



STULZ

CLIMATE. CUSTOMIZED.



SUSTAINABILITY REPORT 2024



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We are STULZ

Founded in 1947, today STULZ is a leading company in the field of air conditioning.

Our core competencies

- Development, production, installation, start-up, servicing and maintenance of precision air conditioning units, chillers, Air Handling Units, and Micro Data Centers, plus solutions for Liquid Cooling for IT, data centers, medical technology, telecommunications systems and industry
- Sales and maintenance of comfort air conditioning systems and Humidifiers, including water treatment for humidifying systems

8 production entities worldwide in Brazil, China, Germany (headquarters), India, Italy, Spain, UK and the USA.

To achieve this, we work with an exclusive sales and service network in more than **140 countries.**

**ONE STULZ.
ONE NETWORK.**
Discover the world of STULZ

→ [STULZ.COM/REGIONS](https://stulz.com/regions)



STULZ Air Technology worldwide

Employees
> 3,500

Sales volume
approx.
€ 850 million

STULZ Group worldwide

Employees
approx. **8,200**

Sales volume
approx. **€ 1,700
million** including
further business segments

Letter from the Management

Dear Reader,

The 2024 Sustainability Report for the global STULZ air conditioning business builds on our previous accomplishments and is enriched by new features and improvements: We present an update on our key performance indicators and updates on last year's report across our four key priority areas Sustainable Products, Resource-Efficient Production, Responsible Supply Chain and Good Employer. Moreover, we feature new data such as our Global Carbon Footprint and a deep dive into latest trends in our industry.

You will read about Liquid Cooling, Free Cooling, low GWP refrigerants, resource-efficient production methods and how we engage with communities across the globe – because sustainability is more to us than just compliance with regulations and standards.

Our product portfolio and customized solutions are the center of our activities. STULZ has a long tradition in energy efficiency, and technological innovation. Our customers require effective, efficient and intelligent cooling solutions for high-performance computing – and we as STULZ need to enable them for their technological journey. We see that the demand for sustainable data centers is increasing significantly worldwide, and we accept the challenge of driving this transformation.

“

EVEN IN TIMES WHEN REGULATORY FRAMEWORKS AROUND ESG ARE BEING RELAXED, WE AT STULZ REMAIN COMMITTED TO SUSTAINABILITY TO STAY ALIGNED WITH CUSTOMER EXPECTATIONS REGARDING CARBON FOOTPRINT AND OTHER ENVIRONMENTAL DATA AS WELL AS SUSTAINABLE SUPPLY CHAIN PRACTICES. IN ADDITION, WE RECOGNIZE ITS STRATEGIC BUSINESS VALUE AS INNOVATIONS AROUND ENERGY EFFICIENCY HAVE BEEN PART OF OUR DNA FOR DECADES AND REMAIN A DRIVER OF OUR LONG-TERM COMPETITIVENESS.

Thorsten Weiss, CFO



Yet, sustainability needs a substantial amount of groundwork. We communicate information and data on environmental, social, and governance (ESG) aspects of our business transparently, as our customers, investors, and regulatory bodies expect this from us. This implies reporting on relevant data such as refrigerant usage and employee statistics, as well as information on topics of interest, although they are less important to our business: An example is water consumption, which is very low for our products, yet we display data.

Our goal is to improve our performance and our processes. In this light, we are happy to provide our stakeholders with carbon footprint data for the global STULZ organization for the first time. This is the initial step towards setting reduction targets, and eventually implementing emission reduction initiatives. Similarly, our Code of Conduct for Suppliers and the new supplier relationship management (SRM) tool in Germany lay the foundation for further progress in responsible supply chain management. There is still further work to master, and we are confident in continuing our sustainability journey, aligned with our business development, in a solid step-by-step approach.

This report will present information and examples from different subsidiaries across the global STULZ organization. STULZ operates in a decentralized manner following a local-for-local approach, which implies that our eight production entities, as well as more than 20 sales and service sites operate according to local demands and practices. In the long term, we need to align key areas of sustainability to manage them more effectively and to follow a common standard. The implementation of our global carbon accounting as well as our ongoing reporting efforts have shown us the benefits of an integrated approach to sustainability reporting. We thank our global team for their ongoing efforts and their dedication in continuously improving data collection and quality to ultimately advance our ESG performance.

We want to express our continued commitment to sustainability and invite you to join us on this journey. Thank you for your interest in sustainability at STULZ - feel free to share your questions and feedback with us.

Yours sincerely,

**Jürgen Stulz
Marc-Oliver Stulz
Christoph Stulz
Thorsten Weiss**

About STULZ



PROGRESS BASED ON TRADITION

STULZ has evolved from an innovative family-run business into a modern global player.



1947

Company founder Albert Stulz paved the way for our enterprise with his Electro AS GmbH Hamburg in Germany.

50s AND 60s

In 1965, the company's own air conditioning unit was launched onto the market – a comfort air conditioning system that cooled and dehumidified the room. The air conditioning system division has consistently grown since 1965.

70s

When the data center sector started to boom in the 1970s, STULZ was ready and waiting on the market with air conditioning solutions and direct Liquid Cooling for mainframes. In 1977, we introduced precision air conditioning units with a modular design – a groundbreaking innovation that further strengthened our international reputation as a specialist for efficient air conditioning.

STULZ WELCOME

The complete range of air conditioning technology

For over 50 years, we have been supplying products, solutions, and services for air conditioning – with our commitment to precision, efficiency and reliability. The STULZ portfolio extends from traditional Room and High Density Cooling to chillers and Air Handling Units all the way to Humidifiers and Micro Data Centers.

STULZ is a pioneer for cooling solutions, mission-critical applications and data centers. By virtue of quality, efficiency and sustainability, the company delivers optimal solutions for every requirement in precision and comfort air conditioning.

Leading enterprises in industry, telecommunications, banks and retail rely on our product promise. As an exclusive sales partner for air conditioning systems from Mitsubishi Heavy Industries in Germany and Austria, we can offer products that ensure an optimum climate in small commercial buildings or households. Our multifunctional units (for cooling and heating) have excellent energy efficiency, and therefore low energy consumption.

Our own Monitoring Software further enhances the portfolio and helps customers deploy made-to-measure air conditioning solutions in the best possible way for their needs. Furthermore, we offer comprehensive services and after-sales support through a worldwide partner network.



→ SINCE THE 80s

In the 1980s, units with Free Cooling were developed. These Free Cooling units offer the greatest energy-saving potential for data centers, especially in cold and moderate climate zones.

→ TODAY AND BEYOND

The increasing use of high-performance computers requires efficient and reliable management of high heat loads, with innovative cooling solutions increasingly in demand. Liquid Cooling emerges as a particularly promising option with STULZ pursuing highly innovative technologies such as direct-to-chip Liquid Cooling, and immersion cooling. Today, STULZ leads the world market in Direct and Indirect Free Cooling solutions.

Innovative products and solutions

STULZ stands for top-quality air conditioning. Thanks to our global network and comprehensive portfolio strategy, today we can satisfy all requirements for precision air conditioning. This is in perfect keeping with our claim: “ONE STULZ. ONE SOURCE.”

Precision air conditioning is deployed in data centers, science and medicine, to name a few. Predictive AI (Artificial Intelligence) has for a long time been an integral part of many data center control and monitoring systems. It helps data center operators increase energy efficiency, and enables early detection of impending failures. With the breakthrough of ChatGPT, generative AI is further evolving as a global trend. This development requires growing data and storage capacities, and at the same time, companies strive to manage increasing data volumes with reduced environmental impact.

To remain competitive in a dynamic market, STULZ develops new ideas and puts them into practice through future-oriented products and solutions. We invest in research and development to ensure the manufacturing of state-of-the-art technologies, and control systems. For example, we see an ever-growing demand for larger central data centers, while small edge data centers are becoming increasingly decentralized. Other factors changing our industry include 5G and fiber optics.

Consequently, we are continuously developing our portfolio accordingly, ensuring our products and solutions satisfy the needs of the market. In data center air conditioning, STULZ Liquid Cooling solutions are a great choice for cooling servers efficiently and reliably, despite additional heat loads. Our units are helping to bring about global digitalization, and we contribute to a more energy-efficient transformation of business.

With 30 subsidiaries, including eight production entities, STULZ has a presence in over 140 countries around the world. Today, STULZ leads the world market in Direct and Indirect Free Cooling solutions.



Our product portfolio



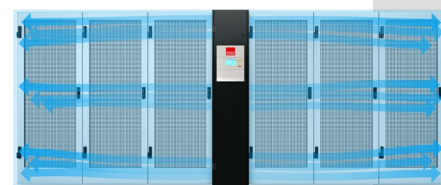
CHILLER UNITS

STULZ Chiller Units are developed for maximum reliability in data centers and industrial buildings. Designed and manufactured under strict conditions, the units ensure the highest possible energy efficiency at any local temperature profile – 24 hours a day, 365 days a year. With the **Explorer series**, STULZ offers a budget-optimized yet state-of-the-art chiller with a high level of flexibility.



HIGH DENSITY COOLING

STULZ offers a wide range of solutions and systems for direct rack cooling to precisely and efficiently cool high heat loads and hotspots on racks. These solutions provide maximum, reliable, and accurate cooling with minimum utility space. Moreover, with the option of Indirect Dynamic Free Cooling, **CyberRow** offers high energy-saving potential at high heat loads.



LIQUID COOLING

STULZ offers integrated Liquid Cooling systems, manufactured and tested, along with individual climate units to complement existing Liquid Cooling infrastructure. From design, and independent product consulting to installation and maintenance – it all comes from a single source. The STULZ Coolant Distribution Unit **CyberCool CMU** is a central component in both direct liquid-to-chip cooling, and immersion cooling solutions.



AIR HANDLING UNITS

STULZ Air Handling Units can be individually configured and manufactured to meet a wide range of requirements. From small data centers needing roof installations, to hyperscale data centers without raised floors: Our indoor and outdoor Air Handling Units offer custom-tailored solutions for projects with optimized energy efficiency. **CyberWall** units, for example, are suitable for indoor applications in hyperscale data centers.





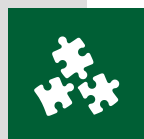
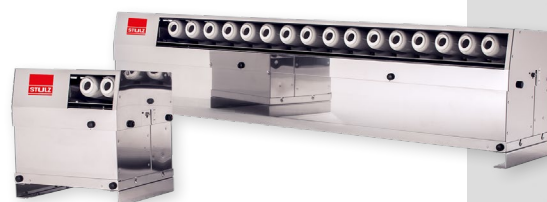
ROOM COOLING

The air conditioning in rooms housing mission-critical applications requires the reliable and efficient removal of large amounts of heat. With precision air conditioning units from STULZ, our clients can rely on 24/7 availability. Our solutions provide continuous air conditioning with optimized energy efficiency, even at high heat loads. Our **CyberAir** is among our flagship products.



HUMIDIFIERS

Computers or hospitals, laboratories or offices – humidification is vital for optimally conditioned air. Furthermore, made-to-measure humidifier solutions ensure highly efficient production in industries like printing, textile as well as food production and logistics. STULZ **UltraSonic** humidifying systems provide tailor-made humidification.



MICRO DATA CENTERS

Micro Data Centers from STULZ are a cost-effective way of providing scalable IT resources that precisely target customer needs, upgrading mission-critical infrastructure or providing additional computing and storage power for the client's network (edge computing). With the **Micro DC**, STULZ can offer a complete solution in a single device.



MODULAR DATA CENTERS

Our modular or containerized prefabricated data centers are built at a STULZ or authorized factory and arrive at a customer site fully tested and ready to be deployed. They are suitable for all data center applications, including the housing of mission-critical IT infrastructure as well as mechanical and electrical plants. A Modular Data Center can be installed externally on a concrete plinth, inside a warehouse – or even in the corner of an office.



SHELTER COOLING

Free Cooling for stand-alone use in modular buildings, containers, air conditioning receiver and transmitter base stations; STULZ Shelter Cooling units are immediately ready for connection and use based on the plug-and-play principle. They can be precisely configured to customer-specific needs, and ensure continuous availability around the clock for years to come. Our **WallAir** unit is installed outside the container, enabling maximum utilization of the interior space.



HEAT PUMPS

We are committed to using energy-efficient heat pumps, particularly air-to-air and air-to-water models. These technologies can be used for cooling and heating and play a decisive role in energy transition. An example is the **Q-ton** CO₂ heat pump.



COMFORT COOLING

The **KX series** provides efficient air conditioning in larger buildings. It offers exceptional comfort and energy efficiency. Indoor and outdoor units can be combined with each other in an almost infinite variety of ways, and can be controlled and monitored centrally and remotely. The KX series is manufactured by Mitsubishi Heavy Industries and distributed under our brand S-Klima in Germany and STULZ in Austria.



MONITORING

We continually strive to improve our cooling systems and solutions, including their control systems, to achieve the best possible results for our customers. That's why STULZ Digital Solutions was founded: to focus on the development of embedded systems, long-term data acquisition, big data measurement, data analysis and 3D data visualization.

CyberHub ECO.DC monitors the data center components and the whole environment (temperatures, humidity, pressure, and energy) around the clock.



SERVICE

For over 55 years, our customers have relied on the technical expertise, comprehensive capabilities, and global availability of our service at STULZ. We ensure trouble-free, economical and professional operation of technical systems and can take care of the entire application from a single source.

Our subsidiaries

PRODUCTION ENTITIES



USA

Stulz Air Technology Systems Inc. in Frederick (Maryland)

Founded in 2001

- Development, production and distribution of Room Cooling equipment for the US market
- Production of CyberWall and other large-scale systems for data center cooling
- Assembly of CRAH and FanWall products in Dayton, Tennessee
- New site in Denton County, Texas is under construction and scheduled to open in 2025



UK

Stulz Modular Ltd. in Oxford

Founded in 2016

- Development, production and distribution of Micro & Modular Data Centers



GERMANY

Stulz GmbH in Hamburg

Founded in 1947

- Headquarters of the international air conditioning technology organization in Hamburg
- Development, production and distribution for Room Cooling, High Density Cooling and chillers

Stulz Digital Solutions GmbH in Hamburg

Founded in 2014

- Software development site



BRAZIL

Stulz Brasil Ar Condicionado Ltda. in Sorocaba

Founded in 2015

- Production for the Brazilian market



SPAIN

Stulz Tecnivel S.L.U. in Madrid

Founded in 2016

- Development, production and distribution of Air Handlers, CyberWall units and heat exchangers



ITALY

Stulz S.p.A. in Valeggio sul Mincio

Founded in 1989

- Development, production and distribution of air conditioning units and chillers for the IT industry and the telecommunications sector



CHINA

Stulz Air Technology and Services Hangzhou Co., Ltd.

Founded in 2013

- Development, production and distribution of products for the Chinese and Asian markets



INDIA

Stulz-CHSPL (India) Pvt. Ltd. in Mumbai

Founded in 2006

- Development, production and distribution of local products for the Indian and Asian markets



Production entities



Sales and service sites

SALES AND SERVICE SITES

AUSTRALIA

Stulz Oceania Pty Ltd. and Stulz Oceania (Power) Pty Ltd. in Sydney

AUSTRIA

Stulz Austria GmbH in Wiener Neudorf

BELGIUM

Stulz Belgium BV in Brussels

BRAZIL

Dala Service AR Conditionada Ltda. in São Paulo

CHINA

Stulz Air Technology and Services Shanghai Co., Ltd. in Shanghai

FRANCE

Stulz France S.a.r.l. in Rueil Malmaison

INDONESIA

PT STULZ Air Technology Indonesia in Tangerang

MALAYSIA

Stulz Malaysia Sdn. Bhd. in Iskandar Puteri

MEXICO

Stulz México S.A. de C.V. in Mexico City

NETHERLANDS

Stulz Groep B.V. in Hoofddorp

NEW ZEALAND

Stulz Oceania Ltd. in Auckland

POLAND

Stulz Polska Sp. z o.o. in Warsaw

SINGAPORE

Stulz ASIA HUB Pte. Ltd. and Stulz Singapore Pte Ltd. in Singapore

SPAIN

Stulz España, S.A. in Madrid

SOUTH AFRICA

Stulz South Africa Pty. Ltd. in Gauteng

SWEDEN

STULZ Nordics AB in Stockholm covering Sweden, Norway and Finland

THAILAND

STULZ Siam Co., Ltd. in Bangkok

UK

Stulz UK Ltd. in Surrey

UNITED ARAB EMIRATES

Stulz EMEA Center of Excellence - FZCO in Dubai



Managing Sustainability



Our organizational structure for ESG management

Our progress in sustainability management and reporting is the result of the joint effort of many players. A team of members from various departments and all our global sites is actively involved in compiling information and data for our global Sustainability Report. The **Sustainability Team** is led by Environmental and Product Management representatives from the German headquarters working in tandem on behalf of Executive Management. The representatives from all production entities and sales and service sites coordinate the work together with their local management.

