce future accidents, we define measures to prevent the recurrence of accidents, which are implemented by the management.

Health and Safety Policy

There is a health and safety policy in place which complies with local law, industry requirements and international standards. It is part of our Corporate Ethics Policy and covers, among others, the following aspects:

- Personal protective equipment
- Machine safety
- Emergency preparedness
- Incident and accident management
- Workplace ergonomics
- Handling of chemical and/or biological substances
- Fire protection



Training and further Measures

We organise training for employees, including new recruits, on our health and safety policy and on practical applications. The training and education programmes on occupational health and safety are divided into general and specialised topics. General topics include fire safety, noise, handling defibrillators and fire extinguishers, crane operators, correct lifting and carrying, spinal health, safety in the office and safety in the workshop. Specialised topics include behaviour in the event of an infection and desk sharing. This annual training takes place in person for employees in the factory and via an e-learning module for office staff.

Our commitment to health and safety is reflected in further measures we have already introduced. They include inspections by external experts and regular risk assessments of all workplaces, both in terms of equipment and the handling of hazardous substances. We hold regular management meetings on health and safety topics and make any necessary adjustments to prevent accidents at work.

100% of employees with access to medical services and with access to health education

Promoting Health at Pfannenberg

At Pfannenberg, we believe that a sustainable company is one that takes care of its people. We invest in promoting our employees' health and supporting their physical and mental health. Daily, free fresh fruit for the workforce and ergonomic workplaces are basic measures at work. We encourage awareness of health aspects at the Hamburg site through regular health days, which are organised in collaboration with health insurance providers. We also offer a wide range of sports groups, such as football, and an on-site space for sporting activities at our Hamburg site. Our company medical consultant assists us with inspections and information on potential improvements, for example in production.

We ensure the well-being of our workforce by integrating health and sustainability into our corporate culture.





Health Initiatives

We take different approaches to enhance employee well-being. Here are two examples of preventive health initiative measures:

1 Protecting employees with voluntary flu vaccinations

A healthy workforce is essential for both individual well-being and company success. To help prevent seasonal illnesses and reduce sick days, Pfannenberg offers regular voluntary flu vaccinations for employees. This initiative not only protects individual health, but also contributes to overall workplace safety by minimising the spread of infections. By making vaccinations easily accessible on-site, we remove barriers for employees, encouraging higher participation and strengthening our corporate health culture.

2 Sustainable mobility: JobRad – cycling for health and the environment

In Germany, we support sustainable mobility through the JobRad programme, which encourages employees to commute to work by bicycle. The programme allows employees to lease bicycles or e-bikes through salary conversion, making it easier and more affordable to cycle to work. Not only does this contribute to personal fitness and mental well-being, but it also helps reduce carbon emissions by decreasing car commuting. Cycling to work is a great way to stay active, relieve stress and contribute to a healthier environment.

Working Conditions and Human Rights

Good Working Conditions

We are looking for ways to contribute to the well-being of our workforce. Pfannenberg benefits from the diversity of a global workforce with numerous different nationalities. We invest in people so that the international experience, language skills and the network within the company are strengthened. To foster our success as an international company, we offer our employees the opportunity to take on responsibilities beyond their own country market within the scope of suitable projects.

As a company, we want to continue to develop together with our employees. We promote employees according to their ability and willingness to perform. A personnel development programme and a Pfannenberg training programme include seminars and training measures open to all employees. The range of further training opportunities extends from leadership training to the improvement of personal work techniques, from seminars and communication training to the imparting of advanced language skills.

An essential foundation is based on actively perceiving situations, taking a position, and communicating it clearly. Everyone is expected to take responsibility for personal growth and the development of the required skills. At the same time, space for creativity and innovation must be possible in order to operate sustainably. We are constantly looking for ways to contribute to the well-being of the workforce.

Our commitment to social sustainability is also reflected in our inclusive employment practices. Since 2003, Pfannenberg has collaborated with the Elbe-Werkstätten in Hamburg to employ individuals with disabilities, integrating them into our daily operations. This partnership underscores our dedication to providing equal opportunities and creating a diverse workplace, benefiting both individuals and our organisation.



Fostering a vibrant and inclusive Corporate Culture

At Pfannenberg, fostering a vibrant and inclusive corporate culture is integral to our commitment to sustainability. To support the well-being and engagement of our employees, we organise a variety of events and support initiatives that strengthen team cohesion, promote health and enhance job satisfaction.

We believe that celebrations and shared experiences are vital for building strong interpersonal relationships within our organisation. To this end, we host numerous events throughout the year, including summer and Christmas parties, evening game sessions, and football tournaments accompanied by barbecues. These gatherings provide opportunities for employees to connect beyond their professional roles, fostering a sense of community and belonging.

Through our idea management programme, employees are encouraged to propose improvements, with viable suggestions rewarded accordingly. This initiative empowers our workforce to actively participate in the company‘s development, fostering a culture of continuous improvement and shared success. As the examples show, we include leadership and apprentices alike in our programmes.





