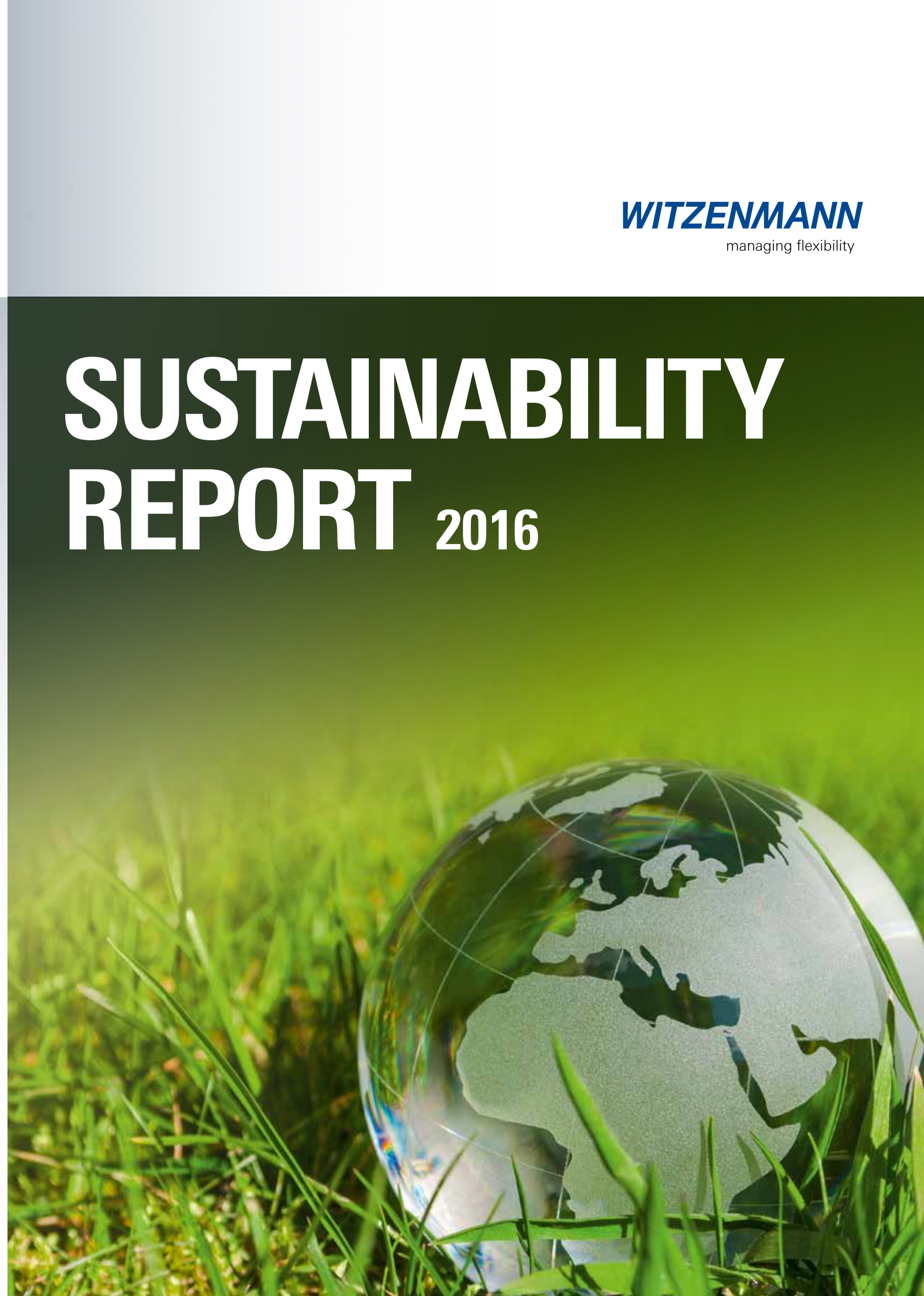


SUSTAINABILITY REPORT 2016

Witzenmann GmbH

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True to our principles
Witzenmann is a family-run company where the people in charge have always placed a high value on the concept of sustainable business.



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ON A SOLID FOUNDATION

Geopolitical crises still threaten the global economic situation. The current economic situation appears in nuances to be more even difficult than in 2015. Demand is stagnating in traditional industrial countries. From the emerging markets – particularly Brazil, Russia and China – we are experiencing a rather weak demand for industrial products.

2015 was a successful fiscal year. We were able to boost turnover significantly in the group. We owe the growth primarily to the increase in turnover of our subsidiaries abroad. At the Witzenmann GmbH, we also managed to achieve a turnover of more than 300 million Euro for the first time and have thus performed better than expected. This good development in sales is also partly due to positive currency effects and has had a favourable impact on the result.

Reserves for strategic investments

The earned profit has remained predominantly within the company. Our equity ratio has increased again and is now just below 59 %. Hence, the Witzenmann Group is extremely well positioned financially to react to any possible economic setbacks or to make strategic investments.

High pressure for results

Business development has become more difficult this year. The weakening of global markets is becoming widespread. Owing to the weaker development in sales, we have to intensify our efforts in order to still remain profitable. With an average operating profit of approximately 7 – 8 % in the group, substantial differences can be seen between the individual companies when examined in detail. We are aiming at an average earnings target of 10 % for the companies of the group.

Diverse future prospects

This means we have to conduct our operations even more dynamically and economically. This is done with foresight by taking the numerous market-induced, technological and social trends into account that are changing our world at a rapid pace. The most important starting points are listed below:

- Despite the tendency towards E-mobility, many potentials still exist on the global automotive components market, particularly due to more stringent emission standards.
- Regardless of the type of drive concerned, our products and applications offer us diverse potentials for still playing an important role in the automotive sector.
- As part of its internationalisation in the automotive sector, our group has created structures that also offer development opportuni-

ties of similar size in foreign markets for our business segments in industry, in the commercial vehicle sector and in technical building equipment.

- The variety of products and applications provides us the opportunity to greatly intensify business segments such as aerospace, pipe supports or technical building equipment that have been underdeveloped until now.

- Digitalisation is creating huge opportunities to profitably expand the business model, in the sale of standardised quality products or in the areas of Engineering and Service.
- Witzenmann Innovation Management and Business Process Management will also identify new products, applications and market opportunities that exceed the aforementioned opportunities, which are being developed and successfully marketed based on the existing engineering expertise.



T. Paschen

Philip Paschen
Dipl.-Ing./Dipl.-Wirtsch.-Ing.
Managing Director

H.-E. Koch

Dr Hans-Eberhard Koch
Chairman of the Board

G. Flöck

Dr Gerhard Flöck
Managing Director

A. Kämpfe

Dr Andreas Kämpfe
Managing Director

PRODUCT LANDSCAPES

Boasting a broad range of products, Witzenmann offers troubleshooting solutions for vibration decoupling, expansion compensation in pipelines, flexible mounting and conveyance of various fluids. Witzenmann acts as a development partner for its customers in the automotive industry, in industry, technical building equipment as well as in other markets including the the aerospace industry.



**INDUSTRIAL
APPLICATIONS**



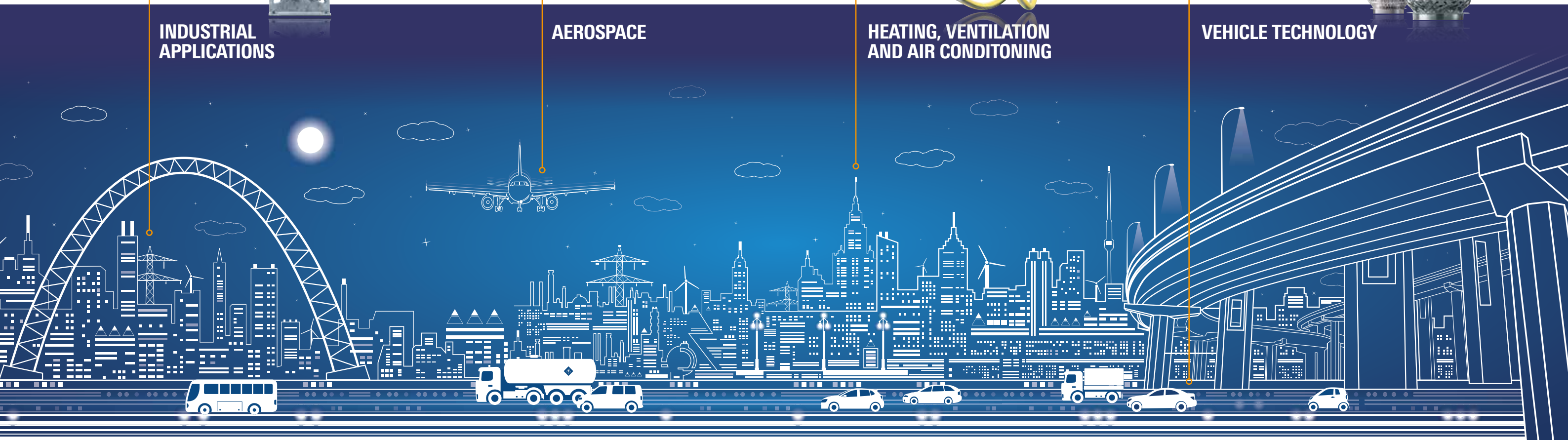
AEROSPACE



**HEATING, VENTILATION
AND AIR CONDITONING**



VEHICLE TECHNOLOGY



TRUE TO OUR PRINCIPLES

Witzenmann is a family-run company where the people in charge have always placed a high value on the concept of sustainable business.