Ultimately, STULZ **Executive Management** is responsible for managing our sustainability efforts. It will also be responsible for future tasks, such as setting goals, allocating resources for sustainability management, and complying with regulatory requirements. The Executive Management is functioning as the highest governance body.

The international **Steering Committee** acts as a link to Executive Management, both in reporting and in overall sustainability management. It includes members from Executive Management, Quality Management, and Product Management. The Steering Committee approves the Sustainability Report, takes strategic decisions and is responsible for communicating critical concerns. Our Sustainability Team holds weekly meetings with members of the Steering Committee.

The Sustainability Team analyzes and implements internal and external requirements in ESG (Environment, Social, Governance). At the headquarters in Germany, various departments, such as Marketing, Product Management, Purchasing, and HR are involved in these activities.

The organizational structure for managing sustainability with **representatives from various levels and departments at a global level** was established during the reporting processes. It will be further developed around topics such as occupational health and safety and waste management. For our production sites, we work with **management systems**.

Additionally, across the global organization, international entities build structures according to local needs. Two examples:

In Germany, the Works Council plays an important role, representing the interests of our workers, in accordance with the German Works Constitution Act. It currently consists of five women and eight men and monitors compliance with legislation, collective bargaining agreements and work agreements. It organizes working committees and is engaged in legal issues, anti-discrimination, equality, social benefits, and environmental concerns.

In Brazil, the S.O.L. Program is a quality tool for continuous improvement in daily work. S.O.L. is the Portuguese abbreviation for Safety, Organization and Cleanliness. STULZ Brazil is regularly audited in line with S.O.L. and performance improvement is monitored.

Management systems across the STULZ production sites

ISO 9001 Quality management	ISO 14001 Environmental management	ISO 50001 Energy management	ISO 45001 Occupational health & safety management
NEW: STULZ Brazil STULZ China STULZ Germany STULZ India STULZ Italy STULZ Tecnivel (Spain) STULZ Modular (UK)	STULZ China STULZ Germany STULZ India STULZ Italy STULZ Tecnivel (Spain) STULZ Modular (UK)	STULZ Italy	STULZ China STULZ India STULZ Modular (UK)

Guidelines and standards for our ESG governance

STULZ has committed, at the highest level, to act responsibly and sustainably, and to treat people and the environment with the greatest care. We attach particular importance to respect for human rights and are committed to complying with internationally recognized standards such as the ILO Core Labor Standards and the OECD Principles.

High quality standards have been defined for our products in terms of safety, data protection, health and safety, and environmental protection. Our fundamental obligations are embedded in guidelines, such as security and data protection management and corporate conduct, and in quality and environmental policies.

These commitments have been established by our Executive Management and are shared with employees and stakeholders through our internal communication channels. The implementation and monitoring of compliance with these guidelines are the responsibility of the area managers.

We have established Codes of Conduct across the worldwide STULZ organization, which set out clear ethical standards and behavioral guidelines. In some cases, these are supplemented by rules for employees to fulfill the national and international requirements as far as possible. The German headquarters has published a Code of Conduct for Suppliers to set ethical standards in the supply chain.

Through regular due diligence of voluntary commitments, we ensure that our business activities and supply chain conform to high ethical, social and ecological standards. The systematic monitoring and prevention of potential risks, such as human rights violations, environmental pollution, corruption and other negative impacts, are future tasks for STULZ.

Risk management, environmental and energy management, quality management and occupational health and safety management are an established part of our everyday practice. Moreover, at several sites we have introduced a whistleblower system, which gives our workforce and in some cases, third parties the opportunity to report concerns anonymously, to effectively identify and tackle potential problems or violations of our guidelines and standards.

“

WE ARE PROUD TO HAVE SUCH A GREAT MANAGEMENT STRUCTURE AT STULZ CHINA: OUR SITE IN HANGZHOU IS CERTIFIED BY SEVERAL ISO STANDARDS AND MANAGED BY GUIDELINES AS A QUALITY POLICY, ENVIRONMENTAL POLICY, OCCUPATIONAL HEALTH AND SAFETY POLICY AND A LABOR AND SOCIAL RESPONSIBILITY POLICY.

Helen Fu, China TOM Director STULZ China

OUR COMMITMENT TO THE SDGS

The United Nations approved the 17 Sustainable Development Goals (SDGs) in 2015, to be achieved by 2030. All players – including corporations – are requested to make their contribution. At STULZ, we substantially contribute to these three SDGs with our products and other sustainability activities.
→ SDGS.UN.ORG/GOALS





FOUR MATERIAL TOPICS WITH SPECIFIC ASPECTS

Sustainable Products

- High quality and safety standards
- Energy efficiency
- Low GWP and natural refrigerants
- Circular economy

Resource-Efficient Production

- Diligent energy consumption and energy saving
- Reduction of greenhouse gases
- Efficient water use
- Waste prevention, reduction and reuse
- Careful handling of hazardous materials
- Resource-efficient logistics

Responsible Supply Chain

- Ethics and compliance
- Responsible purchasing
- Managing our supply chain

Good Employer

- Occupational health and safety
- Training and career management
- Diversity, equality and inclusion
- Modern work environment

“

IT IS AMAZING HOW THE GLOBAL SUSTAINABILITY TEAM HAS DEVELOPED. YOU CAN RECOGNIZE THE GROWING IMPORTANCE OF SUSTAINABILITY WORLDWIDE FOR STULZ AND OUR STAKEHOLDERS. A CONSISTENT GLOBAL UNDERSTANDING AND OUTCOME ARE ACHIEVED. OUR GLOBAL NETWORKING ON SUSTAINABILITY HAS BEGUN TO GENERATE SYNERGIES.

Jan-Lucas Kinne and Ludger Ecke,
Sustainability Team

Material topics

The identification of our material topics lays the foundations for informed reporting and effective sustainability management at STULZ. These topics are strategic priorities for the company and form the basis for the continuous development of our sustainability management program. The material topics were initially defined for our first Sustainability Reports – in close consultation with Executive Management. They were reviewed and confirmed for the global STULZ organization in 2024.

During these processes, we identified the requirements that STULZ must fulfill in terms of sustainability. The dynamic market environment, in particular customers, suppliers, competitors, and regulatory requirements, delivered valuable information on STULZ's impact on ESG topics. Our four material topics cover several specific aspects which we describe in detail in the respective chapters.

Our stakeholders

Our stakeholders were initially identified as part of our ISO certification process (ISO 14001) at our German headquarters. These four groups are therefore also relevant to the global business activities of STULZ. There are currently no vulnerable groups or groups in need of protection among our stakeholders. We regularly review the expectations and concerns of our stakeholders and incorporate the findings into the regular review of our material topic processes and into strategic decision-making in sustainability.

Our stakeholders and their expectations

Customers, including many large, international companies, are demanding greater transparency regarding our efforts toward sustainability. They want long-lasting, energy-efficient products and reliable services. Customers also expect STULZ to align with political framework conditions, such as conditions governing climate protection and the supply chain, for example.

Suppliers play an essential role for stable, reliable supply chains, which are vital to our success. Reliability and partnership are valuable assets on which our relationships should be based.

The **general public** covers various institutions and individuals, for example at our sites and in the business environment. Their expectations are extremely diverse and multifaceted. Here at STULZ, we want to act reliably, with commitment and integrity.

Employees expect STULZ to be an attractive employer, offering opportunities for progression, and with high standards of occupational health and safety. Other requirements are job security, independent working and reliable, transparent communication.

COMMUNICATION WITH STAKEHOLDERS

The **Sustainability Report** forms the international framework for regularly and transparently informing various stakeholders about our commitment. It can be downloaded on our website.

→ [STULZ: SUSTAINABILITY REPORT](#)

We promote sustainability on our products through global activities and communications on the **STULZ websites**. We want to encourage customers to make informed decisions, for example on energy-efficient products. → [STULZ: PRODUCTS](#)

On **social media**, we explain technological matters and keep readers informed about the latest developments in our products and services. Transparency, innovation, and approachability are extremely important to us, and we incorporate feedback in our product innovation processes. Further communications include, among others, events within our global organization and participation at industry events and trade fairs. In regular conversations with customers or suppliers we coordinate with these stakeholders. The STULZ sales offices around the world operate independently and are guided by local and regional needs.



Memberships and cooperations

STULZ is a member or associate of various industry-related organizations across the countries we operate in. With these commitments, we want to actively move forward with changes and advances in our industry, develop innovative solutions, and do our bit to get the air conditioning industry on track toward sustainability.

→ STULZ: ASSOCIATIONS | INDUSTRY
PARTNERSHIPS & MEMBERSHIPS

EXAMPLES OF OUR MEMBERSHIPS AND COOPERATIONS



**Fachverband
Gebäude-Klima e.V.**

The FGK (Fachverband Gebäude-Klima e. V.) is a leading industrial association for air conditioning and indoor air quality in Germany. It advocates the interests of our industry with market partners, politicians, standardization institutes and the scientific community.



Our US entity is a member of ASHRAE, a global society advancing human well-being through sustainable technology for the built environment. STULZ is also associated with ASHRAE Technical Committee TC 9.9, which is concerned with all aspects of mission-critical facilities, data centers, technology spaces, electronic equipment and systems. Across Europe, we cooperate with the EN 50600 series, a framework of standards and technical reports covering the design, operation and management of data centers.



**Bundesverband
Wärmepumpe e.V.**

STULZ is a member of the German federal association bwp (Bundesverband Wärmepumpe e. V.) which is committed to establishing heat pumps as an efficient renewable air conditioning solution.



STULZ S.p.A. in Italy engages with ASSOCLIMA – Costruttori Sistemi di Climatizzazione. This is the Italian association federated with Anima Confindustria, which represents manufacturers of heating, ventilation and air conditioning systems for buildings and industrial processes.

Some employees at STULZ Modular (UK) are member in the Institution of Mechanical Engineers, a global community for lifelong learning and space for innovation. STULZ Modular (UK) is also a member of the Uptime Institute, the Standard bearer for Digital Infrastructure performance.

Sustainable Products

Where product sustainability is concerned, we are and will be focusing on four key areas across the global STULZ organization:

—
High quality and safety standards

—
Energy efficiency

—
Low GWP and natural refrigerants

—
Circular economy

Sustainability in our products and solutions

Throughout our global organization, numerous local and regional regulations apply to sustainability aspects. In Europe, the F-gas Regulation is highly relevant. In the Nordic countries, there are country-specific rules for the GWP of refrigerants. In Singapore, there is a Green Labeling Scheme that requires a minimum standard in energy efficiency for both products and systems. Several countries have health and safety acts as well as equality acts in place.

Our customers also expect us to manage a broad range of sustainability topics with some similarities across the global organization. Examples of product-related information requests include carbon footprint data and energy efficiency data for products, information on recycled materials used, minimum life cycle requirements, and transparency concerning policies and objectives such as governance, climate protection and refrigerants.

There are currently only isolated, local institutions or standards that independently test the efficiency of equipment for data centers. Therefore, market-based comparisons of the energy efficiency of air conditioning units are not possible. The indicator PUE measures Power Usage Effectiveness and is one of the major indicators in data centers. The smaller the PUE, the more efficiently energy is used. In some areas, we are already helping the market to move along with the energy transition: For example, some heat pumps and air conditioning units from the S-Klima range have proven performance indicators (Seasonal Coefficient of Performance, SCoP), which meet the stringent criteria for government funding for installation in private households. In the European market, the Eurovent certification confirms the technical data and efficiency values of our products from Mitsubishi Heavy Industries, confirmed by an independent test laboratory.

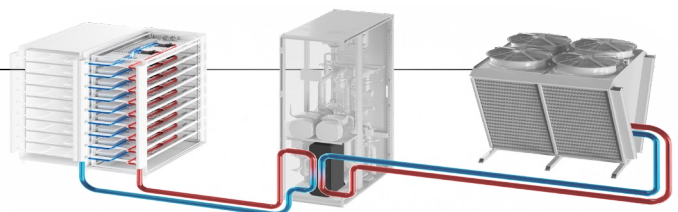
SPECIALIST IN COOLING

With our subsidiaries and a major partner network on all continents, STULZ has a presence in **over 140 countries** around the world. This allows us to distribute our broad product portfolio, which includes precision air conditioning units, chillers, micro data centers and software for mission-critical cooling, to our diverse markets and customers. Our sales are solely to **B2B customers**, including certified specialist firms in refrigeration, air conditioning and heating.

We use the **STULZ brand** for our own products. Our **S-Klima brand** exclusively distributes premium climate systems from Mitsubishi Heavy Industries in Germany and offers its own complementary products and STULZ humidification systems. At S-Klima, refrigeration and air conditioning companies are the most important customer groups.

In Germany, the software provider SDS complements our portfolio with solutions such as **CyberHub**. From development, manufacture, installation and start-up to the servicing and maintenance of equipment, STULZ covers a broad spectrum in the value chain. A committed team of service employees reliably takes care of our precision and comfort air conditioning units with maintenance, servicing and repair during their life cycle.

The CyberCool CMU by STULZ enables up to 40% energy savings in data center cooling and supports PUE values as low as 1.1 through highly efficient direct-to-chip Liquid Cooling. With the ability to handle rack densities up to 120 kW and reuse heat at temperatures up to 60 °C, it combines high-performance cooling with measurable sustainability benefits.



High quality and safety standards

Our products and solutions satisfy the highest quality standards expected by our customers and comply with relevant European regulations. This applies to our own STULZ brand as well as the products under the S-Klima brand. For this, we meticulously monitor the product certificates provided by our suppliers, to make sure that requirements are met.

All the products and solutions we sell are in line with central industry-specific regulations. Chief among these are the CE Declaration of Conformity, the Energy Efficiency Directive, the Ecodesign Directive, the F-gas and REACH Regulations and the European Machinery Directive. Directives on the leaktightness of refrigerant circuits were also adopted as part of the Kyoto Protocol and Paris Agreement on climate change. Our units bear a special label as proof that they have passed the leak test. With the CE label, we declare our compliance with safety and quality standards according to European standards and directives.



STULZ GmbH has a certificate that attests not just to the high quality of our units, but also to their energy efficiency. In acquiring this seal of approval, we have also committed ourselves

to providing spare parts for all our equipment for at least ten years after discontinuation of the product.

Almost all STULZ production sites have their own Test Center for testing products, functions and prototypes. Our production sites in Europe, China, India and Brazil have management systems that are certified according to the ISO 9001 (quality) standard. This includes our supplier management, design verification, and production-related inspections.

STULZ offers precision air conditioning units for use **24/7/365**.

Our units are designed for continuous operation 24/7 and take into account the requirements of the ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) for efficient data center operation. When developing our units, we aim to achieve a service life of 10 to 15 years. However, some of our equipment has been running reliably for up to 20 years. They are service-friendly, with simple replacement of wearing parts. In individual cases, equipment can easily be converted to suit changed operating conditions. In addition, the option of remote monitoring (Building Management System) helps to ensure safe and reliable operation and dispenses with the need for the physical deployment of a service engineer in most cases.

We have started to increase customer satisfaction with a major Project for After-Sales Service (PASS). This was done with the aim of increasing process efficiency and achieving an effective exchange of information with our customers. We have analyzed the entire process chain from order entry through production, delivery and service to the end of the product life cycle. In Germany and the USA, we have started initial projects such as a ticket system and a service level concept. We intend to provide our customers with direct support from our company based on their order information. This is done directly, digitally and with maximum efficiency.

Thriving Liquid Cooling

WHY LIQUID COOLING MATTERS

When air cooling a data center, the separation of the data center into hot and cold aisles in a process known as containment, achieves a power density per rack of roughly 50 kW – more than adequate for many IT applications. For high-performance artificial intelligence systems, this is not sufficient at all.

WHAT LIQUID COOLING ENABLES

Liquids can absorb more heat than air, which means that the power density can be significantly increased: With Liquid Cooling, figures of 120 kW per rack can be achieved without problem, even power densities of up to 250 kW.

HOW THE TECHNOLOGY WORKS IN STULZ PRODUCTS

If Liquid Cooling is used, most of the heat transfer takes place in a closed system without an intermediate medium. Additional air cooling is only required for cooling certain components such as power supply units. As it requires less room, Liquid Cooling is also ideal for edge locations with little space and frequently changing ambient temperatures. There are currently two versions available, which differ in design and efficiency: immersion cooling and direct-to-chip Liquid Cooling.