Promoting sustainability in the development of our apprentices

We are proud to train more than 20 young people as part of our apprenticeship and dual-study programmes. As sustainability will continue to play an important role at Pfannenberg in the future, we also include it in educating our future workforce. A great example is the Energy Scouts initiative which we piloted with our youngest employees.

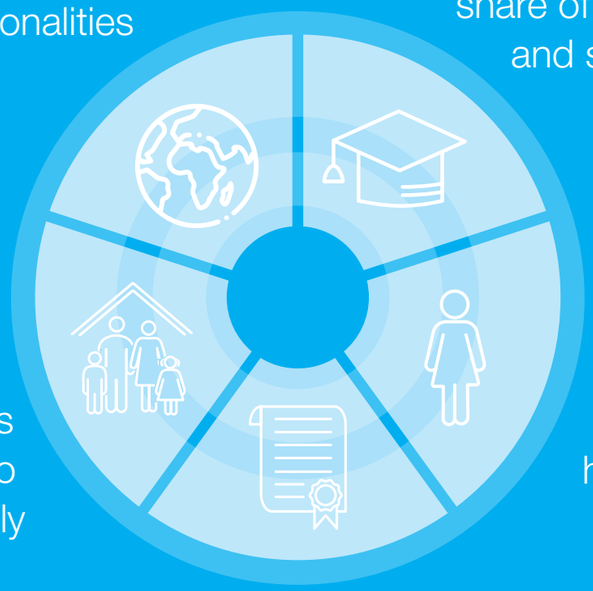
To identify energy-saving potential, we sent our first-year apprentices and dual-study students on a mission! As Energy Scouts, they spent a total of eight months identifying untapped potential in their areas of responsibility in administration, production and the warehouse and motivating their colleagues to implement energy-saving measures. The project kicked off with an initial workshop on the theoretical foundations of energy, climate change and corporate climate protection. The group of people identified interesting potential energy savings while learning to take responsibility and implement practical projects.

Apprentices and dual students continue to participate in the Energy Scout programme. We now offer the qualification module Energy Scouting within the framework of talent development. In a four-day workshop, young employees will learn how to identify and raise potential energy savings in our company. They can acquire a certified qualification as an Energy Scout.



Employees from **24** different nationalities

6.1% share of apprentices and students



100% of employees are entitled to leave for family reasons

17% of all management positions are held by women

80% of employees have participated in regular performance and career development reviews

Our Leadership Principles

The aim of the Pfannenberg leadership development process is to facilitate the generation of a versatile future-minded leadership network that is engaged in developing both leadership and management skill sets that empower it to deliver the company's strategic objectives and to creatively be a step ahead in identifying market developments and new opportunities.

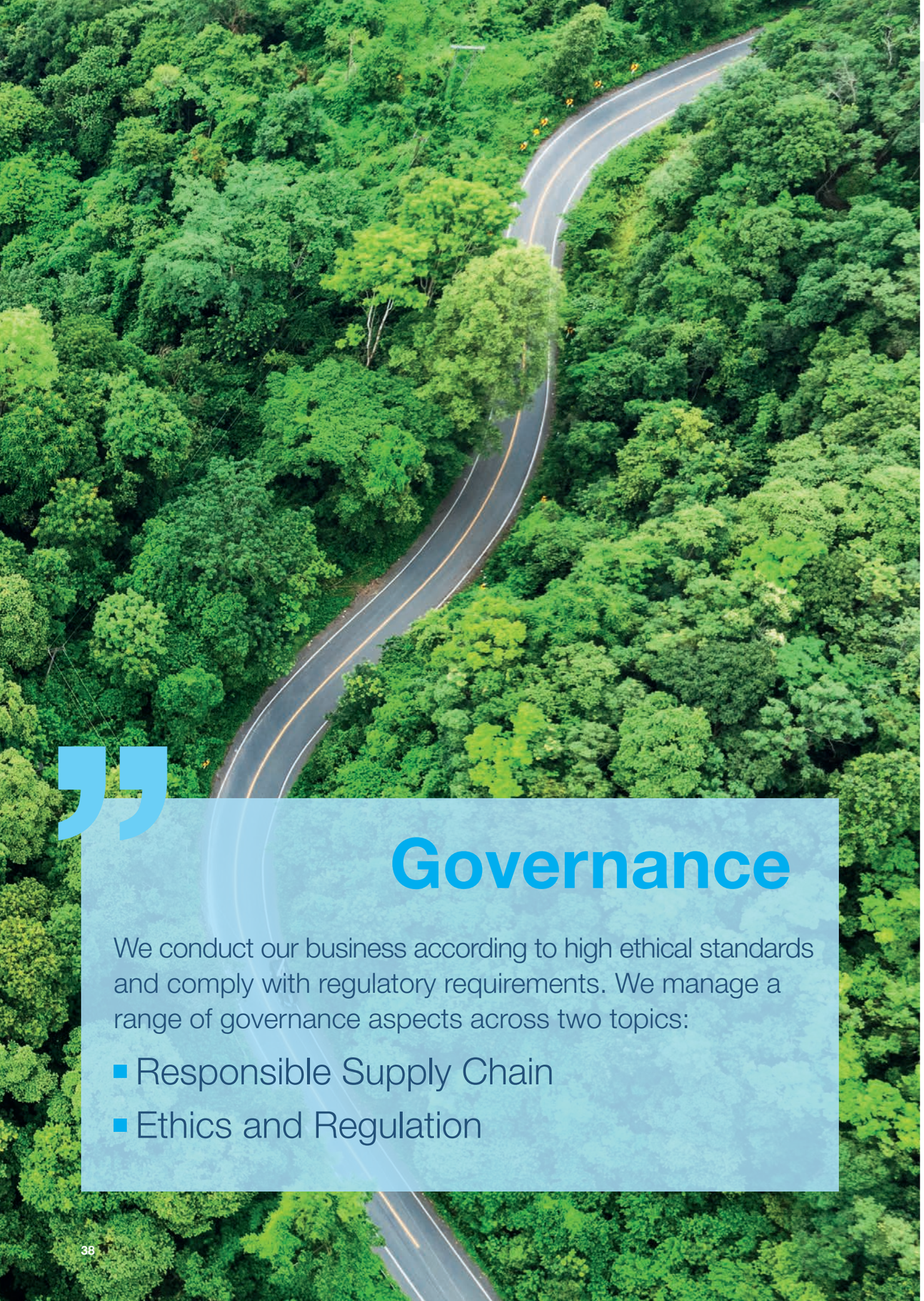
The Seven Pfannenberg Leadership Principles are to be embodied, lived by and enacted and allow an executive's performance to be evaluated. It is the leader's task to coach and workshop these princip-les with their respective understudies and teams; to the point where they trickle down and are felt by the entire workforce.

