

Festo Sustainability Report

2017–2019

FESTO



Title image

The Festo AutomationCenter, which has been awarded the platinum certificate by the German Sustainable Building Council (DGNB).



Sustainable Building
DGNB certificated in platinum

**Editorial note**

All forward-looking statements in this report are based on general assumptions at the time of going to press. → The detailed report profile can be found on page 103.

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Visit www.festo.com/responsibility



→ GRI 102-14, GRI 102-16

Preface



Dear Readers,

Festo is the workmanship of many hands, over generations. Thanks to our financial independence as a family business, we can shape our own future. That is our mission. We involve all our stakeholders – customers, employees, suppliers and society – in the joint and sustainable creation of value. Our actions are aligned with the UN Sustainable Development Goals (SDGs) relevant to Festo.

With our competence in automation and in technical training, we increase the productivity of our customers and thereby create scope for sustainable development with regard to the environment, business and society. That is our promise.

We support fair competition and have zero tolerance for corruption. We treat our employees with dignity and respect, create humane working conditions and, as a learning company, promote their continuous employability through ongoing training. We regard our suppliers as true partners and demand that human rights are respected throughout the supply chain.

We also serve society as a whole – we continuously push the boundaries of education, knowledge, innovation and technology to improve people's well-being.

In this sustainability report, we document our global responsibility to our stakeholders using examples from 2017 to 2019 and provide an outlook on the topics covered by our sustainability strategy adopted in 2020. Along our defined fields of action of this strategy, we take different perspectives and make clear that automation and technical education is made for people and is developed by people – as a common contribution to improve the state of the world a bit.

Enjoy reading.

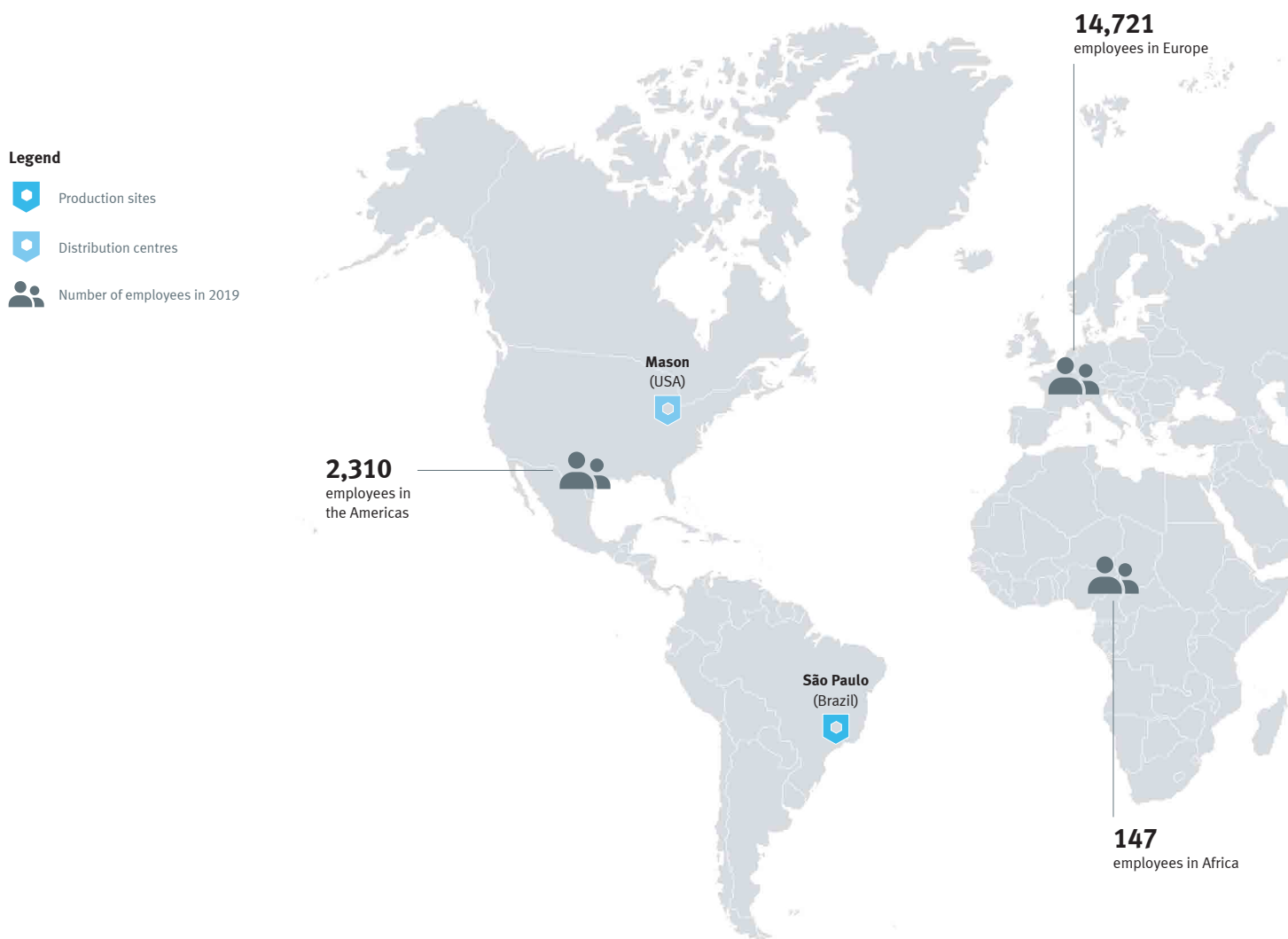
Oliver Jung

Chairman of the Management Board at Festo SE & Co. KG

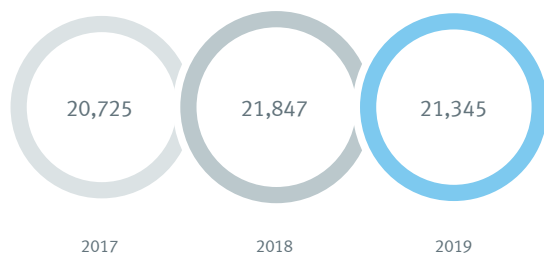
Festo in summary

As an independent family-owned company in its third generation, Festo thinks and acts long term and with a sense of responsibility. Our company, Festo, stands for clear values, the highest quality and customer-oriented innovation.

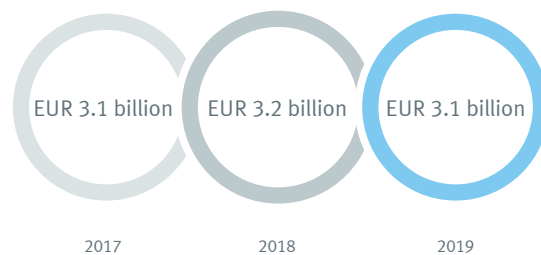
In the fields of industrial automation and technical training, Festo has set standards from its beginnings and has thus contributed to sustainable development in terms of the environment, business and society.



Employees



Group sales



Short delivery times, the right service and a high degree of flexibility – the demands of the global markets are constantly increasing. That is why we are where our customers are. With our own companies and 250 branch offices in 62 countries.



Africa

Nigeria
South Africa

Asia

China
Dubai
Hong Kong
India
Indonesia
Iran
Israel
Japan
Jordan
Kazakhstan
Korea
Malaysia
Philippines
Singapore
Taiwan
Thailand
Vietnam

Europe

Austria
Belarus
Belgium
Bulgaria
Croatia
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Netherlands
Norway
Poland
Portugal
Romania
Russia
Serbia
Slovakia
Slovenia
Spain
Sweden
Switzerland
Turkey
Ukraine
United Kingdom

Americas

Argentina
Brazil
Canada
Chile
Colombia
Mexico
Peru
USA
Venezuela

Australasia

Australia
New Zealand

→ GRI 102-4, GRI 102-7

Europe

Česká Lípa
(Czech Republic)

Sankt Ingbert
Rohrbach/Hassel
Scharnhausen
(Germany)

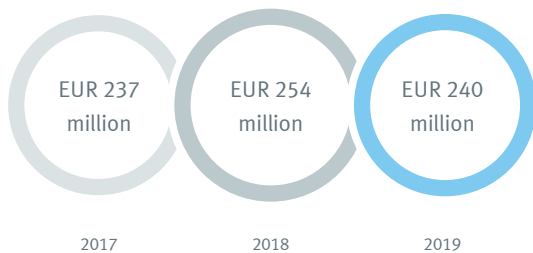
Biel (Switzerland)

Budapest
Hungary

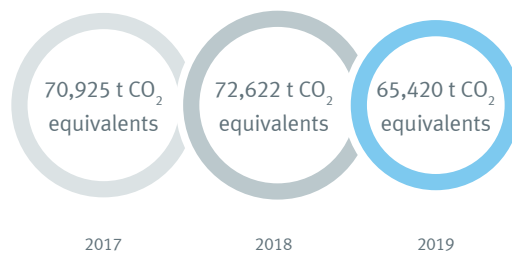
Sofia
(Bulgaria)



Research and development services



CO₂ emissions (scope 1 and scope 2)



1. Strategy and sustainability management

The United Nations (UN) has formulated 17 Sustainable Development Goals (SDGs), which are intended to ensure sustainable development worldwide on an economic, social and ecological level. These goals are aimed at everyone: politics, business, science – and every single citizen is called upon to make their

contribution. For companies like Festo, transparency, a sustainability strategy based on the SDGs and systematic sustainability management are key elements on the way to achieving this goal.

→ [GRI 103-1](#)





1. Strategy and sustainability management

1.1 Industrial transformation as a business model

Today, digitisation, individualisation, education and climate protection are the driving forces behind industrial change and cover all stages of industrial value creation – from development, production, logistics and energy supply to services.

The Festo Group is a leading global provider of automation technology and technical training and further education, divided into the Automation and Didactic business sectors.

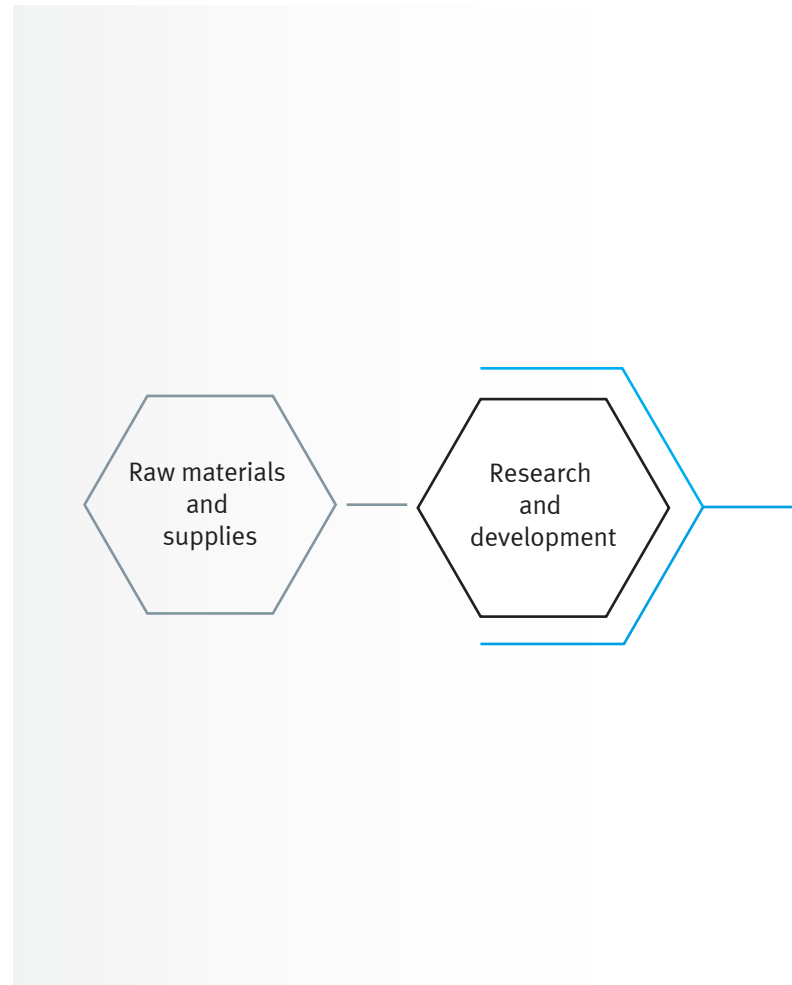
The Automation business sector

The Automation division offers a wide range of solutions for factory and process automation: the business purpose comprises the development, manufacture and sale of pneumatic and electrical components, technical systems and services as well as the transfer of knowledge for automation tasks such as control, regulation, positioning and handling of machines, apparatus and technical processes. In terms of customer solutions, the increasing demand for energy and resource efficiency and humanisation of work is becoming a competitive factor in all industry segments.

The Didactic business sector

Our activities in the Didactic division stand for technical basic and further training and, for more than five decades, have included the continuous development of professional, industry-oriented learning products and services relating to automation technology. The educational offerings focus on pneumatics, hydraulics, electronics and mechatronics as well as sensor technology, robotics, CNC and field bus technology. Festo Didactic is a system partner of companies as well as private and public educational institutions to make and keep people fit for work through education and training and to allow them to participate in economic development. → [GRI 102-2](#)

The value chain in the automation sector is currently participating in the global industrial transformation processes. Automation technology is changing from components to smart components with software. Digitisation permeates all value creation processes and changes business models. The speed of innovation is increasing. Virtual simulations create security for real investments. The use of artificial intelligence and new technologies such as piezo technology and superconductivity opens up new technical solution areas in industry for Festo. The main driver of business activities, apart from digitisation, is global growth.



The value-added chains of the Festo Group will become more international in the coming years. Nevertheless, globalisation is reaching its limits. The global trend towards ‘local for local’ is calling previous value-added chains into question and increasing the pressure on productivity in procurement, production and logistics at all locations around the world – for us and our customers. Online business is becoming increasingly important.

With regard to supply chains, there were no significant changes at Festo in the reporting years. Nevertheless, we are increasingly trying to procure raw materials in the countries where production takes place.

→ [GRI 102-10](#), [GRI 102-48](#)



Acquisitions

In recent years, the Festo Group has made a number of smaller acquisitions. The two Swiss companies Eichenberger Gewinde AG and Eichenberger Motion AG were taken over in 2016. Eichenberger is a manufacturer that specialises in precision spindles. The aim of the acquisition was to become more independent of external suppliers and thus ensure vertical integration of the manufacturing process.

In 2018, two more companies joined the group: with the acquisition of Resolto Informatik GmbH from Herford, Germany, Festo is strengthening its knowledge of the use of artificial intelligence in automation.

The acquisition of the US company Fabco-Air, Inc. allows us both to enter the American inch system and to gain additional market access.

In 2019, Certa Kft., a specialist for aluminium and zinc die-cast parts, was acquired in Hungary. With this acquisition, Festo is securing its ability to deliver in the face of increasing supplier shortages. → [GRI 102-10](#)

1. Strategy and sustainability management

1.2 Sustainability strategy and management

Thinking in terms of generations to come and responsible and sustainable economic activity are deeply rooted in the corporate DNA, particularly in family companies such as Festo, and are expressed in the term 'Corporate Responsibility' (CR) and sustainability management. This chapter describes the further development of sustainability management and provides an outlook on the focal points of our new 2020+ sustainability strategy.

At Festo, the tasks of the Corporate Responsibility department include the conception and implementation of an international sustainability strategy, sustainability management and CR reporting. As environmentally relevant topics are increasingly becoming the focus of public attention and are of strategic relevance to Festo, it was decided at the end of 2019 to merge the two areas of Corporate Environment and Corporate Responsibility.

→ [GRI 102-2](#), [GRI 102-18](#)

Development of the areas for action

The development of the areas for action (page 16) of our sustainability strategy is based on the identification of the Sustainable Development Goals that are relevant for our company. In the autumn of 2015, the United Nations General Assembly adopted the 17 SDGs. They are at the heart of Agenda 2030 – a global action plan that aims to address current challenges such as extreme poverty, inequality and injustice and the protection of our planet, while making economic progress ecologically sustainable and consistent with social justice. We at Festo are committed to supporting the goals formulated therein as part of our own sustainability strategy.

Identification of key issues

The interests of both internal and external stakeholders were taken into account in the identification of topics. There are two stakeholder groups within the external and internal stakeholders. 'Formative stakeholders' have concrete expectations of Festo as a company and also have a direct influence on its business activities.

In addition, there are 'Other stakeholders' whose interests are taken into account but whose influence is considered to be rather limited. In concrete terms, these two categories are as follows:

→ [GRI 102-40](#), [GRI 102-42](#), [GRI 102-43](#), [GRI 102-44](#)

Formative stakeholders

- Shareholders
- Customers and their customers
- Management Board
- Employees

Other stakeholders

- Suppliers
- Science
- Non-governmental organisations (NGOs)
- Supervisory institutions
- Local population
- Public
- State

In identifying the important SDGs and deriving areas of action, the results of the stakeholder analysis were supplemented by monitoring external changes in the areas of legislation, business and politics, technology, energy, environment and society. On this basis, we regularly review our strategic orientation as well as our sustainability goals and measures. → [GRI 102-31](#)

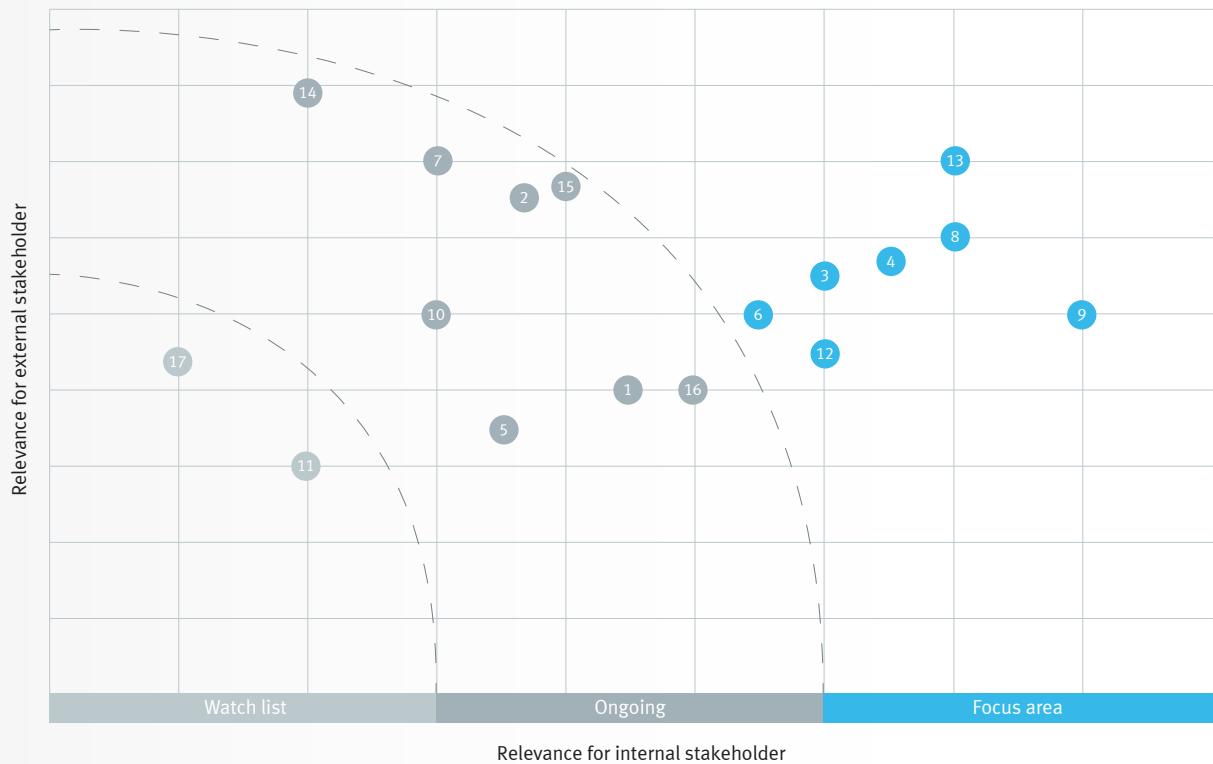
The process resulted in an updated materiality matrix. In this, topics classified according to materiality are divided into the categories 'Watch list', 'Ongoing' and 'Focus area'.

→ [GRI 102-46](#), [GRI 102-47](#), [GRI 102-49](#)

Topics relevant to Festo

Currently, the greatest opportunities for Festo to make an impact have been identified in the implementation of the following SDGs:

- Good health and well-being (SDG 3)
- Quality education (SDG 4)
- Clean water and sanitation (SDG 6)
- Decent work and economic growth (SDG 8)
- Industry, innovation and infrastructure (SDG 9)
- Responsible consumption and production (SDG 12)
- Climate action (SDG 13)



1. Strategy and sustainability management



2020+ sustainability strategy

Our areas of action were reviewed and updated as part of these analyses. The areas of action defined in 2015 were supplemented by the topics of ethics and governance. Our 2020+ sustainability strategy was developed on this basis and adopted by the Management Board in March 2020.

People at Festo

Within this area of action, we will continue to work on our long-term issues relating to the qualification and further development of our employees, the expansion of occupational health promotion and safety, and equality and diversity.

→ Chapter 3

Ethics and governance

The focus of the new area of action, ethics and governance will be on the expansion of a global corporate compliance management system and the integration of due diligence obligations for human rights in business processes.

→ Chapter 4

Environment, energy and construction

By 2025, Festo will reduce direct absolute CO₂ emissions (scope 1) and indirect absolute CO₂ emissions associated with energy procurement (scope 2) in its global production network by at least 30 per cent, in line with the target defined by science, which is to limit global warming to 1.5°C. We want to achieve this goal by combining

the procurement of CO₂-neutral green electricity with a wide range of measures to increase energy efficiency, including the expansion of our own renewable energy generation facilities at our sites. For Germany, we have redefined the development of a more climate-friendly mobility concept for our employees as a measure. The progress achieved is evaluated annually and, if necessary, follow-up action is taken.

→ Chapter 5

As part of our ISO 14001-certified international environmental management system, we will also work to improve our environmental performance with regard to other environmental aspects such as water use or waste reduction.

Resource and material efficiency

Our measures focus on the entire value creation process. For example, projects to save materials in our products lead to a more careful use of resources in our procurement while the improvement in the environmental compatibility of our packaging concept leads to less environmental pollution right from the purchasing department to the end customer.

Increasing the efficiency of resources and materials is a priority at our plants. The continuous reduction in the number of defective goods or the further development of fluid management in metal-working are just a couple of examples.

→ Chapter 6

Climate protection and energy efficiency

Delivering our products to our customers for their use on-site results in significantly higher CO₂ emissions compared to our manufacturing processes. This is why, in the coming years, we will continuously expand our Energy Saving Service, which helps our customers to significantly reduce their CO₂ footprint associated with energy consumption. This service is supplemented by advice on the energy-efficient planning and designing of our products.

→ Chapter 7

The development of energy-efficient and smart products and solutions is another important element in our efforts to help our customers increase their climate-friendly production.

We also want to optimise our delivery processes with regard to the associated CO₂ emissions. Measures include the procurement and manufacture of our products centred around the sales market and the reduction of air freight by transferring it to rail or ship transport. We will report on the results of the individual projects.

Technical basic and further training and CER

Along with climate protection, technical basic and further training is the most important pillar in our efforts to become sustainable. By 2025, Festo Didactic expects to generate 20 per cent of its sales with projects and products directly related to sustainability and a further 40 per cent of its sales with indirect sustainability.

→ Chapter 8

Examples of our activities are:

- Expansion and further development of Festo Didactic's product portfolio in STEM subjects (science, technology, engineering and mathematics)
- Commitment to increasing technical education and training in Africa
- Bionics4Education with a focus on education for girls
- Organisation of World Skills and FIRST® LEGO® League to inspire young people with technology

Our activities relating to the areas of action in the reporting period of 2017 to 2019 and their effects on procurement, our customers and society are explained in the following chapters with the help of corresponding GRI indicators.