A **Cooling Distribution Unit (CDU)** for use in Liquid Cooling systems is a product developed and produced by STULZ and represents a huge technological leap forward. The CDU is a central component in both direct-to-chip and immersion cooling solutions to maximize heat exchange within a limited space. We produce them locally in Germany as well as in China and in India.

An innovative hybrid data center Liquid Cooling solution from STULZ

enables energy-efficient and cost-efficient operations for a University's leading supercomputer. It works with direct-to-chip Liquid Cooling for components with higher heatload, including processors and memory devices. The result: a low PUE of 1.13 and a reduced carbon footprint. On an average load of 75%, electricity consumption is reduced by 27% per year.



**STULZ is a major player
in the global implementation
of Liquid Cooling solutions.**

Energy efficiency

Our industry can make a significant contribution to the achievement of environmental and climate goals, and at STULZ we want to be actively involved. We are working to bring technological progress and sustainability into harmony, so that our products achieve resource efficiency, reduced operating costs and a smaller carbon footprint.

With **precision air conditioning units**, the most important levers for optimum energy consumption are:

- maximized heat exchanger surface areas
- filter surface areas
- optimized air conduction
- carefully coordinated components.

In our **S-Klima** line, energy efficiency is achieved by:

- the use of energy-efficient air conditioning systems and Humidifiers
- inverter technology, especially the “HyperInverter” label denotes units that have been specially trimmed for energy efficiency
- heat pumps and cooling solutions
- suitable Monitoring Systems.

We have a range of energy-efficient products and technologies and demonstrate some examples (see page 26). What's more, we are also developing products and system solutions for efficient waste heat recovery, in order to significantly reduce CO₂ emissions.

ESTABLISHING A HIGHER STANDARD

In 2024, STULZ Oceania made condensers with EC fans standard for our air-cooled DX solutions. These provide significant energy savings of about 35% over AC fan condensers which were the previous default offering.

■ STULZ Oceania ■

Energy-efficient products should also run on an environmentally friendly energy mix. The electricity mix is an important factor for the carbon footprint of STULZ and our customers due to the high electricity consumption during the use phase. We tell our customers about the advantages of using renewable energy. The first projects using energy supplied directly from wind turbines and solar panels have already been successfully implemented with customers, and we are currently working on a standardized solution.

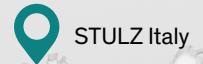
FREE COOLING

We are committed to delivering **energy-efficient solutions** to our customers. One of the most promising ones currently is Free Cooling. Through this technology, we **minimize the carbon footprint and effectively lower the operating costs** when cooling our customers' infrastructure. Cooling is provided by natural cold air instead of using mechanical methods (compressors). High-efficiency air conduction is also key: By designing the surface areas of heat exchangers and filters to be as large as possible, we achieve maximum energy efficiency values and can therefore exploit existing efficiency potential to the max. Free Cooling cuts energy consumption by over 90% which results in low carbon emissions.



An example is our **CyberCool Explorer WS chiller** which is specifically designed to meet the cooling needs of data centers and the integrated Free Cooling ensures high energy savings. In these chillers, we also use low GWP refrigerants such as R513A or R1234ze.

LAUNCHING ENERGY-EFFICIENT PRODUCTS



In 2024, STULZ Italy developed two high-density CW air conditioners with market launch in 2025. Both deliver major energy efficiency gains:



**CyberRack
SideCooler**

Energy efficiency ratio (EER) **+12.5%**
Sensible Cooling **+25%**



**CyberRack
Active Rear Door**

+83%
+37%

As part of the cooperation with ASSOCLIMA, STULZ Italy helped define a proposal of standard efficiency conditions for CRAC and mono-block units. This would prepare including this equipment into the Ecodesign Directive standard and thus, foster comparability within our industry.

ENVIRONMENTAL IMPACT OF OUR PRODUCTS

Carbon footprint data and other environmental impacts over the product's life cycle become increasingly important to our customers and other stakeholders. While measuring carbon footprints is already widespread in other industries, our industry is just beginning to do so.

STULZ has recently conducted an **Environmental Product Declaration (EPD)**, a comprehensive and detailed analysis covering the product's life cycle based on international standards (ISO 14025). Being third-party verified, EPDs represent the highest standard of credibility and depth in sustainable product data but are very resource intensive. Our EPD applies to a specific product configuration and displays hotspots and areas for improvements in the life cycle.

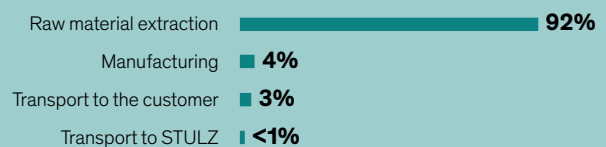
We review other approaches, such as product carbon footprints, which solely focus on emissions and strive to automate data collection and document generation. We also consider industry initiatives such as TM65, developed by the CIBSE association (Chartered Institution of Building Services Engineers) based in London. This pragmatic approach allows simplified calculations based on conservative assumptions and generalized data.



For the **CyberAir 3PRO DX** (cooling capacity: 37.1 kW), we measured the carbon emissions (Global Warming Potential, GWP) per unit across the life cycle stages (cradle to gate).

2024 Product GHG emissions

Total: 3,590 kg CO₂e



We work on scalable solutions to provide accurate sustainability data across our product portfolio.

EXAMPLES OF ENERGY-EFFICIENT PRODUCTS AND SOLUTIONS

The **CyberAir 3PRO** series is the result of over 30 years of project experience at STULZ and ensures uninterrupted data center operation. Aligned with ASHRAE standards, it combines reliability, precision, and energy efficiency—minimizing operating costs and carbon footprint.



STULZ Air Handling Units can be individually configured and manufactured to meet a wide range of requirements, from small data centers with the need for roof installation to hyperscale data centers without raised floors. **CyberWall** units, engineered and produced in Hamburg, are compact and easy to transport. Our CyberWall combines maximum cooling capacity with minimum power consumption.



The **UltraSonic** Humidifier generates an extremely fine mist that's easily absorbed by the ambient air. By further developing this technology for more than 40 years, today it achieves an energy consumption of 60 W per 1 kg/h of humidification capacity. This makes it approximately 93% more effective than conventional steam humidifiers. Extremely durable components and no need to replace the steam cylinders add to the resource-efficient operations.

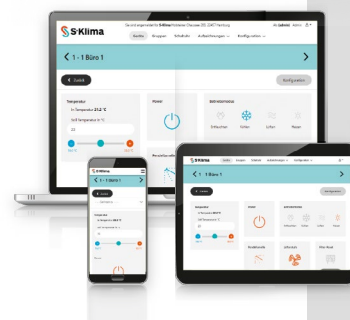


STULZ Shelter Cooling units are designed for air conditioning containers, modular buildings, and receiver and transmitter base stations with a plug-and-play principle. Products such as **WallAir** for outdoor use and **TelAir** for indoor installation guarantee reliable and efficient operation all year round with long maintenance intervals. The low CO₂ emissions are the result of Free Cooling, which cuts energy consumption by over 90%.



The **CompTrol** system ensures optimal Monitoring of our comfort air conditioning units. It records operating temperatures year-round and enables enhanced energy efficiency through the “automatic temperature control” function.

CyberHub ECO.DC is an intelligent system for Monitoring and optimizing the data center. It displays load capacity and cooling performance while automatically suggesting improvements. CyberHub allows the efficient use of cooling units and generates cost savings through low energy consumption.



Low GWP and natural refrigerants

Refrigerants are an essential element in almost all our products, as air conditioning units and cooling systems cannot run without them. As a manufacturer, we are dependent on what refrigerants and cooling components are available on the market and what our customers require. STULZ takes responsibility in a significant area: We attach great importance to preventing leaks in refrigeration circuits through the tightness of our systems.

–9% refrigerants used in our production entities compared to 2023.

Many popular chemical refrigerants have Refrigerant Safety Classification. This means that they are highly efficient and optimized for use in our product portfolio. Nevertheless, they have a high GWP, meaning that they contribute to global warming. It is our responsibility to minimize the use of refrigerants with a negative impact on the climate, while gradually transitioning to refrigerants with a lower greenhouse effect.

Low GWP refrigerants are better for the environment due to their lower greenhouse effect. Many customers still demand traditional, conventional refrigerants, basically for two reasons:

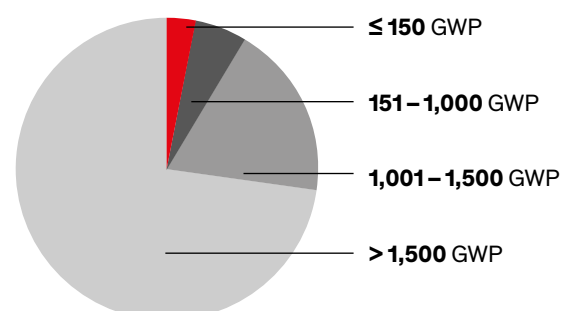
- Conventional refrigerants are considerably more efficient in refrigerant circuits.
- Natural refrigerants have adverse characteristics, such as high flammability (propane) or toxicity (ammonia). Therefore, their use in customers' systems entails complex safety measures.

The flammability poses a significant safety risk especially in confined technical environments such as 4G/5G shelters or Point-of-Presence (POP) stations – a fire can damage critical infrastructure and lead to wide-spread service disruptions.

Despite their disadvantages, we assume that the market will shift toward natural refrigerants in the future. There are more incentives in the market, for example through the F-gas Regulation, which are making low GWP refrigerants much cheaper. We are preparing to adapt our products with refrigerant alternatives. We also work with our component suppliers to achieve this and raise awareness with customers.

The following illustration shows the share of refrigerants by their GWP that STULZ purchased for product manufacturing in 2024. Compared to 2023, we could not yet switch notably to refrigerants with less GWP. A reason for this lies in the production of larger units that use refrigerants with higher GWP, demanded by our customers. Although overall usage of refrigerants grew in 2024, our production entities could reduce their use by 9%.

2024 Used refrigerants, by Global Warming Potential (GWP)



NATURAL AND LOW GWP REFRIGERANTS ARE AN IMPORTANT TREND IN OUR INDUSTRY. WE WORK HARD TO INCREASE THEIR APPLICATION IN OUR PRODUCTS AND PROMOTE THEIR SAFE USE IN OUR CUSTOMERS' APPLICATIONS.

Matteo Foroni, Product Manager Shelter Cooling Solutions STULZ Italy

Transition to eco-friendlier refrigerants

The transition to eco-friendlier refrigerants with a low GWP is an important trend in our industry. These are generally natural refrigerants, but short-term alternatives with lower GWP are needed, too.

- The F-gas Regulation has set a timetable for the phase-out in Europe until 2050 across different product ranges.
- Natural refrigerants are better for the environment due to their lower greenhouse effect. We are already using natural refrigerants such as hydrofluoroolefins, including R1234ze with a GWP of less than 1. In S-Klima products, the natural refrigerant R744 (CO₂) with a GWP of 1 can be applied.
- We plan to use R290 (propane) in future, which has a low GWP of 3. Its excellent thermodynamic properties enable high energy efficiency. It is flexible to use as it can be mixed with numerous oils. Its high flammability, however, is a disadvantage.
- Many natural refrigerants have adverse characteristics, such as high flammability (propane) or toxicity (ammonia). Their use entails complex safety measures in customers' systems.

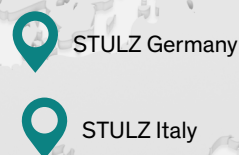
The use of refrigerants depends on component availability and the balance between safety and efficiency.

There are **two short-term alternatives** STULZ introduced.

The refrigerant R513A with a GWP of 631, is available for the German and the Italian markets. It can currently be used in **CyberAir 3PRO**, as well as in the **Shelter Cooling Line** at STULZ Italy. It **has the great advantage of being non-flammable and non-toxic**. In safety class A1, R513A offers a safe alternative to natural refrigerants.

The refrigerant R454C (GWP of 148) is an alternative which already meets today's **F-gas Regulation requirements**. Due to the small filling quantities, the classification as A2L (flame-retardant) is less critical.





ECO-FRIENDLIER REFRIGERANTS

STULZ S.p.A. is advancing sustainable design with low GWP refrigerants. In 2024, STULZ Italy began developing chillers based on the refrigerant R32. R32 has a GWP of 675, which is about a third of the GWP of 2,088 for the standard refrigerant R410A.

Furthermore, R454C, an option with a GWP of 148, will be available in 2026 as an additional alternative for products developed in Italy – aligning with upcoming F-gas Regulations while ensuring safety and efficiency. In Germany, the **CyberAir Mini** is now available with R454C, thus a GWP of 148 compared to R410A. This is a further extension after the **CyberCool Indoor** has been available with the natural refrigerant 454C since 2023.

Circular economy

STULZ meets the reporting obligations of the European Directive on Waste Electrical and Electronic Equipment (WEEE). The German STULZ GmbH is registered accordingly, and registration for the STULZ brand is in progress. The circular economy is set to become a major focal point for our industry over the next few decades – tying in with efforts in the European Union to close loops by 2050, which we are keeping a close eye on.

We are currently targeting our efforts at various aspects of the circular economy, to fit in with the different requirements of our individual business units. This includes equipment recyclability, component reuse and use of recycled materials in products. What's more, STULZ has the potential to develop these themes on a global scale, depending on the initiatives of the different sites. STULZ France, for example, approached circularity by focusing on sustainable design, extended warranties and upgrade programs for customers.

As for recyclability, most of our products are screw-fastened constructions which can be easily disassembled. We assume that, due to their value, most of the materials in our products such as metal components, copper or aluminum will be disassembled and reused or recycled.

We already comprehensively cover recycling aspects in our use of packaging. The plastic films and wooden pallets we use are fully recyclable. Furthermore, we have established recycling and reuse loops for various materials in our production in Germany. Recyclable materials were identified as a significant aspect in our Environment Product Declaration project in Germany: The examination of **CyberAir** confirmed that it has a high proportion of recyclable material.

We are in the planning stages of a recovery scheme, in collaboration with a German partner from the electronics sector. With this system, we aim to refurbish fans and recycle refrigerant, steel, and copper. We will increasingly work together with partners in future on these complex interdisciplinary issues.

We have not yet set up any take-back schemes for our products. However, numerous registrations guarantee our compliance with legislation on electrical waste and packaging in the European market. We are therefore also involved in the circular system through regulatory requirements. Take-back is carried out by specialist companies.



Resource- Efficient Production

As a manufacturing company, resource efficient production plays a major role in our business. We have defined six environmental aspects as priorities:

**Diligent energy consumption
and energy saving**

Reduction of greenhouse gases

Efficient water use

**Waste prevention,
reduction, and reuse**

**Careful handling of hazardous
materials**

Resource-efficient logistics

Strategic importance of environmental protection

Our production sites in Europe, China, India and Brazil have management systems that are certified according to the ISO 9001 (quality) standard. The European and Asia Pacific production sites are also certified according to ISO 14001 (environment) and thus operate according to the highest standards in environmental management. Through the integrated quality and environmental management systems, we ensure compliance with principles and requirements. They are monitored annually by an independent organization and are certified on a regular basis.

Quality and environmental management are promoted and further developed by the plant management. Annual targets are set which we back up with measures and responsibilities, and we monitor these in the following year's review. We comprehensively assess our environmental performance in an annual environmental and quality management review. This includes analyzing key performance indicators and actions taken as well as processing the results of our ISO audits such as any non-conformities and corrective actions to be taken.

As STULZ, we share information, as required, about energy use, goods and services for environmental protection, and climate-impacting substances (F-gas). Through our global involvement in various standards committees and specialist working groups such as ASHRAE, we share our expertise and are committed to improving guidelines and specifications for the sustainable development of our industry.

POLICIES AS BASELINE



In the quality and environmental policy, we emphasize the significance of **environmental protection** for our business activities. The importance of environmental protection is also a key topic within the STULZ GmbH policy statement on safety, health, protection of the environment and data protection. Taking care of the environment is further included in our Codes of Conduct.

The European and Asia Pacific production sites operate a certified environmental management system according to ISO 14001.

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WE EXPLORE A WIDE RANGE OF LEVERS FOR EFFECTIVE AND RESOURCE-EFFICIENT PRODUCTION: AMONG THEM ARE RESTRUCTURING OUR PRODUCTION PROCESSES AND PURSUING FOSSIL-FREE HEATING SYSTEMS, TO OPTIMIZE THE PRODUCTION FLOW. FOR EXAMPLE, RELOCATING WORKSTATIONS HAS REDUCED INTERNAL TRANSPORT ROUTES FOR COMPONENTS AND SIMULTANEOUSLY IMPROVED ERGONOMICS WITHIN OUR FACILITIES.

