

move on

Corporate Responsibility Report and Management Report
of the Messer Group GmbH 2016

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This report complies with the G4 Guidelines of the Global Reporting Initiative (GRI). The G4 standard labels in the margin reference the corresponding text to the relevant position in the GRI Content Index (pages 122 to 125).

An overview of the Messer Group

The Messer Group, founded in 1898, is the largest privately managed specialist in industrial, medical and specialty gases. Under the brand “Messer – Gases for Life”, the company is active in over 36 countries in Europe, Asia, America and Algeria, with a total of more than 90 operating companies. The international activities are controlled from Bad Soden near Frankfurt am Main, whilst the centralised functions of communications, logistics, engineering, production and application technology are managed from Krefeld. Stefan Messer, CEO and owner of the Messer Group, works together with the 5.485 employees in accordance with defined principles. These include a focus on customers and employees, responsible behaviour, corporate responsibility, excellence as well as trust and respect. In 2016 the industrial gases specialist generated consolidated sales of 1.146 billion euros.

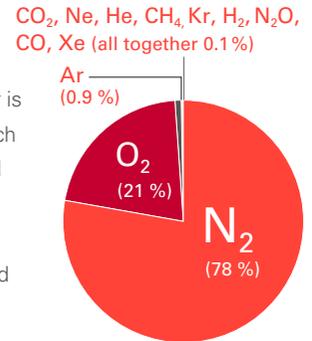
We make gases out of air

What are industrial gases?

Industrial operations require oxygen, nitrogen, argon, xenon, neon and krypton, along with carbon dioxide, acetylene, hydrogen and helium, and a wide variety of gas mixtures. At Messer we call these gases **Gases for Life**. They are produced in large-scale industrial plants and are just as important as water and electric power for many manufacturing processes which make everyday products.

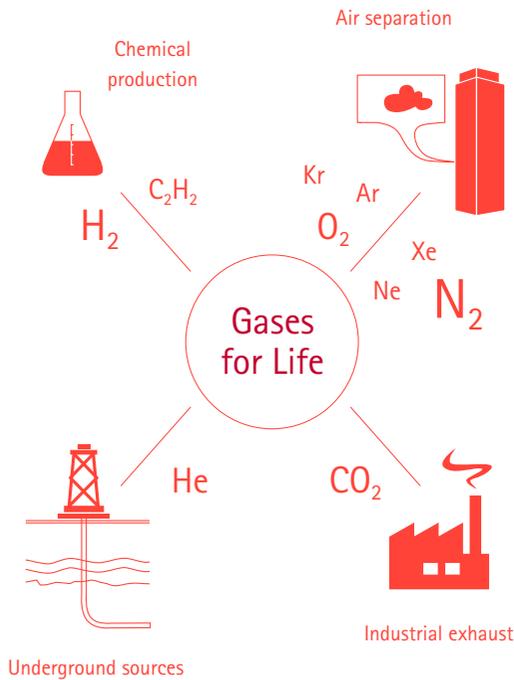
What is air?

What we generally refer to as air is a mixture of different gases which make up the atmosphere around our planet. For the most part, air consists of nitrogen and oxygen, plus a small quantity of argon and traces of other gases.



Where do they come from?

Oxygen, nitrogen, argon, xenon, neon and krypton are produced from the air. Carbon dioxide is primarily collected from the exhaust of industrial operations and cleaned. In some cases it is also produced from natural underground sources. Hydrogen and acetylene are produced chemically. Helium is produced from underground sources.



How are gases produced from air?

In order to produce these gases, we use air separation units which can reach 60 metres high or more. Inside them, a physical process takes place which separates the air into its components. This process, which is also known as low-temperature rectification, basically works as follows:

Air is

- filtered (dust is removed) and compressed to about six bars
- pre-chilled with cooling water
- dried and stripped of all CO₂ in a molecular sieve
- cooled below -175 degrees Celsius and liquefied in the main heat exchanger
- separated into liquid or gaseous oxygen and nitrogen in a separation column
- also separated into liquid argon

The gases are stored in tanks in liquid form.



How do Gases for Life reach the customer?

In smaller quantities, gases are stored in gas cylinders. When industrial gases are needed in large quantities, we install tanks at our customer's plant. These tanks are used to store gases such as oxygen, nitrogen, argon or CO₂ in liquid form. Road tankers are used to transport the gas from the production plants to the customer.

Major industrial concerns such as steel works or chemical companies need so much gas that they often have an air separation unit operating on their grounds. Sometimes pipelines also supply gases to one or more major facilities, such as in industrial parks.

The greater the quantity of gases a consumer needs, the shorter the distance should be between the customer's site and the location where the gases are being produced. Generally speaking, gases are produced where they are needed: close to densely developed industrial areas.



Who needs Gases for Life?

Industrial gases are used in a variety of purity grades and for a wide range of purposes. Including as food gases and medical gases.

Industrial gases can make production processes safer and more cost-effective and improve product quality. They often contribute to environmental protection. Some processes and applications would even be inconceivable without the chemical properties of gases.

Typical user sectors include the automotive industry, the steel industry, environmental engineering, food and beverages, construction, metallurgy, glass and ceramics, medicine and pharmaceuticals, the chemical industry, and research and development.



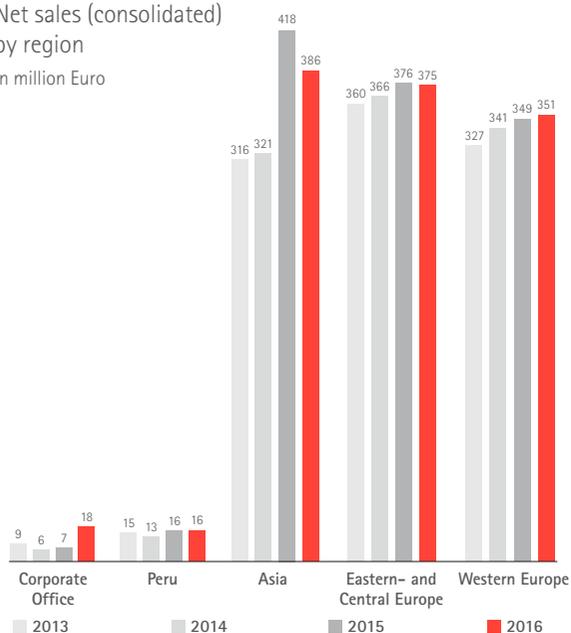
Key figures of the Messer Group at a glance

As of 31.12.2016

		2013	2014	2015	2016
Net sales	in million Euro	1,027	1,047	1,166	1,146
EBITDA	in million Euro	231	241	252	249
EBITDA margin	in per cent	23	23	22	22
Investments	in million Euro**	197	205	145	147
Employees*		5,404	5,449	5,354	5,485

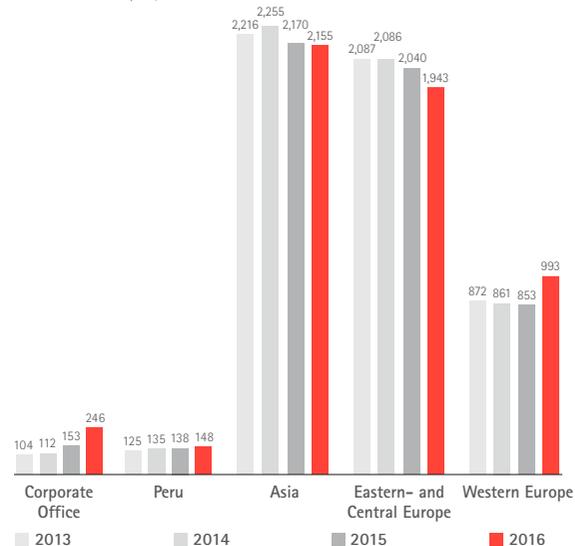
* contractual employments ** incl. IFRIC4