2. Festo footprint

Sustainability can be divided into three areas: economy, ecology and social issues. A balance between these areas is important for sustainable development. In a globalised economy, companies must take responsibility for this balance, both in their own foot-

print and that of their suppliers. Festo faces up to this responsibility and represents this attitude along the entire value chain. Through our involvement in various networks and initiatives, we communicate openly with a wide range of stakeholders and



partners and are clearly committed to the defined standards and guidelines. This is because our responsibility does not end at our factory gates. → [GRI 103-1](#)

2. Festo footprint

2.1 Sustainable business

As a financially independent, family-owned company, we attach great importance to healthy growth. Sustainable business combines long-term company success with added value for society. By creating jobs and thanks to our contributions to local household incomes and the impact on the gross domestic product of the countries in which Festo operates, we make our overall contribution to economic performance. We also secure jobs along our supply chains worldwide by purchasing primary products. In this way, the Festo Group creates considerable economic multiplier effects. → [GRI 203-1](#)

Sustained profitable growth enables the shareholders to achieve an appropriate capital and attractive salaries for the employees. At the same time, it ensures our contribution to society through the payment of tax on earnings. → [GRI 201-1](#), [GRI 203-1](#)

Sales by region

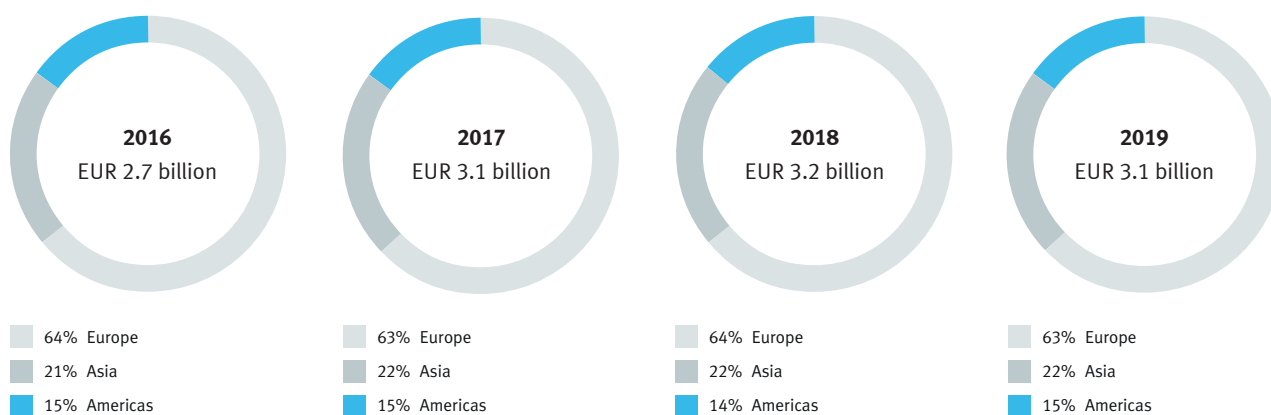
For 2019, the group's sales amounted to EUR 3.1 billion. The Automation business sector accounts for 94 per cent of this, while the Didactic business sector accounts for 6 per cent.

Worldwide sales are made up of 63 per cent in Europe, 22 per cent in Asia and 15 per cent in the Americas. Since 2017, this distribution of sales has remained almost constant. → [GRI 102-7](#)

Financial contribution to local infrastructure

In recent years, we have invested worldwide in various new builds and internal infrastructure measures to support our core business. In addition to numerous educational projects (see chapter 8), Festo also supported aid projects in the immediate vicinity, for example by doubling employee donations from Mexico, the USA, Canada and Europe for earthquake victims. → [GRI 203-1](#)

Total sales by region



GRI 102-7: Scale of the organisation

2.2 Sustainable procurement

Festo's purchasing structure is characterised by the procurement of semi-finished products, components and finished parts. Aluminium and steel are among the most important materials. The quantities are visualised in the two diagrams below. → [GRI 301-1](#)

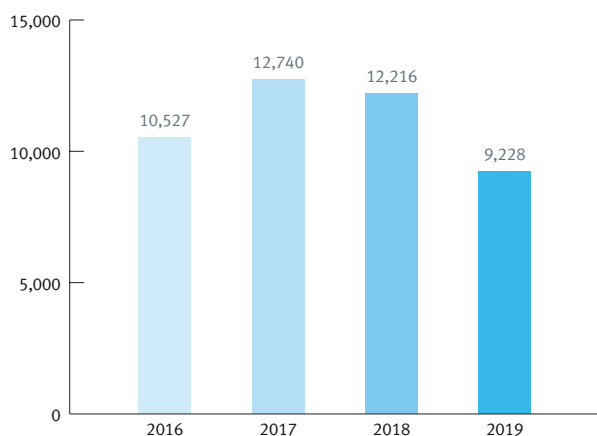
As the purchase of aluminium has a particular influence in terms of quantity, the aluminium supply chain is visualised in the following picture as an example. → [GRI 102-9](#)

Bauxite, which is extracted from the ground, can be processed into aluminium hydroxide and aluminium oxide. In two further production processes, aluminium is used as a raw material and semi-finished aluminium products are manufactured, for example, through rod extrusion.

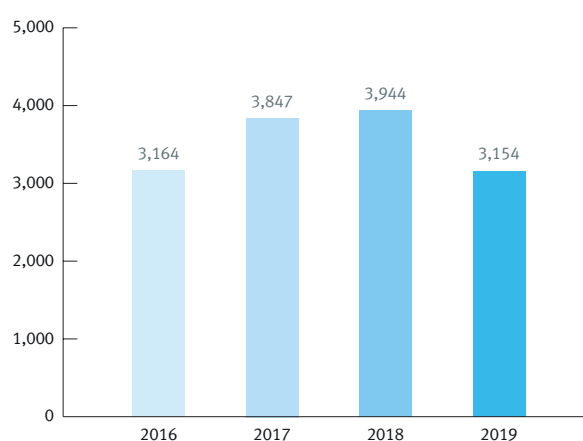
The mining of bauxite as a raw material for aluminium production can have adverse effects on biodiversity, depending on the mining region and the mining conditions prevailing there. At the same time, aluminium can be used for a wide range of design and long-lasting applications. Furthermore, aluminium is easily recyclable. → [GRI 304-2](#)

Due to this fact and the special relevance of aluminium in our value chain, we aim to achieve the highest possible proportion of secondary aluminium.

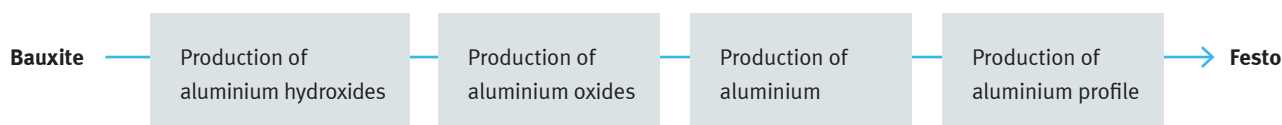
As raw or basic materials, we also purchase plastic granules and plastic components (mainly elastomers), which are usually petroleum-based, and electronic components.



GRI 301-1: Materials used by weight (in t), aluminium



GRI 301-1: Materials used by weight (in t), steel



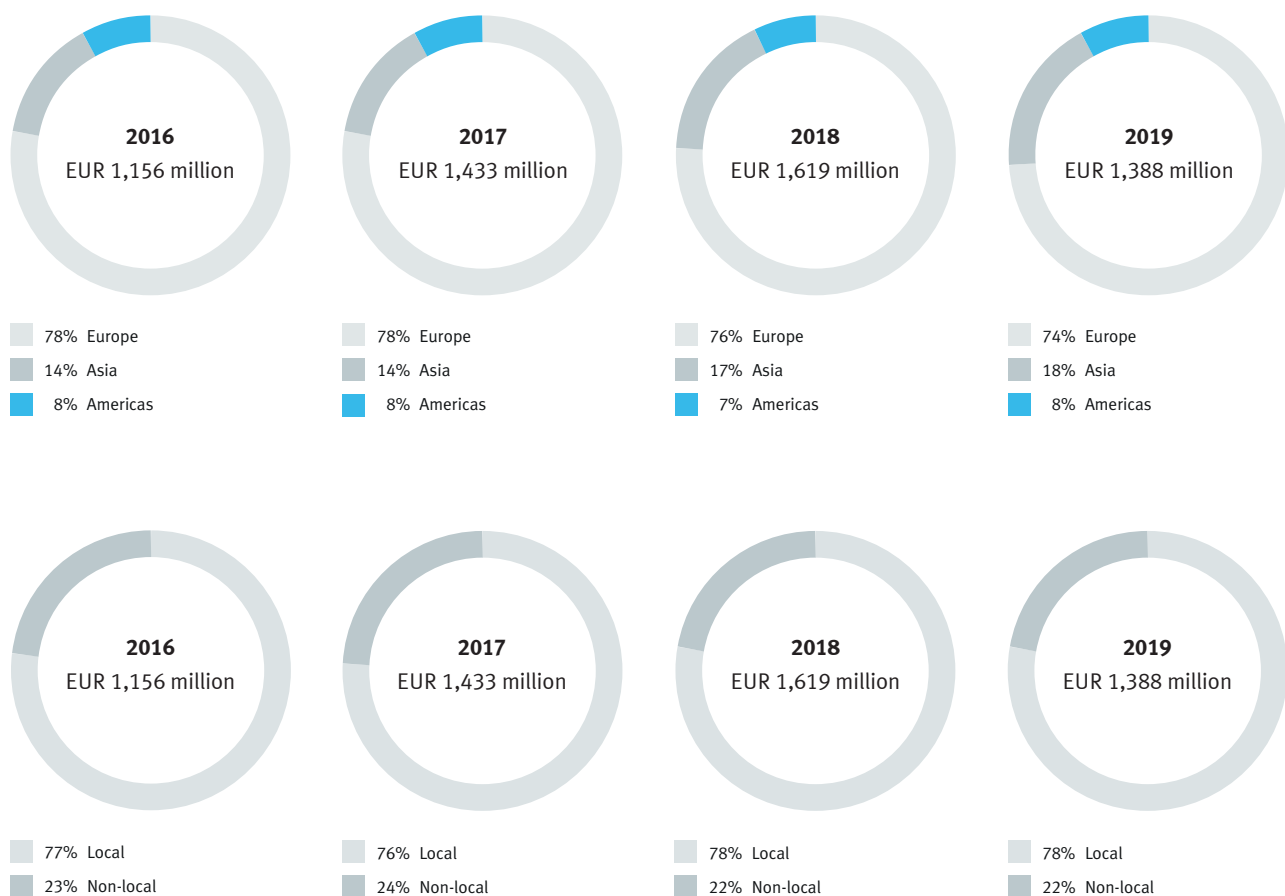
From raw material to material used: the aluminium supply chain

2. Festo footprint

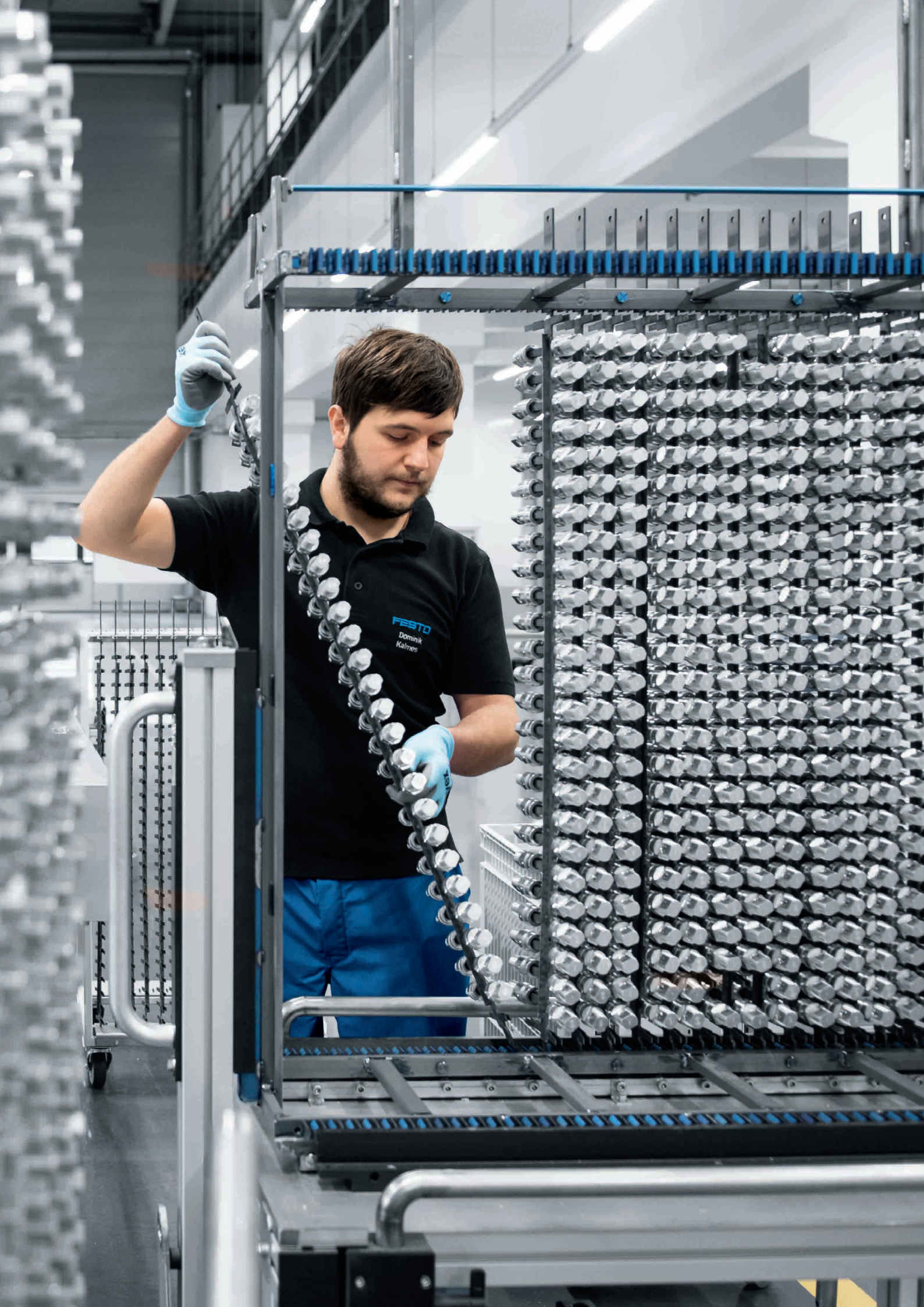
Regional distribution of purchasing volume

Overall, Festo's direct and indirect purchasing volume (production materials and non-production materials) increased from EUR 1,156 million in 2016 to EUR 1,388 million in 2019. Due to economic circumstances, the purchasing volume declined from 2018 to 2019. Non-production materials refer to all Festo production plants (Festo Global Production Centres – GPCs) and local sales companies and production materials include all production plants. → [GRI 204-1](#)

Festo relies on a global supplier network comprising local and non-local suppliers. By 'local' we mean procurement within the country of the respective national Festo company. The number of local suppliers has increased from 77 per cent in 2016 to 78 per cent in 2019. In the future, the 'local for local' strategy will aim to shorten delivery times throughout the entire supply chain while reducing transport routes. The aim is to increasingly procure goods in those countries where production takes place.



GRI 204-1: Regional distribution of the direct and indirect purchasing volume of the Festo Group



FESTO
Dominik
Kalmes

2. Festo footprint

Environmental and social standards for suppliers

The commitment and monitoring of our suppliers for compliance with social and environmental standards is part of our Corporate Responsibility. At Festo, every supplier is therefore evaluated with regard to environmental, social and governance criteria. Among other things, all suppliers must confirm compliance with our Supplier Code of Conduct with a signature.

By signing this document, our suppliers undertake to demand compliance with these agreements from their suppliers as well. If the answers are not satisfactory, we take appropriate action. Festo is careful not to accept any supplier with a considerable risk.

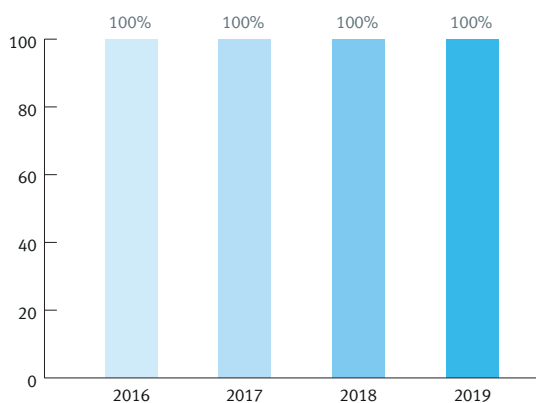
→ [GRI 308-1](#), [GRI 414-1](#)

Evaluation according to environmental criteria

All our suppliers go through defined processes in which they are evaluated according to various criteria. A distinction is also made for technologies and production processes with higher or average environmental impacts. For suppliers with a higher environmental impact, certification according to ISO 14001 (or the Eco-Management and Audit Scheme – EMAS) is required. Alternatively, an environmental audit must be carried out by Festo.

For dealers (distributors), the certification of the actual manufacturer is used. Deviations from the environmental audit are tracked and must be rectified by the respective supplier within a reasonable amount of time. If necessary, a follow-up audit is carried out.

→ [GRI 308-2](#)



GRI 308-1: New suppliers which were audited using environmental criteria

Evaluation according to social aspects

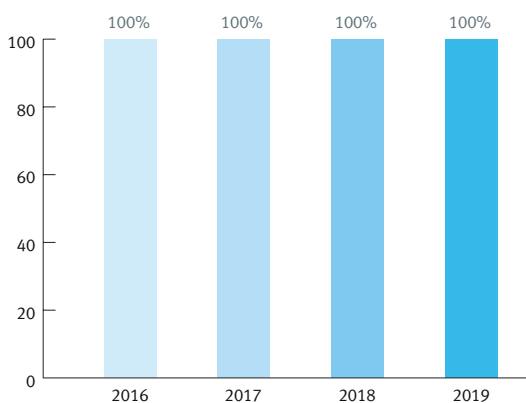
Since the introduction of the sustainability audit in 2017, a total of 233 suppliers from 29 countries worldwide have been checked against social criteria. No negative effects were found.

→ [GRI 414-1](#), [GRI 414-2](#)

The Festo Group is guided by the Business Social Compliance Initiative (BSCI). The initiative offers companies a code of conduct to help them form an ethical supply chain. This code is based on international treaties with the following contents: management practice, no questionable employment, working hours, remuneration, child labour, forced labour, freedom of association, discrimination, working conditions, health and social services, health and safety at work, environmental protection aspects and special protection of young employees. Festo will not tolerate any infringement. → [GRI 407-1](#), [GRI 408-1](#), [GRI 409-1](#)

Dealing with conflict minerals

In order to support the sustainable use of conflict minerals, we disclose the smelters from which the raw materials for our products come within the framework of the Responsible Business Alliance. By filling out the Conflict Minerals Reporting Template (CMRT), we are helping to create the necessary transparency to continuously increase the proportion of certified smelters worldwide.



GRI 414-1: New suppliers which were audited using social criteria

2.3 Networks and committee work

Especially for the highly topical and complex issue of sustainability, partnerships and networks are an essential component of mutual exchange beyond the boundaries of the company. Festo therefore works nationally and internationally in committees and associations to represent its interests. → [GRI 102-12](#)

Membership in national associations and organisations

- Industry 4.0 platform
- Fraunhofer Institute for Production Systems and Design Technology
- Verband Deutscher Maschinen- und Anlagenbau (VDMA)
- German Electrical and Electronic Manufacturers' Association (ZVEI)
- Various employer associations

International associations and organisations

- European industry umbrella organisation ORGALIM (indirectly via the VDMA and ZVEI)
- EuropElectro (represents the interests of European industry in China)
- 5G Alliance for Connected Industries and Automation (5G-ACIA)
- ISO and IEC standardisation committees for automation technology

Our approaches to compliance with environmental and social standards along the value chain are based on various internationally recognised guidelines. Festo is thus involved in various initiatives. → [GRI 102-13](#)

National and local sustainability initiatives and networks

- WIN Charter of the state of Baden-Württemberg
- VDMA Blue Competence sustainability initiative
- Stuttgart CSR network
- 2° foundation of the WWF (World Wildlife Fund)

2.4 Sustainability assessments

Our customers demand transparency with regard to our sustainability performance and monitor it accordingly: whether we meet required environmental standards, observe labour and human rights in our processes, maintain fair business practices and are committed to sustainability in our supply chain.

How sustainably we act is regularly evaluated on various portals and platforms on which sustainability aspects are made available along the supply chain. Leading companies use certain platforms to create supply chain transparency in their purchasing processes. Some of these platforms are directly linked to the purchasing SAP systems of major customers.

Platforms for evaluating sustainability

- EcoVadis
- NQC SupplierAssurance
- Responsible Business Alliance (RBA)
- Resilinc
- Sedex

Companies do not receive a good CSR rating automatically. It requires an extensive coordination process with a large number of employees and a continuous improvement process must be established. As part of the assessments, clear evidence – such as certificates, KPIs or corporate guidelines – must be submitted via a document upload system, which is then reviewed by independent analysts. Every year, we recheck whether the given standards are still being met. At Festo, many areas are involved when it comes to optimising sustainability performance in terms of the environment, supply chain, ethics and social issues.



3. People at Festo

In order to live up to our mission and promise every day, the development of a sustainable workforce is a must. We therefore see life-long learning as an essential part of our corporate culture. We put people at the centre and create the foundations for a secure and

trusting relationship. At Festo, protection of labour, corporate health promotion and respect for valid employee rights form the basis for this. We offer fair and performance-related pay as well as flexible working models to improve work-life balance. This is



because a healthy, motivated and efficient workforce is the guarantee for success for every company. → [GRI 103-1](#)

3. People at Festo

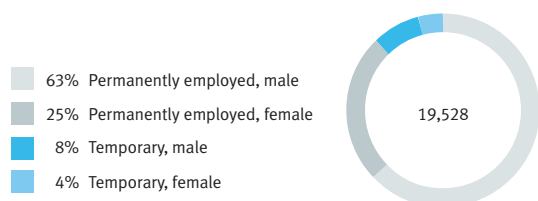
3.1 Staff development

Committed, performance-oriented, qualified and adaptable employees are one of the prerequisites for Festo's business success. We therefore strive to attract, retain and develop the best employees. In 2019, the Festo Group had a total of 21,345 employees in 62 countries worldwide. → [GRI 102-8](#)

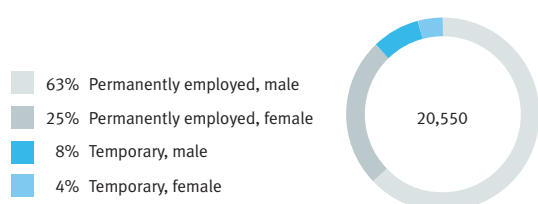
Employment contracts by gender and region

The total number of permanent and temporary employment contracts is shown in the graphic below. There are also activities carried out by contract workers, trainees and students that do not fall into these two categories. In 2017 this number was 1,197, in 2018 the number was 1,297 and in 2019 the number decreased to 1,066. → [GRI 102-8](#)

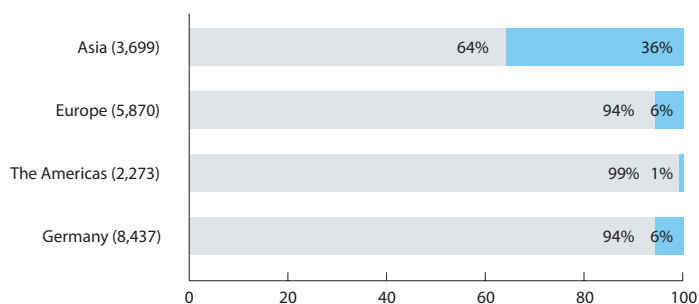
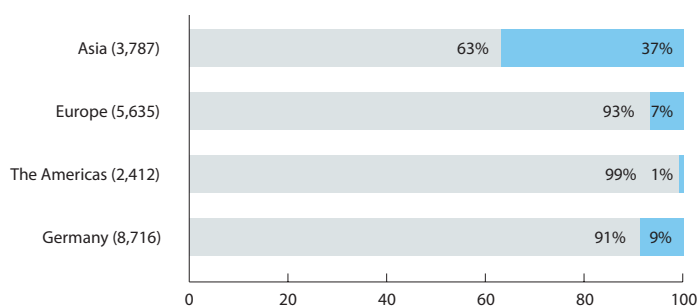
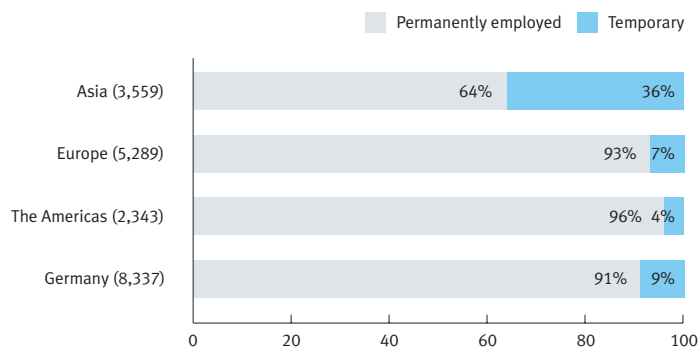
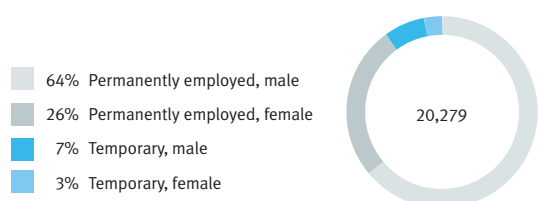
Employees by gender and region in 2017



Employees by gender and region in 2018



Employees by gender and region in 2019



GRI 102-8: Information on employees and employment by gender and region

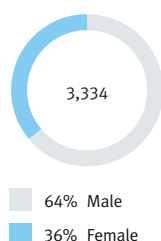
New employees and employee turnover

The following shows both the total number of new employees and employee turnover by gender, age group and region. The turnover of employees reduced from 2018 to 2019. All in all, various programmes and measures help Festo to continue to position itself as an attractive employer. → [GRI 401-1](#)

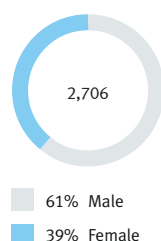
Attractive employer

In Germany, for example, we have implemented flexible working hours by allowing all employees covered by collective agreements to influence their daily working hours within the framework of a working time account – either through flexible working hours for salaried employees or additional days off by swapping shifts and taking time off in lieu for employees in production.