Felix Petschke, Head of Production STULZ Germany

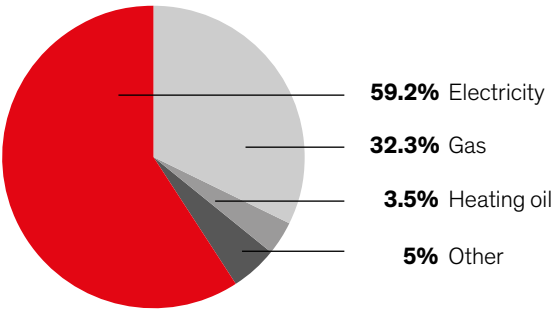
Diligent energy consumption and energy saving

Energy management is taken care of by the management of the production sites and the sales and service sites. The certified environmental management systems (ISO 14001) include energy consumption. Our production site in Italy additionally operates an energy management system (ISO 50001).

We aim to include LED lights worldwide in all production sites.

In the reporting year, total global energy consumption at STULZ was 18,212,461 kWh, about 9% more than in 2023, mainly due to producing a different product portfolio.

2024 Global energy consumption, by type
Total: 18,212,461 kWh



Other including district heating and own produced solar; not including France.

To save energy, we have put a range of measures into practice in production and management:

- In Germany, we set up for fossil-free heating, building renovation and solar installation.
- Ongoing change of lighting to LEDs throughout the company
- Switching to modern heating systems
- Use of non-residential thermostats in stairwells and washrooms
- Use of heat recovery systems to reuse waste heat for our own test benches and data centers
- Installing micro switches in vacuum systems, so that they only run when needed
- Adapting and optimizing production spaces to reduce heating needs in production, thus countering energy losses
- Heating set to 19–20 °C in winter
- Training and awareness-raising among workers regarding office heating
- Software-aided central planning for service vehicle deployment to reduce distances, thus saving fuel

At our sales and service sites, the influence we have on energy infrastructure is limited, as we do not own the properties. However, since these sites are purely offices, the impact there is comparatively insignificant. We see it as our future responsibility to integrate a sustainability aspect into the selection of rental properties, such as modern heating systems, the use of renewable energy, waste concepts or modern building management.

STULZ strives to increase the use of renewable energy. We use solar panels, are realigning our entire heating strategy toward new technologies, and are gradually replacing existing systems. In the long term, we aim to minimize the use of fossil fuels, such as oil and gas.

INSULATING THE FACTORY ROOF

STULZ China upgraded the roof of the old factory building by adding an insulation layer to the roof. This reduces the fluctuation of heat in the factory building, decreases electricity consumption and contributes to reducing carbon emissions.

45% of the electrical energy in our US production site in Frederick comes from renewable energy.

**STULZ Italy****REDUCING
ENERGY IN PRODUCTION**

In a project at the Italian production site, factory outdoor lighting were replaced with lower wattages, from a consumption of 250 W to 100 W per unit. This resulted in an estimated energy saving of approximately 2,700 kWh/year. Through tinting films on the windows of another factory building, energy savings of 7,739 kWh/year will be achieved, reducing the internal heat load and thus the use of air conditioners.

When designing a new climate chamber for another test bench, several measures were planned that will lead to the recovery of significant amounts of energy that would otherwise be lost during testing. They include:

- Total heat recovery for water-water Chiller Units
- Partial heat recovery for air-water Chiller Units
- Contrast cold recovery via dry cooler
- Elimination of diesel generator sets

**STULZ Tecnivel (Spain)****LEAN MANUFACTURING
FOR RESOURCE EFFICIENCY**

Our Spanish plant has aligned its production facility toward lean management. This has resulted in efficient production processes, minimized waste, short distances and clean production facilities. The use of customized assembly aids protects the health of employees. Emphasis was placed on recurring processes that will be continuously evaluated and optimized in the future. These adjustments included the following measures:

- Assembly of dynamic shelving units with their corresponding bins and labels
- Feasibility study for the integration of a dedicated cart for supplying electrical materials to the lines, instead of using multiple pallets with the same materials
- In the unit assembly area of a production line, using dedicated carts for secondary storage of bucket materials
- In tray welding and base assembly, organization of materials related to manufacturing and installation of dynamic shelving as well as new storage for base components by reference, saving space in the section and reducing potential accidents caused by stacked profiles
- In a new assembly line, the implementation of a lean manufacturing system for materials required adjustments in equipment manufacturing, introduction of a new manual and battery powered tools necessary for daily work, along with the audit control system for these tools.



Global Carbon Footprint

We measured the Corporate Carbon Footprint 2024 for STULZ Air Technology globally. It includes all relevant Scope 1, 2, and 3 emissions in accordance with the Greenhouse-Gas-Protocol (GHG-Protocol) for all significant entities within financial consolidation, including the eight production entities as well as sales and service entities. The result provides a sound overview of our global emissions. In the future, we will set targets for our path to net zero and improve data and calculation further.

In 2024, global emissions for STULZ Air Technology amounted to **8.6 million tonnes CO₂e.**

(Scopes 1–3)

- **98.2%** are related to the **use phase** at the customer sites.

(Scope 3.11: Use of Sold Products; measured for units sold in 2024)

- Only **1.8%** of emissions are related to actual production, equaling **156,277 tonnes CO₂e.**

WHY ARE EMISSIONS IN THE USE PHASE SO HIGH?

- GHG-Protocol requires accounting for electricity consumption over the expected lifetime for all units sold in 2024; we calculated 10.6 years on average for our AC units, a conservative estimate.
- Electricity consumption of AC units is very high. For example, our **CyberAir 3PRO DX** unit running 24 / 7 every day in data centers needs an estimated ~55,000 kWh of electricity per year. Over the lifetime of 10.6 years, this amounts to 583 MWh.
- We don't know what type of electricity our clients use and apply conservative location-based emission factors for each country.

HOW CAN WE EXERT AN IMPACT ON REDUCED EMISSIONS IN THE USE PHASE?

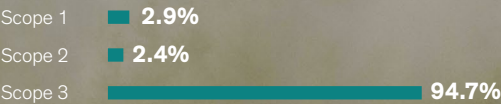
- STULZ is improving **energy efficiency** of AC units – our most relevant action to reduce emissions in the use phase.
- We encourage customers to apply **renewable energy** when using our products – this reduces the carbon footprint during the use phase significantly.
- In addition to electricity, the leakage of refrigerants play a critical role during the use phase. **Preventing leakage through high quality products** is a priority for STULZ.
- We are transitioning towards units that run on **low GWP**. This will reduce emissions in the use phase in the event of refrigerant leakage.

OUR CARBON EMISSIONS FROM GLOBAL PRODUCTION

To allow a better understanding of our emissions from production, we show the more detailed Scope 1 – 3 numbers excluding the use phase. The emissions caused by the production of our AC units are directly within our responsibility.

2024 Share of Scopes in STULZ Carbon Footprint

Total: 156,277 tonnes CO₂e



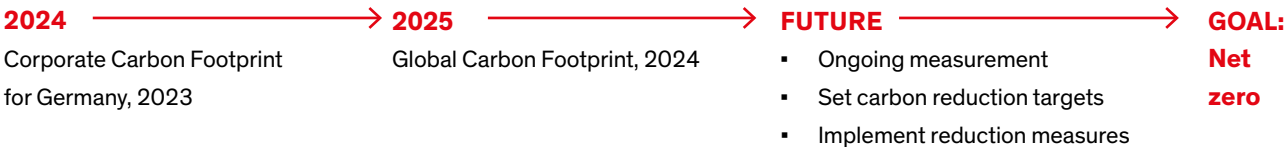
- **91%** of our global emissions stem from our eight production entities while 9% are related to sales and service sites.
- Scopes 1 – 2 emissions account for only **5.3%** of our total production-related emissions. As we have a direct influence on these emissions, they will still play a decisive role in our climate protection strategy.
- **Scope 3** has the highest impact. Within this, **Purchased Goods and Services (Scope 3.1)** is the most relevant category with **80%**.

2024 Corporate Carbon Footprint from global production

Scopes	Emissions (t CO ₂ e) excluding use phase (Scope 3.1)	Share
Scope 1	4,472	2.9%
1.1 Mobile Combustion	2,998	1.9%
1.2 Stationary Combustion	1,453	0.9%
1.3 Fugitive Emissions	21	<0.1%
Scope 2 (market-based)	3,754	2.4%
2.1 Purchased Electricity (Stationary)	3,721	2.4%
2.2 Purchased Electricity (Mobile)	23	<0.1%
2.3 Purchased Heat	10	<0.1%
Scope 3	148,051	94.7%
3.1 Purchased Goods and Services	125,014	80.0%
3.2 Capital Goods	5,085	3.3%
3.3 Fuel- and Energy-Related Emissions	1,990	1.3%
3.4 Upstream Transportation and Distribution	11,293	7.3%
3.5 Waste Generated from Operations	26	<0.1%
3.6 Business Travel	1,760	1.1%
3.7 Employee Commuting	2,883	1.8%
Total Scope 1–3	156,277	100%

Scope 3.8 emissions are included in Scope 1 and 2.

We will continue our journey to **reduce emissions** and commit to a path towards net zero.



Reduction of greenhouse gases

In our own processes, we reduce energy consumption and take measures to cut emissions. Our measures taken include the following:

- Production and warehouse areas in several sites use only LED lamps.
- In Germany, we have adopted an action plan with energy saving measures for both production and in our offices and branches. These measures include guidance on the use of electronic devices, the use of lighting, heating and cooling systems, and monitoring our own energy consumption.
- STULZ S.p.A., Italy, has installed many meters, which allow efficient energy monitoring. Emission management has been digitalized, simplified and made more user-friendly.
- We are taking steps in fleet management, gradually converting our fleet to vehicles with lower fuel consumption and vehicles powered by alternative engines. With this in mind, we are also working on expanding our vehicle charging infrastructure ([see page 41](#)).
- With the sales and service sites, we are pushing ahead with the digitalization of service processes. This includes an Online Portal, which we operate via an app. With this tool, up-to-date information about the entire installation (address, direct contacts, installed units and their history) is constantly available digitally, and we can process service orders in a resource-efficient manner.
- We are using digital working methods like virtual meetings and flexible desk-sharing concepts. This reduces the number of business trips and the number of commutes to and from work at STULZ.

TRANSITIONING TO LOW GWP REFRIGERANTS

The global warming potential (GWP) of refrigerants plays an important role in our Carbon Footprint. To assess the global impact on the climate, we compile refrigerant balance sheets worldwide and measure our Corporate Carbon Footprint.

STULZ is committed to actively contributing to the sustainable development of data centers. In doing so, we are heavily dependent on the requirements and order specifications of our customers. We actively promote the use of more environmentally friendly refrigerants and advise our customers on the use of refrigerants with low GWP ([see page 27](#)).

At the same time, we equip our production facilities with the necessary resources.

- We are adapting our **safety standards** in production to meet the increased requirements regarding of flammability and toxicity.
- We are providing our staff with intensive **training** on the new requirements to ensure that, from the initial consultation with the customer to service in the data center, our colleagues can competently and confidently master the changed technical challenges and communicate and handle them safely.

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WE CONTINUOUSLY IMPLEMENT RESOURCE EFFICIENCY MEASURES IN OUR PRODUCTION WHILE AT THE SAME TIME PROVIDING OUR CUSTOMERS WITH SOLUTIONS TO IMPROVE THEIR ENERGY EFFICIENCY.

Pedro Pardo, Occupational Risk Prevention and Environment STULZ Spain

SMART AND LOW-ENERGY BUILDING

We consider sustainable solutions in our buildings. Our Benelux headquarters, for example, is an intelligent building with a state-of-the-art infrastructure, using innovative and environmentally focused technologies. This includes the highest energy efficiency levels, solar collectors, and infrastructure for electrical vehicles.

■ Benelux



Efficient water use

Although we are a manufacturing company, water is not a material resource for our business. We basically do not use any water in our production processes; water is used solely for human consumption or personal hygiene. Cooling and heating circuits are closed systems and therefore have no consumption. Our production entity in Italy has its own water treatment plant. Apart from Brazil and the UK, where no water is used in performance testing, all our production sites have performance test benches. They reuse water multiple times, thereby minimizing water consumption.

We don't use any ground or surface water for any purpose whatsoever. To minimize our water consumption, we have introduced the following measures:

- In production, we are committed to efficient water use through closed circuits and multiple usage. Extensive heat recovery systems enable cooling water to be used multiple times. We also take this approach in our test bench technology.
- We monitor our own water consumption through regular analysis of our water bills. As we rent the buildings of our branches, we have no direct influence on the water supply and infrastructure at these locations.
- Our service organization advises customers with inefficient systems on potential optimizations concerning water consumption, such as by replacing entire systems or, whenever possible, individual components.
- Every employee is encouraged to save water wherever possible. This includes, for example, reporting leaks in washrooms.

2024 Water withdrawal

Total: 37,215 m³

Production entities  34,892 m³

Sales and service sites  2,323 m³

Not including France, Indonesia, Nordics, New Zealand, Thailand.

Waste prevention, reduction and reuse

We comply with the WEEE (Waste Electrical and Electronic Equipment) requirements of Directive 2012/19/EU. The aim of the directive is to reduce electric and electronic waste through reuse, recycling and other forms of waste recovery. We have registered all the relevant brands sold by STULZ GmbH in accordance with the German Packaging Act as well.

Waste management is the responsibility of our Waste Management Officers, who are appointed in all production sites certified to ISO 14001. Our aim is to continually reduce the amount of waste that we produce.

80.1% of global waste is redirected for recycling.

At a global level, our production entities, not including China and STULZ Modular (UK), generated a total of 3,369,007 kg of waste, of which 98.3% was non-hazardous waste. Over 80% of global waste was redirected for recycling, in Germany the ratio is 95%. Our main driver of waste is packaging waste that we receive from the upstream value chain, e.g., paper, cardboard and packaging wood. Waste is also produced in production and in the offices. Other waste contains mainly electronic components, mixed plastics and construction waste.

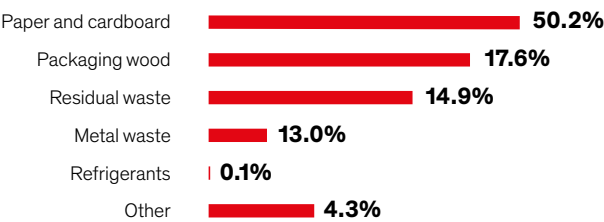
Our figures for sales and service sites are based on assumptions from available data and equate to around 1% of the total volume of waste. Due to the uncertain data and little relevance, these figures are not included in our calculations.

For waste prevention, separation, treatment and recycling/reuse, we have implemented measures, including:

- We separate waste such as paper, wood, recyclables (e.g., scrap metal) and residual waste in our production sites. We recycle materials as much as possible.
- With our chipper, we can shred discarded wood so that it is compressed in the transport container. This reduces the number of journeys to and from the site.
- We use reusable pallets, packaging materials and transport containers wherever possible. We use individual metal/wooden pallets and cardboard boxes for transport between suppliers and production sites.
- We vacuum refrigerants out of air conditioning units in an automated process. We always recycle our refrigerants.
- We have hazardous waste disposed of by a specialist waste disposal service in accordance with the waste code and legal provisions.
- We avoid waste through digital workplace practices. This has already helped us generate less paper waste.

2024 Waste generated at production entities, by origin

Total: 3,369,007 kg



Not including China, Modular (UK).

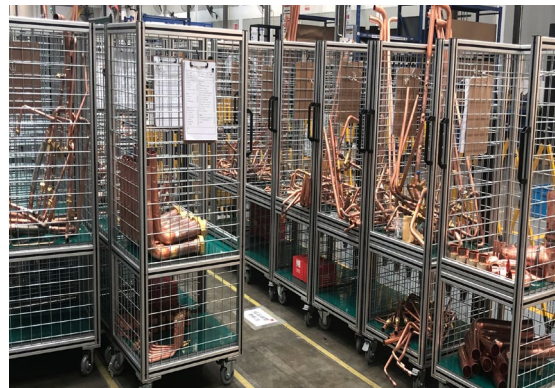
REORGANIZING WASTE COLLECTION

In 2024, STULZ Italy improved its waste management in production. By introducing waste separation directly along the assembly line, collection rates increased. Additionally, digitalization of waste streams led to higher traceability. The elimination of paper documentation in the factory made the process more efficient and environmentally sound – at the same time, operating times and errors could be reduced.

IMPROVE PACKAGING

Our **packaging guidelines** for different product groups comprehensively regulate the handling of packaging in Germany. They contain specifications on the type of transport packaging to be used as well as filling and handling of packaging. In this way, we ensure optimal resource utilization and efficient quality assurance for deliveries.