Attached to each of the seven principles is a summarised framework of skill set development pointers and personal growth propositions that need to be integrated into executive development and in-house workshopping, coaching and mentoring processes.

Leadership development is an evolving proposition, shaped by the flow of the radical change that the world is going through. These seven principles provide a platforming framework that is by design open to updates that reflect the progress of the leadership team and evolution of the company.

The Seven Leadership Principles consist of:





Governance

We conduct our business according to high ethical standards and comply with regulatory requirements. We manage a range of governance aspects across two topics:

- Responsible Supply Chain
- Ethics and Regulation

Responsible Supply Chain

General Purchasing Guidelines

Together with our suppliers, we strive to build a trusting and reliable partnership. Suppliers play a vital role because stable, reliable supply chains are decisive to our success. The purchasing department of the Pfannenberg Group ensures that our supply chain is supplied with materials and services in a way that saves costs and resources. To secure Pfannenberg´s competitiveness in the long term, quality, on-time delivery and supplier innovation are key factors. Our terms and conditions of purchase build a foundation in our global purchasing network. The terms and conditions of purchase and our packaging regulations for deliveries to the Pfannenberg Group can be downloaded on the website.

Ethical and socially responsible corporate management requires further specific measures in our purchasing department. We expect suppliers to comply with the relevant national and international laws and standards with respect to human rights as well as governing occupational health and safety, environmental protection and data protection.

The "Pfannenberg Code of Conduct For Business Partners" serves as a guideline for sustainable procurement and is based on the Code of Conduct of the German Association of the Electrical and Digital Industry (ZVEI). We are member of ZVEI. With ZVEI's Code of Conduct for Corporate Social Responsibility, we apply the industry guidelines in our supply chain regarding working conditions, social and environmental compatibility, transparency and collaboration.

To review if suppliers fulfil our sustainability requirements, we apply self-assessment questionnaires. Selectively, we conduct supplier audits on sustainability aspects as part of our quality audits. Out of all suppliers screened in 2024, about 20% include new suppliers that were screened using environmental and social criteria. Our supplier base is increasingly progressing in integrating sustainability aspects into their business. We will pursue further actions to improve transparency and sustainability performance in our supply chain.

57 sustainability self-assessments and **4** supplier quality audits with sustainability focus in 2024

Our “Pfannenberg Code of Conduct For Business Partners” covers the following requirements:

- Child labour and young workers
- Wages and benefits
- Working hours
- Modern slavery (i.e. slavery, servitude and forced or compulsory labour and human trafficking)
- Ethical recruiting
- Freedom of association and collective bargaining
- Non-discrimination and harassment
- Women‘s rights
- Diversity, equity and inclusion
- Rights of minorities and indigenous peoples
- Land, forest and water rights and forced eviction
- Use of private or public security forces
- Health and safety
- Anti-corruption and anti-money-laundering
- Data protection and data security
- Financial responsibility
- Disclosure of information
- Fair competition and anti-trust
- Conflicts of interest
- Counterfeit parts
- Intellectual property
- Export controls and economic sanctions
- Whistleblowing and protection against retaliation
- GHG emissions
- Energy efficiency
- Renewable energy
- Decarbonisation
- Water quality, consumption & management
- Air quality
- Responsible chemical management
- Sustainable resources management
- Waste reduction
- Reuse and recycling
- Animal welfare
- Biodiversity, land use and deforestation
- Soil quality
- Noise emissions
- Definition and implementation of similar standards towards own tier-1 suppliers
- Binding requirements towards tier-1 suppliers to pass on standards along the supply chain