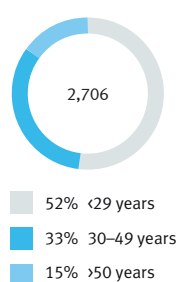
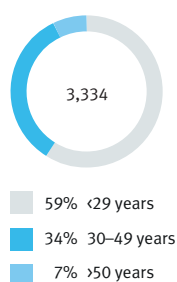
New employees in 2018



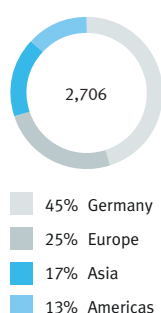
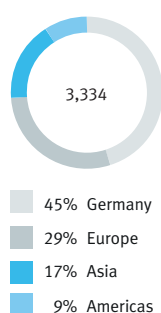
Employee turnover in 2018



GRI 401-1: New employees and employee turnover by gender in 2018

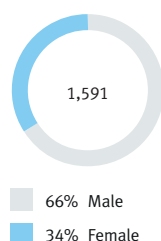


GRI 401-1: New employees and employee turnover by age in 2018

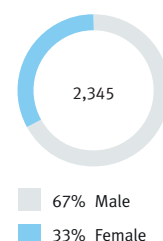


GRI 401-1: New employees and employee turnover by region in 2018

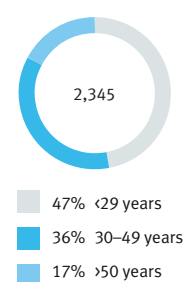
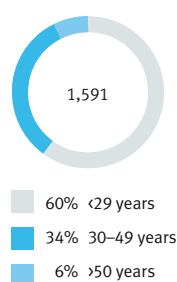
New employees in 2019



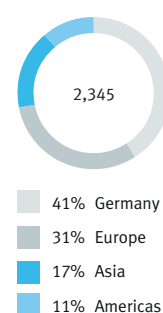
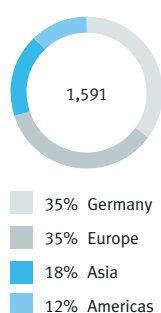
Employee turnover in 2019



GRI 401-1: New employees and employee turnover by gender in 2019



GRI 401-1: New employees and employee turnover by age in 2019



GRI 401-1: New employees and employee turnover by region in 2019

3. People at Festo

With solutions such as working from home and sabbaticals, Festo offers its employees further attractive options for individual organisation of their working hours, which go beyond the models regulated by law in some countries (part-time work, parental leave and care leave).

All employees in Germany – regardless of whether they work part-time or full-time – receive fair overall remuneration and attractive social benefits such as:

- Places in nurseries for children of employees
- Family service through external professional consulting services
- Holiday care for children of Festo employees
- Company pension scheme
- Social fund for special financial burdens (Freud- und Leidkasse)
- Sport offers via company sport groups
- Further training (face-to-face learning and e-learning)
- Discounts on various discount portals and with regional partners
- Subsidised canteens or meal subsidies for our branch offices

→ [GRI 401-2](#)

Total remuneration and collective agreement

The total remuneration package consists of a monthly basic salary, a performance-related remuneration component and a number of additional benefits such as a company pension scheme. This enables fair remuneration for personal performance and promotes employee motivation. Remuneration is based on tasks or activities and is therefore independent of gender.

→ [GRI 405-2](#)

The appreciation and responsibility towards our employees is reflected in good remuneration and working conditions, which at least meet all relevant local and legal requirements. In Germany, for example, the companies Festo SE & Co. KG, Festo Didactic SE, Festo Polymer GmbH and Festo Vertrieb GmbH & Co. KG are subject to the collective agreement of IG Metall, which ensures fair and balanced regulations for employees and the company.

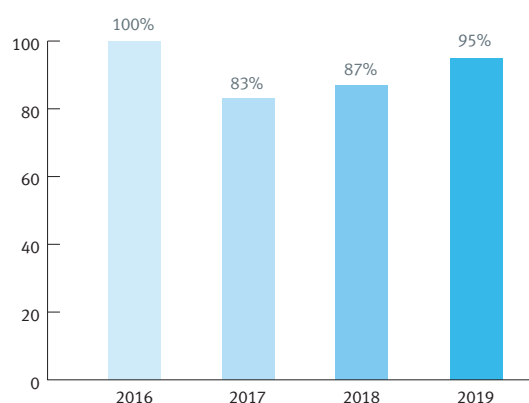
→ [GRI 102-41](#)

Leadership

In our specially developed leadership culture, every manager is called upon to act in accordance with these principles and to treat their employees in an appreciative, dependable and responsible manner. Managers should act as role models and earn and retain the respect of their employees through their performance, approachability and social skills.

At Festo, employees are considered to be managers if they generally work within an internally defined hierarchical level (levels E, F1 and F2) and are given employee responsibility. The graphic below shows that in 2019, 95 per cent of managers at the headquarters in Germany were recruited locally, i.e. within Germany.

→ [GRI 202-2](#)



GRI 202-2: Percentage of locally recruited managers in Germany (main business location)

Since mid 2018, we have been offering our senior managers the executive development programme, the Festo Leadershift Program, which was specially developed by INSEAD, a private business school based in France. The programme is designed to develop management skills in order to successfully shape the transformation of the company in line with the group strategy. It is our promise to develop leaders who distinguish themselves through individual action, joint leadership in a team and networked collaboration.

In addition, the internal leadership development programmes Festo Leadership Initiative and Leadership@Shopfloor take place at lower levels of the hierarchy.

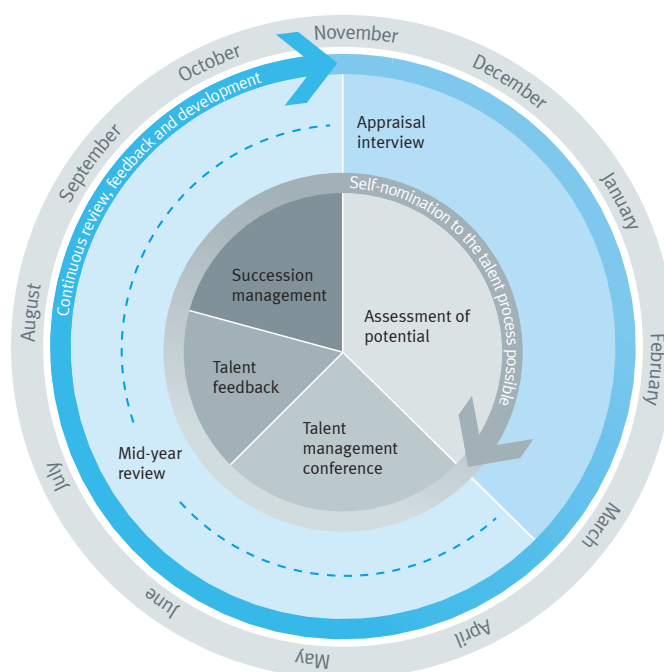
PeopleExcellence employee process

In order to support the systematic development and employability of employees, the PeopleExcellence programme was rolled out as part of the 2020 corporate strategy.

The aim of the programme is to strengthen performance orientation and personnel development on the basis of globally harmonised and digitised personnel processes (performance, skills and talent/succession management) and to provide our employees and managers with new tools, methods and formats for this purpose. These support the establishment of a regular discussion on employee development on the basis of common assessment principles and processes.

Within PeopleExcellence, our skills management primarily focuses on the systematic and task-oriented personal development and qualification of employees. The competency model, comprising core, management and technical competences, forms the joint orientation framework for this. Based on an individual competency profile, managers and employees regularly determine together the necessary development needs and derive the development measures from this.

We have developed and introduced a talent management programme to specifically build up an international pool of junior managers. Important components of this programme are practical phases in Germany and abroad, targeted training measures and a wide range of networking and exchange opportunities within cross-divisional professional assignments. A special focus is also placed on teaching intercultural skills. The annual cycle of PeopleExcellence is visualised in the following picture. → [GRI 404-2](#)



The annual cycle of the PeopleExcellence employee process

3. People at Festo

3.2 Diversity

In our globally active company, employees and business partners of different nationalities, cultures, religions and approaches to life come together. Respect, tolerance, appreciation, fairness and openness are the basic requirements for this cooperation.

Diversity by nationality

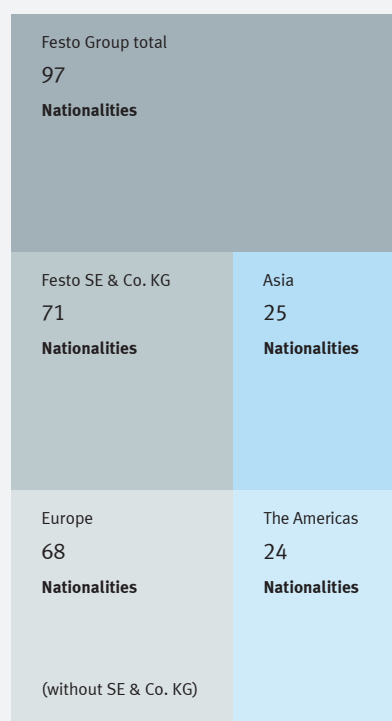
We are convinced that mixed teams can work more creatively and efficiently than homogeneous groups. In terms of origin, we continue to benefit from the cultural diversity of our workforce. In 2019, employees from 97 nations successfully came together at Festo. This diversity helps us, as a company active in more than 60 countries, to understand the specific needs of our customers worldwide.

Diversity by age and gender

In 2018, a total of 848 people were employed in senior management worldwide. This corresponded to about four per cent of the total workforce. In 2019, the number of people in senior management (levels E, F1 and F2) rose to a total of 949 (five per cent). The charts below show the diversity of management bodies and employees by age and gender.

→ GRI 405-1

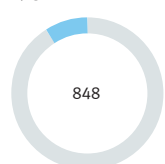
Against the backdrop of demographic change and the promotion of diversity within the company, we will encourage our managers from 2020 onwards to evaluate female employees and younger junior staff in terms of their potential and a next career step and prepare them for our talent management programme.



GRI 405-1: Diversity by nationality in 2019

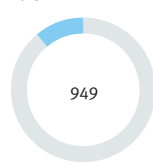
Management bodies

by gender in 2018



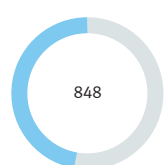
91% Male
9% Female

by gender in 2019



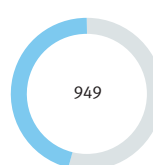
89% Male
11% Female

by age in 2018



0% <29 years
53% 30-49 years
47% >50 years

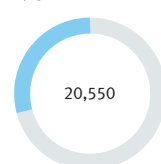
by age in 2019



0% <29 years
54% 30-49 years
46% >50 years

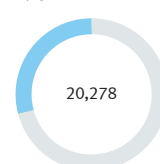
Employees

by gender in 2018



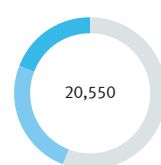
71% Male
29% Female

by gender in 2019



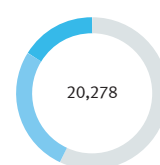
71% Male
29% Female

by age in 2018



19% <29 years
56% 30-49 years
25% >50 years

by age in 2019



16% <29 years
57% 30-49 years
27% >50 years

GRI 405-1: Diversity by gender and age



Women@Festo women's network

Women@Festo is a network of women for women within the company. Women of all ages, hierarchical levels and professions network here. The network offers space for the exchange of experience and mutual support and promotes joint planning ahead, reflection and lateral thinking.

Women@Festo is aimed at all female employees

- who want to help shape the future of Festo together
- who want to develop personally and professionally
- who want to support cultural change and shape diversity at Festo
- who want to actively use the opportunities in the company
- who want to expand their network and get to know other driven women

Discrimination

Festo rejects, without exception, any form of discrimination, harassment, degradation or other disparagement as well as the preferential treatment of employees or business partners on the basis of their ethnic origin, gender, religion, world view, political view, disability, age, sexual identity or other ethical, social and legally

protected characteristics. Our managers should be aware of their role model function here and ensure a working environment free of discrimination and harassment.

Discrimination can have different origins. Festo in Germany, for example, communicates information on the General Act on Equal Treatment (AGG) within the company. In addition, the topic of discrimination is repeatedly part of training and discussed in various courses (such as part of the course on compliance) and also among managers.

At Festo, incidents of discrimination can be submitted to a specially established complaints office. There is an established process for this, which is laid down in a regulatory agreement between the company and employee representatives. The principles and procedures of the AGG are taken into account. In 2019, four cases were processed and closed. Following a complaint, the responsible manager is made aware of their responsibilities.

→ [GRI 406-1](#)

3. People at Festo

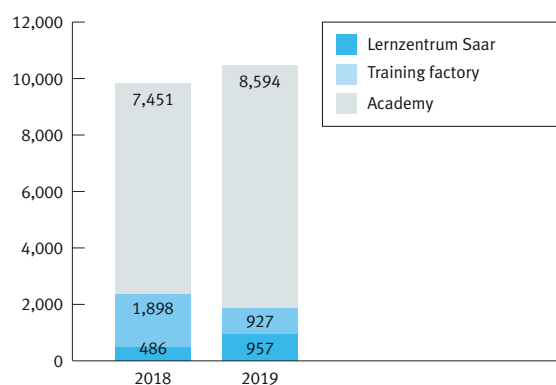


3.3 Further training

Currently, the 70-20-10 model is being discussed in further training. The model reflects that learning takes place mainly (70 per cent) in the working process. Here you can fall back on learning tubes or webinars for specialist knowledge. For our employees, this means creating the framework for self-organised learning and trying out new formats and methods. 20 per cent of the learning experience is created through being directly involved in the context of co-moderation, preparation and follow-up, community and exchange. The remaining ten per cent of knowledge is imparted through seminars. The identified needs are covered by external and internal training courses, for which the corresponding annual budget is made available.

In Germany, our employees have access to the extensive internal training catalogue of the Festo Academy and Festo training factory (both at the Esslingen locations) and Festo Lernzentrum Saar (at the St. Ingbert-Rohrbach location). Festo also offers additional e-learning further training courses via a virtual academy platform.

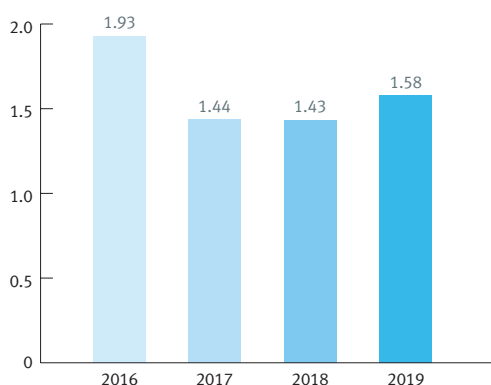
The comprehensive range of seminars was expanded in 2018 and supplemented by external training courses, which could be used from 2019 onwards.



GRI 404-1: Number of participants in internal learning facilities in Germany



At our locations in Germany, the total number of days for internal training in 2019 amounted to 13,474. This represents an average of 1.58 training days per employee per year. → [GRI 404-1](#)



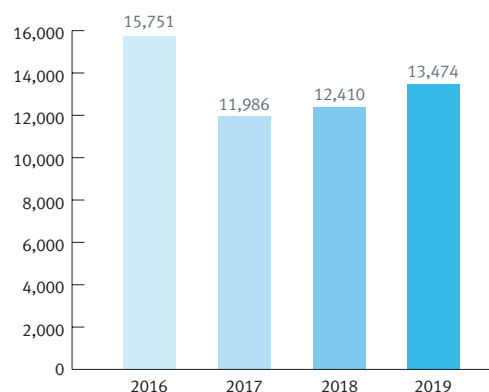
GRI 404-1: Internal training days per employee per year in Germany

Performance assessment of employees

All Festo employees receive a consistent and comprehensive individual performance assessment at least once a year. All employees received a regular assessment of their performance and career development throughout the period of 2016 to 2019.

Employees not covered by collective agreements are also assessed at least once a year in the form of a goal achievement interview. Even those joining during the year receive a target agreement and therefore a performance assessment in the annual bonus round.

For employees covered by collective agreements, a works agreement stipulates that every employee is entitled to an initial performance assessment after three months of employment. This means that in this case, a performance assessment is also carried out at least once a year. A statement on international performance assessment can only be made from 2020 onwards. → [GRI 404-3](#)



GRI 404-1: Internal training days per year in Germany

3. People at Festo

3.4 Training

We see it as our responsibility to train young people and then take them on as qualified specialists. For this reason, Festo attaches great importance to vocational training and it can be seen as an indirect value-added process for employee retention.

In Germany, investments in our training amounted to approximately EUR 10.8 million in 2017, approximately EUR 11.0 million in 2018 and almost EUR 10.7 million in 2019. Since its introduction, we have been training here according to the dual system. An essential feature of dual training is its two places of learning: at school and at the company.

Dual training

The advantages of dual training are, on the one hand, the alternating theoretical and practical phases for reflection and application of the learned content. On the other hand, the rotation through different areas of work encourages active participation from the very beginning and thus facilitates direct entry into later working life.

In the course of technological change, fields of activity and occupational profiles are changing ever more rapidly. We therefore continuously develop our training plans and learning formats and adapt them to the conditions of everyday industrial life. To enable us to measure the impact of our training measures accordingly, we regularly formulate clear objectives and compare these with the current requirements of practice.

Global alignment

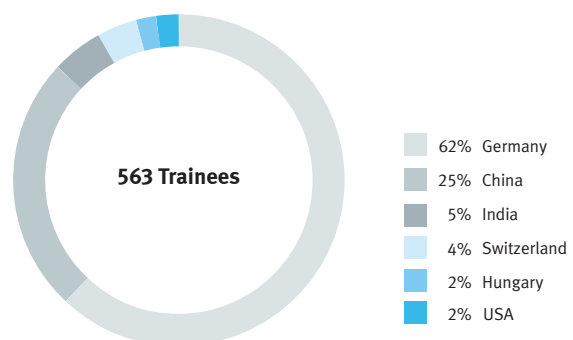
As a globally active company, we also react to global changes: our international locations are growing and the search for suitable specialists is not always easy here either. We have therefore adapted the model of dual training from Germany at some locations abroad: Festo now offers more than 500 young people in six countries around the world an apprenticeship in the commercial or technical field. For this global alignment, we were awarded the Deutschen Personalwirtschaftspreis (German Human Resources Management Prize) in the Training category in 2018.

Country-specific features and offers

Each country has its own individual characteristics. In India, for example, we offer yoga courses and a Saturday school. Within the framework of the Saturday school, the trainees receive everyday education with the title 'Fun and Learn'. Here, content related to everyday life such as 'How do I cook traditional chai tea?' and 'How do I handle money?' is taught.

At the German plants in Rohrbach and Scharnhausen, however, trainees have the opportunity to act as so-called energy scouts, who are involved in the search for energy-saving potential at the plant and in their training workshop. In addition, all trainees take part in additional seminars on virtual addiction, the environment and safety.

In Switzerland, we offer our employees further education to train as plant managers with a formally recognised federal certificate. Plant managers ensure the functioning of our modern automatic production lines. The topics of the two-year training range from setting and controlling the systems, materials science and maintenance to safety, hygiene and environmental protection.



Trainees worldwide in 2019

3. People at Festo



3. People at Festo

3.5 Holistic health promotion

Only healthy, qualified and motivated employees achieve the necessary top performance that makes us successful. Festo therefore offers its employees a wide range of options for maintaining and promoting their health.

Situation-based prevention and behavioural prevention

Our corporate health promotion pursues two essential core tasks. On the one hand, it develops the corporate framework conditions that enable the health-promoting design of workplaces (situation-based prevention).

On the other hand, the employees should be able to take responsibility for their own health (behavioural prevention). The aim is to raise awareness of health risks as early as possible and, if possible, to offer direct measures for appropriate prevention.

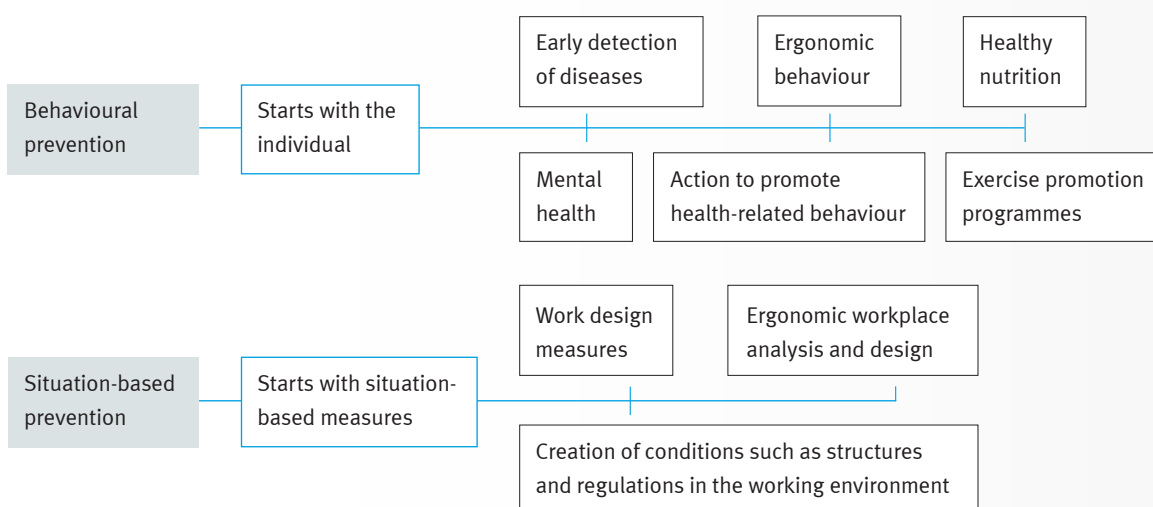
Constantly increasing demands, changing lifestyles, mental stress and an ageing society pose challenges in today's working world, which corporate health promotion addresses with a broad spectrum of measures. Various health activities are therefore organised and carried out at production plants around the world.

In India, for example, the trainees are informed about issues relating to the healthcare system and healthy nutrition. In Germany, all locations have health initiatives that address the specific needs of local employees. These are drawn up together with the disciplines of the health working committee (occupational medicine, occupational safety, work and family, company sports and works council).

Prevention measures

The prevention courses of our corporate health promotion at the Esslingen locations are very popular. The programme includes courses such as spinal training, yoga and back exercises as well as numerous other offers. The courses have a high number of participants: in 2017 to 2019, a total of over 2,500 course places were taken.