By joining the United Nations Global Compact, Witzenmann is pledging itself to its 10 principles, which formulate clear requirements on the subjects of human rights, labour standards, environmental protection and fighting corruption. In accordance with the prescribed statutes, we have promised

to publish an annual report on our progress with respect to implementing these principles and supporting the UN objectives for sustainable development. The 2016 sustainability report documents the current status of our activities.



Companies that sign the Global Compact promise to ...

- ... support and respect the protection of internationally proclaimed human rights within their sphere of influence
- ... make sure that they are not complicit in human rights abuses
- ... uphold the freedom of association and the effective recognition of the right to collective bargaining
- ... uphold the elimination of all forms of forced and compulsory labour
- ... uphold the effective abolition of child labour
- ... uphold the elimination of discrimination in employment and occupation
- ... support a precautionary approach to environmental challenges
- ... undertake initiatives to promote greater environmental responsibility
- ... encourage the development and diffusion of environmentally friendly technologies
- ... work against corruption in all its forms, including extortion and bribery

The aspiration of sustainable business is firmly anchored in the history of the company. Company founder Heinrich Witzenmann considered himself to be in a position of particular responsibility with respect to his employees and his home town of Pforzheim. After more than 160 years ago in business, the fourth and fifth generations of the founder's family still have a majority stake in Witzenmann. Continuity and a long-term perspective are key guiding principles in our corporate strategy. We strive to make a special impact on the community, one that goes beyond our business activities. At a time of globalisation, this responsibility also applies to our corporate sites in different countries and on different continents.



MARKETING CAMPAIGN HOME OF ...

The sustainable management of a company is reflected in a strategy focused on long-term success, continuous improvements and special emphasis on corporate values.

These aspects are also to be found in the current theme campaign of the Witzenmann Group. In highly visual presentations, the significance of the group is emphasised and communicated with confidence in the "World of flexible metallic elements". The slogan "Home of ..." underscores the value of Witzenmann in the genesis of a new industrial sector.

The theme series addresses the different key markets with themes that are specifically tailored to them. The slogans "Home of ... Flexibility, ... Engineering, ... Innovation, ... Talents" emphasise the core competencies of Witzenmann – as a sought-after employer of technological expertise culminating in "talent forge" for skilled employees.

HOME OF TALENTS

Heute wie zu jeder Zeit gilt es, den Nachwuchs ins zu fördern und ihm gleichzeitig Raum für seine individuellen Talente zu lassen. In der Kultur wie in Industrie bewegen wir uns in diesem Spannungsfeld und führen die Nachwuchskräfte behutsam an die Herausforderungen heran. Die eigenen Erfahrungen weiter zu geben und den Erfolg fortzuführen gehört dem bewegenden Momenten in unserem Berufsleben.



WITZENMANN
managing flexibility

HOME OF ENGINEERING

Erfahrung, breites technologisches Wissen und die kontinuierliche Optimierung der Fertigungsprozesse machen uns zum gefragten Entwicklungspartner der Kunden in den verschiedensten Branchen. An 24 Standorten in 19 Ländern weltweit bieten wir Produktlösungen für die Schwingungsentkopplung, Dehnungsaufnahme, flexible Montage, das Leiten von Medien sowie... unser „Genie im Überfluss“.

www.witzenmann.de



WITZENMANN
managing flexibility

HOME OF INNOVATION

Bahnbrechende Veränderungen benötigen immer technisches Können, handwerkliches Geschick und eine zündende Idee. In der Musik wie im Engineering ist es die Persönlichkeit des Virtuosen, die diese Eigenschaften mit der Leidenschaft zur Erneuerung vereint und uns dadurch den Fortschritt bringt.

www.witzenmann.de



WITZENMANN
managing flexibility

HOME OF TECHNOLOGY

Eine besondere Inszenierung entsteht dann, wenn ein herausragendes Werk mit der Virtuosität der Interpreten verschmilzt. Musikern und Ingenieuren ist gemeinsam, dass durch ihre Inspiration, ihre Talente und ihre Kreativität aus einer allgemein zugänglichen Grundlage ein besonderes Werk wird. Wir begreifen dies gleichermaßen als Herausforderung und Verantwortung, unsere Technologien optimal für die Entwicklung führender Produkte und Innovationen einzusetzen.

www.witzenmann.de



WITZENMANN
managing flexibility

INTENSIVE EXPERIENCE

Social project with Witzenmann trainees



Education and training are high up the agenda at the Witzenmann Group. In addition to imparting specialist content, the training of young people also includes personality development. In line with our corporate mission statement, the assumption of corporate responsibility also plays a role. With a social project initiated for the first time, we succeeded in imparting intensive experiences to our trainees.

Under the motto "With each other – For each other", eleven commercial/technical and four business trainees started their first training year in a joint social project with the Lebenshilfe Pforzheim e.V. on 30.05.2016, which we were able to win over as a partner for this project.

The 15 trainees first spent two weeks of their daily work routine in the workshops of the Lebenshilfe. In addition to collaborating in the individual assembly groups and in the vocational training and office area, it was also necessary to raise the trainees' awareness concerning the needs of the employees. The aim was to develop concrete project work from these impressions and experiences for the relevant field of application. This was implemented in a second step in the course of a one-week practical phase together with four employees of the Lebenshilfe as well as a supervisor at the Witzenmann training centre.

The individual subproject included the repair and overhaul of obstacles for an miniature golf obstacle course as well as the development and construction of a test facility for end stoppers.

Openness for contacting people, overcoming reluctance to communicate, patience with oneself and with others as well as respect for the different talents of others are the valuable experiences that the young people were able to acquire.



This was also confirmed by the reflection rounds, in which the trainees evaluated and discussed their experiences and their own situations. One of these captured his experiences in a nutshell with very fitting words:

"Since we do not know what we have, we ask ourselves time and again, what we are lacking".

Following the successful pilot project, it has become very clear to us that the social project will now be a firm part of the Witzenmann training.

Lebenshilfe Pforzheim e.V.

The non-profit organization founded in 1962 is an association of people with disabilities, their parents, other relatives, legal guardians, specialists, sponsors and friends. The purpose, task and aim of the organisation is to empower people with disabilities so that

- *They can lead a life that is as normal as possible*
- *Their participation in the life of the community is possible*
- *They can determine their own lives.*

The organisation is a member of the State Association of Baden-Württemberg and the Federal Association of Counselling.



COMPLIANT

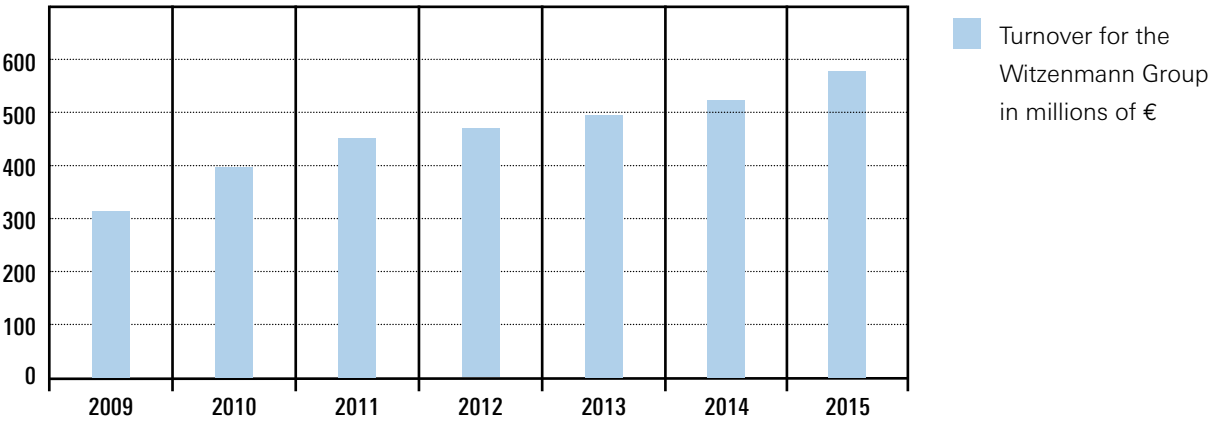
The “Acceptance of Benefits” guiding principles were published with the letter of the Executive Management on 25 October 2005 and are compulsory for all employees of the Witzenmann Group.