The use of **reusable and returnable packaging** as well as possible return cycles are part of our contracts with our suppliers. We process non-reusable cardboard packaging with a cardboard shredder to create filling material for shipping boxes. By introducing optimized film packaging for our own products, we were able to reduce resource consumption in Germany by almost 20% in 2024 while not compromising on transport safety.



Our production site in China reworked their internal logistics for piping, improved material transfer efficiency and lowered wear of facilities. Production switched from plastic boxes to trolleys that transport pipe material. Space occupied in the pipe production zone was halved.



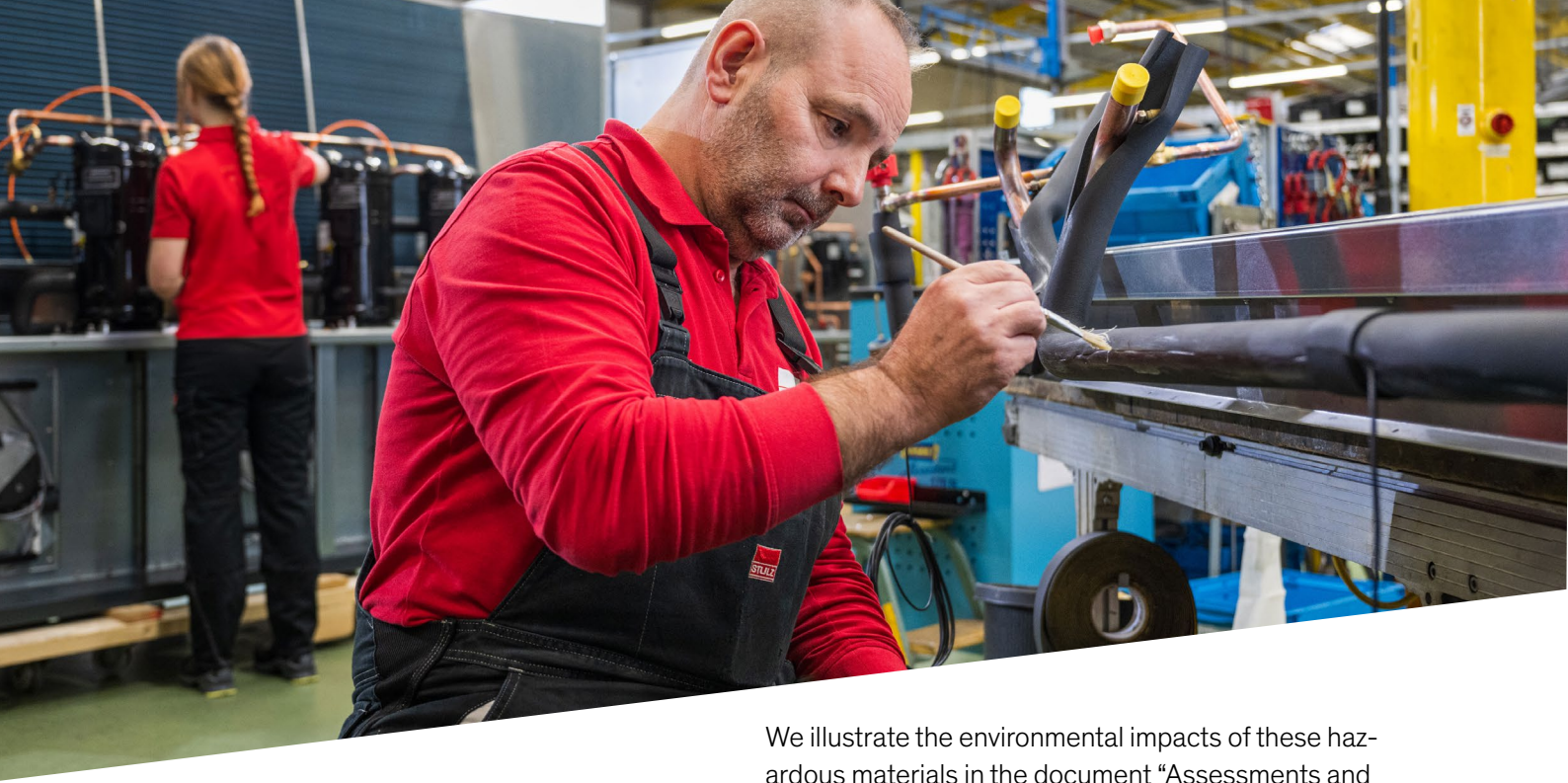
UPGRADING PRODUCTION FACILITIES AND PROCESSES

In the lean manufacturing process in Germany, several measures addressed the careful handling of hazardous materials, some examples:

- To ramp up production of units with low GWP refrigerants, we have adapted our production facilities in Germany. Based on risk assessments, opportunities for optimization, and legal requirements, production processes were redesigned. This included implementing safety concepts for flammable refrigerants.
- As part of a substitution test for the soldering assembly step, we worked with our supplier to integrate a key product with reduced risk potential into this part of the production process. Such substitution tests are recurring processes designed to ensure improvements in the protection of people, machines and the environment.
- In critical areas, we have an independent organization regularly measuring pollutant levels. For example, soldering work in various areas produces air pollutants. These are extracted and cleaned by extraction systems. However, a residual content remains, which is monitored.
- We have now fully air-conditioned production facilities in Hamburg. This results in a controlled temperature and humidity in the working environment, which raised employee satisfaction and optimized our manufacturing process through reduced downtime and a more efficient process flow.



STULZ Germany



Careful handling of hazardous materials

All hazardous materials used in production are subject to the provisions of the RoHS and/or REACH Directive. We keep the use of hazardous materials to a minimum and already consider this in our purchasing decisions, wherever possible. Hazardous materials include oils, refrigerants, lubricants, nitrogen, oxygen, acetylene and greenhouse gases.

In Germany, 85 different hazardous materials are currently used. Adhesives, cleaners and gases accounted for the largest proportion of hazardous materials. The use of hazardous materials varies according to the units produced during a year. Our hazardous materials register offers a detailed overview of hazardous materials. They are categorized by division to clarify responsibilities, while in-depth information on classification, hazard category, and other factors enables risks to be quickly detected and safety measures to be taken. The register is continually updated in line with new requirements and product modifications.

Refrigerants are always recycled at all STULZ sites.

We illustrate the environmental impacts of these hazardous materials in the document “Assessments and impacts on the environment”. Environmental relevance in both standard and emergency operations is evaluated and monitored using a scale. In addition to this, we have set up a hazardous materials management system, headed by our Hazardous Materials Officers. These people compile risk assessments and work instructions in line with the German Hazardous materials Ordinance, and these are available centrally via the intranet. We check at fixed intervals that these are up to date and adapt them when necessary. Risk management also includes regular training sessions for users and officers. We carry out regular substitution assessments on hazardous materials in our production lines, to reduce the potential hazards.

In Germany, external hazardous goods officers assist us with the transport of our hazardous materials. The transport vehicles are marked in accordance with regulations and are subject to special procedures.

PREVENTING LEAKAGE

To satisfy the requirements of the F-gas Regulation and prevent the unwanted emission of fluids, gases and other substances, we perform **leak tests** on every product. These computer-aided tests are carried out by qualified staff, approved electronically and then documented. Preventing leakage is one of **our key contributions to reducing emissions** in the important **use phase** of our products.

Resource-efficient logistics

We have specifications to control our inbound logistics, which are implemented by our suppliers. Within Germany, we collaborate with logistics companies as fixed partners for outbound logistics, and they are in charge of our transport. The companies we contract primarily use diesel trucks. An external hazardous goods safety advisor supports us with our dangerous goods transport. An internally appointed Air Freight Safety Officer supervises compliance with the provisions of the German Federal Air Freight Agency for goods that are transported by airplane.

For outbound transport, each production site delivers directly to the end customer on behalf of the sales subsidiaries. In consultation with our customers, we use the optimal transport routes according to customer requirements. Wherever we have an influence, we organize transport as efficiently as possible, including the avoidance of empty trucks. For exports, transport is typically contract-based and is carried out ex works by our customers.

In 2024, STULZ in Germany took part in the KlimaProtect scheme from GLS. We are also conducting a constructive dialog on sustainability with Fedex/TNT. The initiatives by our logistics partners aim to achieve more eco-friendly packaging logistics.

SUSTAINABLE FLEET MANAGEMENT

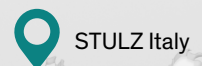
Several subsidiaries already partially operate **an electric fleet** and build up **charging infrastructure**.

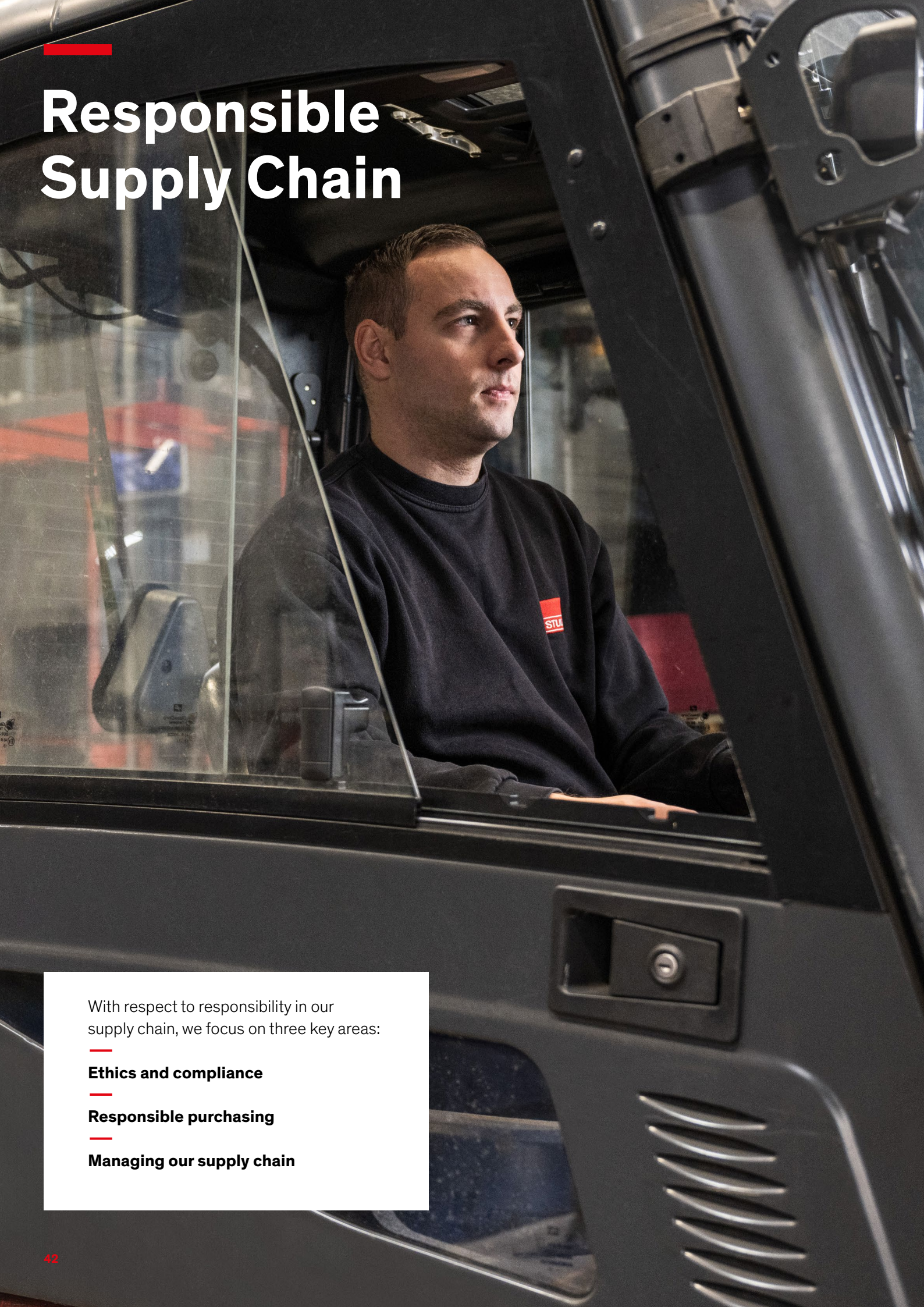
- STULZ Benelux has an electric fleet in its lease cars and introduced an electric service vehicle.
- Outside Benelux, the service fleet is currently made up of diesel vehicles, as we don't have any alternative that covers the necessary range.
- At STULZ Nordics, 50% of company cars are electric.
- In the headquarters in Germany, electric vehicle charging infrastructure will be expanded to 20.



IMPROVING INTERNAL LOGISTICS

As a part of our lean manufacturing transformation, STULZ S.p.A. in Italy strives for a more efficient resource use and to increasing the added value for the customer. One project included improving internal logistics. The logistic flows between the two floors of one of the factories were redesigned. As a result, forklift traffic was reduced by 90%.





Responsible Supply Chain

With respect to responsibility in our supply chain, we focus on three key areas:

Ethics and compliance

Responsible purchasing

Managing our supply chain

Our supply chain

Our in-house STULZ branded products are manufactured at our eight global production entities, which manufacture locally for their respective regional markets. All products are manufactured with high-quality components. Robust design guarantees high reliability, a low demand for spare parts, a long service life and optimal performance under varying conditions. We work closely with our suppliers to ensure quality and efficiency right from the start.

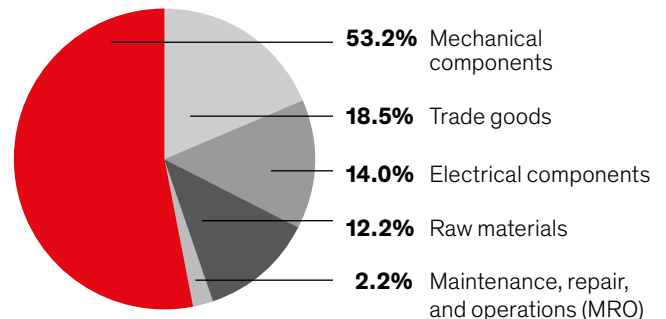
We purchase mostly finished materials and components. When purchasing materials, we prioritize reliability and, to an increasing extent, sustainability factors. Our production activities also require the purchasing of pre-processed base materials, such as copper. While we strive for a multi-sourcing strategy in all our commodities, we still face single source situations in some material groups. In these cases, we work to build close partnerships with our suppliers. For all suppliers, we endeavor to continuously further optimize our component use – in terms of both equipment efficiency and use and cost of materials.

Efficiency plays a vital role in our supplier selection process. It's extremely important to us that the materials and components we purchase are produced in an energy and resource-efficient manner. Together with our suppliers, we explore the possibilities to develop profitable, more sustainable solutions. We have, for example, changed from single packaging to multi-packaging for controllers and Humidifiers and have eliminated plastic bags used for wiring boards (electronics) with a supplier. In another case, we currently test the use of recycled plastic for heat exchangers.

91.7% of our suppliers are located in the same country as their respective production site.

2024 Purchased materials, by type

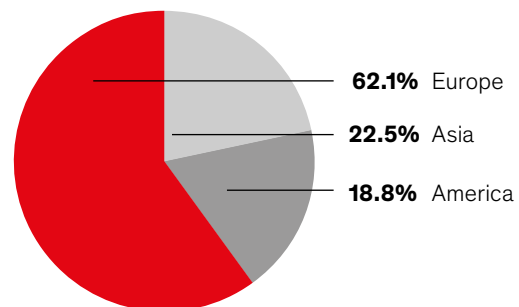
Total purchase volume: 43,963 t



Production entities only, not including Brazil.

2024 Suppliers, by origin

Total: 4,162



Production entities only, "other suppliers" below 1%.

“
INTEGRATING SOCIAL AND ENVIRONMENTAL
CONSIDERATIONS INTO OUR PURCHASING
REQUIRES COMMITTED COOPERATION
AMONG OUR STULZ SITES AND DEEP
ENGAGEMENT WITH OUR SUPPLIERS.

Suresh Balacrishnan, Managing Director STULZ India

Ethics and compliance

STULZ takes a decentralized approach to **ethics and compliance**, which has a positive impact on our measures in individual countries.

For operations at our German headquarters, we have a Code of Conduct that sets out clear rules regarding ethics and compliance for employees. We have established several processes to ensure business ethics in our daily operations: To avoid anti-competitive practices, our contract awarding process is subject to an approval procedure and – for contracts above a certain value – a dual control system. Bribery and corruption are criminal offenses and are firmly rejected. Employees may only accept gifts, invitations and other benefits from third parties only to a reasonable and proportionate extent, and this must not give rise to any conflicts of interest.

Ethics and compliance aspects are often subject to local market requirements and thus are managed accordingly. In the UK market, for example, several ethical and human rights policies are requested from locally operating companies. STULZ UK therefore has a range of policies and mechanisms in place. Among them is the anti-bribery policy and the corresponding procedure.