An important prevention measure in production and administration is ergonomic workplace analyses. Depending on whether it is a workplace for sitting or standing, an individually adapted workplace analysis is designed. The aim is to set up each workplace in an ergonomically optimal way together with the employees. In addition, employees are shown how to move and behave at the workplace so that health problems are avoided.



The essential core tasks of an integrated corporate health promotion

In addition, the corporate health promotion has offered a diverse range of prevention measures at the Esslingen sites over the years.

These include exercise programmes at the workplace, vibration training on the Power Plate, nutrition, cooking and barbecue courses, activities such as smoking cessation and pedometer actions as well as autogenic training, brain training through movement, individual courses and workshops such as emergency courses and numerous health lectures.

Measures for the early detection of diseases

Bowel cancer is the third most common cancer and cause of cancer death. More than 60,000 people in Germany are diagnosed with bowel cancer every year and almost half of them die as a consequence. Studies have shown that preventive medical check-ups, which could significantly reduce these figures, are successful. Therefore, it was decided in 2018 that the costs of bowel cancer screening at the Esslingen sites would be covered for all employees aged between 45 and 50.



3. People at Festo

3.6 Safety at work

For Festo, safety, especially health and safety at work, is an elementary part of its corporate philosophy. The maintenance and implementation of the technical safety requirements serve to protect our employees and the company's values.

In Germany, the Occupational Safety department supports and advises all areas in establishing a safety-conscious occupational safety culture. Internationally, occupational health and safety management in the regions is managed independently at the respective locations. In the plants, local experts are thus responsible for all operational processes. On the part of the central Security department at the headquarters, control and networking is carried out. Thanks to the Festo network for occupational safety, the specialists are in continuous exchange and make use of the given synergies.

The global safety standards are anchored in the integrated management system and written down in an international manual. They are continually and proactively being revised and are based on internationally applicable standards, regulations and Festo's requirements. In addition to the legal requirements, results from audits carried out and influences from the Festo network also ensure that everything is up to date.

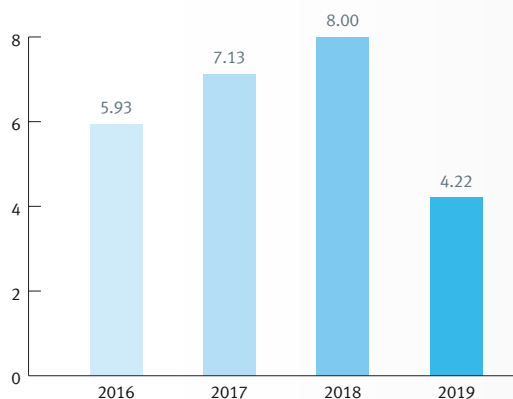
The aim is to continuously reduce the risk of accidents and health impairments. In this context, Festo has already implemented the ISO 45001 occupational health and safety management system at its Budapest, São Paulo and Shanghai locations. This process is to be continued. In addition, numerous events and campaigns were initiated with a view to improving occupational safety.



Accident frequency rate worldwide

The accident frequency rate is calculated using the number of occupational accidents per million hours worked. All production locations are taken into account. All accidents are documented and analysed. However, the vast majority of accidents have a minor impact.

The accident frequency rate increased from 5.9 to 8.0 accidents per million hours worked between 2016 and 2018. In 2019, however, it fell to 4.2. This is an indication of how employees have become more aware of occupational safety. → [GRI 403-2](#)



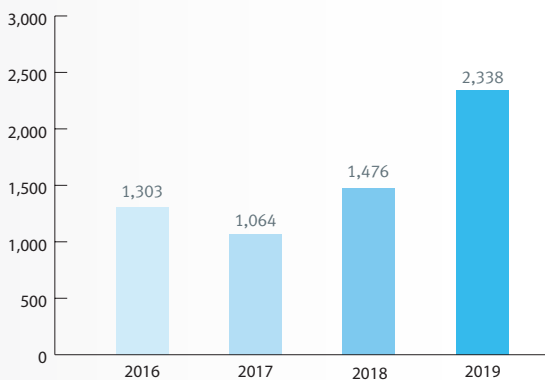
GRI 403-2: Accident frequency rate worldwide



Days of absence due to accidents in Germany

The number of days of absence due to accidents at Festo's German locations in 2019 was 2,338 days, which is higher than in previous years. → [GRI 403-2](#)

Accident statistics in Germany take into account accidents at work that result in at least one day of absence. At present, gender-specific differences are not being reported on and so they are not taken into account in the evaluation of occupational safety. This is also not planned for the future. → [GRI 403-2](#)



GRI 403-2: Days of absence due to accidents in Germany

Trained security staff

The security staff at Festo's German plants are completely trained in the topics of dealing with people, behaviour in hazardous situations and de-escalation techniques in conflict situations.

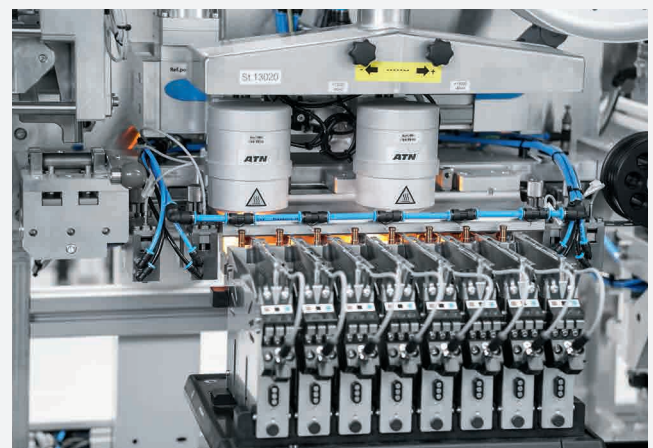
→ [GRI 410-1](#)

Occupational safety through automation

By introducing an automated laser soldering process instead of a manual soldering process in 2018, we improved working conditions at our plant in Sofia, Bulgaria. The production of electronic components and printed circuit boards also includes connecting a cable to the board. Specifically, three wires in the cable are soldered to the contact points on a printed circuit board. This was previously a common manual task for a manual workstation, where employees were exposed to soldering fumes despite an extraction device.

Since the connection pads are very small, with a size of one to two millimetres, employees' eyes were also strained, which made the task very tiring.

With the introduction of light soldering, this production step can now be carried out automatically, thus improving the health conditions for the employees. In addition, the quality of the soldered joints has also improved in terms of reproducibility, which can be measured in the so-called die shear test. Furthermore, only soldering fluxes that do not have mutagenic properties are used.



Working safely in the light soldering facility

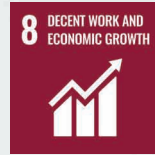
4. Ethics and governance

In order to achieve the goals of sustainable development, binding ethical and governance standards must be set and adhered to worldwide. Therefore, as part of our compliance, we commit our-

selves to always act fairly and in accordance with applicable laws, specifications, standards and guidelines. Legally compliant business processes and compliance with anti-corruption laws play a



central role, as does respecting UN human rights and the National Action Plan for Business and Human Rights (NAP). → [GRI 103-1](#)



4. Ethics and governance

4.1 Compliance

Generally speaking, compliance is understood to mean ensuring adherence to laws and internal rules, to which the company independently undertakes to adhere. The focus is on compliance and integrity from everyone – from the management to the individual employees of a company. Furthermore, compliance should protect against inappropriate and illegal behaviour (prevention) and consequently clarify, evaluate and sanction such behaviour (reaction).

At all our locations, the applicable legal regulations, the respective minimum industrial standards, the International Bill of Human Rights, the UN Convention against Corruption, the Declaration on Fundamental Principles and Rights at Work of the International Labour Organization (ILO) and all internal Festo rules and regulations must be complied with.

We have a zero-tolerance policy. This means that every violation will receive an appropriate sanction. In order to systematically ensure the avoidance of legal and reputational risks, Festo set up a compliance management system back in 2012, which controls and monitors the activities required to prevent legal violations.

→ [GRI 102-17](#)

Internal Audit and Compliance Committee

For this purpose, the Management Board, with the approval of the Supervisory Board, appointed a Chief Compliance Officer (in short: CCO), who is organisationally assigned to the Chairman of the Management Board, but also has the right to report directly to the entire Management Board and to the Supervisory Board.

The tasks of the CCO are to support the individual companies of the Festo Group in implementing the requirements of our Code of Conduct, to monitor compliance with these requirements with the help of other governance functions such as risk management or internal audits, and to update the guidelines for the Code of Conduct when required. The CCO is also the contact person for all questions relating to compliance with and implementation of the Code of Conduct.



The internal audit governance function also has to ensure that its audits comply with the Code of Conduct and its supplementary guidelines and report any violations found to the CCO.

The Compliance Committee supports the CCO's tasks and work within the framework of the Compliance Committee's procedural rules.

Whistle-blower portal

An important tool in the implementation of our guidelines is the international online whistle-blower portal. Here, employees and business partners worldwide can anonymously and safely report any misconduct or violations of our Code of Conduct or the applicable law without fear of reprisals. → www.festo.com/compliance



The firm anchoring of compliance in the corporate culture is a central success factor in making the compliance management system (CMS) as effective as possible. This is why we introduced special integration and initial compliance workshops for two management levels and selected positions at almost all Festo locations, and in almost all Festo companies, from 2014 to 2019. As part of this, 1,196 managers worldwide were trained between 2016 and 2019. These training courses were conducted by Corporate Compliance and the 62 Local Compliance Officers, among others.



4. Ethics and governance

Extensive training offer

Building on the integration and initial compliance workshops, Festo has established an internal compliance training programme comprising basic compliance knowledge, special training courses and local training.

The basic compliance knowledge is continuously provided in face-to-face training, web-based training and onboarding compliance training worldwide. Every new employee at the Esslingen headquarters and in almost all national Festo companies receives the onboarding compliance training when they join the company (2019: 114 trained employees).

The web-based training was rolled out in 2018/2019 for all employees of the Festo Group who have access to our virtual training system and is a mandatory training measure. As part of our online training on compliance fundamentals, employees are taught the contents of the Code of Conduct and internal compliance regulations – in particular the prevention of corruption, fraud and anti-trust violations – using concrete case studies.

Special training courses have also been available since 2018, providing in-depth training in other compliance focus areas.

As part of the local training courses, local, regional and headquarters compliance officers impart country-specific content on the topic.

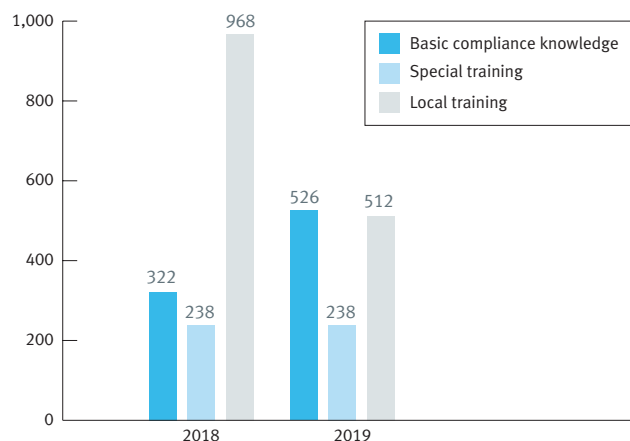
In addition, all trainees have been receiving compliance training since 2018. They then serve as internal multipliers in the individual business sectors and countries. Our distributors have been receiving training since 2019. → GRI 205-2

Regular review

Observance and implementation of the Festo Code of Conduct and other compliance regulations are subject to regular audits by the group auditing department.

No legal proceedings have been initiated due to anti-competitive behaviour or the formation of cartels and monopolies.

→ GRI 206-1



GRI 205-2: Information and training on anti-corruption strategies and measures

Guidelines for internal and external documents

Our compliance guidelines include both internal and external documents and are accessible to every employee.

Our purchasing department also passes on the Supplier Code of Conduct to our suppliers. Our sales employees refer to our own Code of Conduct in the case of framework agreements with customers.

Both documents are also available for download in several languages from our corporate website.

→ www.festo.com/compliance



Compliance guidelines 2017–2019

→ GRI 102-16

- 1) Code of Conduct
- 2) Supplier Code of Conduct
- 3) Anti-Corruption Policy
- 4) Antitrust (Antitrust Law)
- 5) Corporate Instructions CI-056 – exclusion list of industries: weapons industry, pyrotechnics, nuclear industry → GRI 102-11

4.2 Human rights

By signing the joint declaration on human rights and working conditions, the Management Board has committed itself to complying with internationally recognised human rights and the fundamental labour standards of the International Labour Organization (ILO) worldwide.

An examination of compliance with human rights or a human rights impact assessment as part of the National Action Plan for Business and Human Rights has not yet been carried out at the Festo Group's business locations. → [GRI 412-1](#)

The 30 articles of the Universal Declaration of Human Rights:

- | | |
|--|--|
| 1 Freedom, equality, solidarity | 20 Freedom of assembly and association |
| 2 Prohibition of discrimination | 21 Universal and equal voting rights |
| 3 Right to life and freedom | 22 Right to social security |
| 4 Prohibition of slavery and slave trade | 23 Right to work and equal pay |
| 5 Prohibition of torture | 24 Right to rest and leisure |
| 6 Recognition as a legal person | 25 Right to welfare |
| 7 Equality before the law | 26 Right to education |
| 8 Right to legal protection | 27 Freedom of cultural life |
| 9 Protection against arrest and expulsion | 28 Social and international order |
| 10 Right to a fair trial | 29 Basic duties |
| 11 Presumption of innocence | 30 Interpretation rule |
| 12 Freedom of individuals | |
| 13 Freedom of movement and emigration | |
| 14 Right to asylum | |
| 15 Right to citizenship | |
| 16 Marriage and family | |
| 17 Right to ownership | |
| 18 Freedom of thought, conscience and religion | |
| 19 Freedom of opinion and information | |



The **full version of the** United Nations **Universal Declaration of Human Rights** can be found at the following link:
www.un.org/en/universal-declaration-human-rights

5. Environment, energy and construction

Environmental protection, energy management and sustainable construction are closely linked with one another. Because besides treating the environment with care, the economic and efficient use of energy in the face of advancing climate change is a key task of the current era. The use of renewably generated electricity – whether through in-house generation using photovoltaic technology, wind and water power or by purchasing green electricity from

a corresponding supplier – already has an enormous influence on the emissions of many companies' CO₂ balance sheets. At Festo, this is one of many examples of how cross-departmental climate management strategically counteracts the global increase in energy and resource consumption. After all, climate protection begins within your own four walls.

→ GRI 103-1





5. Environment, energy and construction

5.1 Environmental management

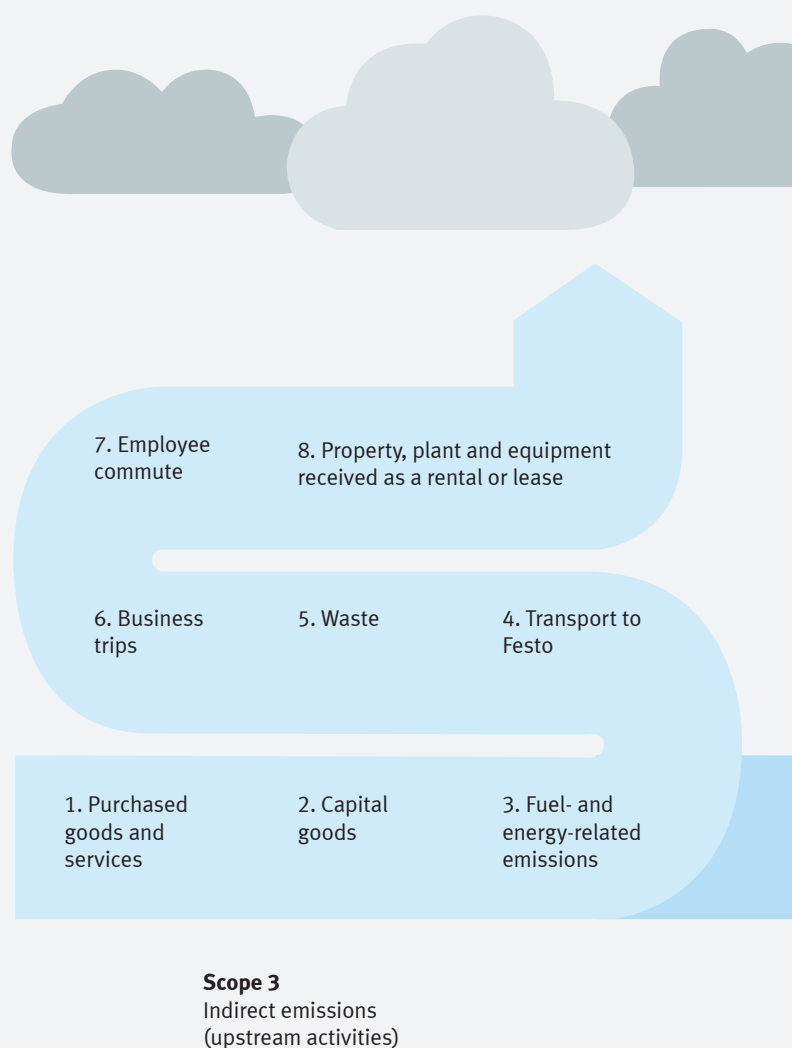
Society and industry face the challenge of conserving resources and counteracting climate change. This is because our energy consumption causes emissions and we need a reliable supply of resources for the production of consumer goods and industrial products.

This is also relevant for Festo's production. We have therefore established environmental management systems at all existing production plants and certified them according to ISO 14001. We continuously increase our energy and resource efficiency and minimise CO₂ and pollutant emissions from our production.

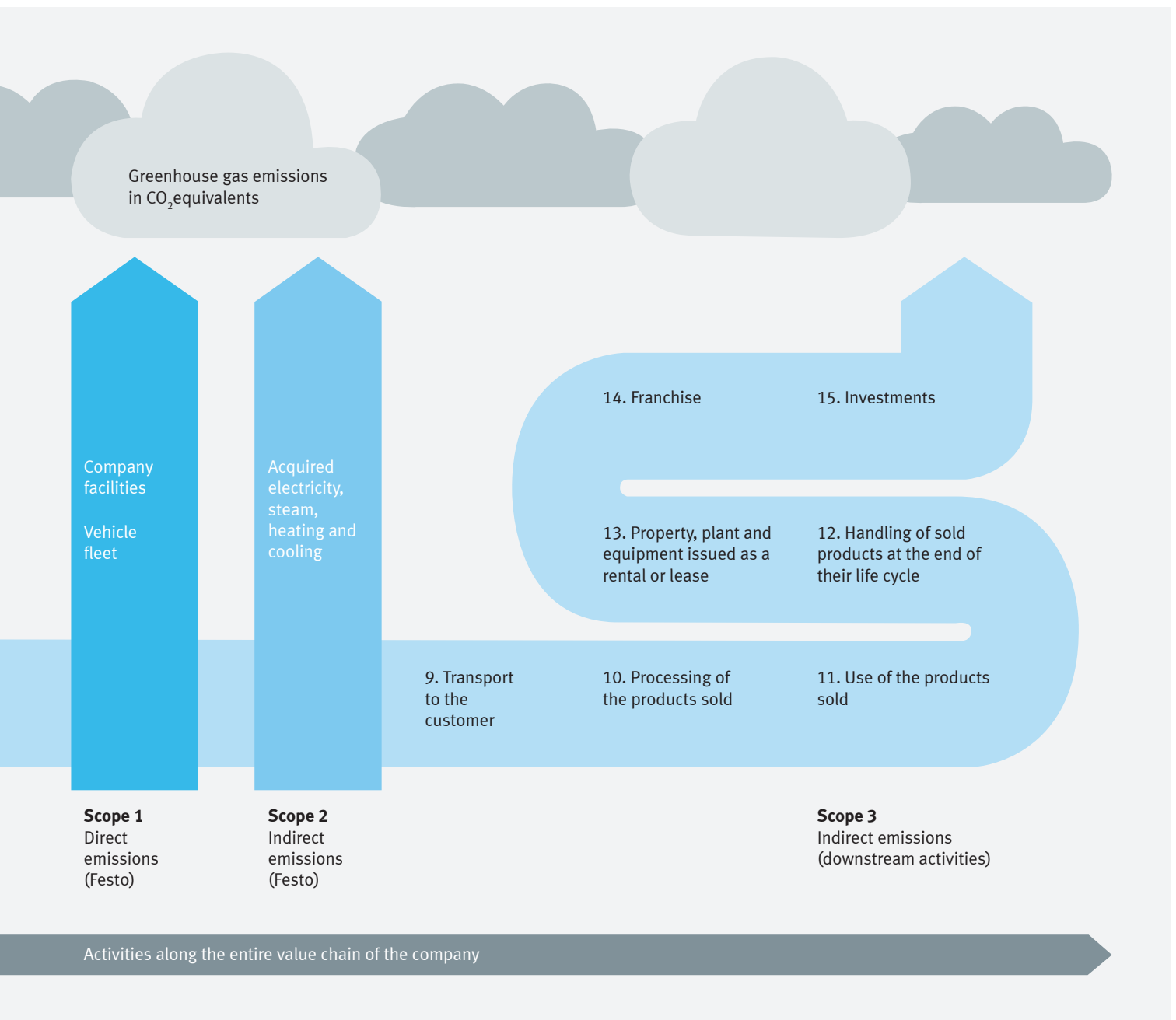
These measures also help us to reduce production costs, meet the demands of our stakeholders and be prepared for new legal requirements.

Recording of emissions according to the Greenhouse Gas Protocol

The Greenhouse Gas Protocol (short: GHG Protocol) is considered the most widely used international standard for recording and accounting for greenhouse gas emissions. It breaks down emissions into scope 1 emissions (direct emissions), scope 2 emissions (indirect emissions from final energy purchases such as electricity and district heating) and scope 3 emissions (other indirect emissions along the value chain).



Graphic based on the GHG Protocol



5. Environment, energy and construction

Primary energy consumption and scope 1 emissions

Among the primary energy consumptions → [GRI 302-1a](#), we document the fuel oil and natural gas consumption caused by the operation of our buildings. This also includes the fuel consumption of transport logistics between some of the European plants and the vehicle fleet in Germany, which is predominantly leased. We report on the CO₂ emissions caused by this in scope 1.

Our production processes do not cause direct emissions of other greenhouse gases (e.g. process emissions). The emissions of cooling agents from cooling and refrigeration plants are negligible compared to CO₂ emissions – they are not reported.

Primary energy demand has risen by around 11 per cent over the last four years. Almost two-thirds of the increase was due to the growth of our locations and the occupation of additional buildings. In addition, rising transport volumes contributed to this. The relative rise was only about two-thirds of the growth in sales over the same period.

Scope 1 emissions → [GRI 305-1](#) are shown in the second diagram on the right. They are essentially derived from primary energy consumption. Only a shift between the various energy sources such as fuel oil, natural gas, diesel and petrol can lead to slight deviations. The influencing factors are correspondingly identical with those of primary energy consumption.

Final energy consumption and scope 2 emissions

Festo obtains its final energy → [GRI 302-1c](#) almost exclusively in the form of electricity. Two locations are heated with district heating in an environmentally friendly manner. The associated emissions are reported in scope 2. Final energy consumption rose by nine per cent between 2016 and 2018 and fell again significantly last year. Over the entire reporting period, there was an

rise of four per cent. The relative rise was thus only a quarter of the sales growth in the same period.

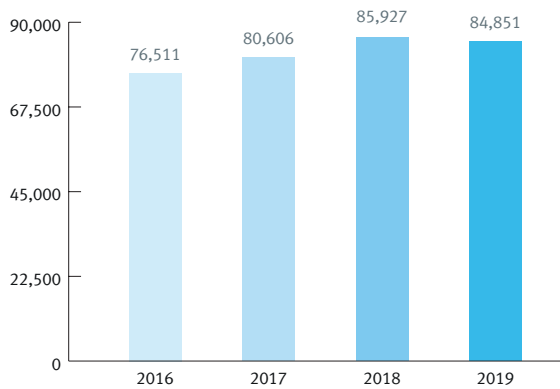
The most important factor influencing final energy consumption is our economic growth. However, consumption-reducing factors are increasingly making themselves felt. These include the processes of our energy management, exemplary compressed air management and the consistent elimination of compressed air leaks, as well as the successive replacement of old fluorescent tubes with LED lamps and shutdown plans for production plants during non-production periods. Great potential for savings was also tapped by optimising the operation of the air-conditioning and ventilation systems.