In accordance with these guiding principles, all employees of the Witzenmann Group are obliged to discharge their duties in an objective manner. As the acceptance of benefits can jeopardise or completely rescind this objectivity, any suggestion of being susceptible to accepting personal benefits while carrying out their professional duties is to be avoided. In addition, it is made clear that corrupt behaviour is a punishable offence and is contrary to an employee's obligation to discharge his/her professional duties in an objective manner.

The guiding principles define the different types of benefits and specify the criteria for benefits that either require or do not require approval. They also express anti-corruption codes of conduct. The “Acceptance of Benefits” guiding principles are stored on the intranet of the Witzenmann Group.

FINANCIAL DATA

Turnover trend



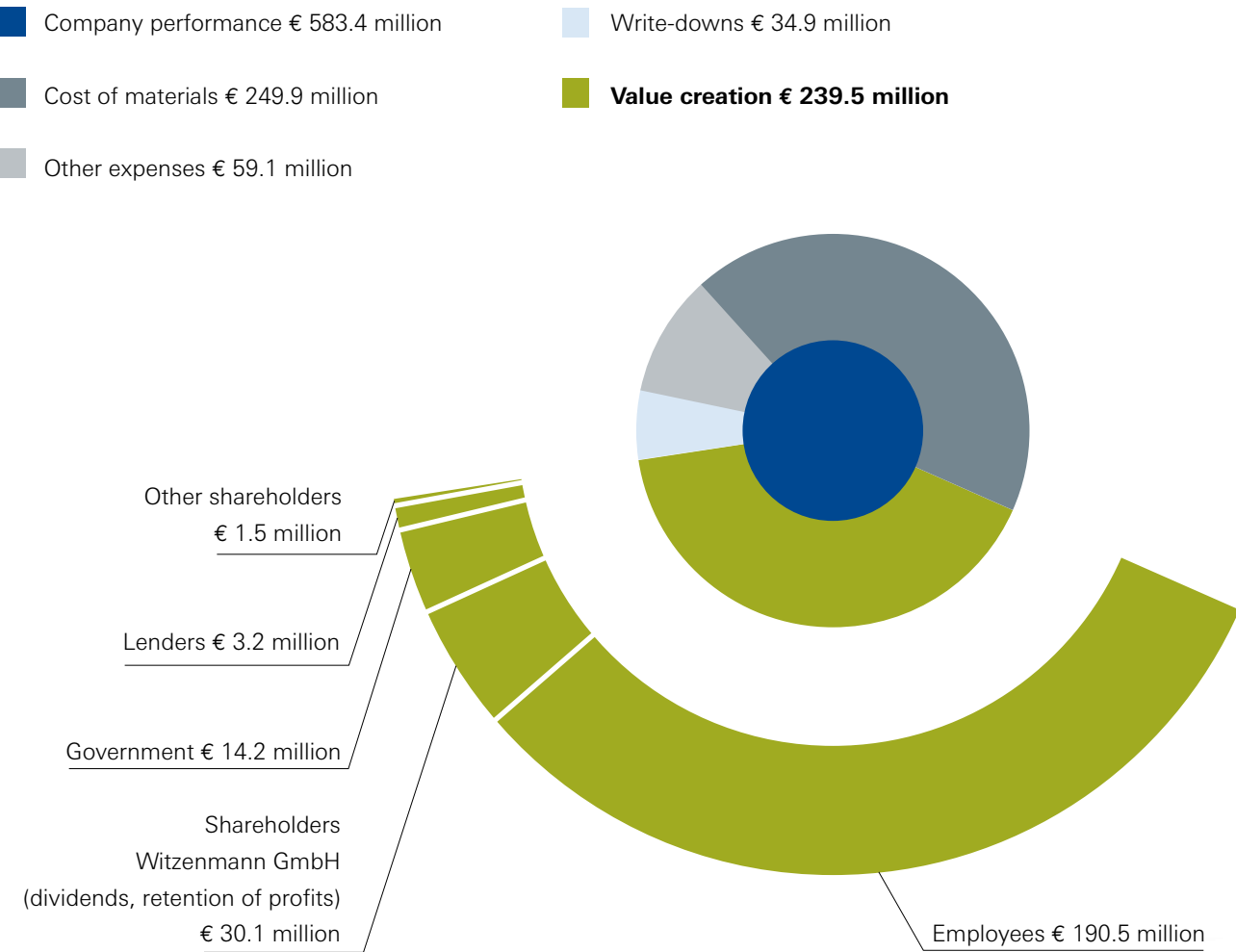
Financial data for the Witzenmann Group

Turnover		2013	2014	2015
in total	Millions of €	497.1	525.4	577.9
in Germany	%	33.5	33.4	30.4
in Europe (excl. Germany)	%	33.1	31.4	30.8
in America	%	18.4	19.8	21.5
in Asia	%	14.7	15.1	17.0
in Africa	%	0.3	0.3	0.3

Turnover by sector				
Automotive industry	%	53.9	56.7	62.7
Industry	%	37.7	35.8	30.0
Technical building equipment	%	7.2	6.5	6.3
Aerospace	%	1.2	1	1.0

Investment and equity				
Investments	Millions of €	30.9	41.6	37.5
Write-downs	Millions of €	28.1	29.7	34.5
Equity ratio	%	51.7	52.9	58.8

Value creation of the Witzenmann Group 2015



Value creation

Value creation is produced from the company performance minus expenses, write-downs and costs of material. It quantifies the Witzenmann Group's contribution to private and public income. The graph above shows how this contribution is distributed among all the parties involved.

GLOBAL COMMITMENT



The Witzenmann Group has promoted its internationalisation strategy since the 1990s. The products manufactured at the individual subsidiaries are mainly intended for the respective local market. The development of the locations has led to an extensive know-how transfer to the individual regions.

In the emerging markets in particular, development of the sites also contributes to improving the living conditions of the people there. In line with the guiding principle of the Witzenmann Group companies regarding social responsibility and responsibility to society, the individual Witzenmann subsidiaries also make a contribu-

tion to their communities that goes far beyond their economic activities. In addition to lending its support to purely charitable projects, this also includes sponsorship measures. The financial backing of regional cultural facilities and support of schools and higher education establishments plays a key role at the headquarters.

It is also worth mentioning employees' involvement in hands-on projects such as their active support of a "duck race" held by trainees or the sale of home-baked cakes – both of which were in aid of local or national charitable organisations. A whole host of examples can also be found at our subsidiaries.

Witzenmann Benelux

- Collaboration with sheltered workshops and enterprises (garden maintenance, housekeeping)
- Donations to non-profit organisations and initiatives (Children's Cancer Association, Child Focus and Diabetics Association)

Witzenmann do Brazil

- Support of social projects
- Support of the "World Environment Day" on 5th June: Opportunity for employees to plant tree seedlings

Witzenmann Korea

- Cooperation with the Shinbang Elementary School. Sponsorship and support measures for various school projects (focal points: intercultural cooperation, globalisation and information technology)
- Agreement with the neighbouring Shinbang village community to sponsor social projects

Witzenmann Mexico

- Support of a day care centre
- Support of an orphanage

Witzenmann Opava (Czech Republic)

- Collaboration with the local vocational school
Internships: 5 – 10 students per year
- Financial support of school activities
- Collaboration with the local technical college
Internships 5 – 10 students per year
- Financial support of sporting activities, e.g. bicycle racing, motorcycle racing, tennis
- Financial support of the "Joy Fest" event for disabled people
- Financial support of the "Knizkovsky" choir
- Financial support of the extracurricular activities of children, "Junak" project

Witzenmann Russia

- Financial assistance for pensioners with low income, families with sick/handicapped children
- Annual "German language week" in Ufa
- New Year's celebration for children
- Excursions for pupils and students
- Cooperation with the local university in Ufa
- Support of the Bashkir School of Ballet

Witzenmann Slovakia

- Promotion of sport and cultural activities of the employees
- Support of the Cykloclub (cycle racing team)

EMPLOYEES & SOCIAL POLICY

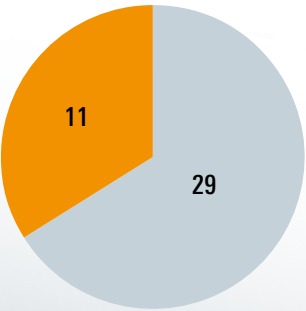
Workforce (as at 31.12.)