Net sales (consolidated)
by region
in million Euro

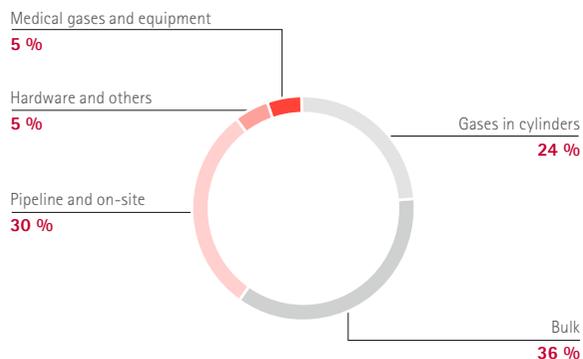


Numbers of employees
by region

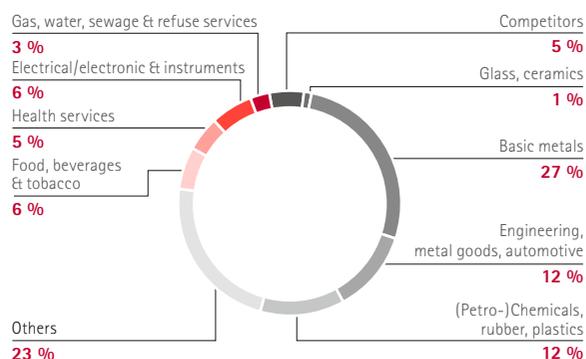
Total: 5,485 Employees*



Net sales by product groups
in per cent



Net sales by industry segments
in per cent



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move on

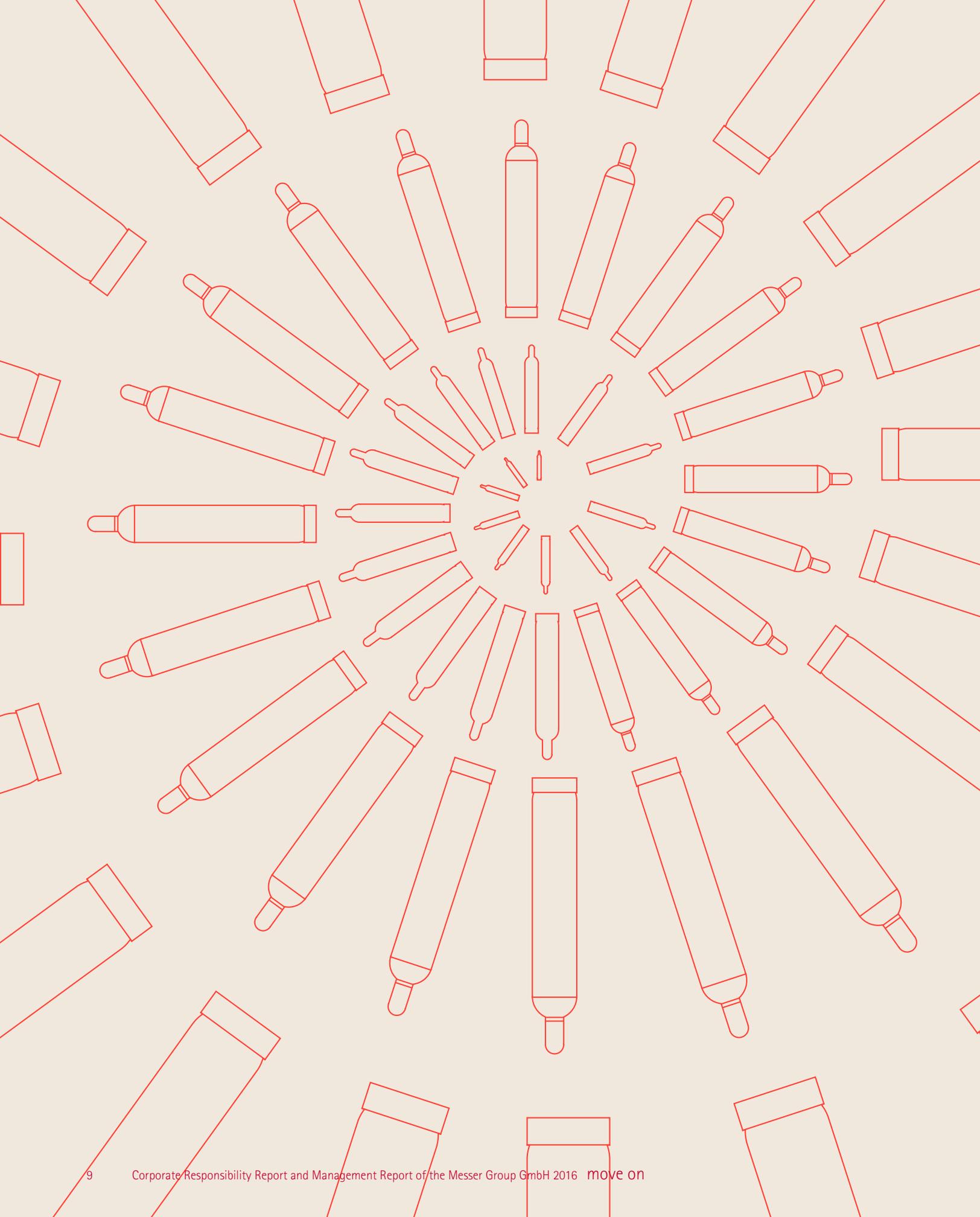
Messer is always on the move. Not resting on our laurels but constantly looking for new opportunities and possibilities is part of how we see ourselves. This applies to innovation, to the optimisation of processes, to our customer care, and of course to our sustainable growth.

We were able to achieve the latter in the 2016 financial year, particularly in China and the ASEAN states (ASEAN = Association of Southeast Asian Nations): investments in new air separation units and a joint venture are tangible evidence of this.

We have also taken further steps in terms of the supply of gases. Our strategic focus on our cylinder gas business is manifested in numerous projects and campaigns. The most conspicuous of these was surely our service campaign, which conveyed the message that we simply have more to offer in every respect where gases in cylinders are concerned.

While the examples mentioned are very different, they share an important precondition: teamwork and cooperation across geographical and company boundaries. That is something that the people who work for Messer are just really good at. Exploring new avenues together is something we simply take for granted, rendering aspects such as origin, language, culture and gender irrelevant.

So, when we move on, it's always as a team and on an equal footing with everyone involved.





Berlin | Page 84



Zwijndrecht | Page 96



Gondrecourt | Page 64



Niš | Page 116

Belgium
France

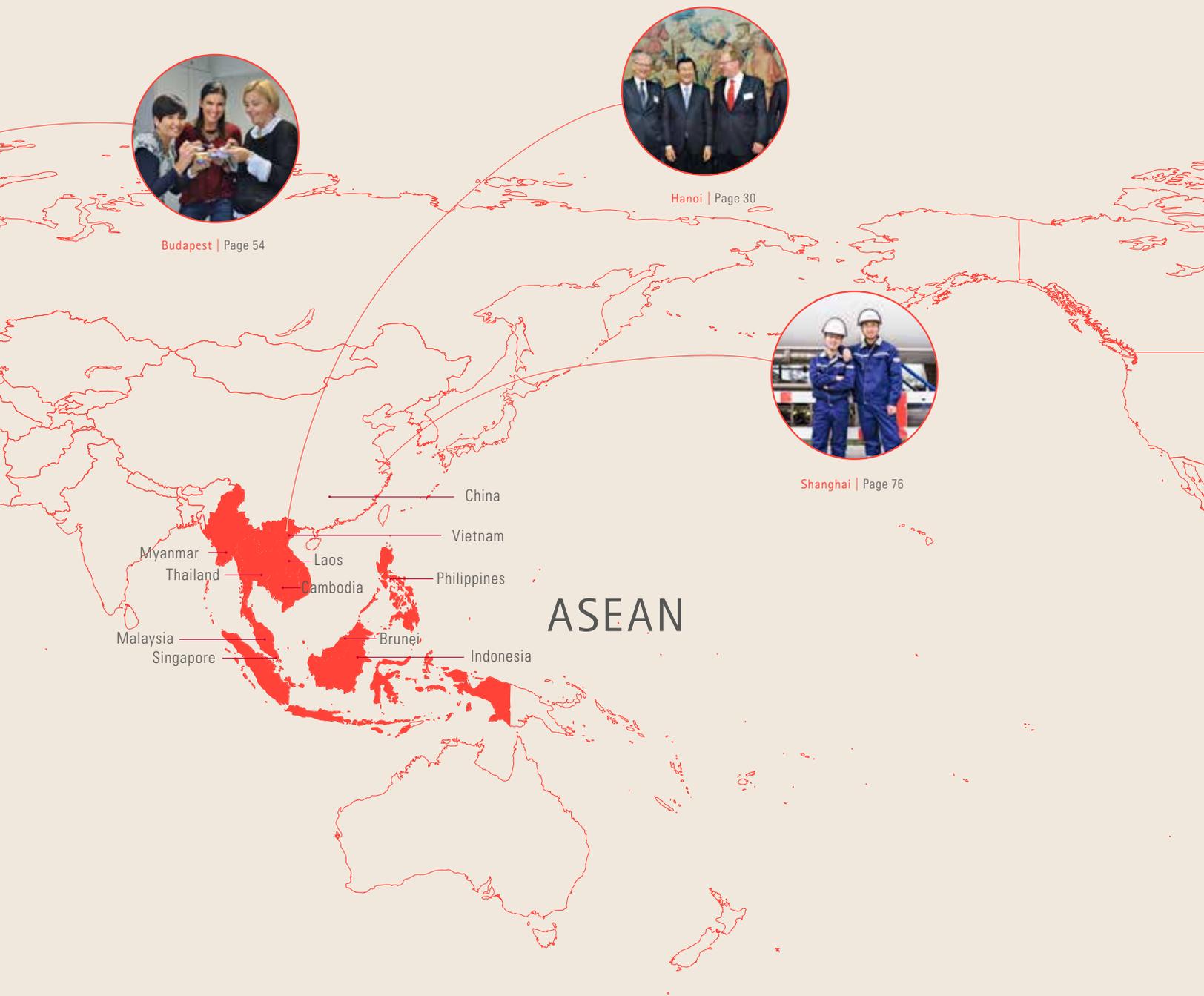
Germany
Hungary
Serbia



The people who work for us worldwide were again one of the most important factors in our success in 2016. We promote their development and cooperation with specific measures such as the Messer Academy.



Our focus on our business with gases in cylinders sends a clear signal to the markets: we offer tailor-made products along with the related, first-rate services.



Budapest | Page 54

Hanoi | Page 30

Shanghai | Page 76

ASEAN

ASEAN

The markets of Southeast Asia (ASEAN = Association of Southeast Asian Nations) offer Messer a wealth of opportunities, which we took advantage of in 2016, including by expanding our production capacities.



As owner and CEO of the largest owner-managed industrial gases specialist, Stefan Messer has been the driving force behind the strategies adopted for the future.

Dear Readers,

The globalisation of our world continued in 2016, bringing about many political and economic changes.

An even more integrated global economy with multinational trade agreements is faced with trends back towards national interests. Especially in Europe, this development, which is politically right-wing in orientation, was reinforced by the Middle East refugee problem.

The Brexit vote meant that the United Kingdom became the first country to position itself against the European Union. Right-wing populist parties are also gaining in importance in other European countries. However, Europe must not fall apart if it is to hold its own against the emerging regions in Asia and America. On the contrary, we need to consolidate and use our economic strength, our cultural values and our high level of education to secure prosperity, peace and success. Going back to nation states would be fatal.

Fidel Castro, the legendary Cuban president, died in November 2016. He held this office for 47 years before handing over the reins to his brother, Raúl Castro, ten years ago. The world's longest-serving monarch, King Bhumibol Adulyadej of Thailand, also passed away after 70 years on the throne. His controversial son, Maha Vajiralongkorn, became the tenth King of Thailand on 1 December 2016.