A comparable development was seen in scope 2 emissions → [GRI 305-2](#). The effect of the above-mentioned consumption-reducing measures was also enhanced by the selection of power supply with a comparatively climate-friendly power station park and thus favourable electricity-related emission factors. Here, it was even possible to achieve an albeit smaller reduction in emissions of 1.5 per cent over the reporting period.

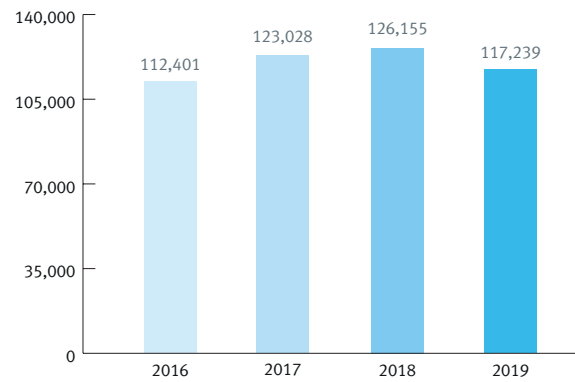
Looking at primary and final energy consumption and scope 1 and scope 2 emissions, it is possible to observe a partial separation of energy consumption and greenhouse gas emissions from economic growth for Festo.

In 2013, Festo committed itself to reducing direct on-site and indirect CO₂ emissions at the Esslingen and Rohrbach locations by 20 per cent by 2020 compared to the base year of 2008 (50,325 tonnes of CO₂ equivalents). The target figure was already surpassed in 2015 and the level achieved has since been permanently secured. The average annual emissions for the years 2016 to 2019 amounted to 35,350 tonnes of CO₂ equivalents.

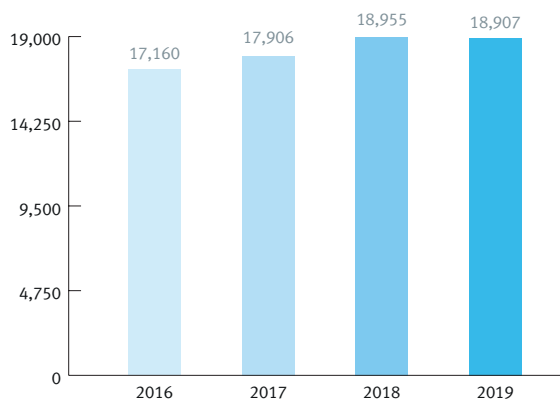
5. Environment, energy and construction



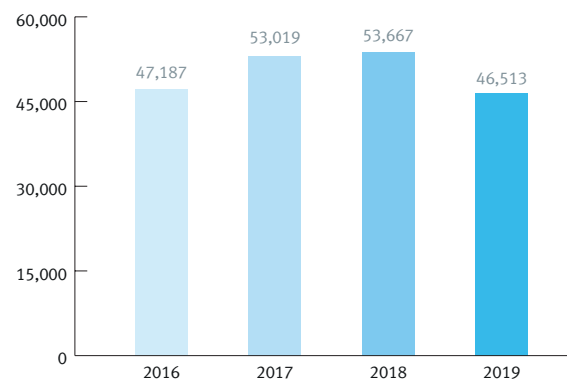
GRI 302-1a: primary energy (fuel oil, diesel, gas, MWh)



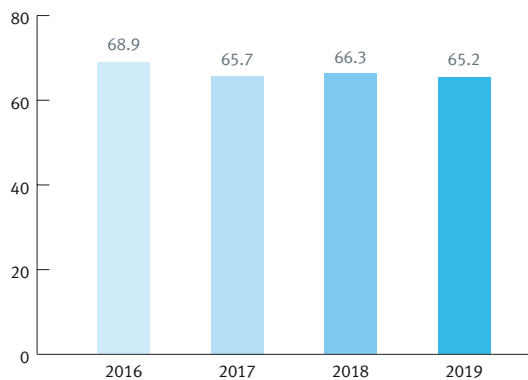
GRI 302-1c: final energy (electricity, district heating, MWh)



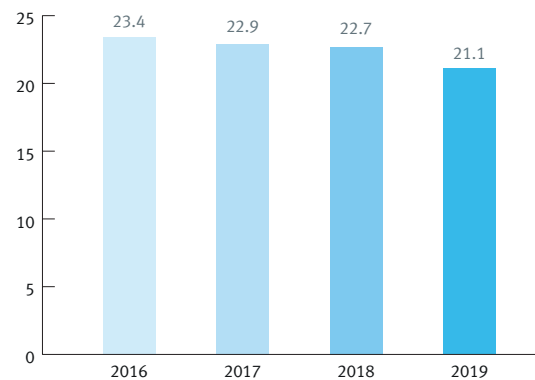
GRI 305-1: direct greenhouse gas emissions (scope 1, t CO₂ equivalents)



GRI 305-2: indirect energy-related greenhouse gas emissions (scope 2, t CO₂ equivalents)



Energy consumption in relation to turnover (MWh/EUR millions)



Greenhouse gas emissions (scope 1 and scope 2) in relation to turnover (t CO₂ equivalents/EUR millions)

5. Environment, energy and construction

Scope 3 emissions

The scope 3 emissions → [GRI 305-3](#) as Festo's indirect greenhouse gas emissions along the value chain generally far outweigh scope 1 and scope 2 emissions. According to the Greenhouse Gas Protocol, they are typically four times higher than scope 1 and 2 emissions combined in the manufacturing industry. The GHG Protocol distinguishes 15 categories in this area. Due to this great variety and range, they are usually only estimated at certain points and only roughly. Typical categories for which we have reliable data are presented below.

CO₂ emissions caused by Festo's business trips amounted to 7,556 tonnes in 2019 and are dominated by air travel, which accounts for over 98 per cent. This includes all trips that were booked through our contracted travel agency. We report on business trips with company vehicles in scope 1.

In 2018, employees travelling to their workplace at our headquarters in the Esslingen area generated 6,380 tonnes of CO₂ emissions. In the assessment, the distance between the employees' homes and their workplace and the transport they take were taken into account. Typical numerical values were used for fuel consumption in private transport.

For 2018, we estimated the emissions caused by logistics for the first time. They amounted to around 35,000 tonnes of CO₂ equivalents. This mainly includes air and sea freight transport between our plants, logistics locations and national Festo companies, as well as occasional transport from suppliers to our plants and trans-

port to customers. Typical emission factors per tonne kilometre from publicly available sources were used.

Air freight emissions also include emissions of non-CO₂ greenhouse gases. We know about the effect of emissions at high altitudes, which is about three times higher, but it is not taken into account in the balance sheet for better comparability. Although 40 per cent of the transport volume is handled by sea freight, air freight is by far the largest contributor to transport-related scope 3 emissions.

We assume that the vast majority of our scope 3 emissions are generated during the use phase of our products by our customers, where they are in turn seen as scope 2 emissions. However, it is not possible for us to make approximately reliable assumptions when it comes to the estimation of these emissions. The wide variety of applications for individual products and product groups, process-typical operation cycles and the industry-typical lifetime of production plants make significant contributions.

Environmental compliance

Festo has not committed any serious infringements of environmental law. However, small fines for breaches of regulations (for example in the transport of dangerous goods) cannot be ruled out. Non-sanctioned, short-term exceedances of wastewater and emission limit values may occur. Appropriate countermeasures are always taken. Wherever there are reporting obligations to the authorities in connection with exceedances, these are carried out.

→ [GRI 307-1](#)

Waste indicators and transport of waste

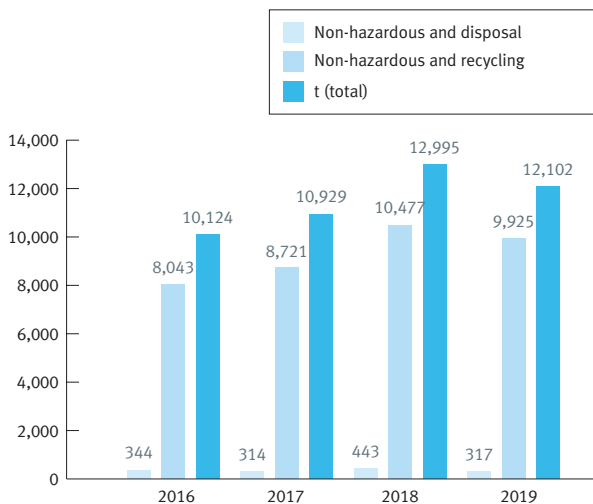
Operation of production plants and buildings is always associated with the generation of waste. For this reason, for many years, we have been striving at all our sites to avoid waste or, if this is not possible, to recycle.

The legal regulations applicable at the respective location are always fundamental for us. Over the last five years, our locations have produced an average of around 11,300 tonnes of waste per year. Of this, 83 per cent was non-hazardous and 17 per cent hazardous waste. The recycling rate for all waste categories has been above 92 per cent for years. → [GRI 306-2](#) We have achieved this high level through a large number of group-wide and local

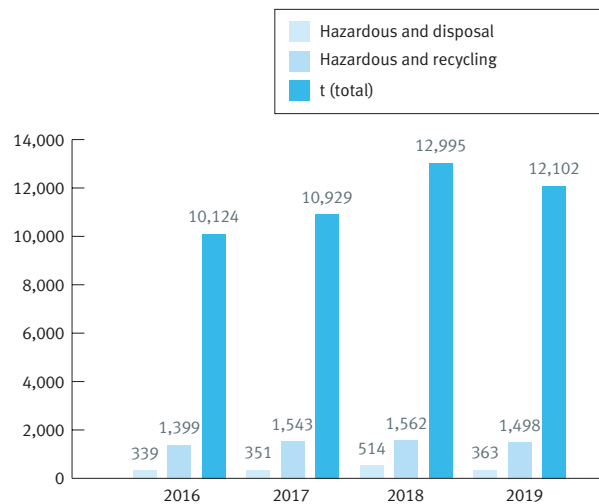
measures, such as returnable packaging, low-waste production methods, separate and process-related waste collection, and ongoing measures to promote environmental awareness among the workforce.

We collect our waste at our locations and only make it available for collection. We do not store it. The few types of waste that cannot be recycled, thermally recycled, composted or incinerated are deposited in landfills at local waste disposal facilities.

Our waste is disposed of exclusively by qualified waste disposal companies. We do not export or import waste. → [GRI 306-4](#)



GRI 306-2: Waste by type and disposal method for non-hazardous waste



GRI 306-4: Waste by type and disposal method for hazardous waste

5. Environment, energy and construction

Water consumption and wastewater

The Festo Group's water consumption was 234,341 cubic metres in 2019. Sanitary facilities have the highest consumption. In 2019, this accounted for 37 per cent, followed by production processes (26 per cent) and refrigeration mainly by evaporative cooling systems (21 per cent). Canteen operations, irrigation of green areas and some other processes are less important (16 per cent).

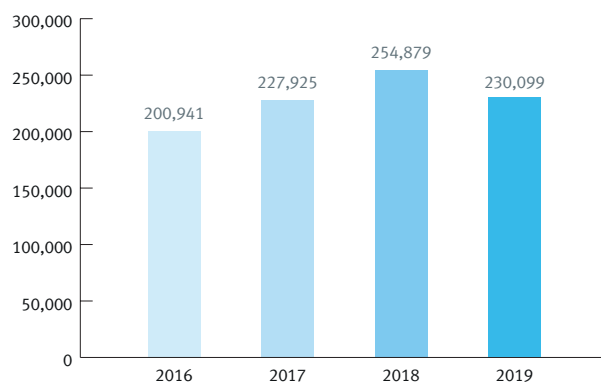
In all areas, we are implementing measures to continuously reduce consumption. We have equipped our own buildings with water-saving fittings throughout. Wherever possible, we optimise the production processes that generate wastewater and reuse the wastewater for other purposes.

The two diagrams on this page show the water intake by source from 2016 to 2019. → [GRI 303-1](#)

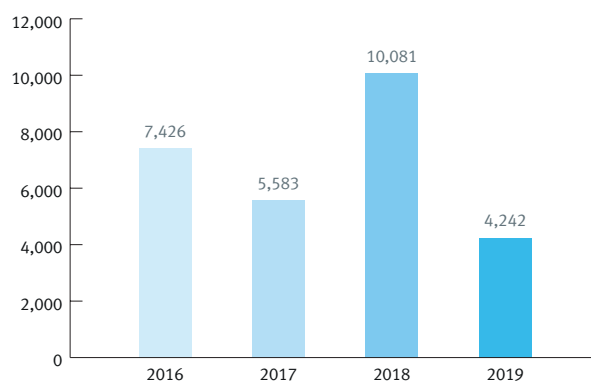
We only discharge contaminated wastewater into the public sewer system. Our production wastewater is treated for process-specific pollutants before it is discharge. We hold the necessary permits for all treatment plants and monitor the treatment and pollutant parameters. With the exception of unpolluted rainwater, we do not discharge any wastewater into natural waters or groundwater.

The four diagrams on the next page show wastewater discharge in terms of quality and discharge location from 2016 to 2019.

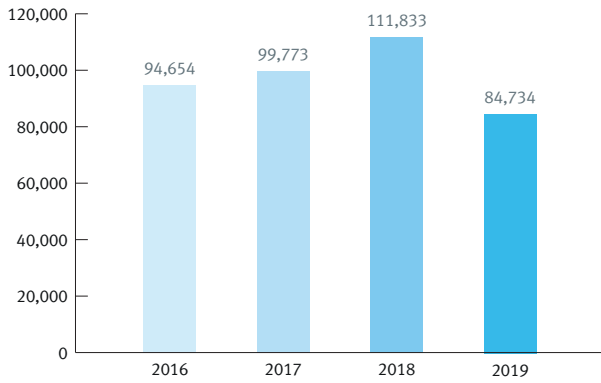
→ [GRI 306-1](#)



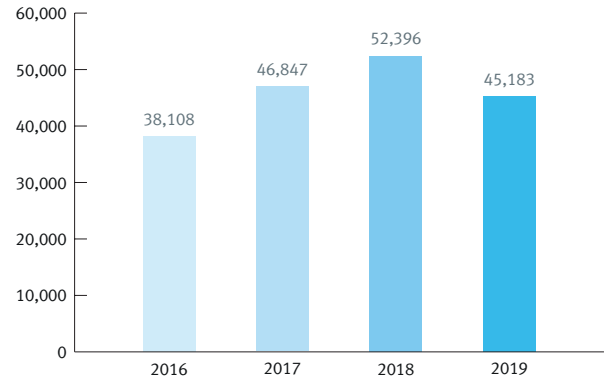
GRI 303-1: Water intake by source: public water supply (m³)



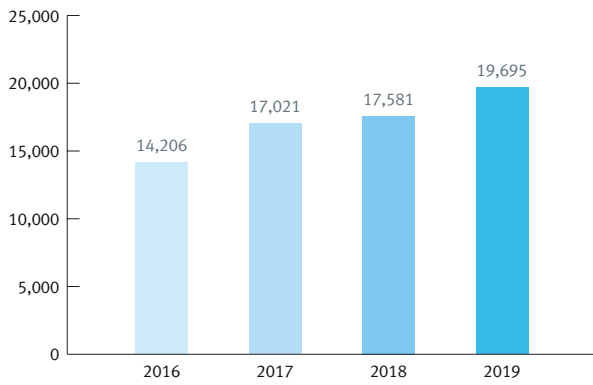
GRI 303-1: Water intake by source: groundwater intake (m³)



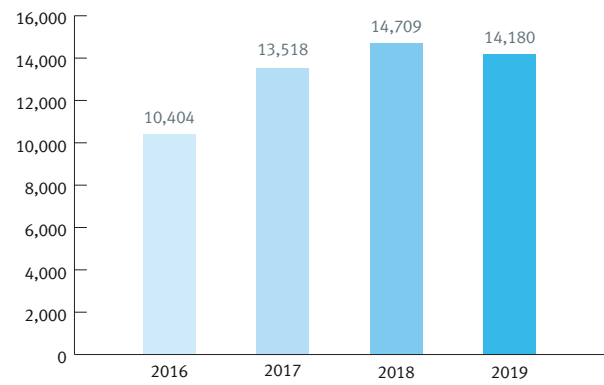
GRI 306-1: Wastewater discharge in terms of quality and discharge location: sanitary facility wastewater/public sewer system (m³)



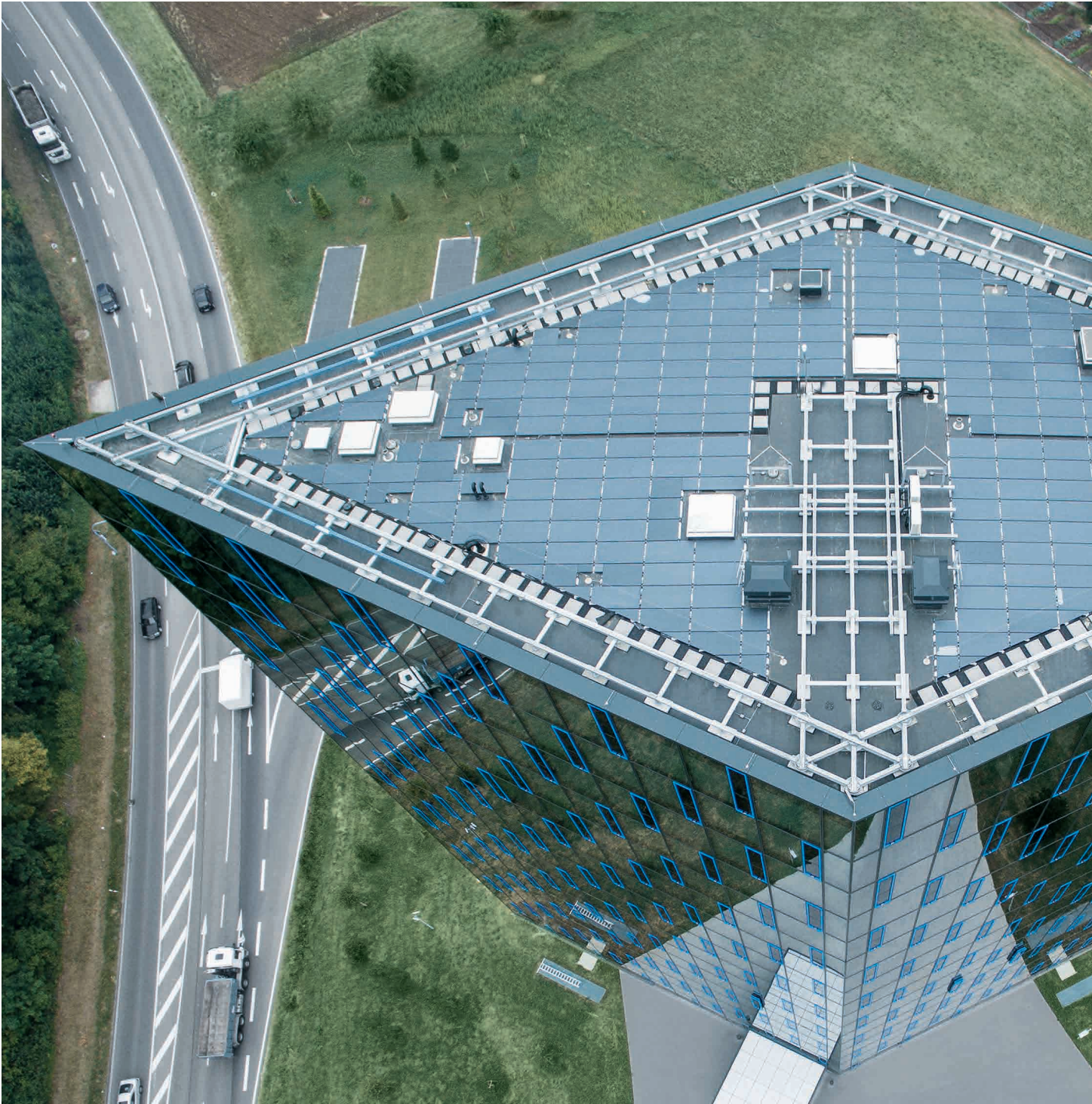
GRI 306-1: Wastewater discharge in terms of quality and discharge location: production wastewater (pretreated)/public sewer system (m³)

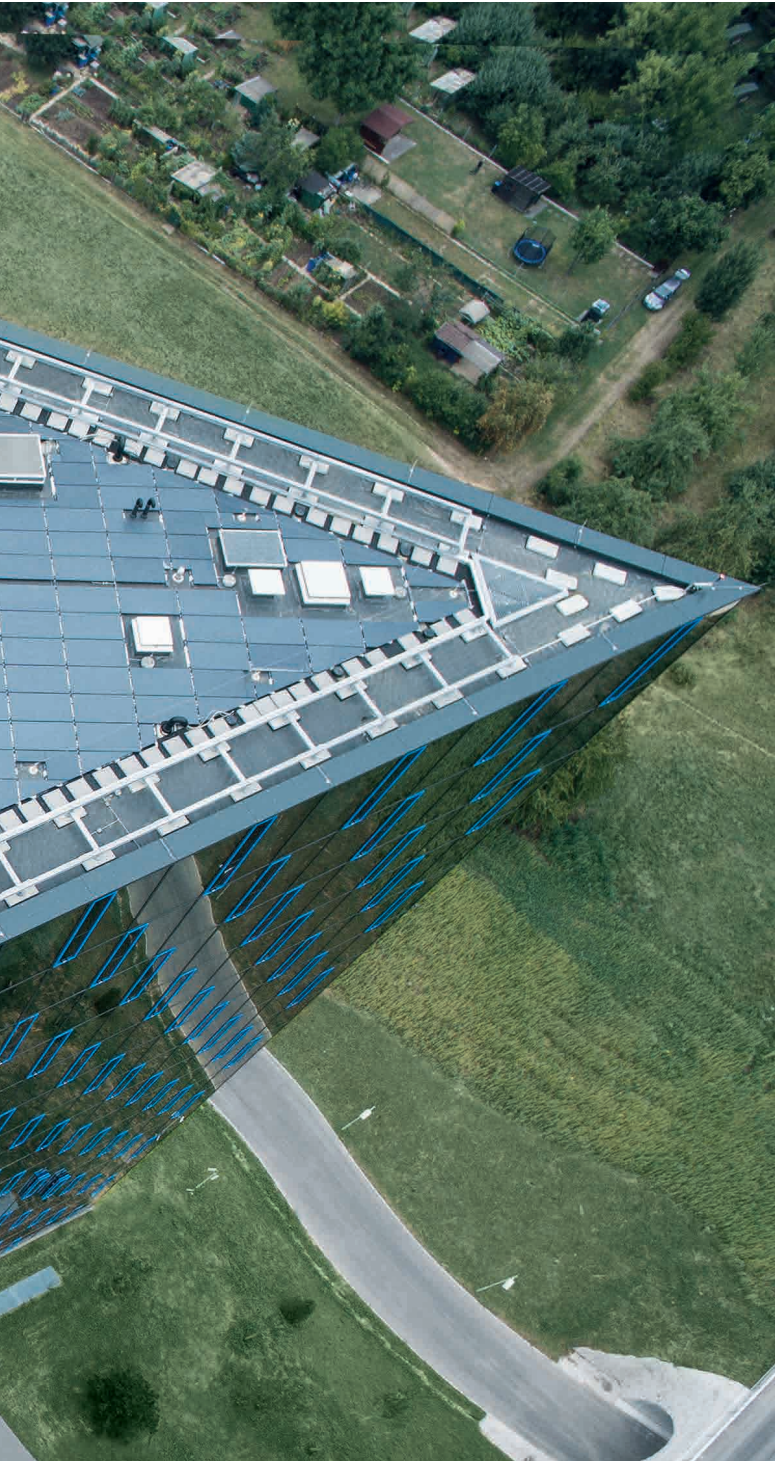


GRI 306-1: Wastewater discharge in terms of quality and discharge location: wastewater from evaporative cooling systems and water treatment for indoor air conditioning/public sewer systems (m³)



GRI 306-1: Wastewater discharge in terms of quality and discharge location: other, e.g. kitchen wastewater/public sewer system (m³)





5.2 Sustainable construction

In Germany, over 40 per cent of final energy consumption is in the construction sector – more than a third of which is in non-residential buildings. In addition to lighting, a large proportion of this energy is used for ventilation and air-conditioning systems, which combine heating, ventilation and air-conditioning functions.