Responsible Sourcing of Raw Materials

An important topic in our supply chain refers to refraining from the use of conflict minerals, which are raw materials including tantalum, tungsten, tin and gold (3TG) from conflict regions. Pfannenberg follows international efforts and has implemented a Policy on Responsible Mineral Sourcing which demands transparency from all suppliers. Our customers can assume that Pfannenberg products do not contain any conflict minerals from affected areas.

Our policy currently covers 3TG, and these minerals are systematically tracked. We are working on including other materials commonly considered critical in our processes as requested by some of our customers, such as copper, aluminium/bauxite, nickel, lithium, platinum and rare earth elements. Furthermore, we are striving to keep our supply chain free of corresponding high-risk smelters.



Read more about the Pfannenberg Policy on Responsible Minerals Sourcing

Supplier Risk Management

Supplier risk management plays a vital role in efficient and competitive global supply chains. It aims to minimise risks associated with supply chain dependencies. We assess our global supply chain for various risks and assign corresponding scores based on a range of indices which are supplemented by additional assessments from supplier questionnaires and audit results. Among the indexes considered are, for example, the Global Rights Index, Inequality in Income Index, Environmental Performance Index, Global Health Index, Global Slavery Index, Corruption Perception Index and Due Diligence Risk Index. Based on these scores, individual measures to minimise risks are addressed. These include environmental and human rights risks as well as other risks in our operations and our supply chain. We validate these assessments through random sampling.

We perform sustainability risk assessments as part of the due diligence activities ad hoc when we expect the risk situation to change significantly. The risk assessments cover direct suppliers (tier-1) as well as indirect suppliers (tier-n).

Our robust supply chain risk management programme is built on four pillars that ensure that we can anticipate and react to supply chain vulnerabilities proactively.

Within our supplier risk management, we assess a range of topics. Our customers ask about specific issues in questionnaires, for example land use and land grabbing. As a result, we have evaluated these issues as not material as components we purchase do not imply significant land use.





Innovation and Research
for a Sustainable Future

At Pfannenberg, innovation is at the heart of what we do. We are continuously researching and developing advanced solutions that enhance performance and drive energy efficiency across our product lines.

Especially in the field of refrigeration technology, we are strongly driven by regulatory requirements. For example, through the F-gas Regulation, legislators are the driving force. However, the availability of technical solutions must be matched by customer acceptance, especially with higher prices involved. Regulation is therefore necessary to establish our patents and innovations in the market.

Some examples of our innovations:
In enclosure cooling, we are committed to pioneering environmentally friendly cooling technologies. Our focus is on alternative refrigerants that reduce environmental impact while maintaining high efficiency.

In signaling solutions, our research is dedicated to increasing the reliability and effectiveness of alarm and hazard detection systems. We are actively exploring radio- and sensor-based alarm procedures to improve communication in critical situations and develop automated inspection procedures for fire and hazard detection systems-enhancing safety, efficiency and compliance.

For filterfans, we are optimising the balance between airflow efficiency and protection. Our research concentrates on high-efficiency filtration systems and energy-saving fan drives that ensure robust intellectual property (IP) protection, keeping enclosures safe from dust and moisture while reducing energy consumption.

While we currently do collaborate with specific research associations, we actively contribute to industry standards. For example, as a member of the DIN Fire Alarm Committee, we play a key role in shaping the future of fire safety by helping to develop new regulatory frameworks and best practices.

Our commitment to research and development reflects our broader mission: to create cutting-edge solutions that are effective, energy-efficient and future-proof. Through continuous innovation, we strive to make industrial operations safer, greener and more efficient – one breakthrough at a time.

Ethics and Regulations

Our Ethics Guideline

Our Corporate Ethics Policy, also called our "Pfannenberg Code of Conduct", is closely tied to the requirements laid out in our "Code of Conduct For Business Partners". Of course, our own standards are as high as the ones we apply to others. Thus, our Corporate Ethics Policy includes similar topics, including human rights and working conditions, anti-corruption and anti-money-laundering, data protection and data security, financial responsibility, disclosure of information, fair competition and anti-trust, conflicts of interest, counterfeit parts, intellectual property, export controls and economic sanctions, whistleblowing and protection against retaliation. We organise training for our employees on the Code of Conduct and our ethics policy. This business law training covers all individuals who have contact with customers and/or suppliers.

Our contract awarding process is subject to an approval procedure and a dual-control system. This way, we avoid anti-competitive practices. Bribery is a criminal offence that is not tolerated. We also firmly reject corruption. Employees may only accept gifts, invitations and other benefits from third parties to a reasonable and proportionate extent. We collect, process and retain personal data only in accordance with data protection law.