In the USA, property tycoon Donald Trump is in the Oval Office. In line with his slogan, "Make America great again", he wants to bring economic added value back to the country and is positioning himself against international trade agreements.

The new Filipino president, Rodrigo Duterte, is taking a hard line against drugs and corruption – unfortunately disregarding human rights in the process. He is turning away from the United States and leaning more towards China, the dominant country in Asia.

Venezuela is mired in socialism and insolvent due to the low oil prices. Brazil is trying to extricate itself from a morass of corruption and mismanagement. The economy is on its knees.

After signing the nuclear agreement, Iran is showing increased interest in Western technology. European firms are lining up to explore potential business opportunities. Risks remain, however, with the US Senate having voted for renewed sanctions and President Trump pushing in the same direction.

The attempted coup in Turkey has helped President Erdogan to gain more power and influence. One of the threats he is now making is to open the country's borders, which could mean another large influx of refugees for Germany.

Last but not least, the unresolved problems in the Middle East mean continued fighting and refugee misery.

Apart from the alarming political events, we are seeing an acceleration of global trends such as urbanisation, climate change, resource scarcity, demographic change, digitalisation and automation with all the associated opportunities and risks.

All in all, we live in an uncertain and rapidly changing world that is undergoing major political transformations – particularly due to the rapidly developing countries in Asia.

Now of all times, it is particularly important that the international community works together to solve the pressing problems of climate change. Many nationalist parties and populists are talking down the already noticeable effects of climate change because tackling them does not fit in with the party manifesto of isolationism. Meanwhile, according to the United Nations, the number of climate refugees is estimated to reach 200 million people in the next 30 years.

Germany is one of only four countries worldwide that have drawn up a climate protection plan. In the meantime, it is becoming increasingly apparent that our strong car industry in particular is coming under pressure as it has failed to consistently pursue the necessary developments. We need to be competitive when it comes to innovation.

Our rather conservative industrial gases sector has also seen a lot of changes in the recent past. For example, the takeover of Airgas by Air Liquide has continued the process of worldwide consolidation of our industry. This acquisition has now led to discussions between our competitors Praxair and Linde about a possible global merger between the two companies. This would create the world's largest industrial gases company with a market share of approximately 40 per cent.

Despite all the political uncertainties and global changes, we at Messer are making good progress on the path to a successful future.

We were able to conclude 2016 with a slight increase in sales and a largely stable margin compared with the previous year's operating results.

Increasing price pressure and the exchange rate difference caused by the devaluation of the Chinese currency did have an impact on our business in Europe and China though. However, we were able to counteract this with efficiency improvements and cost savings.

We were able to generate particularly strong growth in Vietnam, where we commissioned the third on-site facility for our steel customer Hoa Phat. In addition, we installed a nitrogen generator for the largest smartphone producer's new plant near Hanoi.

In China, we performed well despite the ongoing consolidation in the steel industry and continued to develop our diversification strategy successfully. In Nanjing, our third new CO₂ plant went into operation. We continued to develop our cylinder gases business with new filling plants in Changsha, Shaoxing and Sanshui. With copper producer Shuikoushan, we gained a new on-site customer in Messer-dominated Hunan province and were able to start up the facility that we built there. We also completed our new air separation unit in Shaoxing to supply the local market between Ningbo and Shanghai with oxygen, nitrogen and argon.

Our re-entry into the emerging ASEAN region in Southeast Asia began with the purchase of a 30 per cent stake in logistics company Smart-Gas in Singapore. This was followed by a second, majority-stake acquisition in a smaller gases company in Malaysia. Further projects in Indonesia, Thailand and Myanmar are progressing well.

In Poland, we were able to greatly expand our production capacities by putting a new air separation unit and a gas filling plant into operation in Turek. In Siegen, we are gradually supplementing our gas distribution network with the filling of additional gases and gas mixtures to give us an even more self-sufficient presence in the market.

In Belgium, a new CO₂ facility was completed in cooperation with Ijsfabriek Strombeek and the crude gas supplier.

Following long delays, we also received planning and building permission for our air separation unit to supply O₂ to Knauf in Škofja Loka, Slovenia, which allowed us to begin the installation process at the beginning of 2017.

We successfully completed the Turkey/Hungary country swap agreed with our competitor Air Liquide in 2015. The takeover – with antitrust approval – of Air Liquide by Messer in Hungary took a bit longer, but was completed at the end of 2016.

The Messer Eutectic Castolin Group had a difficult financial year: the low oil price and general uncertainties about the future of the economy led to significant sales losses in both the filler metals and cutting systems segments.

BIT, our diagnostic devices manufacturer, finished the 2016 financial year on target however. On 9 December 2016, we officially opened our new joint venture, EDAN Messer, for the manufacture of haematology equipment in Shenzhen. We are expecting significant sales opportunities in this segment of the Chinese market in the coming years.

In 2016, we were once again able to support numerous scientific projects at the universities in Frankfurt and Darmstadt as well as social projects in the Rhine-Main area through our two charitable foundations – the Adolf Messer Foundation and the Dr Hans Messer Social Foundation.

If we are to continue to be successful, it is important that we actively support ongoing generational change. Our Messer Academy carried on its work in 2016, providing training and professional development to our young employees.

Messer was again honoured with two prestigious awards in 2016: in the summer, in Berlin, we received the “Top Sustainable Family Business 2016” award from British business magazine CampdenFB and French bank group Société Générale.

At the end of November, in Hamburg, I had the privilege of accepting – on behalf of our team – the Axia Award in the “Best Family Successor” category from international auditing firm Deloitte in cooperation with the WirtschaftsWoche business magazine, Witten Herdecke University and the BDI (Federation of German Industries).

We have again set ourselves ambitious objectives for this year and predict stronger growth than last year. In this context, we are again counting on your support and your loyalty towards our company.

Let us work together to help ensure that the basic conditions of our lives do not deteriorate. We have now had 70 years of peace, freedom and prosperity in Europe, and we want to nurture and protect these achievements.

I would therefore be delighted if you joined me in supporting the continued existence of a united Europe. Because only together will we be able to preserve what we have achieved and confront new challenges with competence and strength.

Best wishes

A handwritten signature in blue ink, appearing to read 'Stefan Messer', written in a cursive style.

Stefan Messer

Management Board and Supervisory Board of the Messer Group

Since the founding of the Messer Group in 2004, the Management Board has been supported by a supervisory board which assists with strategic decision making and always demands sustainable measures in addition to business success. The members of our Supervisory Board are considered to be experts in conducting business and always bring their experience to bear in a constructive manner. As such, they are reliable partners to the Messer family and the managing directors.

Stefan Messer



Dr Nathalie von Siemens



Dr Bodo Lüttge



Dr Hans-Gerd Wienands



Dr Werner Breuers



Dr Karl-Gerhard Seifert



Dr Jürgen Heraeus



Heike Niehues

Supervisory Board of the Messer Group:

Dr Jürgen Heraeus, Chairman

Dr Werner Breuers

Heike Niehues

Dr Bodo Lüttge

Dr Karl-Gerhard Seifert

Dr Nathalie von Siemens

Management Board of the Messer Group:

Stefan Messer, Chief Executive Officer

Dr Hans-Gerd Wienands, Chief Financial Officer

Dr Uwe Bechtolf, Strategy, Executive Vice President
Controlling/Accounting & Strategy

Johann Ringhofer, Executive Vice President
Engineering & Production

Adolf Walth, Executive Vice President
Sales & Marketing

G4-33

Supervisory Board Report

The Supervisory Board performed the tasks incumbent upon it in accordance with the statutory provisions and the articles of association and provided support and advice to the Management Board during the reporting period in question. The Management Board reported to the Supervisory Board, both verbally and in writing, on the performance and situation of the Company within the course of regularly scheduled meetings on the 7th of April 2016 and the 24th of November 2016. Furthermore, the Supervisory Board was informed about important business transactions and decisions. Legal transactions requiring the Board's approval were submitted to the Board for its decision. The Supervisory Board has satisfied itself in the plenum that the bookkeeping, the annual financial statement of the Messer Group GmbH and the Group accounts for the year ending December 31, 2016, as well as the management report of the Messer Group GmbH and the Messer Group, had been audited and certified with no provisos by the auditing company KPMG AG Wirtschaftsprüfungsgesellschaft, Essen. The audit reports were discussed at the Supervisory Board meeting held on the 6th of April 2017 with the assistance of the auditors. The Supervisory Board had no objections and expressed its agreement with the auditors' verdict.

The Supervisory Board would like to thank the Management Board as well as all employees of the Messer Group for their commitment and successful work during the 2016 financial year.

Bad Soden, 6th of April 2017

Supervisory Board



Dr Jürgen Heraeus, Chairman

Peter Wilhelm Storm van's Gravesande has resigned from the Supervisory Board of Messer Group GmbH. He had been a member since Messer was returned to family ownership in May 2004. The shareholders, Supervisory Board members and Management of Messer Group wish to express their sincere thanks to him for his successful work with the company as well as his many years of commitment and loyalty.

Corporate Responsibility Report

of the Messer Group GmbH 2016



Dr Hans-Gerd Wienands

Stefan Messer

Commitment to sustainability

G4-1

The Management of Messer Group GmbH is committed to acting in a responsible and sustainable manner as part of its economic and social involvement in society.

Stefan Messer, owner and Chief Executive Officer:

“We recognise and accept our social responsibility towards our employees and society in different areas: the safety of our employees, customers and partners when using our products is our number one priority. We are also committed to protecting our environment and climate by constantly improving our processes and focusing our development on technologies that make our customers’ production processes more efficient and resourcefriendly. Messer has a presence in 36 countries. We respect the cultural differences as well as rights in the regions in which we operate. We contribute to community life and education in these regions through the provision of wide-ranging support.”