In Germany, we have adopted a standard operating procedure (SOP), to examine business partners' compliance with legally binding sanctions lists. An export inspection team is responsible for checking our business partners for compliance. We expect our suppliers to comply with the applicable legislation, avoid corruption and adhere to export and import bans and embargoes.

We also enforce business ethics across our supply chain. For us, ensuring human working conditions and compliance with internationally applicable human rights provisions across our entire supply chain is a fundamental expectation. Here, we expect our suppliers to respect human rights and reject child labor.

33.5% of our permanent employees are trained in business ethics.

Not including Italy, Austria, Singapore.

Data security is another aspect of ethics and compliance. In Germany, we collect, process, and retain personal data in accordance with strict German data protection legislation and have appointed a Data Protection Officer. At the German headquarters, there have been no complaints relating to privacy violations or the loss of customer data during the reporting year. We are preparing for ISO 27001 certification to enhance data security.

NEW CODE OF CONDUCT FOR SUPPLIERS



During 2024, we revised and updated our Code of Conduct for Suppliers at the German headquarters. The rules apply to all suppliers, business partners, and other third parties that act on our behalf. Rules are included on:

- **Human rights**
- **Labor conditions**
- **Conflict minerals**
- **Environmental protection**
- **Conflicts of interest**
- **Materials**
- **Ban on bribery and corruption**
- **Fair competition and antitrust legislation**
- **Financial responsibility**
- **Export controls and economic sanctions**

The STULZ Code of Conduct for Suppliers is based on the United Nations Universal Declaration of Human Rights and the Convention Against Corruption, the OECD Guidelines for Multinational Companies, the Conventions of the International Labor Organization (ILO), the principles of the UN Rio Declaration and the Ten Principles of the UN Global Compact.

[→ CODE OF CONDUCT FOR SUPPLIERS](#)



SELECTED RESPONSIBLE SUPPLY CHAIN ACTIVITIES

Respect for **human rights** is regularly checked at our production entities through customer social responsibility audits.

In Spain, Germany, Brazil and other production sites, supply chain management audits are conducted by major globally operating customers.

Our site in the USA participates in customer ESG compliance programs.

Responsible purchasing

As with many companies, responsible purchasing remains a high priority for STULZ in the years to come. Our purchasing department at the German headquarters is organized by material groups with dedicated category managers. A similar structure is in place for the purchasing departments of our other production sites.

Regional purchasing is one aspect. Many components are regionally sourced. Out of more than 4,100 suppliers, 91.7% are located in the same country as the production facilities they supply. The Global Controller is an example of how to combine the advantages of local procurement with globalizing a product, as presented in last year's report: Having suppliers from the same region reduces risks within the supply chain, such as human rights violations. The global use of identical control systems helps to standardize software development and support worldwide and ensure optimum response times 24/7/365.

REDUCING DELIVERY DISTANCES

We recently changed a supplier within Germany who supplied STULZ with most of the small parts used in our production. The transport distance for the large volumes of different small parts was more than 500 kilometers. The new supplier is located in the region, which has significantly shortened the distance for our deliveries. By taking this step, we have improved delivery performance for the parts, including spontaneous availability and lowering carbon emissions. It is an example of how we are looking at the best options for different suppliers and parts from all points of view both from an economic and ESG perspective.



In the German headquarters, an overall risk assessment was carried out. For this, suppliers were analyzed based on their countries and clustered according to risk categories. Furthermore, product and material groups were analyzed for potential risks regarding human rights and environmental protection irregularities.

Within most production countries, our direct supply chain (Tier 1) is generally considered low risk with regard to social and environmental concerns. Our production sites in China and India, however, face comparatively different risks from most of our other sites. For individual material groups (e.g., electronic parts), it is currently not possible to entirely rule out issues relating to working conditions, human rights, and the environment from the upstream stages of our supply chain. In the future, we intend to further improve our risk assessments and verification measures to ensure a responsible supply chain.

For Germany, all strategic suppliers confirmed our new Code of Conduct for Suppliers or submitted their own version with equivalent or higher standards.



RESPONSIBILITY IN OUR SUPPLIER MANAGEMENT IN CHINA

In Hangzhou, China, we have operated a STULZ production site since 2013. A solid supplier management process is in place for about 100 suppliers, the vast majority of which are local. As many of them are only traders, we do not explicitly audit them for human rights and environmental risks.

Our Chinese suppliers pass an annual supplier appraisal; suppliers are reviewed based on multiple criteria and audited according to an audit plan. Environmental and occupational safety performance of companies is considered when selecting suppliers and in the annual audit.

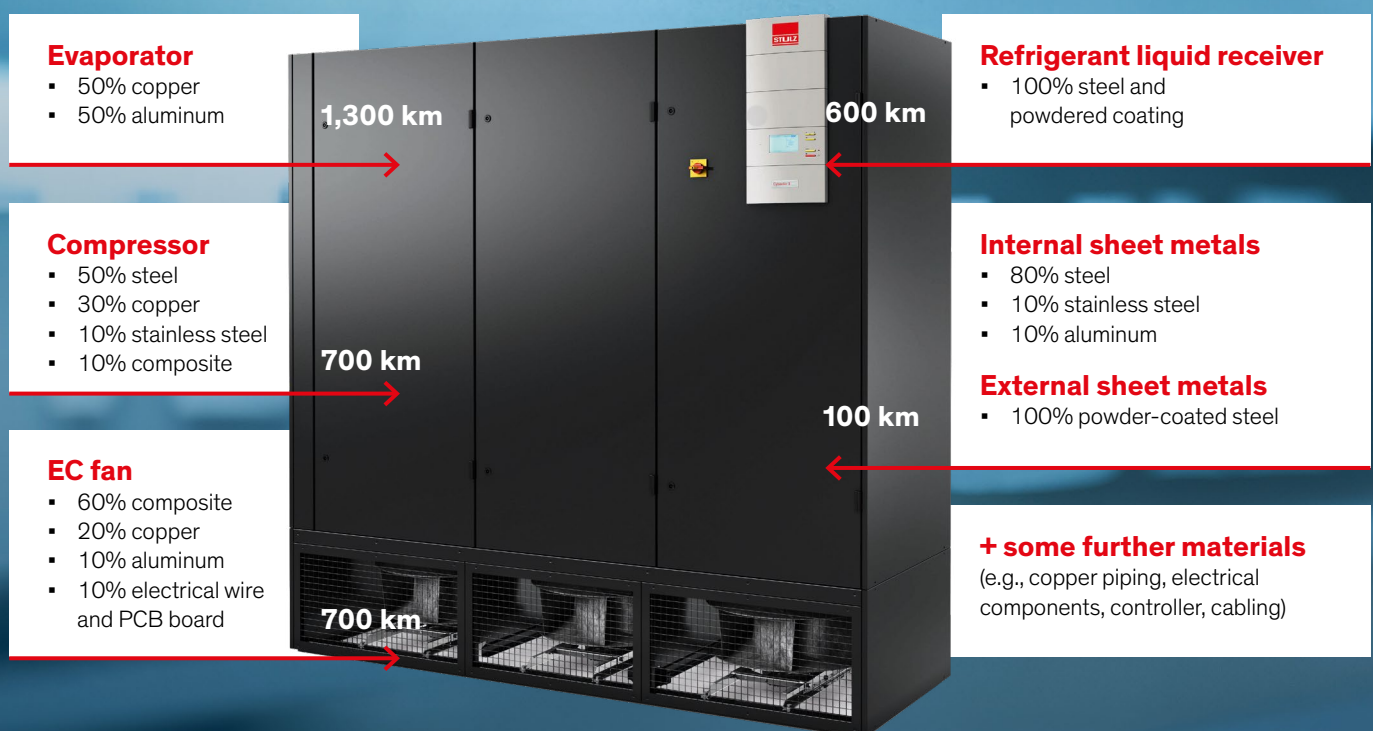
Supplier audits in our Chinese production site

	2023	2024
New supplier audits	10	4
Annual audits	12	7
Process audits	5	4

ESG impacts in our supply chain

In 2024, we conducted an Environmental Product Declaration (EPD) analysis for a CRAC unit, specifically one of our flagship products, on ESG aspects. The illustration shows what materials we buy for a **CyberAir 3PRO DX**, what they are composed of and which distances they travel.

Main components and their materials for a STULZ CyberAir 3PRO DX (Tier 1 supply chain)



In our Tier 1 supply chain, social and environmental impacts are not significant, potential risks exist in upstream tiers of our supply chain. The EPD revealed several relevant insights, including the following:

- The clear hotspot across the assessed life cycle is the raw material extraction stage, accounting for approximately 84% to almost 100% of the total value per environmental indicator.
- The next highest contributing stages are the manufacturing stage, transport to the customer and transport of raw materials to the manufacturing facility.
- The majority of the GWP value (25%) in the raw material extraction stage arises from the “external sheet metals” component. Much of the impact was from powder coating, specifically the heat from natural gas required for the final heat curing of the powder-coated steel.
- For the manufacturing stage, 59% of the related GWP value is attributable to the electricity consumption during manufacturing of the CRAC unit. They arise largely from emissions associated with the upstream combustion of natural gas as energy source.



Managing our supply chain

We analyze and assess supplier-specific and supply chain risks and instigate corrective action when necessary. Sustainability issues are increasingly factored into these assessments.

At present, we do not yet examine new suppliers in terms of social and environmental criteria. We plan to purposely incorporate sustainability issues into our supplier relationships and include them in both our supplier evaluation and regular exchanges.

STULZ Germany conducted a risk assessment in 2024 for compliance with the German Supply Chain Act. It provided insights that helped us prepare our organization to establish solid supply chain management. Different structures and processes were established at STULZ Germany, such as a whistleblower system, preventive measures, and reporting lines. With the new Code of Conduct for Suppliers, we were able to engage our suppliers with our guidelines on responsible supply chain management.

At our German headquarters, we are currently introducing a new supplier relationship management (SRM) tool to continuously monitor and manage supplier risks including ESG beyond Tier 1. By using internal and external data, the SRM tool will allow us to build supply chain resilience. Also, regular queries (REACH, RoHS, etc.) will be managed using this SRM tool. A global roll-out is envisioned.

In 2025, the revised supplier qualification process was introduced, envisioned as a global standard. New to this process is the basic requirement for all suppliers to confirm STULZ ESG standards by accepting its Code of Conduct for Suppliers. The revised supplier qualification process covers a preliminary ESG risk assessment as a basic requirement.

10 subsidiaries have set up a whistleblower system, with no incidents reported in 2024.

NO USE OF CONFLICT MINERALS

We are committed to ensuring that components we have purchased are free from conflict minerals.

Metals such as tin, tantalum, tungsten, and gold are particularly common in electrical components. The mining of these raw materials is problematic in terms of human rights and other social and environmental aspects. The aim is to increase transparency in future as regards conflict minerals in our supply chain.

Working with suppliers and other players in affected industries, we want to contribute to improving conditions in the supply chain.

Currently, we ask suppliers on a case-by-case basis whether they deal with conflict minerals. In the future, it will be included in our supplier screening and qualification process.

In the newly released Code of Conduct for Suppliers in Germany, it is expected that suppliers must prohibit the use of conflict minerals.



**More about
our guidelines,
procedures and reporting:**
→ STULZ: DUE DILIGENCE
OBLIGATIONS IN SUPPLY CHAINS



Good Employer



In the global STULZ organization, we are and will be focusing on four key areas of a Good Employer:

—
Occupational health and safety

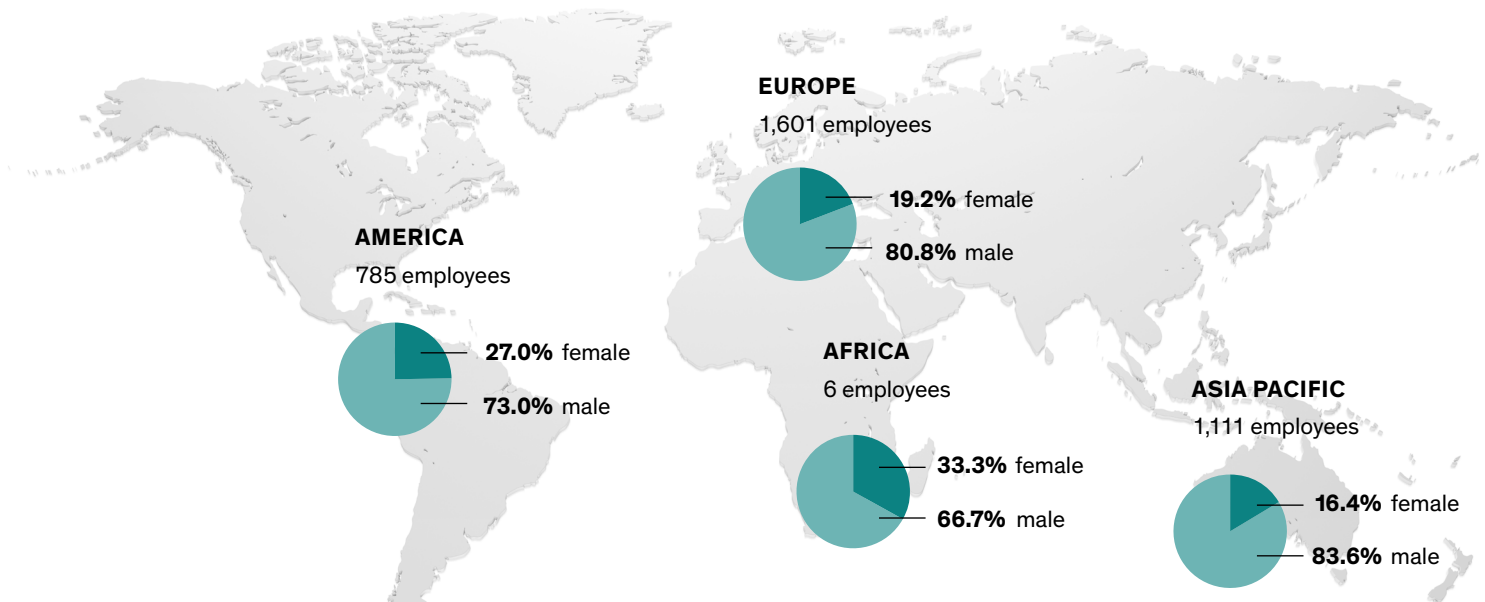
—
Training and career management

—
Diversity, equality, and inclusion

—
Modern work environment

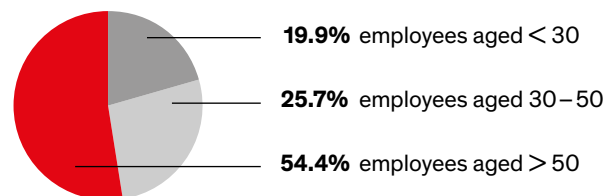
Responsible personnel management

Our qualified and committed employees are the foundations of STULZ's success. In 2024, STULZ had a global total of 3,503 employees – 79.9% of them are male employees, and 20.1% are female employees.



2024 STULZ employees, by age

Total: 3,503



2024 STULZ employees, by contract

	AMERICA		EUROPE		AFRICA		ASIA PACIFIC	
	Male	Female	Male	Female	Male	Female	Male	Female
Permanent	573	212	1,249	290	4	2	461	53
Temporary	0	0	45	17	0	0	468	129
Total by gender	573	212	1,294	307	4	2	929	182
Total continent	785		1,601		6		1,111	
Total	3,503							

GOOD PLACES TO WORK

Several STULZ subsidiaries received awards, among them: “Great Place to Work” awards for STULZ Mexico and STULZ Oceania, “Best Place to Work” for STULZ USA.



Occupational health and safety

The health and safety of our employees is our top priority. We understand that we are responsible for ensuring that our employees are protected against accidents and other potential risks while they are at work.

While we do not operate a uniform global health and safety management system, our production sites operate under guidelines or management systems for health and safety. Approaches and measures vary.

In Germany, we have a refined structure with clear responsibilities and different measures. In Brazil, the S.O.L. Program (see page 15) includes health and safety aspects. Italy has a certified health and safety management system.

In China, an ISO 45001 system on Occupational health and safety management is in place. Each employee receives a comprehensive health check every year. Supplementary medical insurance is provided on top of the statutory social insurance, which includes life and disability, critical illness, maternity leave for female employees, inpatient and outpatient medical expenses both for employees and their children.

A low number of accidents across the global STULZ organization is a great achievement we strive to keep.

Several of our sales and service sites also translate their commitment to health and safety into structures and processes, according to local requirements, for example:

The sales and service site in Thailand has established health and safety measures to ensure a safe and healthy working environment.

Our office in South Africa operates with a health and safety guideline.