We monitor several governance topics requested by our customers and have implemented a set of compliance measures that are reviewed yearly. Among them are the Competition Compliance Policy and the Competition Law Guidelines that are binding for all companies within Pfannenberg.

Pfannenberg has a grievance mechanism established at the headquarters and its worldwide subsidiaries and associated companies. It outlines who is responsible for the complaint procedure, how the complaint can be made and what conditions apply. Of course, complaints are treated confidentially and can be reported anonymously, and we are committed to non-retaliation against complainants. Human rights complaints, environmental complaints and unethical business practices are mainly covered by the grievance mechanism which is available to internal stakeholders, including employees, direct suppliers and service providers.

Part of our commitment is to improve our environmental performance. We achieve this, for example, through our ISO 14001 environmental certification. We also comply with voluntary guidelines such as the Environmental Partnership Hamburg. Since 2009, Pfannenberg has been a partner in this initiative and receives the Certificate of Hamburg Town.

0 reported compliance cases

Major Guidelines regarding our Products

It is our goal to comply with all relevant environmental regulations and to avoid substances of concern across the life cycle of our products. We have implemented compliance measures and fulfil a range of industry directives such as REACH, RoHs and WEEE. In addition, we also comply with TSCA and California Proposition 65 for some products for the US market.

We also strive to make all our products PFAS-free. In some cases, this is not possible for all products due to technical limitations. Refrigerants, for example, are considered PFAS.

Our customers need transparency and assurance. We ensure that all chemical substances and components supplied to Pfannenberg comply with the requirements of the REACH regulation. Where applicable, Pfannenberg products comply with the RoHS and WEEE directives. We strive to manufacture all our products in full RoHS / REACH / WEEE compliance worldwide.

Essentially, every product in Europe is RoHS-compliant, as this is a prerequisite for CE conformity. This is a must-have requirement for a product to be launched onto the market. We require proof of RoHS and REACH conformity from all our suppliers, regardless of their country of origin. We strive to ensure continued conformity, even with changing regulations, through a dedicated Quality department.

At the same time, we comply with all requirements of the EU WEEE Directive regarding the handling of electrical equipment during disposal and recycling, and we fully comply with the European reporting obligations for the national take-back systems.

> Pfannenberg has been certified in accordance with **ISO 9001** since 1997 and **ISO 14001** since 2004.

Certifications

Pfannenberg products are of high quality and go through extensive testing procedures. Strict quality management and precise rules of examination guarantee the required functionality and reliability of our products even after many years of operation.

Several customers and external auditors have scrutinised our products and processes and found them satisfactory. For example, the German Federal Aviation Office (Luftfahrt-Bundesamt, LBA) has examined and approved Pfannenberg as a “known consignor”. As a result, the dispatch handling for our customers is cheaper and faster. Furthermore, Pfannenberg has been certified as an Authorised Economic Operator. Fast and safe customs clearance is therefore guaranteed.

We attach great importance to the constant improvement of our products and processes, thereby offering a continuously improved service and increase in value to our customers.

Product Certifications

DNV

Det Norske Veritas (DNV), formerly DNV GL, provides classification, technical assurance, software and independent expert advisory services to the maritime, oil & gas and energy industries. Pfannenberg has GL certificates for several products.

UKCA

The UK Conformity Assessed (UKCA) marking is a UK product marking that is used for goods being placed on the market in Great Britain (England, Wales and Scotland).

UL

UL is a global leader in testing, inspection, certification, auditing and validation. The UL mark is the single most accepted certification mark in the United States.

EN 54-3

The „EN 54 fire detection and fire alarm systems“ (EN 54-3 regulation) is a mandatory standard that specifies requirements and laboratory tests for every component of a fire detection and fire alarm system, and it allows the free movement of construction products between countries of the European Union market.

EN 54-23

The „EN 54 fire detection and fire alarm systems“ (EN 54-23 regulation) is a mandatory standard that specifies requirements and laboratory tests for every component of a fire detection and fire alarm system; whereas part 23 for fire alarm devices and visual alarms refers to visual signaling devices.

MED

The MED approval for marine equipment is a mark of conformity confirming that a product or piece of equipment is approved for use on board EU member state ships and ships of countries which have agreed to apply the Marine Equipment Directive 96/98/EC. It provides confirmation that the equipment or product is suitable for marine industry use.

NEMA

The National Electrical Manufacturers Association (NEMA) is the association of US manufacturers of electrical equipment that defines the main set of construction standards for the United States and Canada. Adherence to these standards is guaranteed by the UL certification.

EAC

Technical Regulations EAC is a harmonisation measure for all exporters to the Eurasian Economic Union, meeting the applicable safety requirements.

VdS

VdS Schadenverhütung confirms the performance of activities for product surveillance in the manufacturing plant in Hamburg, Germany, for the product groups fire detection and fire alarm systems.

IECEx (in progress)

IECEx is the International Electrotechnical Commission System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres.