Dr Hans-Gerd Wienands, Chief Financial Officer:

“We conduct our business on a sustainable basis and guarantee our autonomy and independence through forward-looking investments. This enhances our customers’ and financial partners’ confidence in us and gives our employees long-term security. We operate with maximum transparency vis-à-vis our stakeholders. Responsible behaviour is an important factor when choosing a business partner. We take this into account by viewing corporate responsibility as a strategic matter and integrating it into our processes.”

G4-15, G4-18 Strategic integration of corporate responsibility

The key themes concerning our responsibility in economic and social spheres are derived from our own objectives, traditions and innovations as well as from general standards. The core areas are our values as a company, our customers and the markets in which we operate, climate and environmental protection, safety, our employees and society.

Since Messer Group GmbH was founded, we have been pursuing long-term objectives to take the company forward on an independent and profitable footing. We have always observed the principles of the "honourable businessman", acting responsibly with regard to our place in society. Our corporate responsibility has been strategically embedded in our processes since 2014 through the cross-divisional Corporate Responsibility function. We have set ourselves measurable goals in the different business units to document our improvements and development. We are publishing these goals in this Corporate Responsibility Report for the 2016 financial year, which features comparisons with the results achieved in 2015. These key performance indicators are transparent and comparable, enabling our stakeholders to understand and assess how we are developing.

In this context, we support our customers' aim of checking and ensuring the sustainability of their own activities and supply chains. At our customers' request we therefore report to contracted third parties, e.g. Ecovadis, the 'Carbon Disclosure Project' and the chemical industry's worldwide "Responsible Care" initiative.

Generation of our materiality matrix

G4-18, G4-20, G4-21, G4-26, G4-27 The key issues we address in our strategic sustainability process are the product of our daily and long-term actions and activities. When evaluating these topics, we consider it important to include representatives of all stakeholder groups. For this reason, we have compiled a diverse list comprising 77 individual topics within the categories of environment/climate protection, economy/business, values, products/services/markets, safety, information/data protection, customers, employees, society and suppliers. In order to differentiate the priorities of our internal stakeholder groups, such as owners, management and employees, 41 senior managers and 296 employees voluntarily completed an anonymous online survey where they ranked the topics on a scale of one to ten, with one being important and ten extremely important. The anonymous online survey was also completed by selected journalists and persons who follow our news in the social medium Facebook.

As in previous years, the safety of our customers and employees is of utmost importance to our company, as is environmental protection.

All important issues can be affected by our decisions and can have potential effects on stakeholders outside the organisation too. For this reason, all major projects, both in-house and external to the organisation, are relevant.

Materiality matrix

G4-19



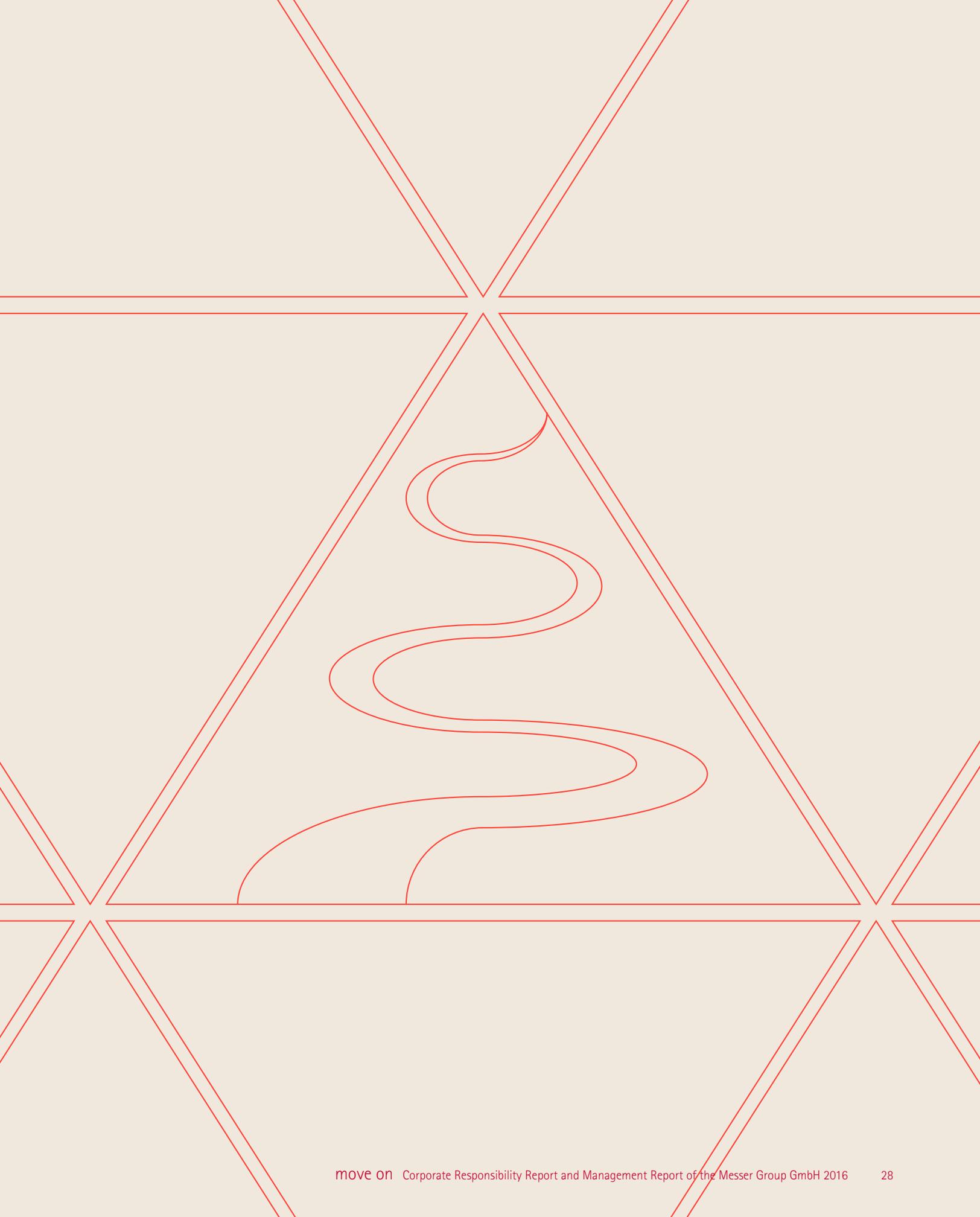
- ▲ Values
- Environmental and climate protection
- ◆ Employees
- ✕ Economy and business
- ★ Safety
- + Customers and markets

G4-19 **Corporate Responsibility**

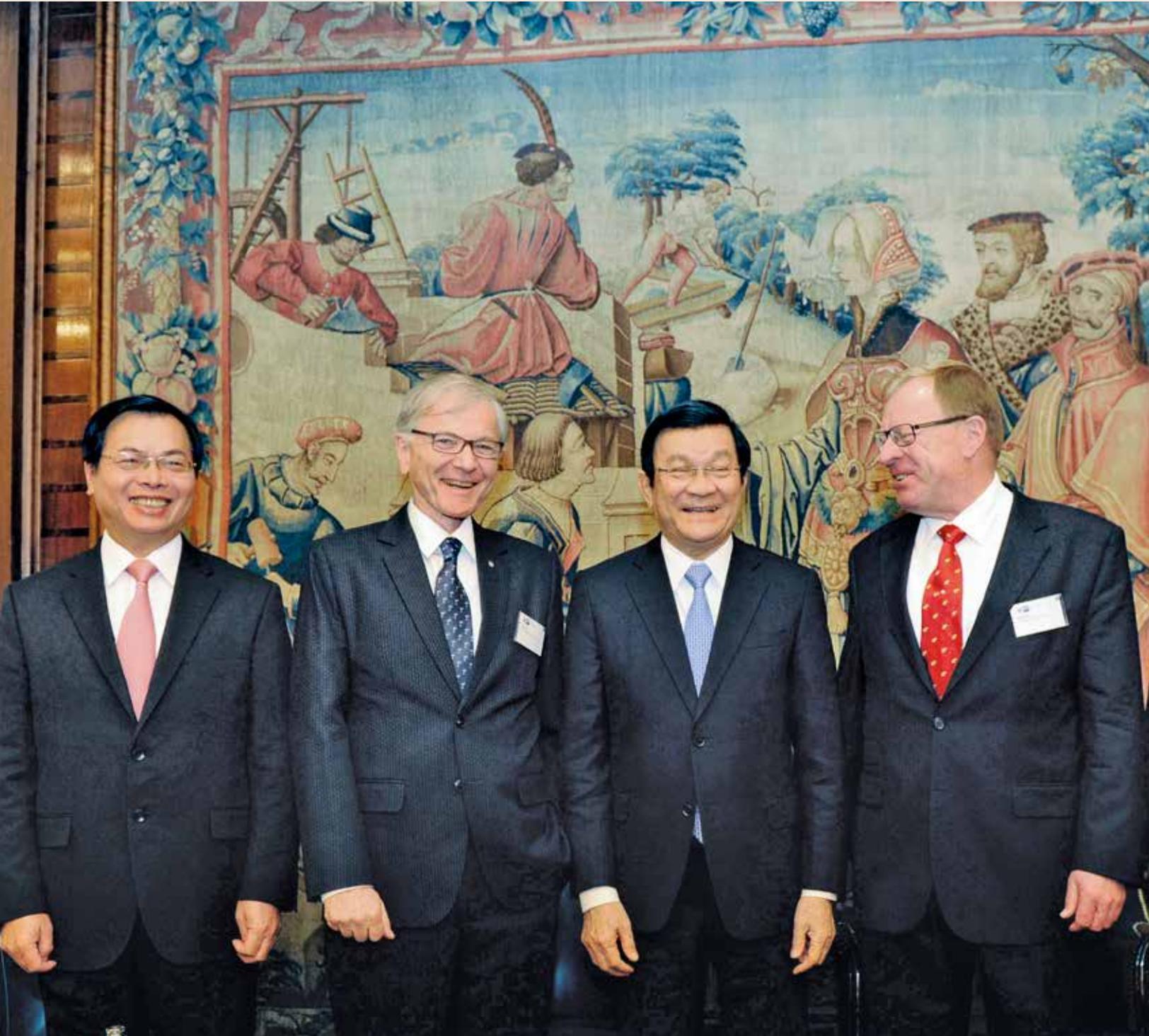
Customer and employee orientation, responsible behaviour, corporate responsibility as well as open communication, trust and respect: all of these are embedded in the Messer Group's mission statement. Shortly after bringing all of the company's shares back into family ownership in 2004, Stefan Messer personally drove forward a discussion of values, which led to a company-wide vision and mission as well as the formulation of the company's values. Ever since the foundation of the Messer Group, we have acted sustainably to meet the needs of our customers in accordance with our collective responsibility for people, progress and the environment. In order to make these values and the corresponding developments measurable and comparable, Messer introduced Key Performance Indicators (KPI) for the first time in 2014. The following twelve key topics are relevant for every Group company:

	Unit	2015	2016
1. Safety of our employees			
Number of Lost Time Injuries (Messer employees)	persons	22	25
Lost Time Injury Frequency Rate - LTI FR (Messer employees lost time injuries)	per million working hours	2.2	2.4
Lost Time Injury Severity Rate - LTI SR (Messer employees lost days)	per million working hours	65.1	77.9
Number of Recordable Working Injuries - RWIs (Messer Employees)	number	87	88
Recordable Working Injury Frequency Rate - RWI FR	per million working hours	8.8	8.3
Fatalities (Messer employees)	persons	0	0
2. Safety of our logistics			
Cylinder fleet: Number of preventable incidents	number	14	12
Cylinder fleet: Frequency Rate (Number of preventable incidents)	per million driven kilometres	0.62	0.48
Bulk Fleet: Number of preventable incidents	number	29	31
Bulk Fleet: Frequency Rate (Number of preventable incidents)	per million driven kilometres	0.51	0.49
3. Safety of our customers			
Total number of customer installations (Messer owned)	number	7,853	7,705
Number of technical reviews of customer installations	number	8,800	8,255
Ratio: Number of technical reviews / Number of Messer owned customer installations	number	1.08	1.07
Number of safety audits at customer sites with Messer's installations	number	1,522	1,299
Ratio: Number of safety audits at customer sites / number of Messer owned customer installations	number	0.19	0.17
Number of safety trainings provided to customers at any customer site	number	2,036	1,492
Total number of customer training participants	persons	3,410	4,366

	Unit	2015	2016
4. Mutual trust and respect			
Number of cases reported in respect to discrimination	number	1	1
5. Energy efficiency in production			
Specific power (energy consumption in relation to sold product)	kWh	1.3760	1.3680
6. Open communication and cooperation with stakeholders			
Media resonance analysis: Gross coverage	persons	45,240,238	47,746,755
Brand awareness (Germany)	per cent	12.6	14.3
7. Protection of the environment			
CO ₂ -Footprint of plants and logistic	million tons of CO ₂ e	2.85	3.02
Specific CO ₂ Footprint of plants and logistic	million tons of CO ₂ e / '000EUR	2.44	2.63
Number of production / filling companies in EU certified to ISO 14001	number	19	21
Number of new customer installations (bulk) for applications which protect the environment	number	204	187
8. Independence of our family-run company			
Net Debt/EBITDA-Ratio	number	1.74	1.52
EBITDA/Sales-Ratio	per cent	21.6	21.7
9. Customer satisfaction			
Number of participants in customer satisfaction surveys across the Group	persons	2,167	1,343
Per centage of credit notes in relation to number of invoices issued	per cent	1.8	1.7
10. Employee satisfaction			
Average length of service	years	11	10.4
Staff turnover rate	per cent	8.0	5.6
Sick days per employee	persons	3.9	3.8
11. Employee development			
Expenditures on training programmes per employee	Euro	214	296
Training days per employee	days	3.48	3.75
Apprentices and trainees in total workforce	persons	56	49
12. Compliance			
Inquiries submitted to the "Ask us help desk"	Compliance cases reported	2	1



Values





In the partnerships that we foster, aspects such as origin, culture, language or faith are no obstacle. What matters to us is finding people who passionately pursue an objective on the basis of shared values.



Stefan Messer (2nd from left) spoke with Vietnamese President Truong Tan Sang (centre) at the German-Vietnamese Economic Forum. Among other things, they discussed potential CO₂ business opportunities in Vietnam.

Our values

The Company Mission Statement

Today, Messer is the largest owner-managed industrial gases manufacturer worldwide. The company was founded in 1898 by Adolf Messer, Stefan Messer's grandfather, in Frankfurt on the Main. Under the leadership of Dr Hans Messer, Stefan Messer's father, the company went through a process of development in the 60s to become a supplier of industrial gases, cryogenic systems, and welding and cutting products. Hoechst AG, subsequently Aventis, held a two-thirds majority stake in the Group; the other third was held by the Messer family.

At the beginning of the 90s, Dr Hans Messer retired from active management of business operations and joined the Supervisory Board.

In 2001, Hoechst sold its two-thirds majority shareholding in Messer to financial investors. With their help, Stefan Messer managed to return large parts of the company to full family ownership in 2004. As an independent family entrepreneur, Stefan Messer built on his father's earlier successes. He managed to turn things around for the long-established company, which many at the time had written off as a failure. Under his management, and with the new "Messer – Gases for Life" brand, the company has doubled its sales to over a billion euros.

Messer consistently aligns all its actions to a specific set of values. The strategy followed by the Messer Group is always based on the company's vision to be the preferred choice for its customers and employees. The Company Mission Statement consists of this vision as well as the mission and the six corporate values, these being: customer and employee focus, responsible behaviour, corporate responsibility as well as open communication, trust and respect.

The Messer Group's Mission Statement has served as a guideline for setting strategic objectives since 2005. It has permeated every part of the company since then. Messer has therefore developed a shortened form of the Mission Statement which today communicates – both internally and externally – who we are, how we see ourselves and what we are aiming to achieve.

The Mission Statement of the Messer Group in shortened form:

Messer is an independent, owner-managed family company specialising in industrial gases with a focus on the European and Asian markets.

Our policy of acting sustainably is informed by the needs of our customers and based on our collective responsibility towards our fellow human beings, the environment and progress.

Mission Statement

Our vision

Messer is an important industrial gases group in its core markets of Europe and China. Messer is and will remain an independent family-run business. We think and act decisively for the long term and measure ourselves by our sustained success. Together with our partners and associated companies in the field of wear, fusion, and cutting technologies as well as precision instrumentation we develop synergies and meet our customers' needs expertly, reliably and with a flair for innovation. This is what makes us the first choice for our customers and employees.

Our mission

As an owner-managed family business with a rich tradition we are focused on the future whilst taking into account the different conditions in our existing markets. We also use our experience and expertise to build up our position in new markets. Ranging from acetylene to xenon we offer our customers a wide range of technical and medical gases and food and specialty gases.

Our product range is completed by our excellent services and state-of-the-art technical plants and equipment. In our highly modern technology centres we work together with our customers to develop application technologies for the use of gases in almost every industry, in food technology, medicine, science and research. Our efficient and dedicated employees, our flexibility and our proximity to customers through our presence in local markets makes us their preferred partner. Through entrepreneurial flair, farsighted thinking and the continuous improvement of our processes, we create added value for our customers and so secure our mutual success in the long term.

Solid financing and fair profits guarantee our independence and support sustainable growth.

Our values

Customer orientation

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

Employee orientation

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

Responsible behaviour

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

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

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Corporate responsibility

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

Excellence

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

Mutual trust and respect

We believe that cooperation is based on trust, sincerity, transparency and frank communication.

We respect and abide by the cultural and social customs of the countries in which we work.

Engagement in the economic sphere

At Messer, there is wide-ranging engagement on the part of owner and CEO Stefan Messer, the Supervisory Board, executives and employees alike. This makes it possible to widen the scope for action and exchange market-related experience via networks and cooperative initiatives.

The owner's personal commitment

As Vice President and member of the General Assembly of the Frankfurt am Main Chamber of Commerce and Industry (IHK), Stefan Messer holds the office of Chairman of the foreign trade committee and was a member of the foreign trade committee of the German Association of Chambers of Commerce and Industry (DIHK) in Berlin in 2016. He is the Chairman of the board of directors of the International Oxygen Manufacturers Association (IOMA) in Washington. He also sits on the board of directors of the Brussels-based EIGA, the European Industrial Gases Association. Furthermore, he is an Honorary Senator of the Technical University Darmstadt and Honorary Senator of the Goethe University Frankfurt, as well as a member of the board of trustees of the Faculty of Economics and on the board of trustees of the China Institute at the Goethe University Frankfurt. In addition, he is a member of the board of the German-Swiss Chamber of Commerce, a member of the advisory committee for the FrankfurtRheinMain economic initiative, a member of Commerzbank AG's advisory committee for the state of Hesse and a member of HDI Gerling's state advisory committee. He is also a member of the Friends of the German-Vietnamese University and sits on the board of Dachser Group SE & Co. KG. Since January 2009, Stefan Messer has been Honorary Consul of the Republic of Slovenia for the consular district of Hesse, Rhineland-Palatinate and Saarland. Stefan Messer is also involved in ASU – Die Familienunternehmer, an association of family entrepreneurs that supports the fundamental values of a social market economy, in particular free enterprise. Furthermore, Stefan Messer is a member of the steering committee and board of the East Asian Association (OAV) and Chairman of the inter-state committee on Thailand. He also sits on the executive committee of the International Chamber of Commerce.