STULZ Singapore ensures compliance with local employment laws and regulations while prioritizing the safety and well-being of its workforce. It operates a certified Occupational health and safety management system (ISO 45001).

Accidents and injuries

	2023	2024
Reportable accidents at work	69	38
Injuries	5	62

Production entities only, injuries 2023 not including USA.

“OUR EMPLOYEES ARE PROUD TO WORK AT OUR STULZ PRODUCTION SITE IN BRAZIL. WE CREATE A GOOD WORKING ENVIRONMENT AND PROMOTE CHANGES IN PEOPLE’S ATTITUDES AND HABITS FOR CONTINUOUS IMPROVEMENT.

Franciane Dias, Production and Planning Manager STULZ Brazil

GOOD WORKING CONDITIONS IN INDONESIA

STULZ Indonesia

STULZ Indonesia supports a range of measures for its employees. Fair compensation and a positive work culture fostering respect, inclusiveness, and teamwork build the foundation. We provide a safe and healthy work environment that minimizes risks and hazards. Opportunities for professional development, training, and career advancement are available to employees, as well as flexible work arrangements such as remote work and flexible hours.



STULZ Germany

HEALTH AND SAFETY MANAGEMENT IN GERMANY

Our **structures** for health and safety at the German site ensure clear organizational and operational procedures. They include:

- **Occupational Health and Safety Committee** (covers also workers who are not employees): Holds regular meetings, decides on adjustments necessary to prevent accidents at work
- **Company Medical Officer:** Inspections and information on potential improvements, for example in production
- **Occupational Health and Safety Officers:** Ensure the safety of our workforce
- **Heads of division and line managers:** Implement measures to prevent the recurrence of accidents, conduct regular risk assessments of all workplaces
- **155 First Aiders:** Provide first aid across the organization

We offer **training and education schemes** on occupational health and safety.

- Regular training for First Aiders and new recruits
- Yearly health and safety training sessions
- Regular Health Days to raise awareness of various health aspects
- Corporate reintegration management scheme after long-term illness

**95% of all employees
have received health and
safety training in Germany.**

Training and career management

To ensure our long-term success, we want to recruit and develop great people around the world. Training and career management are organized in a decentralized manner, so all subsidiaries tailor it according to the local needs and opportunities. Some examples:

In Germany, we offer over 100 different training and education programs on a wide range of topics, several of them provided through our eLearning platform. With the “STULZ Talent Development” scheme, we train promising young talent among our employees to leaders of tomorrow.

In 2024, 28 apprentices and 15 students are employed in Germany. The average retention rate is 95%.

We engage young talent at an early stage and offer apprenticeship opportunities in Germany in several tracks, for example: Industrial Electrician, Production Mechanic, Cooling Technology Mechatronics Engineer, Warehouse Logistics Specialist, Industrial Management Assistant, and IT Specialist. Degrees with Vocational Training include, for example, Business Information Systems, Mechatronics and Air Conditioning Technology.

STULZ China provides a variety of training courses and resources through the internal Online Learning Platform. Among them are general training, professional training on products and technical features, and self-improvement. Additionally, trainee and orientation programs provide comprehensive training for interns and new employees.

Our sales site in Indonesia offers various in-house training opportunities for employees.

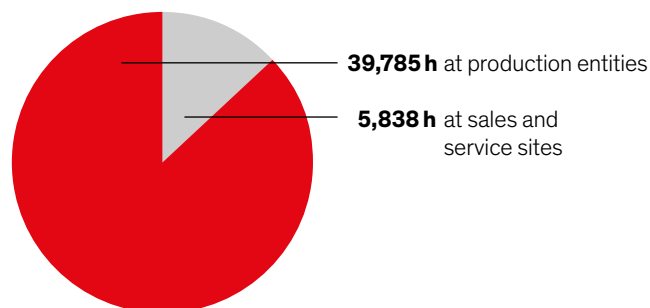
In Austria we educate our technicians internally or at supplier training courses.

STULZ Singapore invests in continuous training and development opportunities, fostering employees' career growth and skill enhancement.

Given the difficulty in finding certain job profiles at the factory's location, STULZ Tecnivel (Spain) provides internships for job seekers in collaboration with several training organizations. The interns receive an opportunity to gain experience and potentially be recruited by STULZ.

2024 STULZ training, by hours

Total: 45,623 h



TRAINING OPPORTUNITIES IN ITALY

In 2024, STULZ S.p.A. started a project to redesign onboarding and career paths within the production departments. Tutors will accompany new recruits on their path of growth and talent management. Training courses in lean manufacturing were launched for all new recruits. The STULZ Academy in Italy will be expanded to other employees outside the production areas. With schools in the area of our factory, internship programs, and school events were launched. The aim is to foster the exchange with young people and provide them with internship opportunities and present STULZ Italy as an attractive employer. Training courses with external teachers from qualified schools and our internal teachers provide opportunities for job seekers.



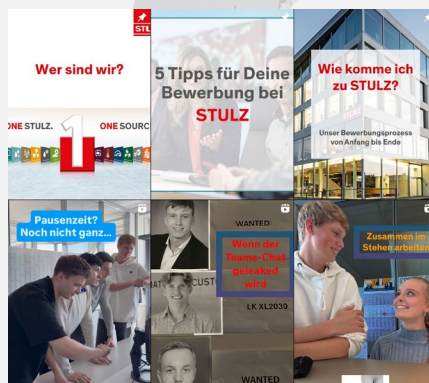
STULZ Germany

CAREER ACCOUNTS ON INSTAGRAM AND TIKTOK

To strengthen our employer brand and attract new talent, STULZ has been operating dedicated career accounts on Instagram and TikTok in Germany since 2022. The channels provide authentic insights into our company culture and career opportunities from the perspective of those most familiar with it – our apprentices and dual students. They are not only the faces of the channels but also take responsibility for content creation. From brainstorming and filming to editing and writing captions – they handle the entire process mostly independently.

The idea initially was to show the daily work of our service technicians. It evolved into a comprehensive career channel that now highlights various roles, career paths, and behind-the-scenes moments at STULZ. Weekly meetings with two supervisors from HR and Marketing serve as creative planning sessions.

The career accounts have already paid off: Several applicants stated that they discovered STULZ through our social media presence. Beyond recruitment success, the project empowers our apprentices and dual students by giving them responsibility and experience in digital communication.



STULZ Career:
→ [INSTAGRAM](#)
→ [TIKTOK](#)



Diversity, equality and inclusion

For us, the diversity of our workforce and the creation of an inclusive working environment is not just ethically correct, but also indispensable for our innovative spirit and competitiveness.

Our team is made up of 703 female and 2,800 male creative thinkers. While we are open to all genders, we currently have no employees who openly identify as non-binary. People from 135 different nations work across all global subsidiaries. Everyone shares a common passion and the drive to shape STULZ's future with commitment and ambition.

135 nationalities working at STULZ.

Our obligation to equality ensures that all our employees are treated fairly – regardless of gender, origin, religion, or any other characteristics. This way, we create a working environment free from discrimination, and we actively strive for an inclusive culture. Discrimination of any kind is not tolerated and will be punished accordingly. We also strictly reject sexual harassment and bullying. Every single employee should feel respected, valued, and an integral part of our team. Three examples of how STULZ organizations handle the topics:

STULZ UK is committed to encouraging equality and diversity among our workforce and eliminating unlawful discrimination. Our aim is for our workforce to truly represent all parts of society and our customers, and for each employee to feel respected and able to give their best. To enforce this, several policy measures have been implemented, among them an equality policy and a bullying and harassment policy.

STULZ China complies with all applicable labor and employment laws and is committed to providing equal employment opportunities to all qualified personnel regardless of race, color, religion, nationality of origin, disability, gender, age, marital status, etc. STULZ China offers complaint and grievance channels for employees to ensure fairness and equality. It strives to provide a fair working environment for employees and incentivizes employees based on actual performance results.

In Germany, we have introduced a works agreement that promotes equal rights and aims to counter discrimination. Our Works Council and the Executive Management work closely together to prevent employees in our company from feeling disadvantaged in any way. Our whistleblower system is publicly accessible to everyone. Employees receive training on topics such as diversity, discrimination and harassment. Our disability representative on the German Works Council ensures that the interests of people with disabilities are also represented in the company. During 2024, we employed 38 people with disabilities in Germany.

Modern work environment

At STULZ, we recognize the importance of the modern work environment and actively incorporate various aspects into the design of our workstations, working hours and commuting, and in our communication methods. The work environments at our global sites are maintained individually by local management. Thus, the focus varies according to local demands.

We understand the importance of a harmonious work-life balance. That's why we support flexible working time models and focus on online meetings in various subsidiaries, among them Germany, Italy, Mexico and at STULZ Nordics.

STULZ China provides additional paid annual leave and sick leave. The team organizes employee activities, such as team building, celebrations, festival activities and sports events to enhance teamwork and improve employees' wellbeing.

STULZ Tecnivel (Spain) conducted a Family Day in 2024 with over 500 attendees.



“

WE ALREADY WON THE “GREAT PLACE TO WORK” AWARD – YET WE KEEP FOCUSED IN MAINTAINING A HIGH QUALITY WORKING ENVIRONMENT FOR OUR EMPLOYEES. FOR YOUNG TALENT, WE OFFER GREAT CAREER PATHS AND DEVELOPMENT PROGRAMS TO UPSKILL OUR WORKFORCE.

Matthew Gellert, Product Manager Cooling STULZ Oceania

EMPLOYEE WELLBEING PROGRAM

At STULZ Oceania, we held in 2024 a wellbeing program for employees focusing on four elements: mindset, nutrition, movement, and rest and recovery. Sessions for all employees were held throughout the year and were run by expert guest speakers. In addition, employees were given two days off to focus on wellbeing, on top of existing leave. A \$275 allowance was also provided to employees for spending on revitalizing activities that help nurture mental health and physical wellbeing.

■ STULZ Oceania ■



Community engagement

OUR STULZ FOUNDATION

The STULZ Foundation in India is guided by values of empathy, integrity, teamwork, innovation, inclusivity, and sustainability. We approach our four initiatives with compassion and transparency, partnering with communities to maximize our positive impact in India.



Empowering Health: We run eight healthcare clinics throughout Mumbai, providing free doctor consultations and over-the-counter medications to all. This initiative serves approximately 100,000 patients each year.

Empowering Growth: To ensure access to nutritious meals, we have partnered with an organization that delivers healthy food to selected slum clusters in Mumbai, with the goal to provide up to 150,000 meals.

Empowering Progress: Our Education Outreach initiative is designed to empower individuals to overcome obstacles and thrive in their unique circumstances. Our educational initiatives are primarily directed towards primary education.

Empowering Change: We strive to bring about tangible and positive change. This area of focus is integral to our work at STULZ Foundation and has been instrumental in our success.

→ STULZ-CHSPL FOUNDATION

CHARITY SPONSORSHIP

STULZ S.p.A. in Italy once again sponsored the "La Corsa Rosa" charity event, a run promoting prevention and early diagnosis of female cancer. We also introduced a solidarity time bank to support colleagues in need.

ENGAGING FOR SOCIAL CAUSES

STULZ Spain collaborates with various animal shelters in towns near the Esquivias production site. We repurpose leftover materials to support animal welfare. Materials we have supplied to the animal shelters include pallet wood planks, wooden boxes to build cat houses, and insulation to prepare the shelters for the cold season.



Our company also strengthens a collaboration with Fundación Down Zaragoza to practice support for people with disabilities. Staff members visited various facilities and occupational centers of Down Zaragoza in 2024. We were able to witness first-hand how efforts toward social inclusion and equal opportunity in society are carried out.



FOSTERING ENVIRONMENTAL INITIATIVES

As part of our commitment to sustainability, STULZ in China launched activities under the slogan “Red for Action, Green for Future”. They include tree-planting initiatives with employees and a tree donation. The company donated greenery to the Alashan Desert to combat land desertification by taking concrete action. This initiative has also been recognized by environmental organizations. Additionally, employees are encouraged to integrate low-carbon practices into their daily lives through innovative incentive measures by the company. They include incentives for eco-friendly commuting, reducing plastic use, and conserving energy.



Key Performance Indicators

Company	Unit	2023	2024
Sales (approx.)	€ million	800	850
Production entities	total	8	8
Sales and service sites	total	19	21
Software development sites	total	1	1

Environment	Unit	2023	2024
GHG emissions excluding use phase (Scope 3.11)			Excluding:
GHG emissions, total	t CO ₂ e	n.a.	Thailand 156,277
Scope 1	t CO ₂ e	n.a.	4,472
Scope 2 (market-based)	t CO ₂ e	n.a.	3,754
Scope 1–2	t CO ₂ e	n.a.	8,226
Scope 3	t CO ₂ e	n.a.	148,051
GHG emissions (Scope 1–3) per 10,000 € sales	t CO ₂ e	n.a.	1.8
Energy		Excluding:	Excluding:
Energy consumption, total	kWh	France, Nordics, Thailand 16,648,087	France 18,212,461
Production entities	kWh	16,021,970	17,137,153
Sales and service sites	kWh	France, Nordics, Thailand 626,117	France 1,075,309
Electricity	kWh	France, Nordics, Thailand 11,161,360	France 10,774,129
Electricity from conventional tariffs	kWh	8,384,868	9,360,444
Electricity from 100% renewable energy tariffs	kWh	2,776,492	1,413,685
Gas	kWh	France, Nordics, Thailand 4,662,928	France 5,879,795
Heating oil	kWh	France, Nordics, Thailand 780,955	France 639,632
Other	kWh	France, Nordics, Thailand 42,843	France 918,926
Energy intensity per employee	kWh	France, Nordics, Thailand 5,085	France 5,199
Water		Excluding:	Excluding:
Water withdrawal, total	m ³	France, Indonesia, Nordics, Thailand 31,240	France, Indonesia, Nordics, New Zealand, Thailand 37,215
Production entities	m ³	30,113	34,892
Sales and service sites	m ³	France, Indonesia, Nordics, Thailand 1,127	France, Indonesia, Nordics, New Zealand, Thailand 2,323
Water discharge, total	m ³	Brazil, Spain, USA, Asia Hub, Benelux, France, Indonesia, Nordics, Singapore, Thailand 22,461	Brazil, Austria, France, Indonesia, Nordics, New Zealand, Thailand 33,301
Production entities	m ³	Brazil, Spain, USA 21,657	Brazil 32,105
Sales and service sites	m ³	Asia Hub, Benelux, France, Indonesia, Nordics, Singapore, Thailand 804	Austria, France, Indonesia, Nordics, New Zealand, Thailand 1,196
Production entities with wastewater treatment in place	total	1	1
Waste (production entities only)		Excluding:	Excluding:
Waste generated at production entities, total	kg	Modular (UK) 3,083,096	China, Modular (UK) 3,369,007
Hazardous waste	kg	34,736	55,488
Non-hazardous waste	kg	3,048,361	3,313,519
Recycled waste	kg	2,645,023	2,698,943
Disposed waste	kg	438,074	670,064

Our new site in the United Arab Emirates (EMEA) is not included in the Key Performance Indicators. The operations of STULZ Digital Solutions GmbH, our software development site in Germany, are covered by the data for STULZ GmbH, Germany. For technical reasons, the data for the following entities is consolidated: Belgium in Stulz Groep (Netherlands), Stulz Oceania (Power) in Stulz Oceania (Australia), Malaysia in Stulz Singapore.