After the Scharnhausen Technology Plant was awarded the platinum certificate by the German Sustainable Building Council (DGNB), the AutomationCenter, which was completed in 2015, also received the platinum award, the highest award, from the DGNB in 2017. Around 360 employees from Festo's Sales department in Germany work here on 16 levels. The assessment takes into account ecological, social and functional, economic, technical and location-related criteria as well as the quality of the construction process.

The decisive factor for the award was largely the sustainable design of the AutomationCenter, which is confirmed by the very good results of the life cycle assessment. Heat and cold are obtained via an ice storage system in the ground and with geothermal energy, so that regulating the building temperature is done autonomously.

The 8,500-square-metre glass facade is designed as an exhaust air-facade and thus achieves energy savings of up to 35 per cent. Attention was also paid to the issue of resource efficiency. In reinforced concrete slabs without static relevance, concrete could be replaced by plastic balls.

An internal construction manual supports this and depicts all essential processes, the necessary organisational statements and planning parameters. It is thus a guideline for sustainable real estate management. In addition, the structure made mostly of glass visually conveys transparency and open-mindedness.



6. Resource and material efficiency

Earth Overshoot Day took place on 29 July in 2019. Never before have we humans used up all the natural resources that our planet can regenerate and sustainably provide within a year so quickly. For industry, this means assuming holistic responsibility for its products. Even in the early stages of product development, the focus must be on material efficiency and resource conservation.

This is because the influence on a sustainable life cycle – from production phase to use phase and recycling of the products – is already set here. At Festo, we also understand holistic product responsibility to include all other measures that ensure product quality and safety such as brand protection and the active combating of product piracy. → [GRI 103-1](#)



6. Resource and material efficiency

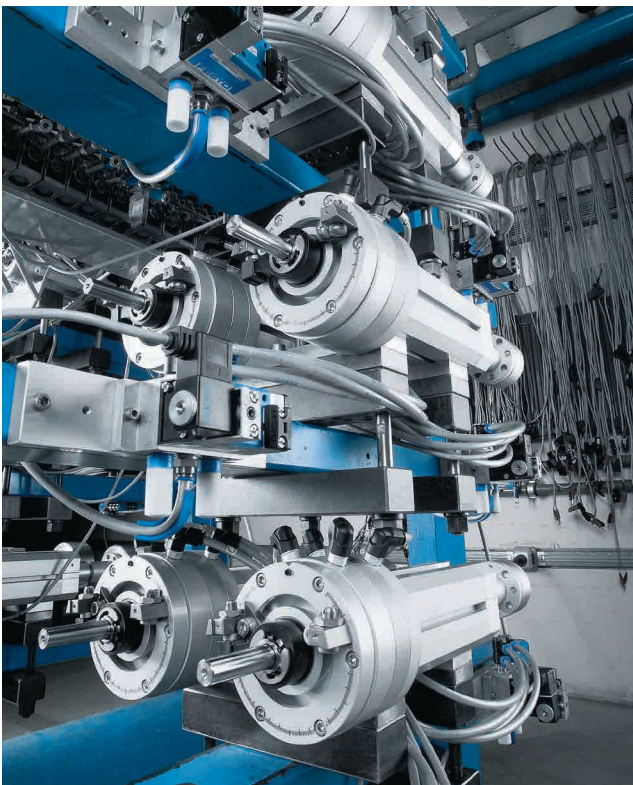
6.1 Product reliability

Safety in industrial production results from durable and robust components. Reliability therefore plays an essential role in our products. From a market perspective, valves, for example, could be seen as consumer goods in terms of the cost. However, reliability and a long service life are very important and valves could therefore also be seen as capital goods. For Festo, the optimum service life depends on the desired application and the specific environment.

The overall reliability of any system is very much determined by the reliability of the weakest link in the system. Furthermore, the

system structure also has a significant influence on this. Fittings are of particular importance in process automation as they control the process. In factory automation, this task is often performed by valves. Our standard valves generally have an average service life of up to 100 million switching cycles.

In order to guarantee reliable products and components, we subject all product series to comprehensive functional and service life tests. More than 1,500 test objects are examined simultaneously at Festo in a wide variety of laboratories and test centres. The service life characteristics from the tests are a central point for preventive maintenance and the evaluation of safety functions.



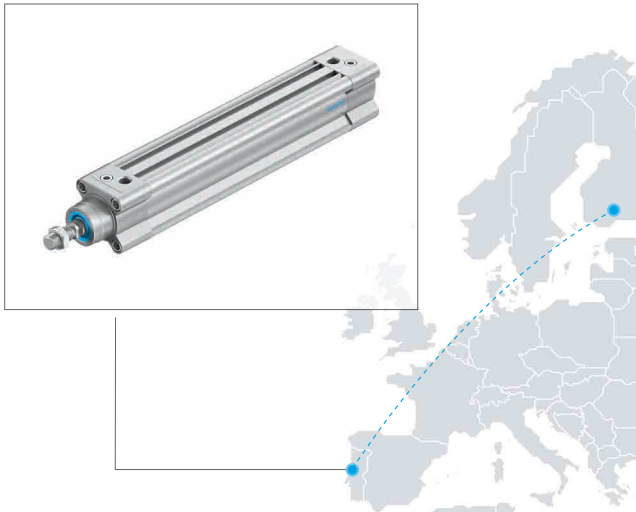
In continuous operation, our cylinders are tested until they have successfully passed the required minimum service life.



This video on YouTube provides an **insight into our endurance tests:**

www.festo.com/crreport/endurancetest

If an application, for example a standard cylinder with a stroke of 160 millimetres and an assumed average service life, has around ten million double strokes (one double stroke corresponds to extending and returning), this corresponds to a total travel distance of 3,200 kilometres and thus slightly more than the linear distance between our locations in Porto and Vantaa near Helsinki.



Average service life of the DSBC-PPVA-N3 32-160 cylinder: ten million double strokes, which corresponds to about 3,200 kilometres

6.2 Brand protection

Nowadays, assuming holistic product responsibility also means protecting our customers from the negative consequences of product piracy through preventive measures.

In order to protect the Festo brand and our customers (among other things) from the risk of warranty failure in the case of counterfeit goods, Festo took structured action against brand misuse on various sales platforms in 2018 and 2019. This was achieved by processes for issuing warnings or delisting on online platforms, which was carried out by a specialised partner company.

The aim was to reduce the range to original components as far as possible. There are online sales platforms on which the search term 'Festo' will produce a large number of hits for items which are not Festo original products. In spite of this, we could prove that brand protection measures were effective. In the medium term, a structured process currently under development is expected to lead to sustained success on many platforms.



Brand protection is important, because plagiarism does not only cause financial damage, it often endangers the safety of the user

6. Resource and material efficiency

6.3 Product responsibility and transparency

Product responsibility, traceability and transparency of used materials are now part of the status quo. In terms of the entire value chain, this is referred to as 'track and trace'.

Customers and end users need available and appropriate information on the positive and negative environmental and social impacts of products and services. In addition, consumers must be provided with information on the safe use of a product, the disposal of the product and the origin of its components. Therefore, digital product keys, recycling passes or blockchain concepts for supply chains across all industries are in vogue.

The Product Compliance department researches the regulations and laws applicable to Festo products worldwide. These are interpreted and communicated throughout the company. In addition, the implementation of and compliance with the guidelines is ensured. The aim is to raise awareness within the company and to disseminate knowledge about product safety.

Risk assessment of new or revised products

For new products to be developed or products that are to be modified and that could lead to new hazards, a risk assessment according to DIN EN ISO 12100 must be carried out in advance. This is accordingly stipulated in our development process for new products.

For products with increased risks, FMEAs (Failure Mode and Effects Analysis) are also carried out.

Consideration of applicable guidelines and laws

The processes involved in product approvals are described in internal guidelines. Festo must comply with applicable law so that the products are considered safe. There are different regulations and laws on product safety around the world to allow products to be placed on the market. This requires the respective certifications in the various regions.

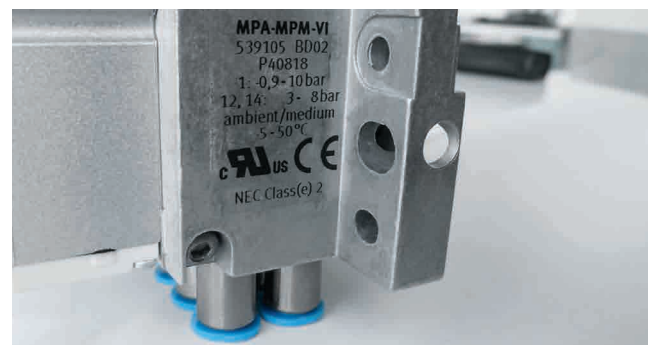
→ [GRI 102-11](#), [GRI 416-1](#)

Statutory regulations that must be complied with are, for example, EU Directive 2011/65/EU (RoHS 2), EC Regulation 1907/2006 (REACH Regulation), the requirements of the EC Packaging Directive 94/62/EC and the requirements of the EC Battery Directive 2006/66/EC. All regulations and directives aim to prevent prohibited ingredients being contained in a material at a concentration above the permitted limit. The limit values for the regulated ingredients vary from one regulation to another and are embedded in Festo's internal guidelines.

Festo's products are labelled in accordance with legal requirements with regard to their origin, composition and use. The corresponding label describes, for example, when a product was manufactured and in which factory so that traceability is guaranteed.



Theory: the label system for Festo products



Practice: the label in use on the MPA-MPM-VI Festo valve terminal

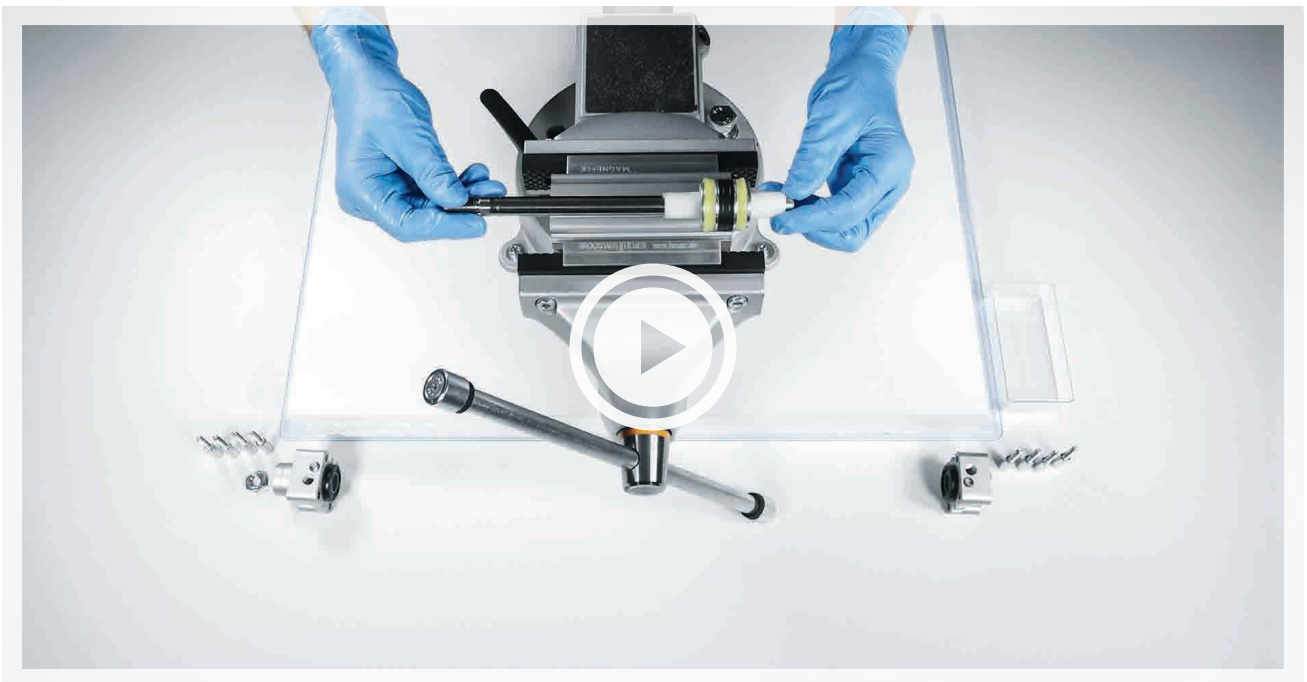
User documentation and repairs

The user documentation provided is of great importance since it is also part of the product. The Technical Documentation department prepares detailed information and specifications for this purpose. This is because the benefits and added value of the products can only materialise if the user has the appropriate knowledge about them.

Modern editing systems and translation technologies help us to meet future market and customer requirements. In this way, Festo ensures that the necessary information is available anywhere in the world – whether it is classically on paper, as a solution in the cloud or as a help function installed on the device.

With a media mix of instructions and descriptions in the languages of our markets, users learn how to use a newly acquired product safely. Advice on possible misuse and information on maintenance, cleaning, care and disposal help the user to avoid expensive and climate-damaging costs and at the same time extend the service life of the products. → [GRI 417-1](#)

The media mix also includes various tutorials that clearly explain how, for example, spare parts kits can be changed independently. Festo supports this so-called 'repair culture' with these instruction videos.



You can watch the videos on our channel at
www.youtube.com/FestoService.

6. Resource and material efficiency

6.4 Use of methods in early phases of development

The sustainability of products must be ensured throughout the entire product life cycle. The environmental and social impacts over the life cycle are largely determined in the development phase. Festo aims to integrate a simplified life cycle assessment in the development phase in order to be able to methodically come up with recommendations for action.

Simplified ecological life cycle assessment

Life cycle assessments can be used to calculate how high the environmental impact is in various environmental impact categories. Decisive factors influencing the environmental impact include the choice of materials, the respective production engineering and the components' suitability for reuse.

We approach the complexity of environmental impact categories through the establishment of a simplified ecological life cycle assessment (LCA), which allows the CO₂ footprint of the product to be calculated via the bill of materials in the early phases of product development.

Below you will find the ecological life cycle assessment using the two standard cylinders DSBC and DNC as examples.

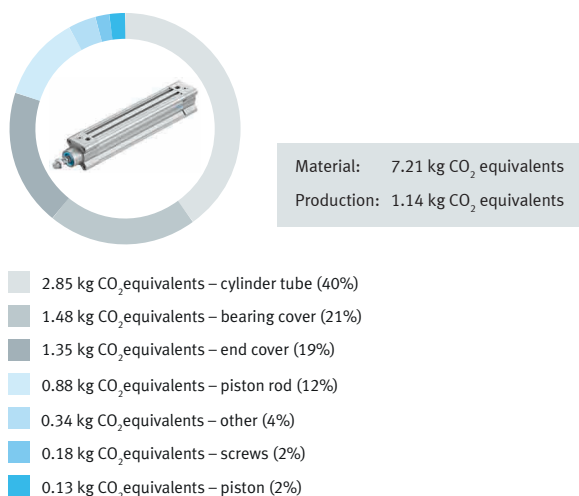
This methodology to quickly estimate the CO₂ footprint of products was developed by our research department in cooperation with the Technische Universität Braunschweig from 2015 to 2017. As part of internal further development, the calculation logic was further automated and linked to existing IT systems in the company.

Lightweight construction methods

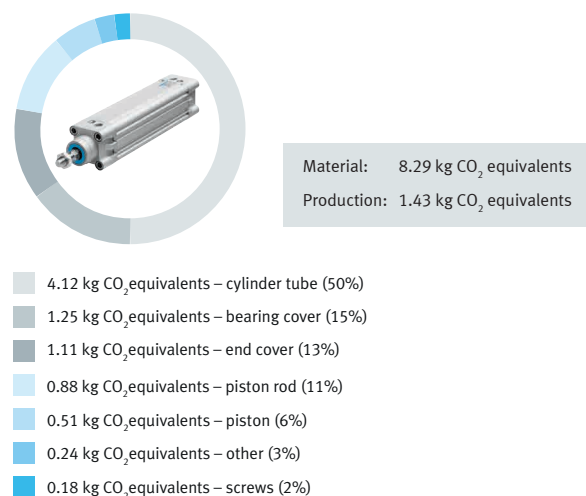
Resource efficiency affects early development activities. Constructive material and resource savings and lightweight construction concepts have an effect on the CO₂ footprint of the product, among other things, because less material is used.

In order to incorporate resource efficiency aspects into the design system at Festo, a methodology for lightweight construction was applied and tested. With its systematic approach, it creates an awareness of the most urgent improvements to be made to a design in terms of lightweight construction and supports the design engineer in sketching the idea even before a CAE programme is used.

Thinking in terms of functions and creating the functional structure are particularly valuable in the conception phase of weight-sensitive products.



Exemplary CO₂ footprint of standard cylinder DSBC (diameter 32 mm, length 100 mm)



Exemplary CO₂ footprint of standard cylinder DNC (diameter 32 mm, length 100 mm)

6.5 Sharing economy in an industrial environment

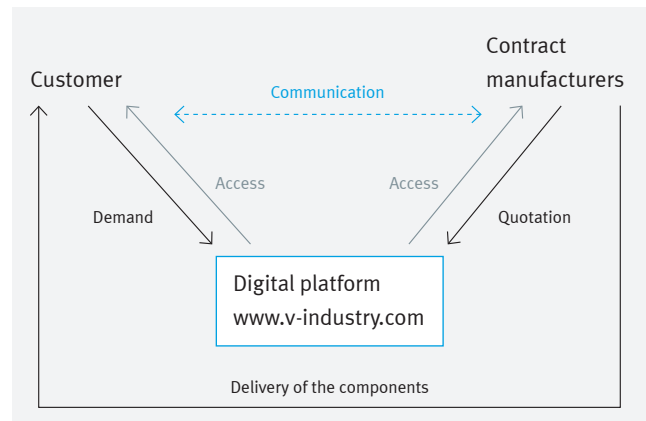
The so-called sharing economy is becoming increasingly important in our society. Things no longer have to be bought in order to use them. The joint use of goods by lending, renting, exchanging or sharing, but also the provision of services, is already well established in the field of mobility and travel. In addition to improving the utilisation of existing capacities and reducing the consumption of resources, the focus is also on expanding social contacts and promoting social cohesion.

Festo has been working on the topic of the sharing economy in production since July 2018. To evaluate such business model innovations for your own company, you can try them out with design thinking methods. We therefore participated in a pilot project with the start-up company V-INDUSTRY.

The goal of V-INDUSTRY is to integrate the basic ideas of the sharing economy into resilient B2B business models. The 'V' stands for 'virtual' and means that production can no longer only take place in the company's own workshops – it can also take place elsewhere.

The start-up company therefore developed a platform for digitising production processes in order to identify and communicate free machine capacities. On the one hand, machines automatically report their free capacities. On the other hand, companies receive orders for which they have the right machines available. On the digital platform, a large number of manufacturing resources are aggregated in order to provide customers with access to a broad production network.

The fact that companies outsource part of their work, either because they themselves are at their production limits or because the work is offered at a lower price elsewhere, has long been common practice when it comes to contract manufacturing. What is new about the idea is that machines and orders are brought together using an algorithm. Matching in this form is only made possible by digitisation.



Procedure for the digital procurement of components in the pilot project

In the pilot project, Festo took on the role of the customer and another company took on the role of the contract manufacturer. In addition, our project team commissioned the components to be manufactured via the platform, which took care of marketing the machine capacities identified at the contract manufacturer. All technical specifications and requirements could be communicated via the platform. Even with variable production requirements and limited time resources, the digital processes were able to provide efficient and transparent remedies. The various machines were thus better utilised and the digitisation of the shop floor could be actively supported. Since the successful completion of the pilot project, Festo has been using the platform operationally for the digital procurement of components.

In the future, the use of such a platform could not only increase the efficiency of individual companies. As fewer but more intelligent production plants would be used in the long term, the entire industry sector would improve its use of materials and thus its CO₂ emissions as a whole.



Further information on the start-up company can be found at www.v-industry.com.

7. Climate protection and energy efficiency

In the scientific community, nine planetary boundaries are being discussed, the exceeding of which endangers the stability of our ecosystem and thus the basis of human life. One of these planetary boundaries is climate change, which is caused by the constant enrichment of the earth's atmosphere with man-made greenhouse gases, especially carbon dioxide (CO₂). Climate protection and the economical use of energy are two of the major tasks of our time.

Europe has the ambition of becoming the first climate-neutral continent by 2050. Industry plays an essential role in this. CO₂-neutral production can be achieved through energy-efficiency measures, green electricity procurement and CO₂ compensation. We at Festo support our customers' energy-efficiency measures on the way to achieving this goal. → [GRI 103-1](#)





7. Climate protection and energy efficiency

7.1 Energy efficiency by design

Climate change is also a central challenge for manufacturers of automation technology. Like any challenge, this is both a risk and an opportunity. Typical automation components occupy a special position in the area of sustainability, as they are usually only used together with other components in the system. Nevertheless, components can also generate an enormous leverage effect, as they are sold in large quantities and thus influence the particular system in which they are installed.

We consider the reduction of CO₂ and pollutant emissions at an early stage in the further development of products. This topic has been taken up by the Energy Efficiency task force, a team of researchers supported by the Sales department. Between 2014 and 2018, an internal energy-efficiency guideline ensured that the energy efficiency of new products was tested and evaluated in the development process in comparison with the respective predecessor product. → [GRI 102-11](#)

To implement an automation task, the machine builder has, among other things, various pneumatic and electrical automation solutions at their disposal. The purchase of a solution and the decision to implement drive technology are directly linked to environmental effects in the utilisation phase.

As a provider of pneumatic and electric drive technologies, we know their individual advantages and disadvantages. Basically, criteria such as dynamics, force, adjustability, load stiffness and above all profitability play an important role in the decision. In many cases, a sensible combination of both technologies can also be the optimal solution.

For automation applications in which stopping processes are primarily involved, pneumatics offer clear energy and cost advantages. If an application requires free positioning or special accelerations and speeds are mandatory, electric drives are usually used. The graphic below gives a brief overview of the most important features of both technologies.

Advice on energy efficiency

To pass this knowledge on to the customer, we offer the following energy-efficiency consulting services directly at our customers' premises:

- Workshops to raise awareness among employees
- Energy-efficiency analyses of production plants
- Total cost of ownership (TCO) calculations to compare pneumatic and electric drive systems

	Electric drives	Pneumatic drives
Strengths	• Driving profiles flexibly programmable • Simple control of the drive system • High degree of load stiffness • High dynamics possible • Load-dependent energy use • Energetically advantageous for movement processes	• Simple, cost-effective • Low maintenance, reliable and sturdy • High degree of protection and explosion prevention and protection • High power density, i.e. compact • Easy installation and commissioning • Overload capacity • Energetically advantageous for stopping operations
Weaknesses	• Relatively complex system structure • Decentralised heat generation • Only limited overload capacity • Relatively high space requirement • Relatively high acquisition costs	• Energy consumption as a negative image • Energy losses in case of leakage • Noise • Movements without intermediate position • Low degree of load stiffness

Strengths and weaknesses of electric and pneumatic drives

Energy-efficient products

When using pneumatic components, the aim is to reduce compressed air consumption through efficiency technologies and thus lower the CO₂ emissions indirectly associated with the electricity mix in use. On this page you can see an example extract of products that lead to increased energy efficiency for customers (energy efficiency by design).

MSE6-D2M energy-efficiency module

Constant monitoring of the compressed air consumption to avoid unnecessary or increased compressed air, automatic switch-off in case of plant standstill or machine standby.



MSE6-E2M energy-efficiency module

Constant monitoring of the compressed air consumption to avoid unnecessary or increased compressed air, automatic switch-off in case of plant standstill or machine standby.



SFGA AirFlowAnalyzer

Mobile measuring system for flow and pressure measurement for transparency of consumption data



DGO rodless linear drive

Constructive low leakage due to sealing system



OVEM vacuum generator

Reduced air consumption through air-saving circuit. Application-specific control of the vacuum through integrated measurement.



EXCH planar surface gantry

Two fixed motors drive a rotating toothed belt. This drive concept ensures a low moving dead weight.