Business opportunities in Vietnam

As part of a three-day visit to Germany, Vietnamese President Truong Tan Sang attended the German-Vietnamese Business Forum organised by the Frankfurt Chamber of Commerce (IHK). Among other things, he gained an insight into the Messer Group's successful activities in Vietnam. In a subsequent one-to-one meeting, the statesman and Stefan Messer discussed the CO₂ business potential in Vietnam.

State visit from Serbia

In March 2016, Serbian Prime Minister Aleksandar Vučić visited the cities of Wiesbaden and Frankfurt/Main. During his visit, he also had a one-to-one meeting with Stefan Messer. The latter stressed that Serbia is an important country for the Messer Group, which is seeking to make further attractive investments there. Messer put up two air separation units at its Smederevo site back in 2006, followed in 2015 by another air separation unit in Bor. In a speech at the Serbian Business Forum, Aleksandar Vučić cited Messer as an example of successful investment in the Balkan country.



Aleksandar Vučić (centre), Stefan Messer (right) and Adolf Walth (EVP Sales and Marketing Europe)

Business meeting in Dongguan, China

At the end of 2016, Stefan Messer, Dr Hans-Gerd Wienands, CFO Messer Group, and Dr Werner Hickel, CEO Messer China, were guests of the local authority of the city of Dongguan. The reason for their visit was the on-going construction project for the largest air separation unit for liquid products operated by Messer in China. This investment will enable us to further strengthen our market position in the southern Chinese province of Guangdong, where we already operate two production facilities, and to participate in the rapid growth of the local economy. Dongguan is a major international centre of the electronics industry. Every fifth computer manufactured worldwide comes from Dongguan.



Stefan Messer in conversation with Lv Yesheng (right), Secretary of the Communist Party of China in Dongguan.
In background: Li Yun (left), Messer China, and an interpreter.

G4-16 **Involvement in industry associations**

The Messer Group is a member of the European Industrial Gases Association (EIGA). The Brussels-based association represents nearly all European companies that produce and market industrial, medical and food gases. The association's members cooperate with the aim of achieving the highest possible safety and environmental standards during the production, transport and use of gases. At the beginning of each workshop organised by the EIGA, the members are reminded of the importance of complying with the "EIGA anti-trust meeting rules". Messer is also a member of the IOMA (International Oxygen Manufacturers Association), the German Committee on Eastern European Economic Relations and the German Asian-Pacific Business Association (OAV).

The Messer Group is a member of the German Welding Society (DVS e.V.). The DVS is a non-profit, technical and scientific association based in Dusseldorf. Messer is also involved in family business association "Die Familienunternehmer e.V.", in the FBN Family Business Network and in the Frankfurt-RheinMain e.V. economic initiative.

Messer employees are involved in expert committees, support research projects, and establish and maintain contact with expert groups in technologically advanced fields. The subsidiaries are engaged in various local industry associations. The Messer companies are also involved in organisations in their local regions.

Hesse chambers of commerce visit Messer in Switzerland

Members of the state of Hesse's ten chambers of commerce visited Switzerland in September 2016 as part of a three-day trip. They had been invited by the German-Swiss Chamber of Commerce in Zurich to discuss the Swiss economy and trade relations with Germany. Since Stefan Messer is a member of the board of the German-Swiss Chamber of Commerce as well as Vice President of the Frankfurt/Main Chamber of Commerce (IHK), the itinerary also included a visit to Messer Schweiz. The delegation was given a guided tour of the production facilities in Lenzburg, which provided an opportunity to answer a wide range of questions on the applications of gases.



Dr Hans Michael Kellner (2nd from right), Managing Director at Messer Schweiz, gave the IHK Hessen delegation a tour of the Lenzburg plant.

Close ties with India

In July 2016, members of the All India Industrial Gases Manufacturers' Association (AIIGMA) visited Messer sites in Bad Soden and Siegen. The AIIGMA represents all of India's gases manufacturers. Stefan Messer had met this association on the occasion of its annual conference in Bangkok in April 2014. When they returned his visit, the guests from India were given an insight into the organisation and operation of the air separation unit and filling plant in Siegen. They found the practical presentation of the filling process particularly interesting. Messer and its sister company MEC will continue to maintain contacts with the members of the AIIGMA – also with regard to business opportunities.



Guests of Messer in Germany: members of the All India Industrial Gases Manufacturers' Association (AIIGMA).

Messer Compliance Management System

G4-DMA Compliance

The Messer Compliance Management System (Messer CMS), which we implemented in 2015, is an organisational concept that describes the Messer Group's system of values and its practical implementation and defines the responsibilities derived from it. It constitutes a mandatory framework for resolving conflicts of interest and ensuring compliance with applicable laws, regulatory provisions and the inter-company and company-internal policy guidelines within all divisions of the Messer Group. The managing directors and senior management are fully committed to the Messer CMS. As a system of values, its purpose is to establish a relationship with our customers, partners and employees as well as with our competitors, the public and the media, based on fairness, solidarity and trust, to resolve conflicts of interest and ensure compliance with the applicable laws, regulatory provisions and inter-company and company-internal policy guidelines within all divisions of the Messer Group. The CMS which has been developed for this purpose supports those responsible in setting up and implementing the organisational concept. The aim of the organisational concept is to prevent breaches of the Messer Code before they occur.

The Messer Code

The management of Messer Group GmbH has summarised the principles for the organisational concept in a set of rules (the "Messer Code"). The Messer Code stands for active corporate governance and is intended as a guide to all employees in their daily work life while taking into account the Messer Mission Statement. Managing directors must take suitable measures to ensure that all employees have unrestricted access to the Messer Code and are aware of where and how it can be consulted.

The Messer Code of Conduct is the core document within the Messer Code. It is supplemented and given substance by the Group Guidelines as well as other binding internal regulations.

Our employees are obliged to observe applicable laws and the rules of the Messer Code when performing their work.

We also expect our business partners, customers and other parties who work with Messer to observe applicable laws and the principles of the Messer Code.

Compliance officers

The management of Messer Group GmbH bears responsibility for monitoring the Messer CMS. This organisational concept is binding for all managing directors, senior management staff and employees of the Messer Group.

The managing directors are responsible for implementing this organisational concept in their own national subsidiary and ensuring that it is adhered to while observing applicable legal regulations. The board of Messer Group GmbH has appointed a Corporate Compliance Officer (CCO) to support the managing directors and the supervisory bodies in their duties. In addition, there are Local Compliance Officers (LCOs) who are designated by the regional directors in consultation with the respective national managing directors. The team of compliance officers is supplemented by the corporate departmental heads in the Corporate Office, who act as department-specific compliance officers (BCOs). The management of the Messer Group GmbH has defined the tasks, rights and obligations of the compliance officers in a Compliance Officer Guideline document.

Managing directors, senior management, the CCO, LCOs and BCOs also serve as role models. They are expected to demonstrate a high degree of social and ethical competence. Managing directors and senior management are expected to demonstrate an appropriate degree of organisation, leadership, communication, selectivity, oversight and direction in their activities. Moreover, they are obliged to protect customers, employees and the environment. In this context, a clear commitment to conducting business in compliance with the law is just as essential as preventing and disciplining illegal practices.

Training programme

Besides traditional classroom training, there are webinars and e-learning courses given on selected topics relating to the Messer Code. The corporate departments, and the local management and departments generally decide on the content of the courses and the employees to be trained. They assume responsibility for arranging and giving the training courses, supported by external service providers as necessary, and ensuring that proper documentation is issued.

The Messer Group management may mandate training courses and specific course content as well as the group of employees to be trained.

Reporting and auditing

The Group Guidelines, the largely standardised articles of association, the rules of procedure for the boards of management of the (national) subsidiaries, the signature regulations based on dual responsibility, and the individual requirements issued by the corporate divisions have the effect that a whole range of matters is governed by a specific approval and reporting process.

In addition to this, regular meetings at the local, regional and departmental levels are held, where topics are discussed and coordinated and experiences and information exchanged and reported on.

The most important procedures at Messer are defined and often certified (e.g. ISO, GMP). The existing organisational structures are used to ensure that the Messer Code is adhered to. Each department, the regional managers and the management bodies have direct responsibility. Thus each area of responsibility is accountable for ensuring implementation and observation of the Messer Code.

The Internal Audit team, supported by Corporate Legal, performs regular audits of all national subsidiaries which last several days. During the process, matters pertaining to the Messer Code (e.g. articles of association, rules of procedure, signature regulations, training provided, compliance with the reporting procedures etc.) are also examined in detail. Individual departments perform other detailed audits in addition (e.g. SHEQ, Medical, IT). Findings and suggestions for improvement are documented in a report which is submitted to the Messer Group Executive Board. Follow-up audits are performed within a set time period to verify that the suggested improvements have been implemented.

Every three months, pending and threatened/imminent disputes which exceed a certain value/risk are queried centrally and the facts of the case, dispute value, process status, process risk and financial provisions already made or which may prove necessary are recorded. The managing directors/LCOs and BCOs are obliged to inform the CCO of any suspicion of a serious breach of the Messer Code. The CCO shall report to the Messer Group GmbH Executive Board and the Supervisory Board on a regular basis, and in specific cases on request, any serious breaches of the Messer Code of which he or she has been informed in a timely manner or otherwise once a year.

Once a year, all national subsidiaries and corporate departments report any issues relevant for the Risk Report to the EVP Strategy. This is discussed by the Messer Group Executive Board, which then decides on any further measures that may need to be taken. These are then submitted to the Messer Group Supervisory Board along with further explanations as needed for information purposes.

Reporting in the event of compliance infringements and justified cases of suspicion

The managing directors and senior management must organise their area of responsibility such that reports from employees about infringements of applicable law or the Messer Code ("compliance infringements"), as well as justifiable cases of suspicion, can be submitted to them in a timely manner in order to ensure that prompt remedial action can be taken.