Witzenmann Group		2013	2014	2015
Total number of employees	People	3,617	3,756	3,941
in Germany	People	1,946	1,927	1,931
in Europe excl. Germany	People	1,026	1,103	1,200
in America/Asia	People	645	726	810

Witzenmann Academy				
Employees on the High Potential programme	People	12	11	11
External costs for training and professional development	€K	571	526	519
Number of seminars	Number	332	233	224
Participants in training and professional development seminars	Number	507	425	450

Witzenmann GmbH				
Total number of employees	People	1,680	1,659	1,658
Non-manual workers	People	658	657	658
Manual workers	People	940	925	926
Apprentices/trainees	People	82	77	74
Proportion of women	%	19.6	19.9	19.7
Proportion of men	%	80.4	80.1	80.3
Number of part-time employees	%	6.7	6.5	7.4
Severely disabled persons & persons regarded as such	People	67	71	80
Average age	In years	42.2	42	42
Average length of service	In years	12.5	13	13
Participants in employee activities	People	365	386	396

Health management at Witzenmann GmbH 2015

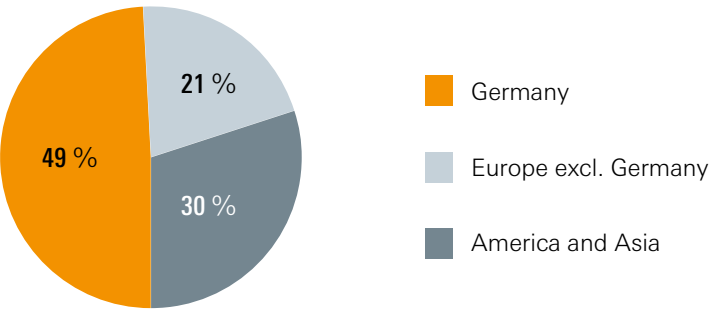


612 occupational health checks in 2015

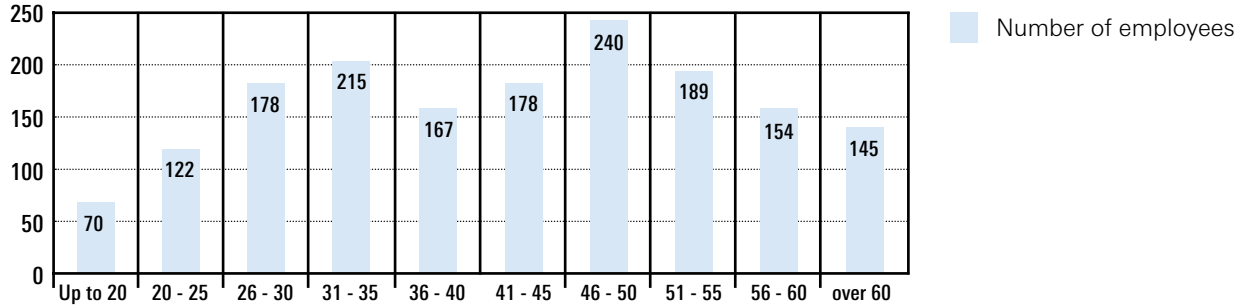
- Number of non-reportable accidents where an employee was unable to work for less than 3 days
- Number of reportable accidents where an employee was unable to work for more than 3 days (incl. commuting accidents)

Reportable accidents		2013	2014	2015
For every 1,000 employees	Number	26.9	23.4	17.4

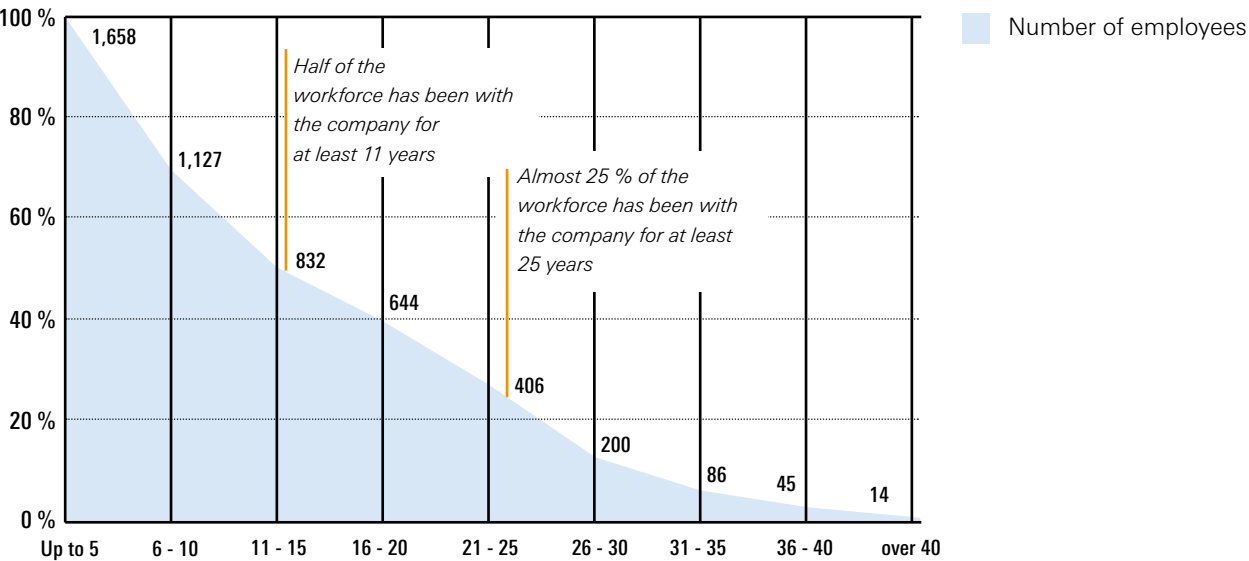
Witzenmann Group workforce 2015



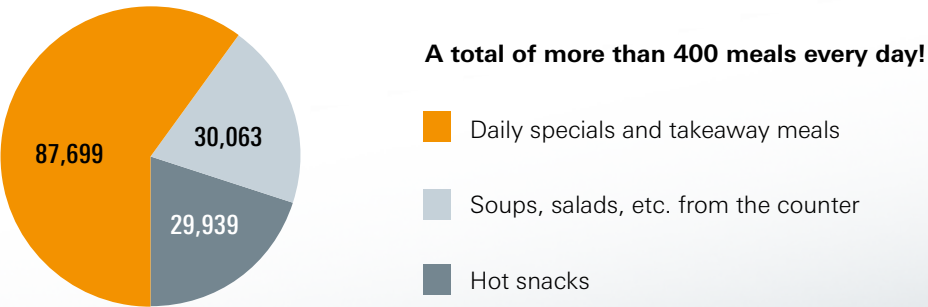
Age distribution of the workforce at Witzenmann GmbH 2015