MSE6-C2M energy-efficiency module

Constant monitoring of the compressed air consumption to avoid unnecessary or increased compressed air, automatic switch-off or pressure reduction for standby detection by electrical pressure control valve.



SFAM flow sensor

Continuous recording and measurement of compressed air consumption for transparency.



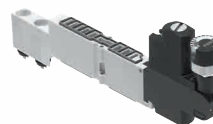
VSVA reverse jet pulse valve

Alternating cleaning air and cooling air saves up to 50 per cent compressed air.



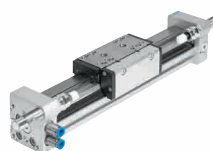
Vertical pressure regulator plate for MPA1

The working pressure can be regulated directly on the valve terminal via the pressure regulator plate for the individual cylinder. No additional installation effort.



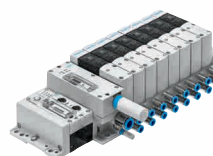
DGC pneumatic linear drive

Reduced leakage due to new sealing system.



VTEM Motion Terminal

Valve functions controllable via app, for example leakage diagnosis, energy-saving ECO travel, proportional pressure control.



7. Climate protection and energy efficiency

7.2 Research and joint projects on energy efficiency

Whether it is done jointly with customers, research institutes or partner companies: in various projects, we look for solutions for the sustainable factory of the future and deal with the question of what requirements will be posed for the automation of tomorrow in this context.

EneffAH research project

In the EneffAH (energy efficiency in production in the field of drive and handling technology) joint research project, which was completed in 2012, we worked with partners to develop and investigate various approaches and measures for energy efficiency.

EnAP research project

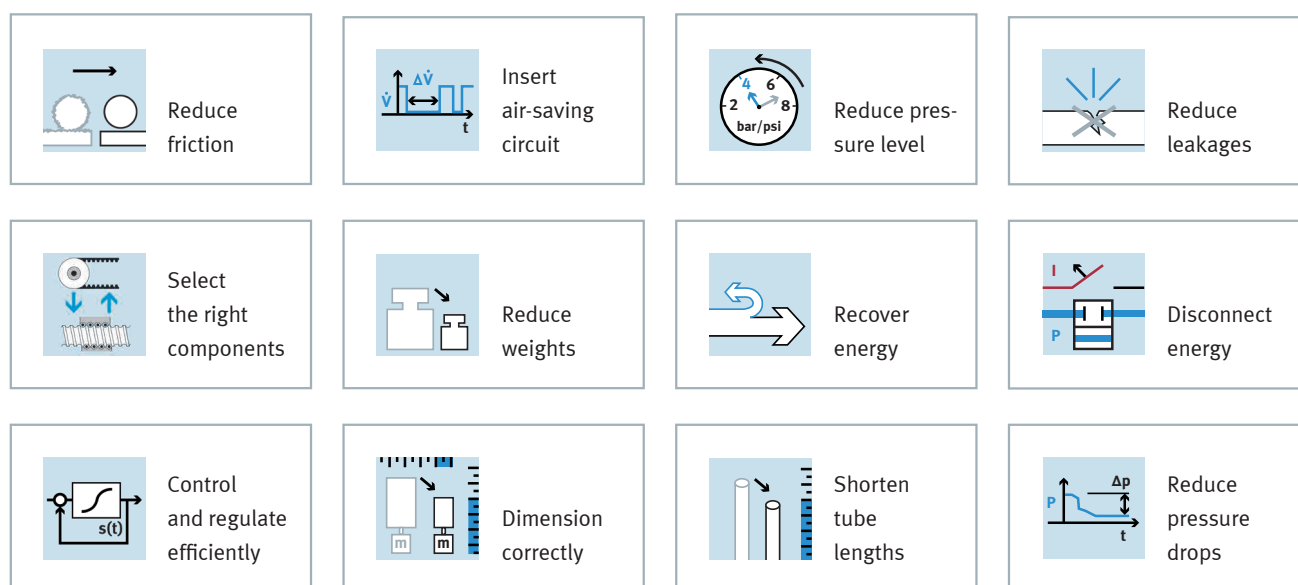
This was followed by the EnAP research project (user-oriented use of energy-efficient drive technology in production) from 2016 to 2019, in which selected measures were examined in detail and further developed for practical application. The project dealt with the question of how expert knowledge can be made available to the market.

Our engineers designed a system that is not only used internally, but is also available to our customers to facilitate energy-efficient design. This enables our customers to carry out simple and economically sensible evaluations of various energy-efficiency measures and receive the corresponding recommendations for action. Through its involvement in EnAP, Festo is actively involved in putting energy-efficiency measures into practice.

Our own Research Experimental Factory (REF), an assembly plant for the electronics industry and a filling system were used as demonstrators. The Institute for System Dynamics (ISYS) of the University of Stuttgart and the Institute of Fluid Power (IFD) of the Technische Universität Dresden were responsible for the methodological approach. The EnAP research project was funded by the Federal Ministry for Economic Affairs and Energy (BMWi) under the funding code 03ET1385C.



More information about the projects can be found at www.eneffah.de and www.enap-projekt.de.



Result of further development at Festo: 12 concrete measures for energy efficiency

'The Road to a <2° Economy' joint project

Initiated by the WWF (World Wildlife Fund for Nature), we participated in the 'The road to the <2° economy' (Weg in die <2°-Wirtschaft) joint project from 2017 to 2019 together with 39 other companies from the transport, building and industrial production sectors. The aim was to design and implement cross-company project ideas for a '<2° world' in three phases and several workshop blocks, thereby limiting average global warming to well below 2 degrees Celsius.

Over the course of the project, Festo then developed a pilot project together with Bilfinger, Kuka and Trumpf in order to support the manufacturing industry on its way to achieving CO₂-neutral production.

The Transparency4Earth pilot project aims at measuring and achieving transparency of the real CO₂ footprint within industrial production. For this purpose, the prototype of a measuring system was developed, which measures the energy consumption of our customers and collects the recorded data in a cloud.

The data collected can then be evaluated. This enables the customer to determine where high levels of CO₂ emissions are generated and to reduce them. In contrast to secondary data, which is used in a life cycle assessment study and can be acquired via commercial databases, the solution developed should integrate real data into the LCA calculation.

By using such a measuring unit in each individual process step of production, the customer could calculate the real CO₂ emissions per batch and assign them to the end product. In the long term, only real data analyses can be used to develop and implement a company's own reduction strategy.

The companies' individual projects were also presented to the Federal Minister for the Environment, Nature Conservation and Nuclear Safety, Svenja Schulze, at a final workshop in Berlin.



You can find out more about the joint project on the website www.stiftung2grad.de/en or in the project booklet www.festo.com/crreport/2grad.



Impressions from the cross-company project workshops



Photos: ©Thomas Imo/photothek/BMU

7. Climate protection and energy efficiency

7.3 Festo Energy Saving Services

On the way to achieving CO₂-neutral factories for our customers, cross-company solutions for industry that go far beyond our own product portfolio are required. Currently, the greatest leverage a component supplier has in terms of climate protection is system optimisation to reduce indirect emissions – specifically in the use phase of the products (→ see pages 48–49, GHG Protocol, scope 3, category 11). This requires specialists with the expertise to optimise the entire pneumatic system.

Ecologically oriented business models that focus on both CO₂ reduction and economic customer benefit thus create a win-win situation. Festo Energy Saving Services, a customised service programme in accordance with DIN EN ISO 11011 for determining and making the best possible use of compressed air savings potential, are based on this holistic approach. Customers who make use of these services also optimise their entire energy management system in accordance with DIN EN ISO 50001.

Festo Energy Saving Services are available around the globe and consist of a pre-audit and an audit, which are carried out by our specialised auditors. From 2017 to 2019, 12 auditors were deployed worldwide, who, in addition to our efficiency technologies and consulting services, made the most effective contribution to reducing CO₂ emissions in pneumatic applications.

Festo pre-audit	Festo audit
1 Energy analysis – assessment	1 Energy analysis – assessment and measurement
2 Compressed air quality analysis	
3 Pressure drop measurement	
4 Compressed air consumption analysis	
5 Leak detection – quick check	5 Leakage detection and elimination
6 Machine analysis for energy efficiency – quick check	6 Machine analysis for energy efficiency
+ Conservation measures	
+ Technical basic and further training	



Pressure drop measurement



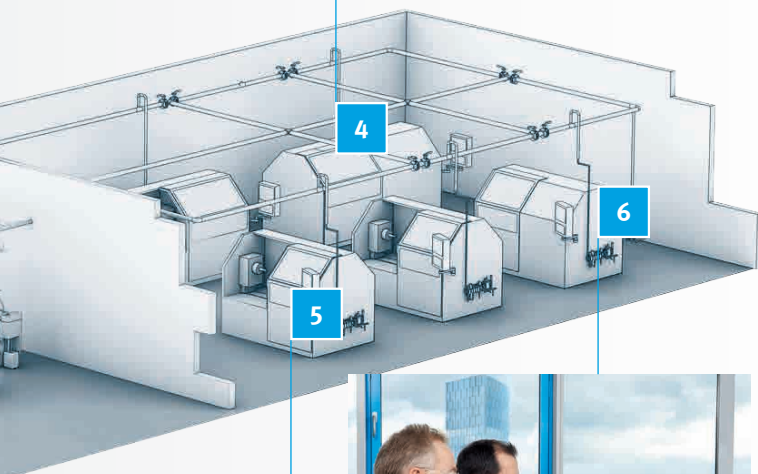
Analysis of compressed air generation



Compressed air quality analysis



Compressed air consumption analysis



Machine analysis for energy efficiency



Leakage detection and elimination

Festo pre-audit

With the pre-audit, the customer immediately recognises their weak points and knows which measures are most likely to pay off for their compressed air system. In doing so, our auditors examine both the compressed air generation and its preparation, assess the utilisation of the compressors, analyse the compressed air quality and measure the pressure drop in the network.

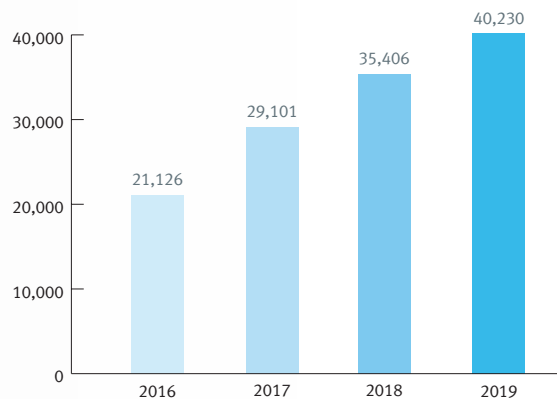
In a quick check, they also carry out exemplary leakage detection on a machine and check it for pneumatic efficiency. The result is a detailed report with precise documentation of the data and recommendations for action weighted according to priority. The documentation also includes the CO₂ emission values that many companies require for inclusion in their sustainability report, for example in accordance with GRI or GHG.

Documented savings potential

Overall, we have been able to identify CO₂ saving potentials in customer projects from 2016 to 2019 as quantified below.

→ GRI 302-5

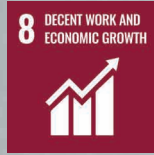
For example, for a customer with emissions of 13,188 tonnes of CO₂ per year for compressed air generation, a saving of five per cent would already have an extremely positive effect. This estimated saving would be equivalent to 660 tonnes of CO₂ per year and thus compressed air costs of 174,600 euros per year.



GRI 302-5: Cumulative identified savings potential through the use of Festo Energy Saving Services at our customers (t CO₂ eq)

8. Technical basic and further training and Corporate Educational Responsibility

Technical basic and further training is important for sustainable development. It provides the necessary skills to tackle today's challenges in the technical corridor in a solution-oriented manner and to shape the future in the interest of future generations. Festo Didactic makes an important contribution to the technical qualification of future generations and today's professionals with its comprehensive range of training courses and worldwide projects and partnerships. → [GRI 103-1](#)





8.1 Learning solutions in electrification

The need for learning systems and training courses that prepare learners in primary school, secondary school, university, in their professional or private lives to implement sustainable development goals is already evident today and will increase in the future. Topics such as climate protection and energy efficiency are already part of many curricula.

Energy transformation, mobility, infrastructure and industry

In addition to new mobility concepts, the main focus is on the electrification of the infrastructure of buildings, cities and industry. These electrified applications have to be embedded in larger electrical infrastructures, which requires the ability to store the energy required for this. Investments in energy efficiency will increase enormously in the coming decades because our current energy use is not very efficient. Energy management is a key issue for cost and energy savings in all areas from buildings and infrastructures to industrial applications.

Charging stations for electromobility

Festo Didactic addresses these topics with many learning solutions. The electric vehicle charging station equipment set, for example, is used for practical training in the planning, installation, testing, error elimination and energy management of a modern charging station.



Efficient lighting systems and building infrastructure

Lighting systems generally account for more than a quarter of the energy consumed in a building. Our range of learning systems for fluorescent lamps, high-performance LEDs, high-pressure discharge lamps and energy-efficient lighting is dedicated to this very topic.

In addition, most modern commercial buildings have air-conditioning systems that are automatically controlled. HVAC (heating, ventilation, air conditioning) control systems regulate the temperature, air flow, humidity and carbon-dioxide content of rooms based on the temperatures inside and outside the building. This keeps the climate in the rooms comfortable and the current consumption low. Our 'Building HVAC Controls' learning system provides the necessary basis for teaching this knowledge and practical training with real components.

Learning systems with electrical automation technology

Electric drives are increasingly replacing pneumatic technology for many reasons. One of the reasons is that the price-performance ratio of the electrically driven motion control has continuously improved and they are more precise than pneumatic drives. For this purpose, we offer several training packages that deal with servo drive technology, servo brake systems and stepper motor drive technology.



8.2 Learning solutions for solar and wind energy technology

There is currently a shift in energy supply towards renewable sources such as solar, wind, hydroelectric, biomass or geothermal energy in order to reduce dependence on fossil fuels. This change also leads to changed qualification requirements and job profiles in the world of work.

Festo Didactic therefore offers various learning solutions in connection with renewable energies and modernisation of electrical networks and infrastructures.

Electromechanics

Our flagship products are an electromechanical learning system and the electrical energy technology programme. This offers a wide range of courses that cover basic electrical energy topics in depth – such as AC and DC circuits, power transformers, rotating machines, AC transmission lines, industrial controls and power electronics.

The programme builds on the knowledge acquired by the students in the basic courses and then provides training in more advanced subjects, such as power generation from renewable resources. These include wind and solar energy in private households, large-scale electricity generation from hydroelectric and wind power, smart grid technologies and the storage of electrical energy in batteries and in drive systems for small electric vehicles and cars.



Wind turbines

The so-called nacelle training system for future wind-turbine technicians is a completely scaled-down version of commercial wind-turbine nacelles and thus an excellent replacement for expensive equipment in practice. To cover further training content, electrically or hydraulically adjustable pitch hubs for rotor adjustment can be connected to the system. The three-phase generator of the learning system makes it possible to deal with the topics of grid synchronisation and grid feed-in under realistic conditions.

In order to provide member schools with access to our training devices, Festo Didactic maintains a partnership with the Bildungszentrum für Erneuerbare Energien (education centre for renewable energy – BZEE).



You can find further information on our offer in the field of wind power in our virtual showroom:
www.festo-turnkey-solutions.com/windpowertraining

8.3 Learning solutions in water management

Even though water covers 70 per cent of our planet, it remains a scarce resource. Ensuring a stable and sustainable water supply for the population and industry is a major challenge. This requires specialists with the appropriate qualifications worldwide.

Management skills, expertise in service and maintenance routines and efficient processes play a major role. Training in technology and management is the most important lever here. Several learning solutions from Festo Didactic cover water management and help to better understand how this precious resource can be used and protected more efficiently.

One of these learning systems is the Environmental Discovery System (short: EDS®) for water management. The EDS® for water management is a modular training system that presents the core processes of a water and sewage treatment plant in the form of a water cycle that starts at the source and goes the sewage treatment plant and back. The different stations introduce the students to the management of the water cycle.

There are many branches of industry that use, treat, and process water and handle wastewater in their activities and products: for example, in the food and beverage and pharmaceutical industries

(water as an ingredient), for mining (management of water levels in mines and treatment of the water used in the purification of raw minerals) and for the oil and gas sector (treatment of the water separated from crude oil), to name but a few.

Process control in various industry segments

This is why Festo Didactic also offers various learning solutions for process automation (PA) and closed-loop control technology. For students of process engineering processes and control engineering, models in small format with industrial components are an effective way to learn the basic principles and make things simpler.

The EduKit PA project construction kits can be used for this purpose. The modular production system (MPS® for short) PA compact workstations teaches the basics of process automation, while the MPS® PA stations teach the common applications of process automation.

In the in-depth study of the measuring and control technology required for industrial processes involving water, our learning solutions for level, flow, pressure, temperature, pH value and conductivity provide a flexible platform for meeting specific training requirements and learning with industrial-quality components.



8.4 Training factory for Industry 4.0

Digitisation places new demands on the technical skilled workers in industry. We approach this challenge with our training factory: a modular learning environment that enables training along an exemplary production process. Pilot training courses or process qualifications can be carried out there at any time during the working day and are flexible in terms of duration, content or number of participants, without disrupting serial production.

The cyber-physical platform models the stations of a real production facility and enables people to learn system programming, networking and other content such as safety, energy efficiency, data management, and the optimisation of the value chain.

The hardware is upgraded to a comprehensive learning system through modern accompanying media and e-learning offers on the → Festo Learning Experience (LX) learning portal. In this way, it is possible to understand on a small scale how technology works on a large scale.

In addition to illustrating manufacturing processes, the platform also shows how an integrated production management system (Manufacturing Execution System – MES) and a production line work together in an Industry 4.0 context, already taking into account topics that will shape manufacturing in the future such as artificial intelligence and machine learning.

The training factory consists of individual plant cells, which can be regrouped within a few minutes if necessary. The system is constantly equipped with the latest technologies and, thanks to its modularity and the exclusive use of open standards, can grow with the requirements and be used flexibly.

Accordingly, our training factories are to be found in the laboratories of schools and universities worldwide, as well as in industry training facilities. In this way, we provide access to Industry 4.0 technologies and applications and ensure that specialists and young professionals can prepare themselves for current and future changes in the world of work.

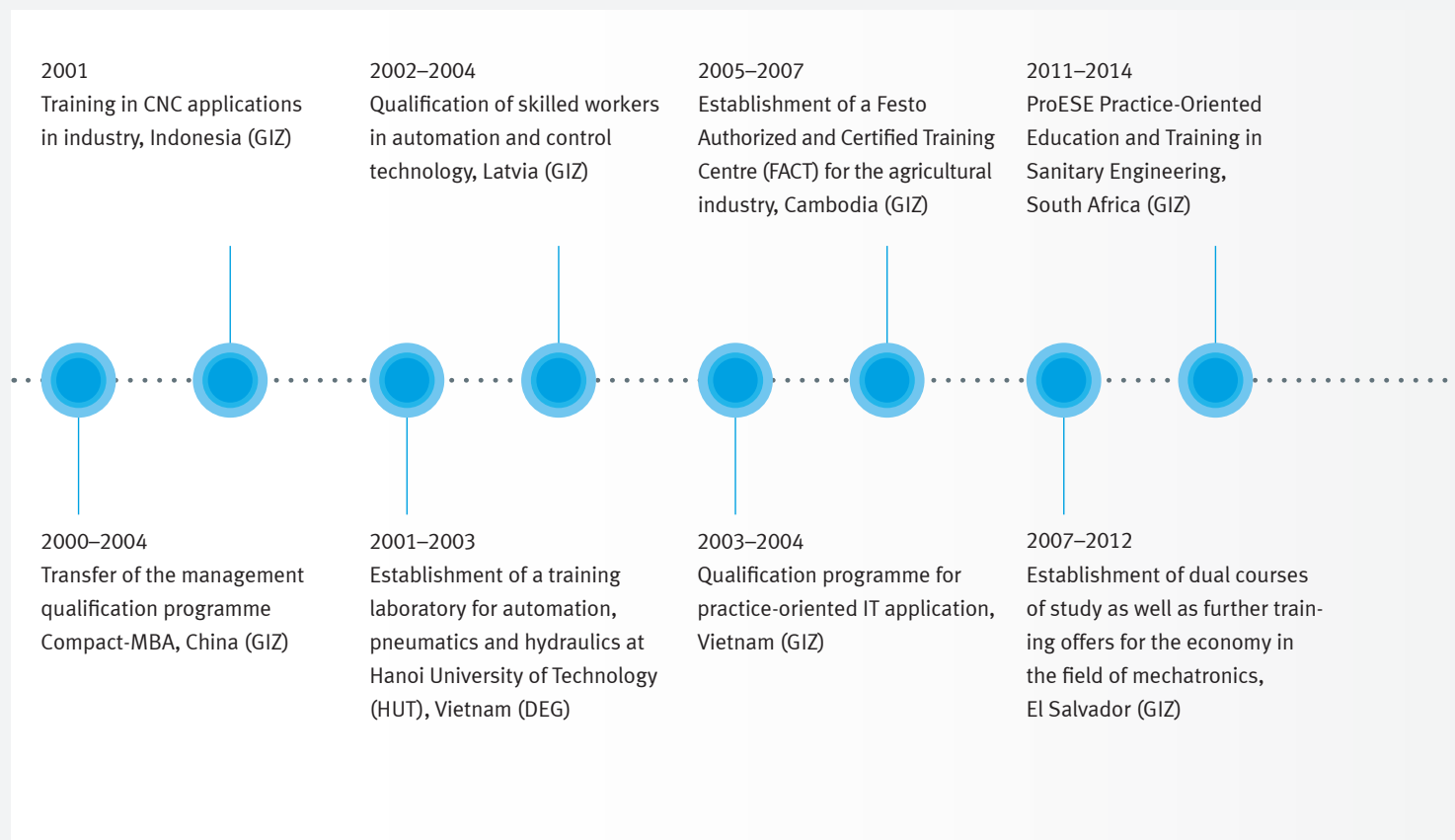


8.5 Public-private partnerships

Public-private partnerships (PPP) are partnerships between public authorities, such as a government agency, and private sector companies. In terms of content, these partnerships revolve around the delivery and provision of goods or services to the public. In our Didactic business sector, we have been implementing PPP projects

around the globe since 1999. Our cooperation partners include the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Deutsche Investitions- und Entwicklungsgesellschaft (DEG). All projects have local development aid as their goal, which in turn enables us to drive innovation and further develop our product portfolio. → [GRI 102-12](#)

Successfully implemented PPP projects from Festo Didactic:





2016–2018
Capacity Building Program in
Darkhan, Dornod and Dalanzadgad,
Mongolia (GIZ)

2013–2015
ProEducat Practice-Oriented
Education and Training in Water
Technology, Peru (GIZ)

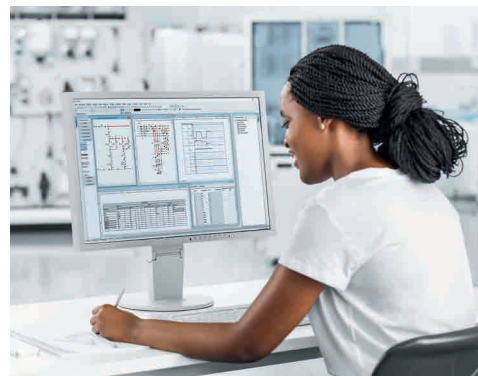
Capacity Building Program in Mongolia

As part of our commitment, the Capacity Building Program project was launched in Mongolia in 2016. The aim of the joint project is to establish a basic and further training programme in the field of mechatronics at the polytechnic in Darkhan. To this end, the personnel and institutional capacities of the polytechnic are to be strengthened so that it will be able to offer a training course in mechatronics in the future. In addition, it is to function as a further training centre for teachers from other vocational schools and for company employees – especially in-house instructors.

The following services in particular will be provided through making complementary use of specific basic and further training offers from Festo Didactic and specific instruments from GIZ:

- Equipping a learning workshop at the polytechnic with the necessary practical training material and learning systems from and by Festo Didactic
- Development of a skills-based curriculum and preparation of teaching and learning materials for a mechatronics training course by Festo Didactic
- Basic and further training of the teaching and management staff of the polytechnic within the framework of training measures in Germany and Mongolia as well as on-the-job training by GIZ

GIZ closely coordinated all the measures carried out in the joint project with the relevant partner organisations and the Mongolian Ministry of Labour. In addition to GIZ and Festo Didactic, the Mongolian Ministry of Labour and the management of the Darkhan polytechnic were involved in leading the project. GIZ set up a control unit which supervises the work of the steering committee and prepares and follows up on corresponding meetings of the committee.