Part of the reporting process involves creating a report which records the action taken in response to confirmed compliance infringements. This includes a description of how the incident was investigated, how the consequences of the wrongdoing were established and what decision was made regarding further action.

The managing directors must take suitable measures to ensure that all employees are informed about how and to whom breaches of the Messer Code are to be reported, including publishing a telephone hotline number and the compliance e-mail address. A total of 49 suspected compliance infringements were reported in 2016. This figure breaks down as follows: 22 in the Western Europe region, 20 in the Southern/Eastern Europe region, five in Peru and one each in Asia and Central Europe. Investigations have been closed in three of the suspected cases.

Company reputation and brand awareness

In contrast to many other businesses and our competitors, "Messer" is not a made-up company name. It is the name of the Messer family and it lends the company, as a family business, and its products a special identity and standing.

The company slogan "Gases for Life" is an integral part of the Messer brand and plays an important role in the international marketing of our products and services. By associating our brand with positive connotations, we are looking to gain long-term competitive advantages through emotional branding.

To this end, we regularly evaluate the Messer brand's reputation scores and the media resonance in Germany.

Every year, a telephone survey is carried out in Germany to measure brand awareness. 1,058 people in the German cities of Siegen, Bad Soden, Krefeld, Frankfurt/Main, Konstanz, Freiburg, Hamburg, Cologne, Stuttgart, Dortmund, Duisburg and Oberhausen took part in it at the end of 2016. Based on the same number of respondents to the prompted question "Are you aware of Messer as a manufacturer of industrial gases?", Messer's brand awareness rating as an industrial gases manufacturer has increased by 22 %. Taking the average of prompted and unprompted questions, the awareness rating has gone up from 12.6 % to 14.3 %. When first measured in 2012, it was 8.7 %.

Brand awareness is most pronounced in Bad Soden, Siegen and Krefeld, the Messer Group's locations. But in the Ruhr area, too, Messer is still firmly embedded in people's minds thanks to its strong presence there in the past.

Besides brand awareness, the survey also includes questions about the characteristics of the family company. For example, the respondents are asked whether they find Messer likeable and people-oriented or unlikeable. They are also asked whether Messer is a family company or a corporation. Knowledge of the fact that Messer is a family company has also increased along with the general increase in brand awareness. This result can be attributed to the improved figures in Bad Soden. It is striking that Messer is mostly remembered as a corporation at former Messer Griesheim locations in Frankfurt, Dortmund and Oberhausen. Messer is thought of as likeable almost without exception, the percentage points having risen significantly. The increased level of brand awareness in Bad Soden and Krefeld is a decisive factor in this rise. The likeability ratings in Dortmund, Hamburg, Cologne and Oberhausen have also seen a sharp increase. One can speculate as to the reasons, but it is probably due to the improved brand awareness and the fact that Messer receives exclusively positive coverage in the media. 22 % of respondents think of Messer as people-oriented; the year before, it was 10 %.

In 2016, Messer Group further intensified its press and media work, putting out 25 press releases over the course of the year.

The media resonance analysis shows that Messer attained a gross reach of 47,746,755 people with its publications in independent online and print media. Media reach is determined according to standard criteria to ensure comparability. Gross reach indicates the number of people contacted. In 2015, a gross of 45,240,238 people were reached. As in the previous year, all of the reports published about Messer in 2016 were positive and provided an accurate picture of our business activities. Messer's press releases were referred to in 143 German printed media and 435 online media.

Open communication with our stakeholders

G4-24, G4-25, G4-26, G4-DMA
Open communication and
cooperation with our stakeholders

The basis for a good relationship characterised by familiarity and trust can only be created through open and honest communication. This is why keeping in regular contact with customers, suppliers, employees, industrial firms and organisations, with the media, our neighbours, the general public and the Internet community – and not forgetting our valued retirees – is so important to us. Our communication channels are as varied as the needs of our stakeholders. Information about the Messer brand, product features or special technologies has to be compiled and made available in a suitable format, and it should be easily accessible. Messer uses a variety of channels to do this.

At Messer, the tools used for external communication are just as important as those used for internal communication. These include our Corporate Internet, press and public relations work, trade show appearances and exhibitions, image brochures, business reports, sponsoring and a customer magazine entitled "Gases for Life", which appears quarterly, as well as a website of the same name: www.GasesforLife.de. When it comes to press and public relations work, Messer maintains close contact with both the regional press as well as business and specialist publications and, in particular, with journalists.

Our company profile at www.messergroup.com

Since the end of December 2015, the Messer Group has had a new website where it can showcase its products and services to customers, business partners and the public in general (www.messergroup.com). With an average of 10,000 visitors accessing our European web pages each week, our Internet presence is the ideal platform for finding out more about Messer's activities, its products and applications, as well as to learn about its history and what makes this family business special.

The annual report

G4-30

Annual reports, which are published once a year following conclusion of the financial year, no longer solely disclose key financial data and core projects. Together with the Corporate Responsibility Report, they are the ideal compendium for assessing the economic and technological development of a company. This is particularly important for demonstrating transparency with respect to financial partners and key accounts and engenders trust. Since an annual report is very expansive, it is made available in printed form in addition to being published on the Internet. Messer's latest Annual and Corporate Responsibility Reports are always available for download from annualreport.messergroup.com.

Our CSR report has successfully undergone the "Content Index Service" of the GRI G4 Guidelines. The Global Reporting Initiative has been in existence since 1999, with one of the founding members being the United Nations Environment Programme. According to the GRI, its aim is "sustainable development through comparability and transparency among companies and organisations". Up to 120 key performance indicators from ten areas include working practices, social commitment, human rights, ecology and economy. Another partner of ours is French company EcoVadis. They analyse – including on behalf of customers of ours, such as Coca-Cola – the sustainability of companies based on 21 environmental, social, ethical and supply chain criteria. Coca-Cola has been selecting its suppliers based on these criteria for years, reviewing them once a year. This in turn led to Messer's decision to start producing CSR reports. By achieving our key performance indicators and making them transparent, we can attract the attention of sustainable companies and become their preferred supplier of gases.

All of the annual reports from 1964 to the present day are available for download on the company website www.messergroup.com. The archived annual reports and the outlines of the economic environment in which the company was then operating (written by historian Dr Jörg Lesczenski) chart the economic cycles, the growing intertwining of global economies and the rise of new boom regions that presented Messer Griesheim GmbH (formed in 1965) with increasing challenges in the last third of the 20th century and continue to have a significant bearing on the development of the Messer Group today.

Gases for Life – The industrial gases magazine

Our industrial gases magazine was conceived for readers who are already acquainted with Messer and want to find out more about the diversity of our business. It is published up to three times a year in German, English, Hungarian, Slovakian and Czech.

Gases in everyday life at www.GasesforLife.de

www.GasesforLife.de gives examples of applications and processes that use gases in all aspects of our lives, such as nutrition, leisure, healthcare, communication, mobility, environmental protection, science and home life. The information is written in a comprehensible manner and aimed primarily at a lay audience, rather than technical experts or those whose work involves the use of gases. The target groups of our website include journalists, teachers, students, school children and consumers. All images and text material can be downloaded for free.

GaseWiki at www.gase.de

GaseWiki is a free encyclopaedia about the world of gases which is written by voluntary contributors rather than by a permanent editorial team. This Messer initiative is intended to provide a structured, comprehensive presentation of knowledge on specific topics as well as information about every aspect of the world of gases. Knowledge is central to GaseWiki: it in no way attempts to compete with the much bigger Wikipedia, upon which it is modelled. GaseWiki is a collection of pages which thrives through the propagation of knowledge about gas-related topics. Besides reading the pages, any visitor can also edit them or even add new ones.

Messer in social media

Social media are often the first port of call for people who are looking for information about products or a company. Even in times of crisis, the public gets its information via social media channels first. Not all of these networks are available in every country, however, which is why their use can vary significantly from region to region. In order to be able to respond to the changes in communication habits, Messer Group has created a number of official channels, such as Facebook, Google+, Twitter, Xing and YouTube. Many of Messer's subsidiaries also have an active social media presence where, among other things, they exchange information with friendly organisations and educational institutions.

Employee communication

The communication strategy developed by the Messer Group's Corporate Communications Division together with the communication officers from the subsidiaries contains communication goals and the measures for achieving them, which are necessary for the implementation and continuity of our corporate strategy.

Messer uses an intranet portal for the purpose of internal communication to which all employees have access. Messer uses the intranet to publish current information about the company, as well as the group's mission statement and corporate strategy. It also provides access to the Messer Compliance Management System and various other guidelines and manuals. In 2016, Messer started the process of redesigning the MesserNet portal. The launch will take place in 2017.

The employee magazine "Messenger" is published quarterly in German and English, with one of the four issues being a special issue. The magazine's content is divided into three themed sections – Projects, Strategy and People.

In addition, Messer communicates current company news with high information value for all employees as a newsletter via e-mail in German and English.

Awards and Commendations

Messer included in list of “Top Family Businesses”

In 2016, the Messer Group was honoured with the “Top 500 Family Businesses” award by the Foundation for Family Businesses. The award is based on a ten-year study examining the importance of family businesses to the economy. Since 2006, Messer has increased its sales by 85 % to 1.166 billion euros. The company’s business figures over the past few years show that Messer has grown steadily rather than rapidly, preferring to focus on long-term effects. This development is in line with the study’s findings, which state that the number of people employed by family businesses has increased by an average of 27 %. Over the same period, Messer’s workforce has increased worldwide from 4,247 to 5,354. Messer has achieved this growth thanks to its employees. They are the most important factor in achieving economic success.

“Die deutsche Wirtschaft” (“German Industry and Commerce”), a Düsseldorf-based employer platform, also sees Messer in a leading position: in its ranking of the top 1000 German family businesses, Messer comes 193rd with annual sales of over 1.1 billion euros.