Years of service of employees at Witzenmann GmbH 2015



Meals sold at Witzenmann GmbH 2015



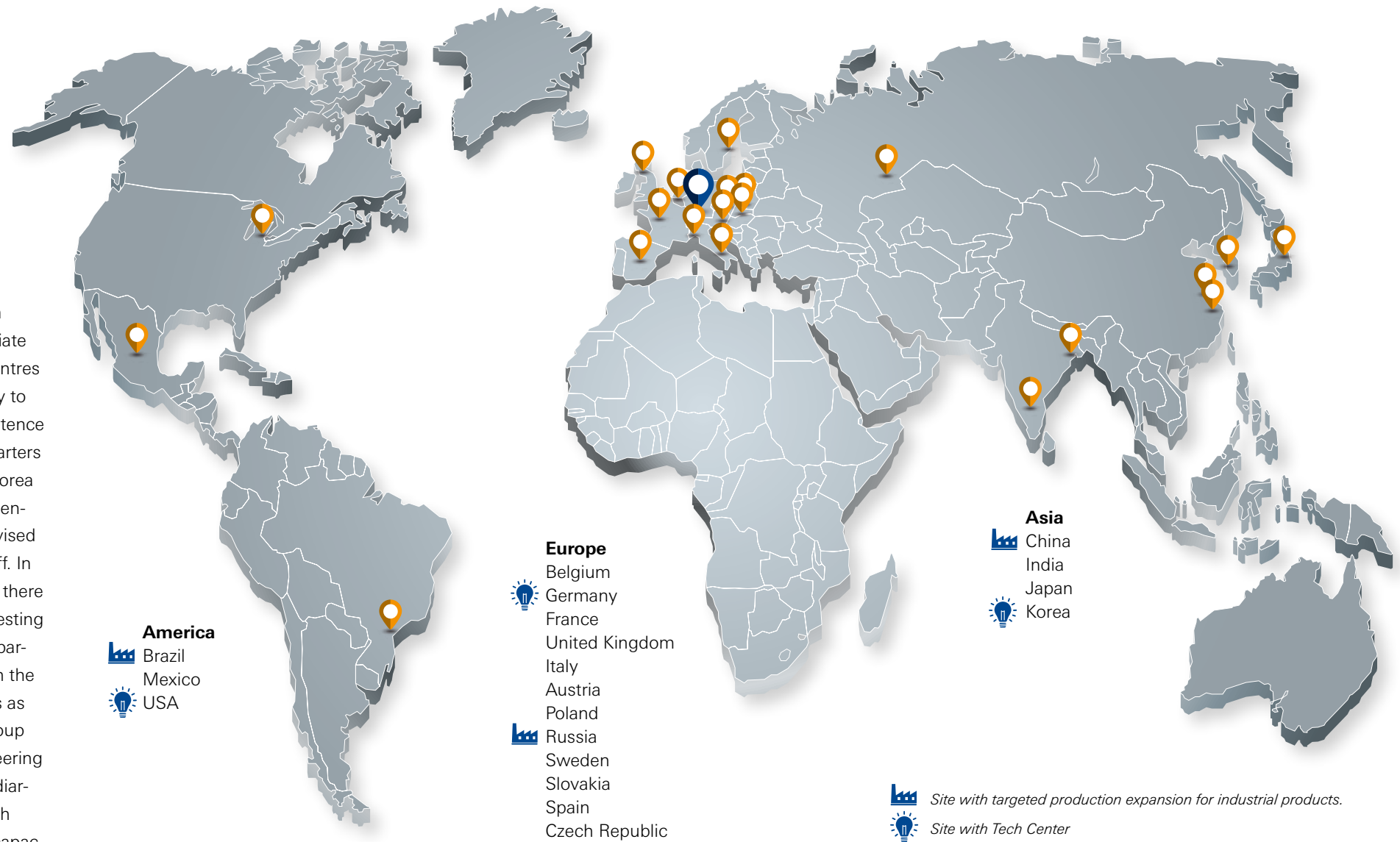
EXPERTISE NETWORK

The 24 subsidiaries worldwide of the Witzemann Group

Global Expansion – sustainable growth

The internationalisation strategy of the Witzemann Group has been promoted since the early 1990s. In the course of this, the commitment of the group has gone far beyond just installing production sites. As a technological leader in the sector, Witzemann provides its global locations with extensive development and advisory expertise. The individual subsidiaries and headquarters in Pforzheim have close ongoing interaction on the various technological developments and production engineering experiences via a close-knit network. Important thematic issues such as technical cleanliness, quality and maintenance are discussed and advanced in specially appointed forums throughout the group and mostly coordinated from the headquarters. This know-how transfer

and find competent partners within close proximity for fast and immediate solutions to problems. The Tech Centres of the group contribute significantly to the worldwide Witzemann competence network. In addition to the headquarters in Pforzheim, the Tech Centers in Korea and the USA are equipped with extensive testing facilities and are supervised by competent and experienced staff. In Korea, on an area of about 500 m², there are permanent load and vibration testing facilities as well as a facility for preparing and evaluating vehicles tests on the road. The Tech Center in Korea acts as an "engineering hub" within the group for supporting the sales and engineering activities of the Witzemann subsidiaries China, India and Japan. The Tech Center USA operates in the same capacity on the American market with similar equipment. Opened in 2015, it has close



The Tech Center opened in 2012 in Korea

takes place in central attendance events as well as in forums that are held throughout the group. The customers of the Witzemann Group can therefore rely on high quality standards worldwide



Tech Center Witzemann USA

connections with the headquarters in Pforzheim as well as with the subsidiaries in the USA, Brazil and Mexico.



Witzemann Mexico

Diversification of international manufacturing facilities

One essential factor for meeting the ambitious goals of the Witzemann Group is the gradual expansion of manufacturing

capacities for the industrial division (id). For this reason, an expansion joint production was installed at Witzemann Russia almost 10 years ago. In order to serve the targeted markets of the oil industry, chemical, petrochemical and steel industry there on a largely self-reliant basis, manufacturing capacities up to a diameter range of DN800 were established. In 2013, these were increased to DN 1200. Today, the Russian expansion joint production serves as a blueprint for further sites within the group.

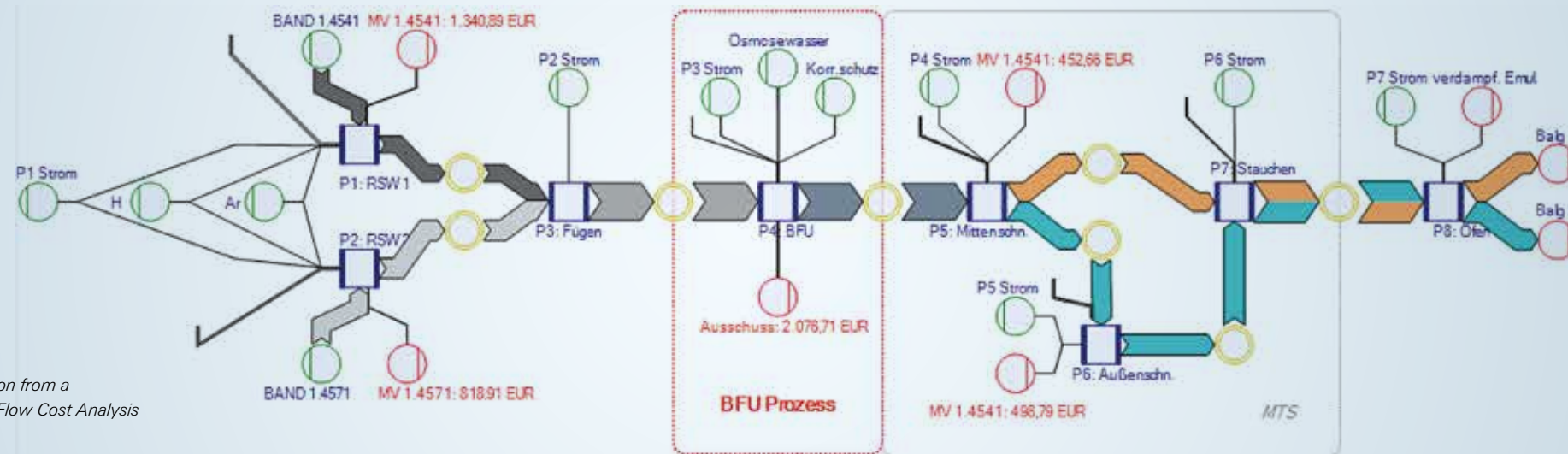
At Witzemann do Brasil, previously designed solely as a manufacturing facility

for automotive components, a production expansion branching out towards the chemical and petrochemical industry was realised in 2014. Expansion joints and flexible metal hoses are produced and assembled for the local market onsite.

At the Chinese subsidiary, bellows for the valve industry have been manufactured since 2013. Following the expansion of the manufacturing capabilities within the Witzemann Group, the claim drafted in the guiding principle of establishing manufacturing and competence centers for all relevant markets

locally wherever possible is gradually being achieved. A concept that protects existing resources through the elimination of procurement and transportation routes and which promotes the economic development of the respective Witzemann sites through the resulting know-how transfer.

PROCESS OPTIMISATION IN ALL-ROUND VIEW



Presentation from a
Materials Flow Cost Analysis

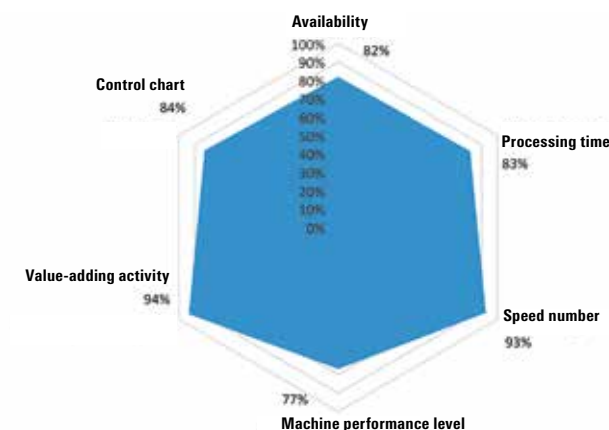
The process optimisation is not unknown territory for the Witzenmann Group. Since the launch of the Witzenmann Production System (WPS) more than five years ago, the production areas have been continuously optimised at Witzenmann according to the Lean Management Philosophy.

In the meantime, the WPS has also been expanded to the indirect business divisions and business processes and – now under the new name Witzenmann Process System – the international roll-out to the 23 subsidiaries has been initiated worldwide. Within the framework of a bachelor thesis, an evaluation tool was developed, which also takes key figures into account for evaluating sustainability in addition to the usual key figures from the Lean-Management. For this purpose, data material from a wide variety of coverage areas was analysed.

Data bases merged

Materials Flow Cost Accounting provided a basis. With this method, the material and energy flows of a product are essentially recorded and monetarily evaluated. The main difference in relation to traditional cost accounting is the monetary evaluation of the material loss. In addition, the relevant machine-related consumption data for electrical energy, compressed air as well as the proportionate maintenances expenses were determined.

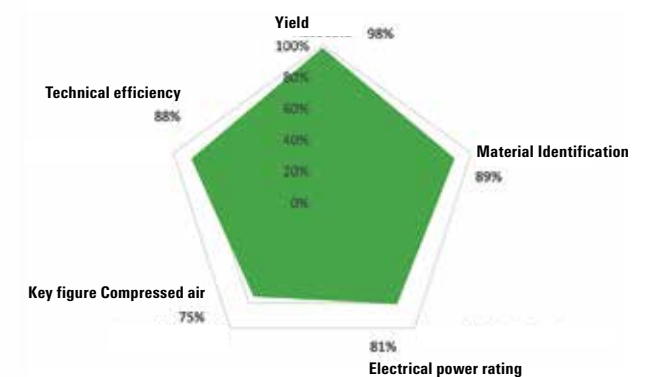
Data, such as the availability, processing time and machine performance level already collected as part of the established WPS loss evaluation were integrated and evaluated as part of the audit.