8.6 Commitment in Africa

The population of Africa is growing rapidly: while the continent had about 350 million inhabitants in the 1950s, it now has more than 1.3 billion. According to forecasts, this number will increase to 2.0 billion in 2030 and 3.0 billion in 2050.

In light of this, technical basic and further training can be perceived as a significant driver of individual prosperity, sustainable economic development and the promotion of industry – on the African continent itself as well as throughout the rest of the world. In Africa, as in all regions of the world, Festo Didactic is a partner of governments, bilateral and multilateral development organisations and banks, as well as the private sector and industry.

With a focus on 15 countries in five African clusters, Festo Didactic is available as a contact for pan-African organisations in the field of education. Together with the African Union Commission (AUC), the Agency for the Development of Education in Africa (ADEA), the New Partnership for Africa's Development (NEPAD) and the African Development Bank, we are constantly searching for educational models that can guarantee affordable and scalable vocational training for African youth.

We also work in close cooperation with international institutions such as the World Bank, UNESCO (United Nations Educational, Scientific and Cultural Organization) and UNIDO (United Nations Industrial Development Organization).

In doing so, we want to implement ideas for needs-oriented educational concepts that can provide millions of people with a job in both digital and practical formats after they have completed secondary school.

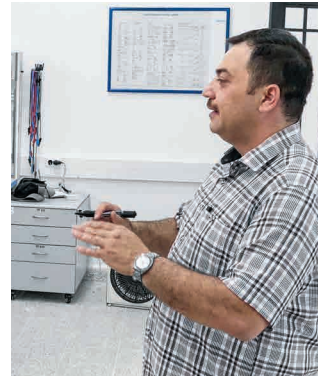
Technical basic and further training for women

Education for women also plays a role here since it can ensure a long-term gender balance in society. In addition, non-formal educational models are being explored, such as education in social clubs, where students can learn in out-of-school groups through funding from charitable foundations.

In a partnership form, we also seek cooperation with industrial associations that see basic and further training as an opportunity to prove themselves as a global competitor by exporting quality products.

In various sectors such as food, mining, textiles and energy (including renewable energies and water), better resource conservation can therefore be achieved with appropriate educational concepts.

In addition, the industrialisation of Africa contributes to the prosperity of the continent, its population and the rest of the world. Our commitment in Africa will certainly only have an impact in the long term, but with a growing middle class, Africa offers great opportunities for the world and the prosperity of mankind.



8.7 Technical education and training for Syria

The Syrian civil war devastated social structures and forced millions of refugees to seek stability in a new environment inside and outside their country. The crisis of the last eight years has, among other things, destroyed many academic institutions that provided millions of students with access to quality education.

Festo Didactic and its local partner STS are working on establishing new laboratories for the industrial engineering faculty at the universities in Damascus and Aleppo, based on long-standing relations with UNIDO.

Within the framework of a teacher training programme, we were able to contribute to the creation of a new educational ecosystem that gives many young students a hopeful and confident look into the future.

University laboratories equipment

The university laboratories were equipped with learning solutions and e-learning offers for pneumatics, hydraulics, electropneumatics and PLC system technology. Festo Didactic also took care of:

- All associated laboratory furniture
- Teacher training
- E-learning/FluidSIM simulation software
- Workbooks
- The revitalisation of the learning spaces

Training as the key to reconstruction in Iraq

In parallel, we are working with UNIDO on the rehabilitation of the mechatronics faculty at the University of Mosul in Iraq. Similar to Damascus and Aleppo, in Mosul we are creating an environment for the next generation of leaders who are committed to the industrialisation of their economies.

Trained workers will remain the key to the reconstruction of Syria and Iraq in the years to come. Festo can make an important positive contribution through its core skill in vocational technical training.



8.8 Bionics4Education

As part of our Corporate Educational Responsibility (CER), we want to get children and young people excited about science and technology (STEM subjects) and thus create the basis for technological excellence at an early age.

For this reason, an interdisciplinary team of engineers, designers, computer scientists and biologists from our Bionic Learning Network, together with experts from Festo Didactic as the education provider, has developed the Bionics4Education learning concept. Bionics and technical education will be sensibly combined with each other in the form of a modular system for trying things out and learning.

A bionics modular system for practical learning

The idea for Bionics4Education arose from the countless preliminary models that were created during the development phases of individual bionics projects. The lessons from our bionic scientists should not only be preserved in this respect, but didactically prepared and made available to young people.

Against this background, the modular system is designed as an open source of knowledge. School classes, work groups or inquisitive individual researchers can thus either start experimenting with bionics using the equipment in the modular system or organise and set up everything themselves from A to Z.

Digital learning environment

In addition to the hardware, there is a digital learning environment with further content about bionics as well as helpful tips for practical implementation in lessons or at home. On the online platform, learners can find out more about how the Bionic Learning Network works – for example in the areas of robotics, coding and 3D printing.

Excellent educational concept

Bionics4Education combines analogue and digital learning and thus awakens interest in future STEM professions and study courses. For this special commitment, we were awarded the 18th Worlddidac Award. Festo has also been recognised as a STEM-oriented company.



At www.bionics4education.com, you will find further information and teaching materials on all aspects of bionics.

8.9 Technical education the serve the public good

'We are the industry partner when it comes to qualification in our region' – this is the vision of the Festo Lernzentrum Saar (FLZ) in St. Ingbert-Rohrbach. Since 1994, we have been offering industrial companies and their employees seminars, consulting services, joint training and funding consulting services here. To coincide with the 25th anniversary in 2019, a new training factory was opened in which everything revolves around further training in the context of Industry 4.0 and lean management approaches.

Participation in the events is open to all those interested in continuing further training. In addition, examination and certificate courses from the Chamber of Industry and Commerce (IHK) as well as training courses to become a state-certified technician are also part of the educational offer.

Entrepreneurial commitment to education

This educational mandate is not only a major concern for us, it is also laid down in the corporate form of the Lernzentrum as a non-profit limited-liability company (gGmbH).

Instead of primarily pursuing economic goals, the focus of the non-profit limited-liability company is on further developing our educational vision in an entrepreneurial way through reinvestment.

The surplus funds of the Festo Lernzentrum are used, for example, to promote new education and research projects on digitisation or to invest in our training factory. In addition, we use the proceeds to support other non-profit organisations with an educational mission and are involved in regional STEM associations.

Support for projects in the field of youth and technology

For example, the FLZ is a member of the Wissenswerkstatt Saarbrücken e. V. The association is supported by several companies in the Saarland and offers young people free courses in mathematics, computer science, natural sciences and technology in order to get them interested in these topics as well. We are also a member of the MINT-Campus St. Ingbert, which pursues the same objective.



Photo: © Institut der deutschen Wirtschaft Köln Medien GmbH



Commitment to education for children and young people

Festo is also committed within the Lernzentrum to introducing young people to technology and getting them interested in it. With three programmes, children and young people are offered points of contact and fun with technology throughout their lives, from nursery and primary school to the point where they are choosing their career path.

The Begeisterung Technik programme

The Begeisterung Technik (enthusiasm for technology) programme was set up in 2005. Since then, more than 600 pupils aged 13 to 16 have been taught basic pneumatics and electrical engineering knowledge in free courses.

The Abenteuer Technik programme

In order to get children excited about technology at an early age, the 2010 programme was extended to primary school pupils aged eight to ten with Abenteuer Technik (technology adventure). For this purpose, we have developed a curriculum that allows teachers to offer age-appropriate technical experiments once a week.

The Erlebnis Technik programme

Since 2014, the Erlebnis Technik (technology experience) programme has also been involving kindergarten children by conducting age-appropriate experiments in a playful form once a week. Questions such as 'What is a baroscope?', 'How do you build a magnet?' and 'How much air do my lungs hold?' are intended to arouse interest in technical topics among the three- to five-year-old 'fireflies'.

Best practice for other companies

In 2010, the FLZ was awarded the first prize 'Unternehmen im Saarland aktiv & engagiert' for this commitment. The programmes can be used as best practice for other companies and can therefore be multiplied many times over. Festo is pleased to offer its support in this respect.



You will find additional information at:
www.festo-lernzentrum.de/wir-ueber-uns/engagement/

8.10 WorldSkills professional world championship

At Festo, technical education is the focus of Corporate Responsibility for current and future generations. Since 1991, we have been supporting the WorldSkills championships as the leading platform for international benchmarking in vocational technical training.

Festo takes on several different roles at the event: as a global industry partner, technical supplier, exhibitor and as a competitor with our Festo trainees. We are involved in various competitive disciplines such as mechatronics and water technology and qualify for the new discipline Industry 4.0 and digitisation.

We know our responsibility as a learning company: as an employer, as a training operation, as a hardware and solution provider in the field of technical training and as a promoter of the dual system for vocational technical education.

We draw the motivation to be repeatedly among the best in technical training and to continue to be at the forefront from many sources: working flexibly in a team, learning in a group together with other disciplines and ways of thinking, continually researching technology and working on the intuitive, future-oriented orientation and development of learning solutions.

It is precisely these qualities that the young people in the WorldSkills competition need: they must work consistently and flexibly under pressure, have optimal input and exchange with their partners, master the technologies in various details and be intuitive and inquisitive when faced with seemingly unsolvable tasks.

Our aim is to optimally support these people in universities, schools and industries with our learning solutions and services and to move them forward.

WorldSkills 2019 in Kazan

At the 45th WorldSkills championship in August 2019 in Kazan, Russia, 1,400 young and talented people from 66 countries and in 56 professional disciplines met to win medals for top positions. In addition, some 1,500 experts, teachers and educators from the global vocational education and training scene were on site to exchange views on trends, innovations and digitisation in vocational education and training.

In addition to our commitment to WorldSkills, we are passionately involved in other projects with a focus on youth, technology, knowledge and education:

FIRST® LEGO® League

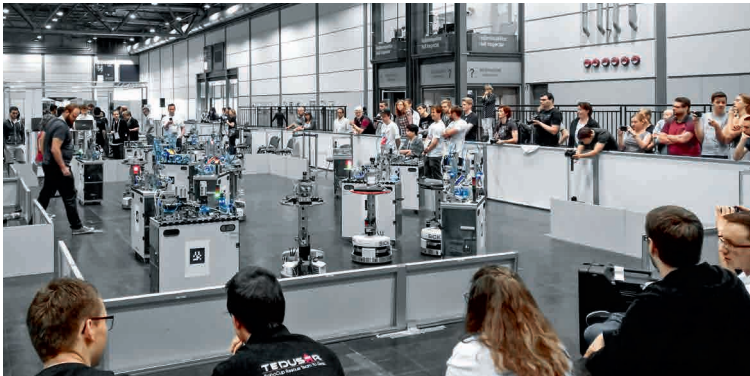
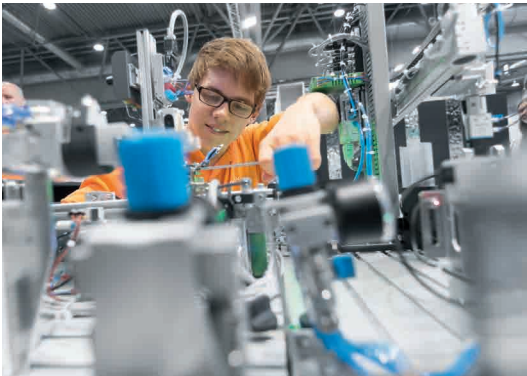
FIRST® LEGO® League is a support programme that introduces children and young people to technology and scientific research in a playful way. The annual research and robotics competitions motivate young researchers to solve tasks on specified topics with innovative ideas and team spirit. On the day of the competition each team goes through three jury evaluations – robot design, research and teamwork – and takes part in a robot game over three rounds with the specially developed robot.

RoboCup

The international RoboCup community has the aim of fostering the development of intelligent robots through competitions and providing scientists and students from all over the world with an attractive test environment for their robots. As a supplier of the RoboCup Logistics League in Leipzig, Festo has been supporting the competition and its participants for many years and helping them to progress.

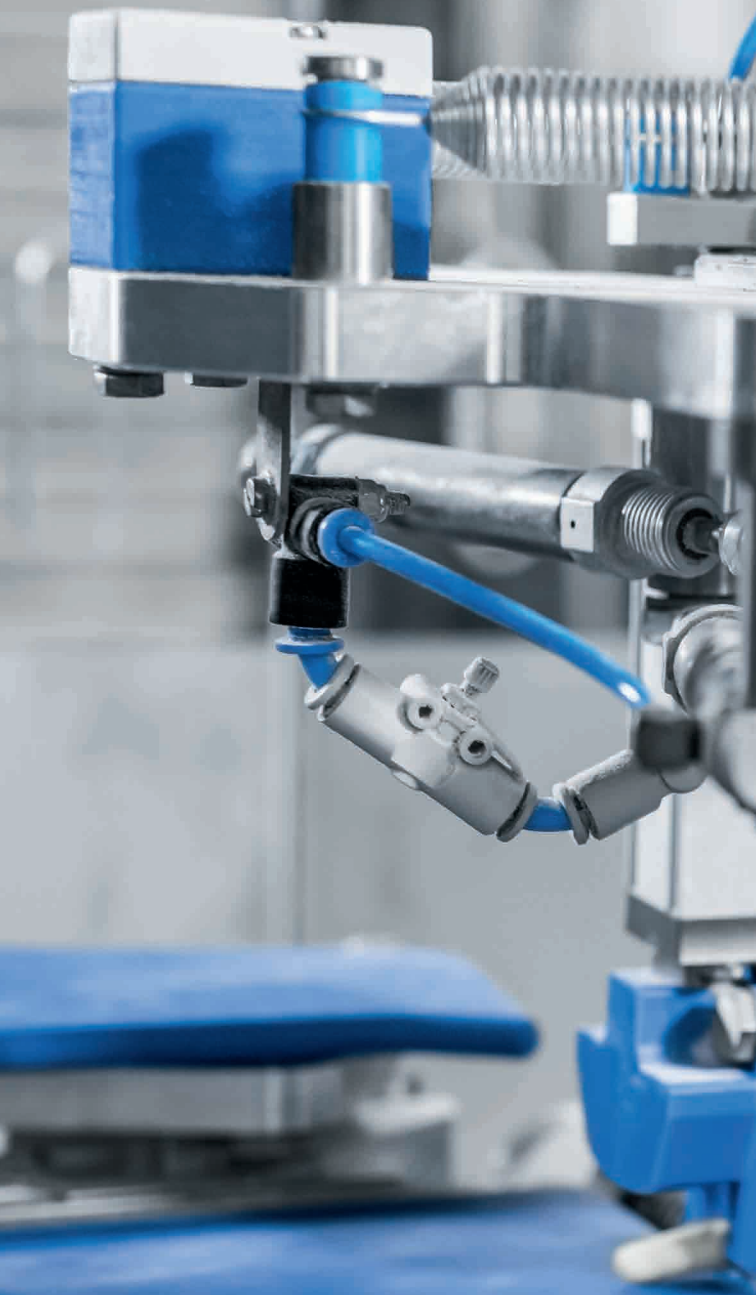
Wissensfabrik

In addition, we have been involved for several years in the non-profit organisation Wissensfabrik (knowledge factory) and there in the educational partnerships KiTec (children discover technology) and NaWi (discover natural sciences).



9. Impact on our customers and society

The design of today's industrially manufactured products and their production methods mean that sustainable resource use is no longer possible. Every year, with the consumption of industrially produced goods, humanity consumes more resources than the earth can regenerate within one year. Nevertheless, it is thanks to industrial production alone that such a rapidly growing world population can be supplied at all. In addition, automation leads to sustainability effects for our customers and their industries – for example, by increasing productivity or relieving them of monotonous and strenuous work. This shows what social impact automation technology can have. → [GRI 103-1](#)





9.1 Automation and population growth

The growing world population and its striving for prosperity lead to increasing consumption of products with consequences we can see today. The world economy and the global gross national product are growing. The earth's resources are being used up faster than they can be regenerated.

This leads to the question: how can the prosperity of the world population be increased in such a way that the world's resource consumption is at least in balance with its ability to regenerate? As a manufacturer of automation technology, products and their production processes have the greatest leverage effect for Festo.

9.2 Effect of automation technology

Automation has a fundamental impact on society as a whole and an effect in all industries. These include being free of physically demanding routine work, increasing the effectiveness and productivity of human activity, using the increase in effectiveness and productivity in a humane way, and avoiding the inhumane effects of automation. The reduced humanity in automated processes makes corresponding ethical orientations for action necessary.

Being free of physically demanding routine work

At Festo, we see one of our contributions to society in the fact that automation relieves people of manual activities and frees them from monotonous tasks. In return, people can devote themselves to other things such as personal further training or development, which leads to a potential increase in innovative strength. Thanks to the automation of routine tasks, our customers can use the manpower of their employees for other purposes. For example, for activities in which creativity, cognitive intelligence or social interaction with other people are indispensable.

Avoidance of activities that are hazardous to health

We are also concerned with making work safe for people and ensuring that it is not detrimental to their health. By automating certain processes, it is thus possible to avoid working environments that are harmful to the health of the user.

For example, an automated painting system ensures that people here do not have to work under conditions that are hazardous to health due to the emissions of the liquid paint.

Ergonomic working

Especially in assembly and logistics, however, there are many repetitive operations that are physically demanding and cause fatigue. This is where automation technology provides support and helps employees to avoid physical injury. In addition, the worker can perform their work more precisely and in a more concentrated manner and thus more efficiently. Among other things, this is one way of handling demographic change in production.



Balancer systems to relieve strain in assembly and logistics

Anyone who wants to feed loads ergonomically on a permanent basis needs technical support. Since 2018, with the YHBP from Festo, we have been offering a servopneumatic drive solution for balancer systems which can perform this task safely and thus benefit the health of our customers and their employees.

→ GRI 416-1

With such a servopneumatic balancer, large loads from 30 to 999 kilograms can be moved easily and safely with just two fingers. The YHBP automatically detects the weight of the load and automatically adjusts the compensating force to it. It even does this when loads are added or removed in a state of

suspension. This means that even load losses can be absorbed. Particularly in the automotive and packaging industry, production processes with a high number of variants can thus be designed with particular flexibility. Thanks to its intuitive control, the system can be operated effortlessly.

In the safety variant, the drive solution corresponds to performance level d in accordance with EN ISO 13849-1, so that safety is always guaranteed in the event of a defect component – even if there is a voltage failure or sudden pressure drop.

The balancer supports all activities where heavy loads have to be moved in defined, repeatable sequences, such as

- When loading and unloading
- When stacking and destacking
- When assembling in production lines
- When loading and palletising
- When turning, swivelling, tilting and emptying containers

In the automotive industry, balancer systems can be used to move and precisely adjust heavy components such as in the assembly of shock absorbers, engines, dashboards, tyres, windscreens, doors and seats. They are responsible for loading and transporting heavy containers, packages and goods in the food and electronics industry.



The balancer systems in use

The following video shows how the servopneumatic balancer creates sustainable added value in the assembly of car bodies:

www.festo.com/crreport/balancer

Increase in productivity and economic effects

‘We are the engineers of productivity’ – this has been Festo’s credo for years. Repetitive activities with strict cycle times, where a high degree of accuracy or speed is required, can be carried out reliably and largely independently with the help of automation technology, which is usually much more productive than manual execution.

Furthermore, automation leads to a reduction in fixed costs and enables new working time models that are decoupled from value creation. It therefore has both a commercial and economic impact on the industry. Moreover, goods can be produced in large quantities at low prices in order to satisfy the basic material needs of the entire population.

By ensuring that our core business contributes to better and healthier working conditions, we make a direct contribution to SDG 3 (good health and well-being) and SDG 8 (decent work and economic growth).

Ethical responsibility for the impact of automation

Festo assumes ethical responsibility by excluding certain business areas, such as military and nuclear technology, as industries we supply. We defined this several years ago in an internal Corporate Instruction, which was initiated by the shareholder families.



9.3 Indirect impact of our business sectors

We make an indirect contribution the SDGs via our value chain. As the Festo Group, we are active in the factory automation and process automation sectors as well as in technical basic and further training. → [GRI 102-6](#)

Factory automation

The most important sectors of factory automation include the electronics industry, the automotive industry, the food industry and end of line packaging. The food industry indirectly contributes the second SDG (no hunger).

Providing enough food for the growing population is a key societal challenge – we will need to feed around ten billion people in 2050. This is not only a task for agriculture and politics – automation technology also makes its contribution.

Our automation components are used, for example, in sorting machine systems for bulk materials. These detect, for example, bad grains of rice and separate them from the good grains within milliseconds using fast-switching valves with compressed air.

The automated looping of pretzels is another example of the numerous applications that our customers can carry out with the help of our components and in which it becomes clear that we are making a contribution to feeding the world's population.

Process automation

In the field of process automation, we develop products that can be used for automatic wastewater processing. The entire system landscape of waterworks, for example, can be equipped with a high degree of automation so that the systems can be monitored and controlled centrally by the employees.



One of the largest and most modern control systems of German water supply companies is the Langenau plant: up to 5,000 pumps, closing devices and equipment of the entire drinking water production, treatment and distribution operation require a control system comprising around 300 automation devices. Festo is thus making a positive contribution to SDG 6 (clean water and sanitation facilities).

Technical basic and further training

As an innovation leader in factory and process automation, besides the technical solution, we always keep an eye on the people who operate the equipment. With Festo Didactic, we have been investing in new markets, primarily in education, since the 1960s. We bring our training expertise to schools, vocational colleges, universities and companies and inspire people there with a wide range of education services for technical courses.

Education is an important building block for sustainable development. It promotes equal opportunities and opens up new perspectives for the future for people all over the world and thus makes its contribution to the economy and society. Lifelong learning is elementary these days for individual employability and company success. As skilled workers are becoming scarcer worldwide, it is important to develop existing potential in economies and companies by means of innovative training and development concepts.

Adapting the qualification of people to the progress made in industry and developing it especially for the automation sector therefore remains a permanent task worldwide. As Festo Didactic, we set international standards for technical basic and further training and make our contribution to tomorrow's knowledge-based society and thus actively contribute to the fourth SDG (equal opportunities and high-quality education).

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11. Report profile

In this sustainability report, the Festo Group informs its stakeholders about the 2020+ sustainability strategy and the sustainability activities that happened from 2017 to 2019. The requirements of the German CSR Directive Implementation Act do not impose any obligation for sustainability reporting. Rather, Festo does so because it is committed to the topic of sustainability.

GRI standards and UN Sustainable Development Goals

The Festo Sustainability Report 2017–2019 was compiled in accordance with the international standard for sustainability reporting by the Global Reporting Initiative (GRI) in the ‘Core’ option. → [GRI 102-49](#), [GRI 102-54](#)

We have supplemented this data with further information on strategically relevant and current topics, also with regard to the Sustainable Development Goals (SDGs). → See page 12 for more details. → [GRI 102-46](#)

Reporting period and editorial deadline

The document is available in German and English and mainly relates to the period from 1 January 2017 to 31 December 2019. All forward-looking statements in this report are based on general assumptions at the time of going to press. The editorial deadline for this report was 30 September 2020. → [GRI 102-50](#), [GRI 102-51](#)

The last Festo Sustainability Report (based on G4) was published in March 2017 as a print version and interactive PDF and covered the 2016 financial year. The publication date of the next Festo Sustainability Report was not yet available at the time of the above editorial deadline. → [GRI 102-52](#)

External and internal audit

By using the GRI standard, we want to ensure transparency of information and comparability for the public. There was no external audit of GRI compliance. → [GRI 102-56](#)

Our environmental management system according to ISO 14001 and our quality management system according to ISO 9001 are regularly reviewed by external auditors.

Editorial note

Please note that Festo SE & Co. KG traded under the name Festo AG & Co. KG until 30 January 2020.

Contact persons and project participants

Numerous employees of the Festo Group worked on the Festo Sustainability Report 2017–2019. We will be happy to answer your questions and, if necessary, forward them to the relevant specialist departments. → [GRI 102-53](#)
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