ESG Key Performance Indicators

All data for fiscal year if not marked otherwise

Environment

Climate Action	Unit	2024 EMEA
Scope 1-3	1,000 t CO_2e	685.28
Scope 1	1,000 t CO_2e	1.49
CO_2 emissions from natural gas	1,000 t CO_2e	0.44
CO_2 emissions from fuel fleet	1,000 t CO_2e	0.69
Scope 2 Total, market-based	1,000 t CO_2e	0.17
Scope 1-2 Total	1,000 t CO_2e	1.66
Scope 3	1,000 t CO_2e	683.62
Scope 3 Upstream Total	1,000 t CO_2e	37.29
Waste from business activities	1,000 t CO_2e	1.01
Upstream transport	1,000 t CO_2e	0.17
Business trips	1,000 t CO_2e	0.13
Employees commuting to work	1,000 t CO_2e	0.01
Scope 3 Downstream Total	1,000 t CO_2e	646.32
Usage phase products	1,000 t CO_2e	619.27
Energy consumption: Primary and secondary energy	MWh	3,667.34
Share of renewable energies	% Total energy consumption	34.8
Energy consumption: Primary energy (natural gas)	MWh	2,273.41
Energy consumption: Secondary energy Total (electricity)	MWh	1,393.93

Green Factory	Unit	2024 EMEA
Sites with environmental management system in accordance with ISO 14001:2015	Number	2
Waste [1]	t	494.35
Non-hazardous waste	% Total waste	99.8
Proportion of recycling and recovery	% Total waste	96.7
Hazardous waste	% Total hazardous waste	0.4
Non-hazardous waste	% Total non-hazardous waste	96.3
Water consumption	m^3	2,633
Vehicle fleet (owned and leased vehicles) [2]	Number	73
Share of electric and hybrid vehicles	% Vehicle fleet	29.9
Charging station on the company premises for electric vehicles [2]	Number	13
Environmental incidents and fines	Number	0

Social

Workforce [2]	Unit	2024 EMEA
Employees	Number	361
Age group < 30	Number	59
Age group 30-50	Number	184
Age group > 50	Number	118
Blue-collar Workers	% Total number of employees	36.0
Employees with permanent contracts	% Total number of employees	63.0
Hiring rate	% Average number of employees	14.0

[1] Without Italy [2] As of 31 Dec. 2024

All data for fiscal year if not marked otherwise

Social

Workforce [1]	Unit	2024 EMEA
Fluctuation	% Average number of employees	2.9
Leadership positions	Number	107
Women in leadership positions	% All leadership positions	17.0
Female employees	Number	143
New hires of females	% New hires	30.0
Employees with disabilities	% Total number of employees	1.7
Nationalities of employees	Number	24
Employees using working time models (part-time)	Number	21
Employees who have participated in regular performance and career development reviews	% Total number of employees	80
Apprentices and students of dual-study programmes	Number	22
Share of apprentices and students	% Total number of employees	6.1

Occupational Health and Safety	Unit	2024 EMEA
Reportable accidents	Number	41
Employees	Number	32
Temporary workers	Number	9
Lost-time injuries (LTI)	Number	4
Employees	Number	4
Temporary workers	Number	0
Deaths – work-related	Number	0
Employees	Number	0
Temporary workers	Number	0
Contractors	Number	0
Fatality rate – work-related	Number	0
Employees	Number	0
Temporary workers	Number	0
Cases of occupational diseases	Number	0
Share of employees with access to medical services [1]	% of employees	100
Share of employees with access to health education	% of employees	100
Share of employees entitled to leave for family reasons	% of employees	100
Share of eligible employees who took leave for family reasons	% of employees	8.3

Governance

Responsible Supply Chain	Unit	2024 EMEA
Number of relevant suppliers with purchasing volume > €10,000	Number	474
Sustainability self-assessments	Number	57
Supplier quality audits with sustainability focus	Number	4

Ethics and Regulations	Unit	2024 EMEA
Reported Compliance Cases	Number	0
Reported Discrimination Cases	Number	0
Employees graduating from business compliance training	% Invited employees	0

[1] As of 31 Dec. 2024

About the Report

General Remarks

This is the first Pfannenberg Sustainability Report. It covers the fiscal year 2024 (1 January to 31 December 2024) and our EMEA region. Reporting is voluntary. No external audit was carried out.

The Sustainability Report was published in July 2025, and the editorial deadline was 27 June 2025. As a reporting standard, we applied the GRI Standards 2021.

With this report, we want to show our stakeholders and anyone else who is interested how Pfannenberg implements sustainability in its daily business.

Scope of Consolidation for Data Collection

The Pfannenberg Group publishes an annual report which is disclosed in the "Bundesanzeiger" (Federal Gazette). The scope of consolidation of this Sustainability Report varies from the annual report as it covers the EMEA region only. Pfannenberg EMEA includes the following subsidiaries:

- Our production site with associated sales site in Hamburg, Germany as well as the Holding headquarters
- Our production site with associated sales site in Fidenza, Italy
- Our sales site in Rotherham, United Kingdom

This covers the following legal entities: Pfannenberg Group Holding GmbH, Pfannenberg GmbH, Pfannenberg Europe GmbH, Pfannenberg SrL, Pfannenberg Italia SrL, Pfannenberg (UK) Ltd.