Presentation of the Lean Management Potentials

Technical level of utilization

The maintenance data used by the Witzenmann GmbH is the so-called technical level of utilization of a machine. Tendencies of the technical losses can be identified with the help of this data. This knowledge can be used for planning the maintenance.



Presentation of the Sustainability Potentials

Control charts

So-called quality control charts are used for visualising and monitoring the process behaviour and process stability. Quality control charts check whether the determined characteristic (for example, the number of defective parts or the mean value) is within the calculated thresholds and whether the process flow is stable.

All improvement potentials at a glance

Thus, in the result with the 360° Potential-Audit an overall view of the respective manufacturing process emerges, which includes improvement potentials both in the area of Lean-Management and with regard to sustainable and resource-saving manufacturing.

A thesis sponsored and supervised by Witzenmann in the field of business process management was awarded with a sponsorship prize of Pforzheim University

The sponsorship prize presented by the PSD Bank Karlsruhe-Neustadt eG is awarded for project work and theses by the Faculty for Economics and Law of Pforzheim University, which addresses sustainable and/or ethical aspects in particular.

FAMILIES IN THE FAMILY COMPANY

In this day and age, family businesses stand for continuity and reliability. In Baden-Württemberg, this often includes inventiveness and diligence, too. These values are supported by the employees. This is particularly true when a family works at same company over several generations. In this respect, Witzenmann is a family business in the best tradition.

Christoph Gramalla



In our family business, members of the Witzenmann family have borne entrepreneurial responsibility for over 150 years. At the location in Pforzheim, three generations of employees work together under one roof. Thus, together with them over the years we have become a family business in the wider sense of the word.

In the Gramalla family there is a mainstay in the truest sense of the word, – angling. Everything affecting the life of the male family members is discussed when angling. Apart from private matters, this is mainly work. And the fact that both are very closely connected in the Gramalla family, is made clear by the following number: Believe it or not, 16 male members of the Gramalla family work at Witzenmann, which includes a kind of group that is run like a family business.

It is a quite a challenge to get to the heart of the matter concerning the exact family ties of the family members who "work" at Witzenmann: These are Christoph Gramalla and his two brothers Darius and Andreas. They are the third family generation. One member from the second generation is Waldemar, their uncle on the mother's side, who's surname is Czaika. This also includes Hubert Gramalla, the uncle on the father's side. And there is Patrick, the son of Christoph Gramalla. He represents the fourth family generation in the meantime. In addition, there are those related by marriage, who did not always bear the name Gramalla and still belong to the large family clan. There are also representatives from the first generation that are still active at Witzenmann. They do not work anymore, however, but enjoy their retirement.





Waldemar Szach

Patrick Gramalla

Waldemar Gzaika

THE GRAMALLAS

Andreas Gramalla



Brzostek Zbigniew

Darius Gramalla



The close relationship between the Gramallas and the Witzenmann family business has many dimensions that are worth mentioning. Family plays an important role in the life of the Gramallas. This is hardly surprising if you know the family history. The Gramallas are late emigrants. In 1988, the ethnic Germans of Breslau leave Silesia and first come to Altensteig. From there, the then 15 year old Christoph Gramalla, together with his brothers and sisters (apart from his two brothers there is also one sister) and his parents move to Pforzheim. The grandmother and uncle Waldemar live there. Thus, the family bond has remained close to the present day: "We help each other, not only at work, but also at home by caring for the older family members," says Christoph Gramalla.

But there is still something that is worth mentioning in connection with Gramalla and Witzenmann - the choice of occupation of the Gramalla men. For all of them have learned welding and work as welders at Witzenmann, sometimes even in the same department, on the same project and in the same shift – that is then pure Gramalla power. "All my uncles worked in the metal industry. They always talked a lot about metal," says Christoph Gramalla. Where? When angling, of course For Christoph, what he heard there was interesting This is how he also came to work at Witzenmann and to his current profession. Christoph Gramalla

Gramalla family



has passed on his passion for metal-working to two of his three sons. Patrick, the oldest, works today at Witzenmann as a construction mechanic and his youngest son also wants to follow a career in this direction.

The professional career of Christoph Gramalla, who celebrates his 25th year of employment with the company this year, is therefore essentially typical for the men of the Gramalla family. "Some of us have the school leaving examination and still preferred to follow the training course as a welder," according to Christoph Gramalla. And those who had first worked in another profession, like his brother Andreas, still switched to welding later. Today, he also works at Witzenmann. "One reason for changing profession was because Andreas could not join in the conversation when we talked about metal during angling. That annoyed him," says Christoph Gramalla with a smile. But then he remarks seriously: "What makes the work at Witzenmann so exciting

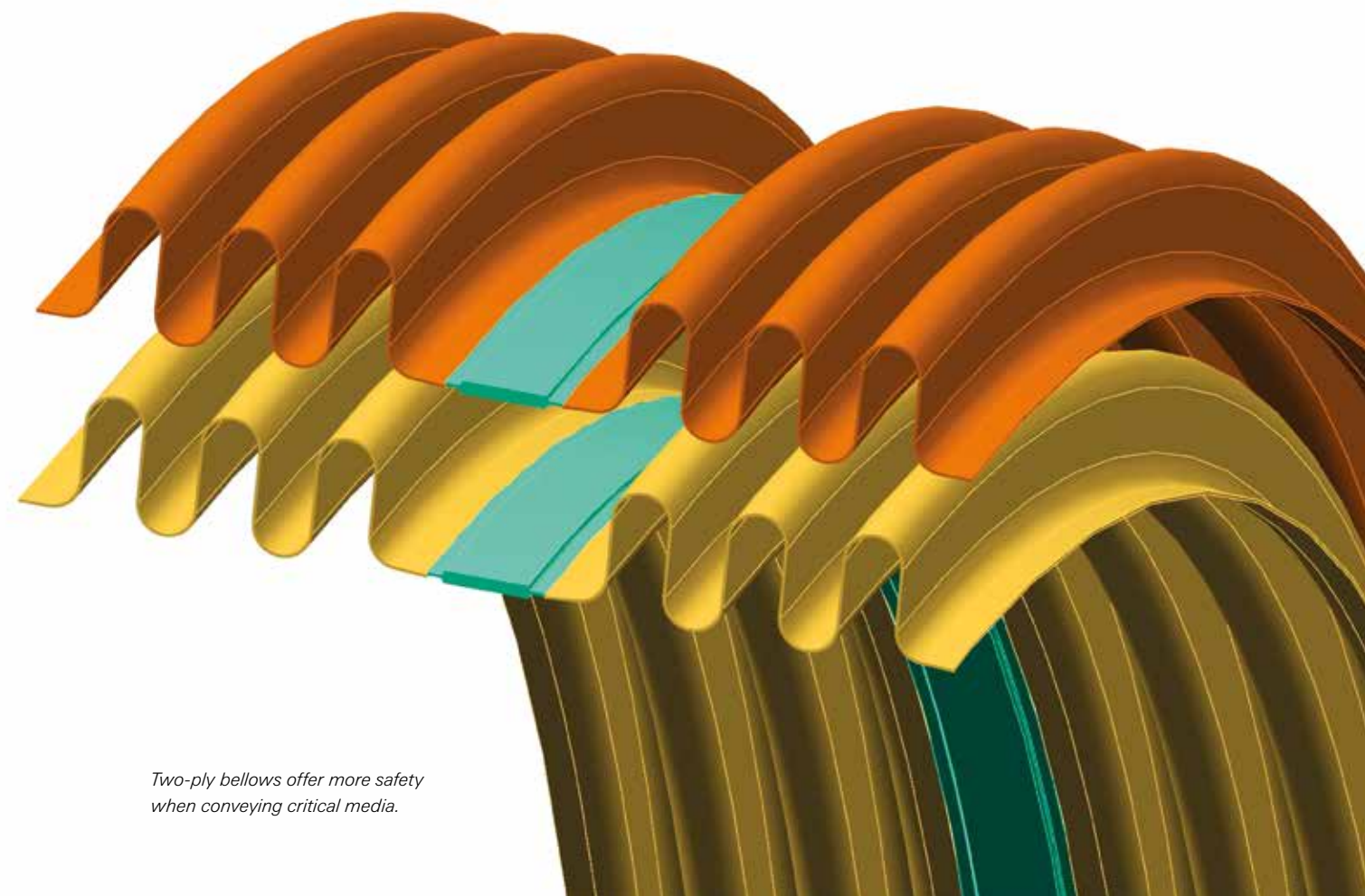
is the diversity that the broad field of welding offers." The extensive, ever-changing product range always presents new challenges. This means that everyone of them can further develop and enhance their skills. At the same time, they are recognised as specialists thanks to their high level of expertise. "For us as welders it is all about materials and how they are processed," says Christoph Gramalla. This is then often the topic of the family discussion, which, of course, always takes place when angling – where else.