Environment	Unit	2023	2024
Waste generated at production entities, by origin	kg	Modular (UK), USA	China, Modular (UK)
Metal waste	kg	574,487	437,278
Packaging wood	kg	462,349	591,965
Paper and cardboard	kg	361,091	1,690,729
Refrigerants	kg	5,372	3,722
Residual waste	kg	115,985	500,951
Other	kg	196,097	144,363
Refrigerants			
Refrigerants used, total	kg	99,650	116,770
Share of refrigerants with global warming potential (GWP) of			
≤ 150 (R1234ze, R454C)	%	8.5	2.2
151–1,000 (R513A, R32)	%	7.1	4.1
1,001–1,500 (R449A, R134)	%	14.9	14.8
>1,500 (R22, R438A, R407A, R407C, R404, R422D, R410A)	%	69.5	78.9
Company fleet			
Company vehicles, total	total	688	706
With combustion engine	total	610	637
With alternative engine	total	78	69
Social	Unit	2023	2024
Employees			
Employees	total	3,303	3,503
Female	total	643	703
Male	total	2,660	2,800
Employees by age			
< 30	total	664	697
30–50	total	1,829	1,904
> 50	total	810	902
Employees by contract			
Permanent	total	2,622	2,844
Female	total	502	557
Male	total	2,120	2,287
Temporary	total	681	659
Female	total	141	146
Male	total	540	513
Full-time	total	3,199	3,399
Female	total	578	644
Male	total	2,621	2,755
Part-time	total	104	104
Female	total	65	74
Male	total	39	30
Workers who are not employees	total	140	105
Female employees in managerial positions	total	37	48
Nationalities of employees	total	89	135

Social	Unit	2023	2024
Employee turnover	total	531	341
Female	total	70	45
Male	total	461	296
Employees on parental leave	total	87	107
Female	total	26	38
Male	total	61	69
Share of employees covered by collective bargaining agreements*	%	55.1	73.5
Training and education		Excluding:	
Employees participating in training courses	total	Brazil, Benelux, Indonesia, Nordics, UK 3,173	2,589
Training hours, total	h	Brazil, Benelux, Indonesia, Nordics, UK 17,954	45,623
Training hours, per participating employee	h	Brazil, Benelux, Indonesia, Nordics, UK 5.7	17.6
Health and Safety (production entities only)		Excluding:	
Production entities with a certified H&S management system in place	total	4	4
Reportable accidents at work	total	69	38
Injuries	total	USA 5	62

Governance and supply chain	Unit	2023	2024
Governance		Excluding:	
Employees trained in business ethics	total	Asia Hub, Indonesia, Mexico, Nordics, South Africa, UK 2,114	Italy, Austria, Singapore 1,175
Percentage of included employees trained in business ethics	%	Asia Hub, Indonesia, Mexico, Nordics, South Africa, UK 66.8	Italy, Austria, Singapore 33.5
Sites with whistleblowing procedure in place	total	8	10
Reports from whistleblower procedures	total	0	0
Violations of environmental protection laws and directives	total	Modular (UK), Asia Hub, Indonesia, Mexico, Nordics, UK 0	Italy, Austria, Singapore 0
Confirmed cases of corruption	total	Modular (UK), Asia Hub, Indonesia, Mexico, Nordics, UK 0	Italy, Austria, Singapore 0
Materials (production entities only)		Excluding:	
Total purchase volume	tonnes	Brazil 44,421	Brazil 43,963
Mechanical components	tonnes	18,438	23,377
Raw materials	tonnes	10,804	5,349
Trade goods	tonnes	9,473	8,121
Electrical components	tonnes	4,853	6,151
Maintenance, repair, and operations (MRO)	tonnes	853	965
Suppliers (production entities only)			
Suppliers, total	total	3,984	4,162
Europe	total	2,509	2,585
Asia	total	725	857
America	total	747	714
Other	total	3	6
Share of suppliers in same country as sourcing site	%	91.3	91.7

* 2024 data cover subsidiaries in Brazil, Germany, Italy, Spain, Austria, France, Netherlands, South Africa only (representing a total of 1,587 employees).
2023 data cover subsidiaries in Brazil, Germany, Italy, Spain, Benelux and South Africa only (representing a total of 1,479 employees).

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 (January 1 to December 31, 2024). GRI Sector Standards are not applicable. Disclosures conform to the latest available version of the GRI Standards, which can be downloaded here: [→ WWW.GLOBALREPORTING.ORG/HOW-TO-USE-THE-GRI-STANDARDS/GRI-STANDARDS-ENGLISH-LANGUAGE/](https://www.globalreporting.org/how-to-use-the-gri-standards/gri-standards-english-language/)

GRI Standard	Disclosure	Reference and omissions
GRI 2: General Disclosures		
1. The organization and its reporting practices		
2-1	Organizational details	3, 12 – 13, 66
2-2	Entities included in the organization's sustainability reporting	12 – 13, 66
2-3	Reporting period, frequency and contact point	66
2-4	Restatements of information	67
2-5	External assurance	66
2. Activities and workers		
2-6	Activities, value chain and other business relationships	3, 8 – 10
2-7	Employees	51, 61 – 62
2-8	Workers who are not employees	61; total workers only
3. Governance		
2-11	Chair of the highest governance body	15
2-12	Role of the highest governance body in overseeing the management of impacts	15
2-13	Delegation of responsibility for managing impacts	15
2-14	Role of the highest governance body in sustainability reporting	15
2-16	Communication of critical concerns	15, 44
2-17	Collective knowledge of the highest governance body	15
4. Strategy, policies and practices		
2-22	Statement on sustainable development strategy	4 – 5
2-23	Policy commitments	16, 34, 44
2-24	Embedding policy commitments	15 – 16, 22, 31, 44
2-25	Processes to remediate negative impacts	16, 31, 44, 48
2-26	Mechanisms for seeking advice and raising concerns	16, 44, 48
2-27	Compliance with laws and regulations	62; no reported incidents
2-28	Membership associations	19; exemplary selection
5. Stakeholder engagement		
2-29	Approach to stakeholder engagement	18
2-30	Collective bargaining agreement	62; share of covered employees only

GRI Standard	Disclosure	Reference and omissions
GRI 3: Material Topics 2021		
Material Topics 2021		
3-1	Process to determine material topics	17; SR 2023 pages 18 – 19
3-2	List of material topics	17

Material Topic: Sustainable Products			
GRI 3-3: Management of material topics			20 – 22, 24, 27, 29
GRI 301: Materials 2016	301-1	Materials used by weight or volume	43, 62; total weight by type used in production entities
	301-3	Reclaimed products and their packaging materials	29, 38 – 39; exemplary for production entities only
GRI 302: Energy 2016	302-5	Reductions in energy requirements of products and services	24 – 26; approaches and examples
GRI 416: Customer Health and Safety 2016	416-1	Assessment of the health and safety impacts of product and service categories	22, 40
	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	No known incidents
GRI 417: Marketing and Labeling 2016	417-1	Requirements for product and service information and labeling	22, 38, 40
GRI 418: Customer Privacy 2016	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	44; Germany only

Material Topic: Resource-Efficient Production			
GRI 3-3: Management of material topics			30 – 41
GRI 302: Energy 2016	302-1	Energy consumption within the organization	32, 60
	302-3	Energy intensity	60; per employee
	302-4	Reduction of energy consumption	24 – 25, 32 – 33; examples and actions only
GRI 303: Water and Effluents 2018	303-1	Interactions with water as a shared resource	27
	303-3	Water withdrawal	27, 60; total withdrawal only; no analysis of water stress areas
	303-4	Water discharge	60; total discharge only
GRI 305: Emissions 2016	305-1	Direct (Scope 1) GHG emissions	34 – 35, 60, 67
	305-2	Energy indirect (Scope 2) GHG emissions	34 – 35, 60, 67
	305-3	Other indirect (Scope 3) GHG emissions	34 – 35, 60, 67
	305-4	GHG emissions intensity	60; Scope 1 – 3 (excl. use phase) per 10,000 € sales
	305-5	Reduction of GHG emissions	36 – 37; exemplary
GRI 306: Waste 2020	306-1	Waste generation and significant waste-related impacts	38, 40
	306-2	Management of significant waste-related impacts	38 – 40
	306-3	Waste generated	38, 61; production entities only
	306-4	Waste diverted from disposal	38, 61; total diverted waste of production entities only
	306-5	Waste directed to disposal	38, 61; total directed waste of production sites only

GRI Standard	Disclosure		Reference and omissions
Material Topic: Responsible Supply Chain			
GRI 3-3: Management of material topics			42 – 49
GRI 204: Procurement Practices 2016	204-1	Proportion of spending on local suppliers	43, 62; production entities only; local means same country as the sourcing entity
GRI 205: Anti-corruption 2016	205-2	Communication and training about anti-corruption policies and procedures	44, 62
	205-3	Confirmed incidents of corruption and actions taken	No known incidents
GRI 308: Supplier Environmental Assessment 2016	308-1	New suppliers that were screened using environmental criteria	46 exemplary for China, 48 overall approach
GRI 414: Supplier Social Assessment 2016	414-1	New suppliers that were screened using social criteria	46 exemplary for China, 48 overall approach

Material Topic: Good Employer			
GRI 3-3: Management of material topics			50, 52, 54, 56 – 57
GRI 401: Employment 2016	401-1	New employee hires and employee turnover	61 – 62; total turnover by gender only
	401-3	Parental leave	62; total employees with parental leave by gender only
GRI 403: Occupational Health and Safety 2018	403-1	Occupational health and safety management system	15, 52 – 53, 62
	403-2	Hazard identification, risk assessment, and incident investigation	52 – 53
	403-3	Occupational health services	52 – 53
	403-4	Worker participation, consultation, and communication on occupational health and safety	52 – 53; focus on production entities
	403-5	Worker training on occupational health and safety	40, 52 – 53; focus on production entities
	403-6	Promotion of worker health	52 – 53, 57
	403-8	Workers covered by an occupational health and safety management system	52 – 53, 62; coverage of management systems
	403-9	Work-related injuries	52, 62; total injuries according to local law; production entities only
GRI 404: Training and Education 2016	404-1	Average hours of training per year per employee	54, 62; per participating employees
	404-2	Programs for upgrading employee skills and transition assistance programs	54, 56; examples for programs
GRI 405: Diversity and Equal Opportunity 2016	405-1	Diversity of governance bodies and employees	51, 56, 61; total employees by gender, age and region only
GRI 406: Non-discrimination 2016	406-1	Incidents of discrimination and corrective actions taken	No reported incidents

About the Report

This is the third Sustainability Report by STULZ, based in Hamburg, Germany. It covers the operations of STULZ Air Technology worldwide. The report applies to the 2024 fiscal year (January 1, 2024 to December 31, 2024) and was published on October 23, 2025. The editorial deadline was October 13, 2025. The previous Sustainability Report was published on November 4, 2024 for the 2023 fiscal year.

Our reporting is voluntary; no external auditing was conducted. Our aim is to transparently disclose to our stakeholders how STULZ manages sustainability in a comprehensive and future-oriented way. We present key areas and approaches, selected strategies, goals, actions, progress, and key performance indicators. We thereby demonstrate how STULZ deals with economic, environmental, social, and governance (ESG) concerns.

SCOPE OF CONSOLIDATION

This Sustainability Report covers 30 legal entities as subsidiaries, eight production entities, one software development site¹, and 21 sales and service sites. Out of the eight production entities, Germany, Italy, India and USA are covered with integrated sales and service sites, Brazil and Modular (UK) with integrated sales sites.

Production entities	KPI coverage
Stulz Brasil Ar Condicionado Ltda., Brazil	Brazil
Stulz Air Technology and Services Hangzhou Co., Ltd.	China
Stulz GmbH, Germany (headquarters) ¹	Germany
Stulz-CHSPL (India) Pvt. Ltd.	India
Stulz S.p.A., Italy	Italy
Stulz Tecnivel, S.L.U., Spain	Tecnivel (Spain)
Stulz Modular Ltd., UK	Modular (UK)
Stulz Air Technology Systems Inc., USA	USA

The 30 subsidiaries come under the scope of the consolidated financial statements of Stulz Verwaltungs GmbH & Co. KG. They represent our worldwide operating entities under one of the STULZ Group's business units, STULZ Air Technology. Thus, the scope of this Sustainability Report differs from the scope of the consolidated financial statement of STULZ Verwaltungs GmbH & Co. KG, for 2024 fiscal year, as this covers also other business segments.

Sales and service sites	KPI coverage
Stulz Oceania Pty Ltd., Australia ²	Oceania
Stulz Oceania (Power) Pty Ltd, Australia ²	Oceania
Stulz Austria GmbH	Austria
Stulz Belgium BV ³	Benelux
Dala Service Ar Conditionada, Ltda., Brazil	Brazil
Stulz Air Technology and Services Shanghai Co., Ltd. China	China
Stulz France S.a.r.l.	France
PT STULZ Air Technology Indonesia, Indonesia	Indonesia
Stulz Malaysia Sdn. Bhd. ³	Singapore
Stulz México S.A. de C.V.	Mexico
Stulz Groep B.V., Netherlands ³	Benelux
Stulz Oceania Ltd., New Zealand	Oceania
Stulz Polska Sp. z o.o., Poland	Poland
Stulz ASIA HUB Pte. Ltd., Singapore	Asia Hub
Stulz Singapore Pte Ltd. ³	Singapore
Stulz South Africa Pty. Ltd.	South Africa
Stulz España S.A., Spain	Spain
STULZ Nordics AB, Sweden	Nordics
STULZ Siam Co., Ltd., Thailand	Thailand
Stulz UK Ltd.	UK
Stulz EMEA Center of Excellence – FZCO, United Arab Emirates ⁴	EMEA

¹ In this report, the operations of Stulz Digital Solutions GmbH, our software development site in Germany, are covered by the data for STULZ GmbH, Germany.
² For technical reasons, the data for the two Australian sites is consolidated.
³ For technical reasons, the data for the following entities is consolidated: Belgium in Stulz Groep (Netherlands), Malaysia in Stulz Singapore.
⁴ EMEA is not included in the Key Performance Indicators.

CONTACT

For questions about sustainability at STULZ and our sustainability reporting, contact our team:
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Mr. Jan-Lucas Kinne
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DATA COLLECTION AND METHODOLOGY

Data for this Sustainability Report was collected in collaboration with the relevant departments of STULZ and our international site representatives. We have further improved data quality. Some data remains unavailable at our subsidiaries. We clearly indicate excluded subsidiaries in the Key Performance Indicator section, also compared to 2023 reporting omissions. There are no significant changes compared with the last report. Regarding methodology, we point out the following aspects:

- Data collection is now carried out at the organizational level rather than the country level. This may result in differences if we relate statements only to production entities or only to sales and service sites.
- Our newly included subsidiary in EMEA is not included in Key Performance Indicators in this report.
- We display health and safety data, as well as data on materials and suppliers for our production entities only because figures are the most significant for these entities.
- Regarding our health and safety data, we have gathered information on how many accidents had to be reported to authorities according to local laws and regulations as well as how many accidents resulted in a work absence of more than six weeks.
- Waste data also is only fully collected for the production entities.
- We use metric tonnes.
- Deviations due to rounding may occur in individual cases.

Corporate Carbon Footprint methodology

STULZ follows the GHG-Protocol Standard to calculate its global Corporate Carbon Footprint for 2024. Due to the methodological improvements, results are not comparable with the carbon footprint displayed for Germany for the year 2023. Within the Key Performance Indicators, we display emissions excluding use phase.

Organizational and operational boundaries

The system boundaries for the GHG inventory were established using the operational control approach for all entities within financial consolidation (excluding Thailand and EMEA), applying the three scopes of the GHG-Protocol:

Scope 1: direct emissions from combustion processes in stationary and mobile applications and direct emissions of fugitive gases.

Scope 2: indirect emissions from purchased electricity and heating.

Scope 3: indirect emissions from Purchased Goods and Services (3.1), Capital Goods (3.2), Fuel- and Energy-Related Emissions (3.3), Upstream Transportation and Distribution (3.4), Waste Generated in Operations (3.5), Business Travel (3.6), Employee Commuting (3.7), Downstream Transportation and Distribution (3.9), Use of Sold Products (3.11). Scope 3.8 (Upstream Leased Assets) is included in Scope 1 and 2.

An extensive screening of all Scope 3 categories was carried out regarding relevance and significance of emissions. As not relevant or significant for the STULZ global Corporate Carbon Footprint are the following Scope 3 categories: Processing of Sold Products (3.10), End-of-Life Treatment of Sold Products (3.12), Leased Assets (3.13), Franchises (3.14) and Investments (3.15).

Emission factors

To calculate the GHG inventory 2024, we used emission factors expressed in CO₂-equivalents (CO₂e) of the International Energy Agency (IEA), the UK Department for Business, Energy & Industrial Strategy (UK DBEIS), the Umweltbundesamt (UBA) Germany as well as market-based emission factors for electricity contracts.

Methodology remarks and data exclusions

We used both the market-based and the location-based approach to calculate Scope 2 emissions; we present the results for the market-based approach.

Most activity data is based on actual consumption such as kWh, km or tonnes-km used. Emissions for Scope 3.1 and 3.2 are based on financial data, thus, they provide only a rough estimate of emissions, especially with regards to purchased raw materials and components to build our AC units.

Data from Thailand and United Arab Emirates have been excluded due to unavailable data and insignificant size. Electricity data for France was not available but also insignificant with regards to low emissions of France's energy mix.

Upstream Transportation and Distribution (Scope 3.4) include all inbound transports except for the United States and India (estimated as significant) and Brazil (estimated as not significant). It further includes all outbound transportation where STULZ entities pay the transport and transport data is available. This is only the case for Germany, China and Brazil. Downstream Transportation and Distribution (Scope 3.9) is excluded due to lack of data for all outbound transports organized and paid by STULZ clients. This is the case for all exported goods.

**This report is publicly available
on our website as a PDF file.**

→ [STULZ: SUSTAINABILITY REPORT](#)

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Cash Cow Farmers Hamburg, Germany

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