The data on our company's sustainability activities is clustered into Environment, Social and Governance sections. Unless otherwise stated, the reported content and data relate to the above-mentioned scope of consolidation.

Our workforce data is valid as of 31 December of each reporting year. Other data is measured as an average for the respective fiscal year.

Methodology for Calculating our Corporate Carbon Footprint

The above-mentioned EMEA subsidiaries were included in our CO_2e balance sheet.

Operational System Boundaries according to Scopes

The calculation of the Group's greenhouse gas inventory is based on the principles and methods of the Greenhouse Gas Protocol. The system boundaries of the greenhouse gas inventory were determined using the operational control approach. The following greenhouse gas emissions are considered:

Scope 1: direct greenhouse gas emissions from combustion processes in stationary applications, mobile applications (like vehicle fleet) and direct emissions of volatile gases (technical gases and refrigerants).

Scope 2: indirect greenhouse gas emissions resulting from the generation of electricity that we purchase. District heating and steam are not relevant in our case.

Scope 3: Indirect emissions from purchased goods and services (3.1), upstream fuel- and energy-related emissions (3.3), upstream transport and distribution (3.4), waste generated in operations (3.5), business travel (3.6), employee commuting (3.7), use of sold products (3.11) and investments (Scope 3.15). Scope 3.8 is included in Scope 1 and Scope 2.

For our calculations, we used emission factors based on data from the International Energy Agency (IEA) 2023 and the UK Department for Business, Energy and Industrial Strategy (UK DBEIS) 2023. The emission factors are expressed in CO_2 equivalents (CO_2e) and consider carbon dioxide and all other greenhouse gases regulated by the Kyoto Protocol.

Scope 1 and Scope 2 emissions

Both the market-based and location-based approaches were used to calculate Scope 1 and Scope 2 emissions. In this report, we report on the market-based approach.

Scope 3 emissions

A comprehensive screening of all Scope 3 categories was conducted in accordance with SBTi requirements to define relevant categories for the 2024 reporting year. Category 3.12 emissions were found to be negligible after calculation and were therefore not included in our greenhouse gas inventory.

In calculating emissions, we used either an expenditure-based approach, activity data from business units and locations, third-party data or a combination of these – depending on which option was most suitable to achieve the most transparent and accurate results.

For Scope 3.7, we did not consider greenhouse gas emissions from employees' teleworking, i.e., greenhouse gas emissions resulting from the consumption of heat and energy in home offices. The data for waste in Italy to calculate Scope 3.7 had to be partly estimated because data from the waste recycler did not provide sufficient details.

For Scope 3.1 and 3.4, supplier-specific data was used where available.

The number of employees refers to all employees of the Group working in EMEA as of 31 December 2024. All employee indicators with categorisations such as gender, contract type, management level, etc. were calculated using the SAP SuccessFactors system.

Definitions and Calculation Methods for other Indicators

Suitable locations for photovoltaic (PV) systems are those where we have legal influence and where PV systems make economic sense. These locations are identified through detailed preliminary studies. Photovoltaics expansion is primarily carried out in locations with high energy consumption.

The group of relevant suppliers includes all suppliers with a purchasing volume of more than €10,000. Non-taxable external creditors (e.g., insurance companies, industry associations and freelancers) are not included, regardless of their purchasing volume. Relevant suppliers completed an ESG self-disclosure in 2024.

Further information and contact

This report is publicly available on our website.

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This report is publicly available on our website

GRI Content Index

This Sustainability Report was compiled with reference to the GRI Standards 2021 and GRI 1: Foundation 2021 of the Global Reporting Initiative (GRI) and applies to the 2024 fiscal year.
GRI Sector Standards are not applicable.

Disclosures conform to the latest available version of the GRI Standards in English, which can be downloaded here:

GRI Standard	Disclosure		Reference and omissions
GRI 2: General Disclosures 2021			
1. The organization and its reporting practices			
2-1	Organizational details		4, 52
2-2	Entities included in the organization's sustainability reporting		48
2-3	Reporting period, frequency and contact point		48
2-4	Restatements of information		None, this is the first Sustainability Report
2-5	External assurance		48
2. Activities and workers			
2-6	Activities, value chain and other business relationships		4, 6-8; overall information on the value chain
2-7	Employees		46-47; without non-guaranteed workers
3. Governance			
2-9	Governance structure and composition		11
2-10	Nomination and selection of the highest governance body		11
2-11	Chair of the highest governance body		11
2-12	Role of the highest governance body in overseeing the management of impacts		11
2-13	Delegation of responsibility for managing impacts		11
2-14	Role of the highest governance body in sustainability reporting		11
4. Strategy, policies and practices			
2-22	Statement on sustainable development strategy		3
2-23	Policy commitments		39-41, 43
2-24	Embedding policy commitments		11, 27, 40-41, 44
2-27	Compliance with laws and regulations		39-41, 43
2-28	Membership associations		39; exemplary
5. Stakeholder engagement			
2-29	Approach to stakeholder engagement		12
2-30	Collective bargaining agreements		There are currently no collective, but only individual agreements. The right to collective bargaining agreements is codified in the Code of Conduct.
GRI 3: Material Topics 2021			
3-1	Process to determine material topics		12-13
3-2	List of material topics		13
Material Topic: Climate Action			
3-3	Management of material topics		15-17
GRI 302: Energy 2016	302-1	Energy consumption within the organization	18, 46
	302-4	Reduction of energy consumption	26-27
	302-5	Reductions in energy requirements of products and services	19, 27; exemplary

GRI Content Index

GRI Standard	Disclosure		Reference and omissions
Material Topic: Climate Action continued			
GRI 305: Emissions 2016	305-1	Direct (Scope 1) GHG emissions	15, 46
	305-2	Energy indirect (Scope 2) GHG emissions	15, 46
	305-3	Other indirect (Scope 3) GHG emissions	15, 17
	305-4	GHG emissions intensity	46
	305-5	Reduction of GHG emissions	16
Material Topic: Waste and Packaging			
3-3	Management of material topics		21, 27
GRI 306: Waste 2020	306-1	Waste generation and significant waste-related impacts	21-22
	306-2	Management of significant waste-related impacts	21-22
	306-3	Waste generated	46, without Italy
	306-4	Waste diverted from disposal	46, without Italy
	306-5	Waste directed to disposal	46, without Italy
Material Topic: Refrigerants and F-gas Regulation			
3-3	Management of material topics		24-25
GRI 305: Emissions 2016	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	24-25
Material Topic: Green Factory			
3-3	Management of material topics		26-27
GRI 301: Materials 2016	301-2	Recycled input materials used	27; overall commitment
GRI 303: Water and Effluents 2018	303-1	Interactions with water as a shared resource	28
	303-2	Management of water discharge-related impacts	28
	303-3	Water withdrawal	28, 46
Material Topic: Occupational Health and Safety			
3-3	Management of material topics		31-33
GRI 403: Occupational Health and Safety 2018	403-1	Occupational health and safety management system	31
	403-4	Worker participation, consultation, and communication on occupational health and safety	31-32
	403-5	Worker training on occupational health and safety	32
	403-6	Promotion of worker health	32-33
	403-9	Work-related injuries	31, 47
Material Topic: Responsible Supply Chain			
3-3	Management of material topics		39-41
GRI 308: Supplier Environmental Assessment 2016	308-1	New suppliers that were screened using environmental criteria	39-41
	308-2	Negative environmental impacts in the supply chain and actions taken	39-41
GRI 414: Supplier Social Assessment 2016	414-1	New suppliers that were screened using social criteria	39-41
	414-2	Negative social impacts in the supply chain and actions taken	39-41

GRI Standard	Disclosure		Reference and omissions
Material Topic: Working Conditions and Human Rights			
3-3	Management of material topics		34-35, 40
GRI 401: Employment 2016	401-1	New employee hires and employee turnover	46-47
	401-3	Parental leave	47
GRI 404: Training and Education 2016	404-3	Percentage of employees receiving regular performance and career development reviews	47
GRI 405: Diversity and Equal Opportunity 2016	405-1	Diversity of governance bodies and employees	47; selected diversity criteria for employees
GRI 406: Non-discrimination 2016	406-1	Incidents of discrimination and corrective actions taken	47
GRI 407: Freedom of Association and Collective Bargaining 2016	407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	40; These rights are codified in our Code of Conduct for employees and for Business Partners; employees can report incidents.
GRI 408: Child Labor 2016	408-1	Operations and suppliers at significant risk for incidents of child labor	41; covered as part of our Supplier Risk Management
GRI 409: Forced or Compulsory Labor 2016	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	40-41; covered as part of our Supplier Risk Management and in our Responsible Sourcing Policy
Material Topic: Ethics and Regulations			
3-3	Management of material topics		43
GRI 205: Anti-corruption 2016	205-1	Operations assessed for risks related to corruption	43; general approach
	205-2	Communication and training about anti-corruption policies and procedures	43, 47
	205-3	Confirmed incidents of corruption and actions taken	47
GRI 206: Anti-competitive Behavior 2016	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	43
GRI 415: Public Policy 2016	415-1	Political contributions	None
GRI 416: Customer Health and Safety 2016	416-1	Assessment of the health and safety impacts of product and service categories	44-45; management systems and certifications
	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	None known

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Disclaimer

The collection and processing of all information in the Sustainability Report 2024 is carried out with the greatest care. Nevertheless, errors cannot completely be ruled out. Any forward-looking statements were made based on current assumptions and estimates at the time of publication.

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