Marcel Gramalla

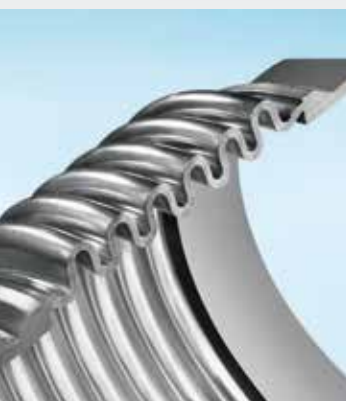


BUILT (ALMOST) FOR ETERNITY

The principle of sustainability is based on durability, a responsible approach to natural resources and farsighted risk avoidance. This involves parameters, which also apply in particular to the flexible metallic elements of the Witzenmann Group. Two examples illustrate this.



Two-ply bellows offer more safety when conveying critical media.



Double safety with critical media

Based on the special design principle "2in1" Witzenmann is achieving reliable solutions wherever increased safety and functional reliability is called for and where particularly critical media have to be conveyed. This applies, for example, to the gas supply lines of large combustion engines in ships.

Here too, the primary tasks of the flexible elements, the absorption of heat and system movements, must be fulfilled. Moreover, however, the safety-relevant aspects are what determine the design for such applications.

Witzenmann has developed the so-called "2in1-bellows" for these areas. In simplified terms, this consists of an inner and outer bellows. The latter has a slightly larger diameter. Both bellows are fitted into one another and welded tightly together at their ends. This forms a closed annulus between the individual bellows, which can be monitored with special devices. This means double safety. Since even in the case of a leakage of the inner bellows, caused by high pressure or unforeseen media for example, there is no risk. This is indicated immediately by the monitor and yet the system can be still be operated without risk until the bellows is exchanged. For thanks to the double bellows principle, no medium can leak from the plant thereby causing hazards.

The Functional Principle: Multi-Ply

The idea behind this principle is to break up the pressure retaining wall of a flexible metallic element into many thinner individual layers. Thus, the flexibility of the metal bellows as a main feature is increased significantly, without compromising pressure resistance. Moreover, the multiple ply feature offers the possibility of constructing the entire wall with different materials

The use of extremely high-quality, corrosion-resistant materials can therefore be limited to the medium-wetted inner layers or outer layers that are exposed to environmental influences. This enables resource-friendly use of the often energy-intensive produced materials.



Multiple ply bellows are much more flexible compared to single ply bellows of the same wall thickness.

STRIKING THE RIGHT BALANCE

In addition to making trendsetting, strategic decisions, doing business sustainably also involves taking targeted, coordinated measures.

Witzenmann Benelux

- Objective: Replace steel by stainless steel to a greater degree
- Optimisation of the environmental aspects in preparation for the ISO 14001 certification (2017)
- Disposal and treatment of rinse water and soldering fluid
- Sewage water filter
- Consideration of the ISO 14001 certification by suppliers

Witzenmann do Brazil

- Consideration of sustainability aspects when choosing local suppliers

Witzenmann Española

- Filter system for oil-polluted water (reduction of pollution by about 40 %)
- Waste separation (steel, wood, paper, non-ferrous metal, plastic and waste)
- Use of recyclable work gloves

Witzenmann France

- Taking rationalisation of the supply taking CO² pollution into account
- Reduction of paper consumption, lorry deliveries, stock movements (all under consideration of operating efficiency)
- Reduction of energy consumption
- Starting points: Thermal insulation, conversion to movement-related LED lighting
- Raising awareness of the staff on issues concerning waste separation and recycling.
- Collecting waste paper and handing it over to a charitable recycling company

Witzenmann Hamburg

- Exchanging all fluorescent tubes in the workshop for LED tubes
- Planning 2017: Exchanging all tubes in the office area
- Savings of the overall measure: More than 60 % of the current power consumption for light
- Exchange of all chemical solvents for cleaning parts against biological

Witzenmann Korea

- DIN ISO 14001 certification

Witzenmann Mexico

- Collective agreement with trade union for recognising the right to collective bargaining
- Quest for gender equality (20 % of the staff are currently female)

- Barrier-free design of the entire site (parking spaces for disabled persons, ramps, special break rooms)
- Waste separation and recycling material collection (paper, wood)
- Zero tolerance against corruption and bribery already during the building phase of the new site
- Shuttle-bus for the workforce and support of car-sharing options

Witzenmann Russia

- Various environmental protection measures: waste separation, exhaust gas treatment, dust filtration
- Raising awareness of the staff regarding cleanliness and safety in the operating areas
- Occupational safety: Personal and commonly usable safety equipment as well as safety signs

ENVIRONMENTAL POLICY

As a leading company in the industry of flexible metallic elements, we feel a particular degree of responsibility to stand up for the protection and conservation of natural resources. Early on, we committed to corporate management based on the careful use of resources. We continuously strive to avoid or reduce to a minimum damage to and stress on the environment through the production and use of our products. We comply with all relevant legal standards and other requirements as a matter of course.

The following environmental guidelines apply to the implementation of the environmental policy in all divisions of the company:

- We consider the conservation of natural resources for future generations to be an important part of our social responsibility.
- We regard environmental protection as an important component of corporate governance and formulate concrete goals and rules of conduct for its implementation.
- We recognise the importance of each employee in the implementation of environmental protection measures and in providing training opportunities and decent working conditions.
- We identify and assess the environmental impacts of our business processes through continuous analysis. New processes and materials were examined for their environmental compatibility before use.
- We are committed to continually improving our environmental performance and take all necessary measures to prevent, eliminate or at least reduce our environmental impacts to a minimum.
- We publish a regular sustainability report to keep our customers, the general public and the relevant authorities informed about our social and ecological commitment.

Since 1997, we have regularly published an environmental report in which we document our environmental protection system, how we use our resources and other important key data relating to the environment. You will find a presentation of the current data on page 42.



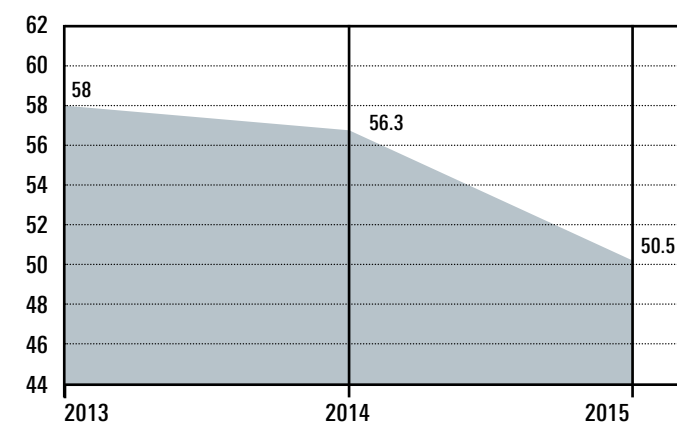
Metal recycling – complete recycling of secondary raw materials into the material cycle

Waste management

For many years, we have been achieving a high recycling rate. Only 0.5% of our waste requires disposal.

99.5 % Recycling rate*

Electricity procurement in MWh/ 1 million Euro turnover*



* based on the Witzenmann GmbH

TRACKING DOWN WASTAGE

Energy efficiency is becoming increasingly important in the group. Energy efficient production contributes significantly to climate protection, reduces the consumption of resources and enhances the competitiveness of our company.



Case B)
Lighting of large expansion joints hall
The spotlights in the large expansion joints hall were replaced.

	HQI hall spotlights 2 x 400 W	LED spotlight 200 W
Total connected load for 22 hrs.	17.6 kWh	4.4 kWh
Power consumption/year/spotlight**	70.4 MWh	17.6 MWh
Energy costs/ Year/spotlight***	10,560 €	2,640 €

** With 3-shift operation, 5 days per week, 50 weeks/year
*** 0.15 €/kWh

Witzenmann feels a particular degree of responsibility to stand up for the protection and conservation of natural resources and to handle resources carefully. We continuously strive to avoid or reduce damage to and stress on the environment to a minimum through the production and use of our products. A current example is the energy audit conducted recently at the headquarters as well as the measures derived from this.

Case A)
Production lighting

The lighting in building 2 and building 4 is implemented with general-diffuse lights from the 1990s using conventional ballasts. With a burning time of 16 h per day, they decrease approx. 290,000 kWh/a (building 2) or 390,000 kWh/a (building 4) per year. After retrofitting to modern lighting technology (LED tube 25 W), the power consumption could be reduced by approx. 55 %.

	Fluorescent lamp L 58 W	LED tube 25 W
Rated light output	90 lm/W	150 lm/W
Beam angle	360°	150°
Total connected load	70 W	25 W
Power consumption/year/lamp**	420 kWh	150 kWh
Energy costs/ Year/Lamp***	63 €	23 €
Service life	average service life 20,000 hours	Service life 40,000 hrs.

** With 3-shift operation, 5 days per week, 50 weeks/year
*** 0.15 €/kWh



** **Retrofit** has established itself as a term for upgrading and converting old plants and equipment. Through the replacement of obsolete components by technologically enhanced components existing plants can be updated.*



Lighting in the large expansion joints hall

CLIMATE ASSESSMENT

CliCCC – Climate & Carbon Calculator for Companies

The following pages show the results from the Corporate Carbon Footprint calculation of the Witzenmann GmbH for the year 2015 according to the CliCCC method.

In addition to the direct CO₂ emissions (Scope 1) and indirect emissions caused by the energy supply (Scope 2), the CliCCC method takes the climate impact into account due to the purchase/production of preliminary work and fixed assets (Scope 3), estimated on the basis of purchasing data. The estimation of emissions from the purchasing data is determined by infinite upstream chains with the aid of national accounts. The ifu Hamburg GmbH has traced, reproduced and validated the calculations for the year 2015.

Furthermore, the values for the comparison years (2010, 2012, 2013 and 2014) were calculated and corrections were made where necessary.

The results are printed in the summary based on three indicators:

- Total emissions
- Cumulative emission intensity (CEI) and
- Population equivalent

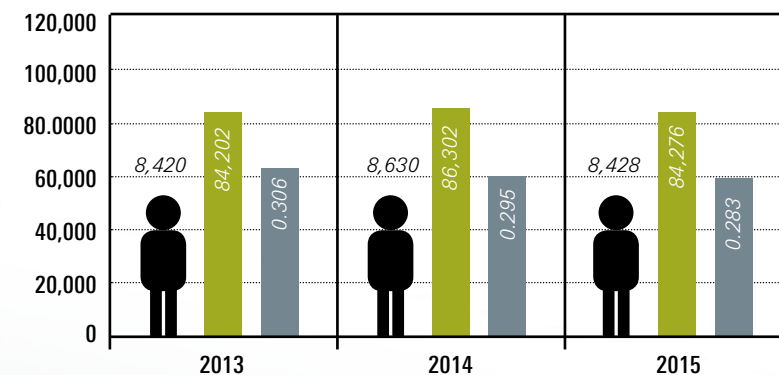
The **total emissions** reveal the sum of all emissions from the individual categories.

The Cumulative emission intensity (CEI) is the ratio of total emissions to company turnover. The sales of the comparison years is adjusted for price in order to represent a timeline.

The current CE is used to substantiate the rather abstract indicator "total emissions". In addition, the population equivalent is also indicated, which is the ratio of the recognised total emissions to the annual pro capita emissions of Germany.

From the composition of the results for the 2015 reporting year, it is clear that the prevailing emissions of 87.8% come from scope 3. Most of the emissions are in the **goods category comprising pig iron, steel and semi-finished iron and steel products**, which makes up 34.3% of all recognised emissions with 28,936 t CO₂ equivalent. It would therefore be wise to offer incentives to suppliers in this goods category to encourage them to disclose their specific

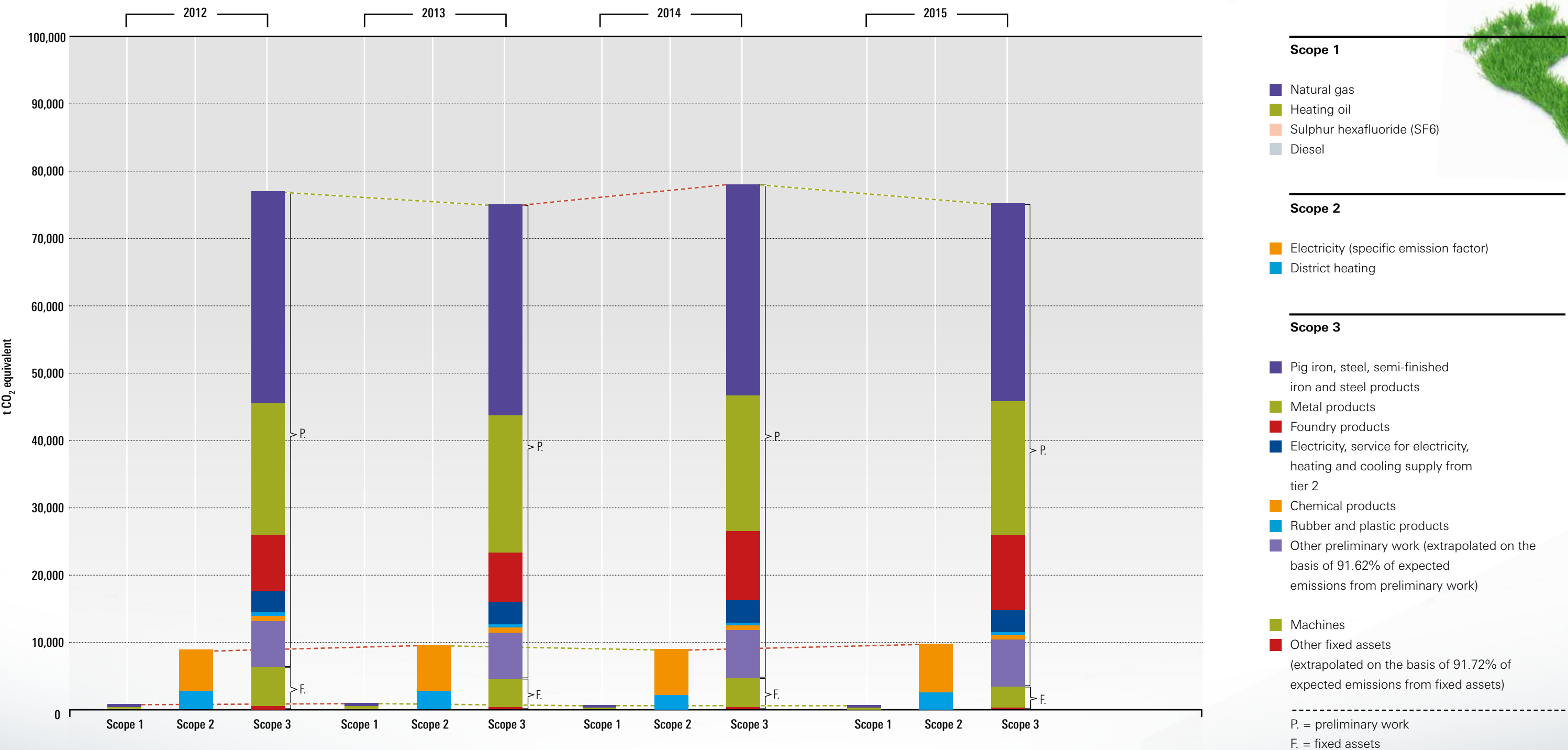
emissions in order to take alternative decisions for low climatic impacts. The same applies to the goods categories comprising metal products and foundry products, which has 19,473 t and 11,053 t CO₂ equivalent and is therefore also above the total emissions from scope 1 and scope 2. When investing in fixed assets in the future, and especially for machines, it would be wise to obtain information about the specific emissions.



Source:
Result report
Corporate Carbon Footprint
according to CliCCC methodology
for Witzenmann Report year 2015,
ifu Institute for Environmental Informatics Hamburg GmbH

- Total emissions in t CO₂ equivalent
- Cumulative emission intensity (CEI) in kg CO₂ equivalent/€
- Population equivalent

CLICCC – COMPOSITION OF THE RESULTS



ENVIRONMENT



Environmental report

Witzenmann GmbH		2013	2014	2015
Procurement turnover	Millions of €	94.8	98.2	102.4
Plates/tubes/wire	%	17	15	15
Parts/components	%	75	75	77
Energy/auxiliary materials	%	8	10	8
Waste management				
Total volume of waste	t	2,262	2,514	2,953
Recycling rate	%	99.2	99.2	99.5*
Water consumption	1,000 cbm	24.7	22.6	23.9
HCl solvent balance				
Disposal	t	1.27	0.79	2.89
Emissions	t	0.76	0.54	0.53
Space utilisation	%	148	148	148
Energy				
Electricity draw	MWh	16,275	16,450	15,417
Electricity draw/1 million € of turnover	MWh / €	58.9	56.3	50.5
Building heating				
District heating	MWh	9,456	7,240	8,886
Natural gas	MWh	1,968	1,856	1,985
Energy requirement/1000 employees	MWh	7.3	5.4	6.6

**adjusted by new building leased land and parking spaces*

Environmentally relevant incidents

No environmentally relevant incident occurred in 2015.

CONTACT



Philip Paschen

As Managing Director, Philip Paschen is responsible for the “Business process management, logistics and sustainability (GFgIn)” division. His areas of responsibility include, among other things, industrial engineering (including productivity management, lean production, lean administration and six sigma), plant design, building management, logistics, sustainability and compliance. Furthermore, he is responsible for the Commercial Vehicles / Engines business division



René Pflittner

In his role as the Environmental Protection Officer, he is the person to contact with regard to all internal and external questions relating to the environment and Witzenmann GmbH.



Jochen Geiger

The Head of the Marketing and Public Relations department at the Witzenmann GmbH is responsible for editing the sustainability report.

IMPRINT

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