Switzerland: Rating Certificate

In 2016, for the sixth year in succession, credit rating agency Bisnode D&B Schweiz AG awarded Messer in Switzerland a Rating Certificate with Risk Indicator 1, which represents a minimal default risk. Only two % of all Swiss companies meet the conditions for this top category. The certificate distinguishes Messer in Switzerland as a trustworthy, reliable, economically healthy and stable business partner. Bisnode D&B is a partner in the network run by Dun & Bradstreet, the world’s largest service provider for business-to-business economic information.

Bosnia-Herzegovina: Most attractive employer

For the third time in a row, Messer in Bosnia-Herzegovina has been voted the most popular employer via the “Posao.ba” online jobs portal. “Posao.ba” is a major recruitment agency that helps job-seekers find training and employment. Every year, it organises a public online survey to determine the country’s best employer. The latest survey was completed by 19,100 people who rated 740 companies, for example according to potential earnings, training opportunities, ideas management and cooperation between management and staff. The award was formally presented to Messer in May 2016.



Top left: Valentin Ilievski, Managing Director at Messer BH Gas and Messer Tehnoplina in Bosnia-Herzegovina, accepted the award on behalf of Messer.

Top right: Marisa García accepted the Messer SHEQ Award on behalf of Messer Ibérica de Gases. (Page 46)

Below: The Messer SHEQ Awards went to Messer Ibérica de Gases (Spain), Messer Hungarogáz (Hungary) and Messer Vardar Tehnogas (Macedonia). (Page 46)

Slovenia: Family-friendly company



In May 2016, Messer in Slovenia was presented with the “Family Friendly Enterprise” certificate at a formal ceremony. The subsidiary had already been awarded the basic certificate in recognition of its family-friendly practices back in 2012.

This successful certification required Messer Slovenija to implement a number of measures within the work environment and at the same time optimise its business processes. All these measures had one aim: to improve the work-life balance for the company’s employees. In order to facilitate a proper work-life balance within the company, Messer Slovenija offers its employees preventive health measures and support in the event they face financial difficulties. In addition, employees receive presents on the birth of a child and there are special holiday activities for school children every year. Employees are also given time off by their employer to allow them to attend their six- to eight-year-old children’s first day at school. This special provision also applies to their children’s first day at nursery.

Spain: Messer safety award for best performance of the year

Messer presents its own in-house safety award once a year. At the end of May 2016, the three safest Messer companies of 2015 received their awards. The winner for best performance of the year in Safety, Health, Environment and Quality was Messer in Spain, followed by Messer in Hungary and Messer in Macedonia. The preconditions for taking part in the process of applying for the award were zero accidents in the last two years, zero fatal accidents in the last five years, zero accidents when transporting gases and zero accidents resulting in environmental pollution.

The presentation of the annual safety award for outstanding work safety and exemplary safety awareness to the best Messer companies forms part of Messer’s safety campaign. In 2013, the management of Messer Group initiated the first internal campaign to improve work safety, combined with an annual worldwide day of action.

Bosnia-Herzegovina: Award for financial performance

Messer Mostar Plin in Bosnia-Herzegovina received an award for its outstanding financial performance from LRC Business Intelligence System (LRCBIS) in June 2016. LRCBIS runs the most reliable and secure financial performance and credit rating database in Bosnia-Herzegovina. The LRCBIS experts analysed the annual accounts as well as other economic parameters and concluded that Messer Mostar Plin is among the country's top companies in terms of these categories. This assessment is documented by the certificate that was awarded.



Bosnia-Herzegovina: Commitment to students

In recognition of its support in organising the Youth Speak Forum in Bosnia-Herzegovina, Messer Mostar Plin received a letter of thanks from the organiser AIESEC (Association Internationale des Etudiants en Sciences Economiques et Commerciales). AIESEC is an international student organisation that provides a platform for young people to develop in "Leadership Management" and make a positive impact on society. AIESEC wants to motivate young people to assume responsibility. The Youth Speak Forum in Bosnia-Herzegovina supports the free expression of opinion on existing local community shortcomings as well as the process of presenting methods designed to overcome them.

Messer receives safety awards

At the beginning of June 2016, in Berlin, the Messer Group received six safety awards for exemplary work safety from the European Industrial Gases Association (EIGA):

Messer in France was honoured with the Gold EIGA Award for 20 years of accident-free working at its Creil site. Our Russian subsidiary OOO Elme Messer K in Kaliningrad also received a Gold EIGA Safety Award for 15 years of accident-free operations. The Carbon-Blanc site in France was rewarded with the Silver Safety Award from EIGA for ten accident-free years. Messer in Hungary also received a Silver EIGA Safety Award for ten years without accidents at its Győr site. Furthermore, Messer received a Bronze EIGA Safety Award for five accident-free years at the Nyíregyháza production site in Hungary and for its production facility in Salzgitter, Germany.

The EIGA, which is based in Brussels, represents nearly all European companies that produce and market industrial, medical and food gases. The association's members cooperate with the aim of achieving the highest possible safety and environmental standards during the production, transport and use of gases. Among other things, the European Industrial Gases Association therefore awards gold, silver and bronze "EIGA Safety Awards" to its members every year.



Stefan Messer giving his acceptance speech for the "Top Sustainable Family Business Award"

Germany: Europe's top sustainable family business

On 21 June 2016, in Berlin, the Messer Group was presented with the “Top Sustainable Family Business” award. The European award is presented annually by CampdenFB, a British magazine for family businesses, in cooperation with the French bank Société Générale, and recognises private companies that can demonstrate high social, economic and environmental standards. Stefan Messer accepted the award, given in recognition of his exemplary sustainability and corporate responsibility, at a formal awards ceremony.

Messer uses measurable targets to document improvements and developments in environmental protection, energy consumption, safety and personnel development, and publishes the results in its annual CSR report. For Messer, this “Top Sustainable Family Business” award is the first of its kind at European level.

Spain: Award for optimisation project

In June 2016, Messer Ibérica de Gases in Spain received an award from the Catalan Engineering Association for its project to optimise gas production with the aid of a complex mathematical model. The new model calculates optimal process conditions for the production of gases, taking into account various parameters such as fluctuating electricity prices and inconstant demand, especially for liquid gases. This allows the production costs to be reduced. Messer received the award on behalf of the Tarragona Chemical Industry Cluster. The model was developed in cooperation with the Rovira i Virgili University in Tarragona. Messer employee David Fernández was in charge of the project. He was supported by the Technical Director and other Production staff.

Spain: Award for zero accidents

In June 2016, for the sixth time in a row, Messer in Spain received the safety award from FEIQUE, the Spanish chemical industry employers' association. This award, which is presented annually to companies with more than 50 employees, was given to firms in the sector that had no industrial accidents resulting in staff downtime at any of their sites.



Marisa García (centre) accepting the FEIQUE safety award on behalf of Messer Ibérica de Gases

Germany: Messer receives Axia Award

Stefan Messer was awarded the Axia Award 2016 in the “Best Family Successor” category. “Preserving and continuing tradition” was the motto of the award ceremony, which took place in Hamburg at the end of November 2016. Stefan Messer accepted the sustainable management award, with which Deloitte, an international network in the auditing and consulting sector, and the WirtschaftsWoche business magazine honour medium-sized companies in Germany.



Stefan Messer with (left to right) Sophie Dubbick, Marcel Messer, Jenjira Messer, Diana Buss and Andrea Launer at the award ceremony in Hamburg

Vietnam: Messer nominated for German business award

At the end of 2016, Messer was nominated for another award, the “German Business Award for Development 2017”, for the project “Dual Training of Mechatronics Technicians in Vietnam”. This award is given by the Carl Duisberg Society in recognition of companies’ engagement in developing and emerging countries that goes beyond the corporate objective in benefiting local people. Besides Messer, another four companies were nominated, including Porsche and Teekanne.

China: Award for environmental technology

Sichuan Meifeng Messer Gas Products received the award for “Forward-looking Private and Community Energy Saving and Emissions Reduction” from the Sichuan provincial authority for human resources and social safety. Messer got the company award for its work in support of the Chinese “Ecological Civilisation” environmental programme.

China: Award for research and science

The Chinese subsidiary Foshan MS Messer Gas received the “Achievements in Scientific Research” award from the Foshan city authorities for two technical development projects in the area of production, such as achieving the purity grade 5.0 for the production of nitrogen from ambient air. In addition, the company received an award for the production process for obtaining high-purity, stable xenon for the lighting industry.

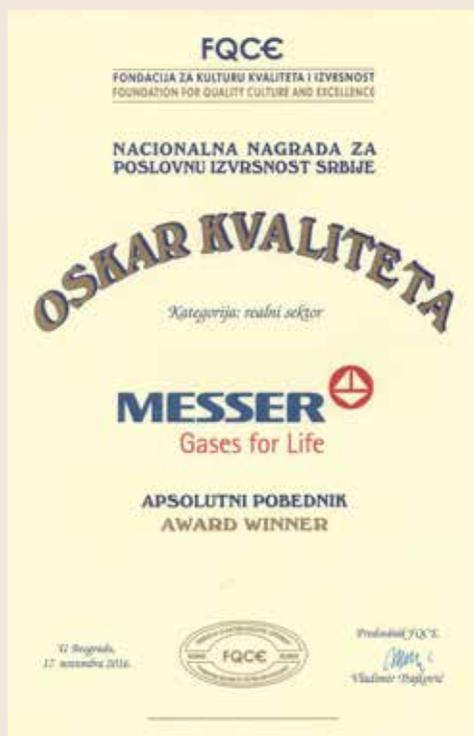
China: Progressive company

As part of a business competition run by the Pingwang city authorities, Wujiang Messer Industrial Gas won the “Most Progressive Company” award. In addition, the company was honoured as an “Important Taxpayer of the City of Pingwang” by the local government.



China: Exemplary use of resources

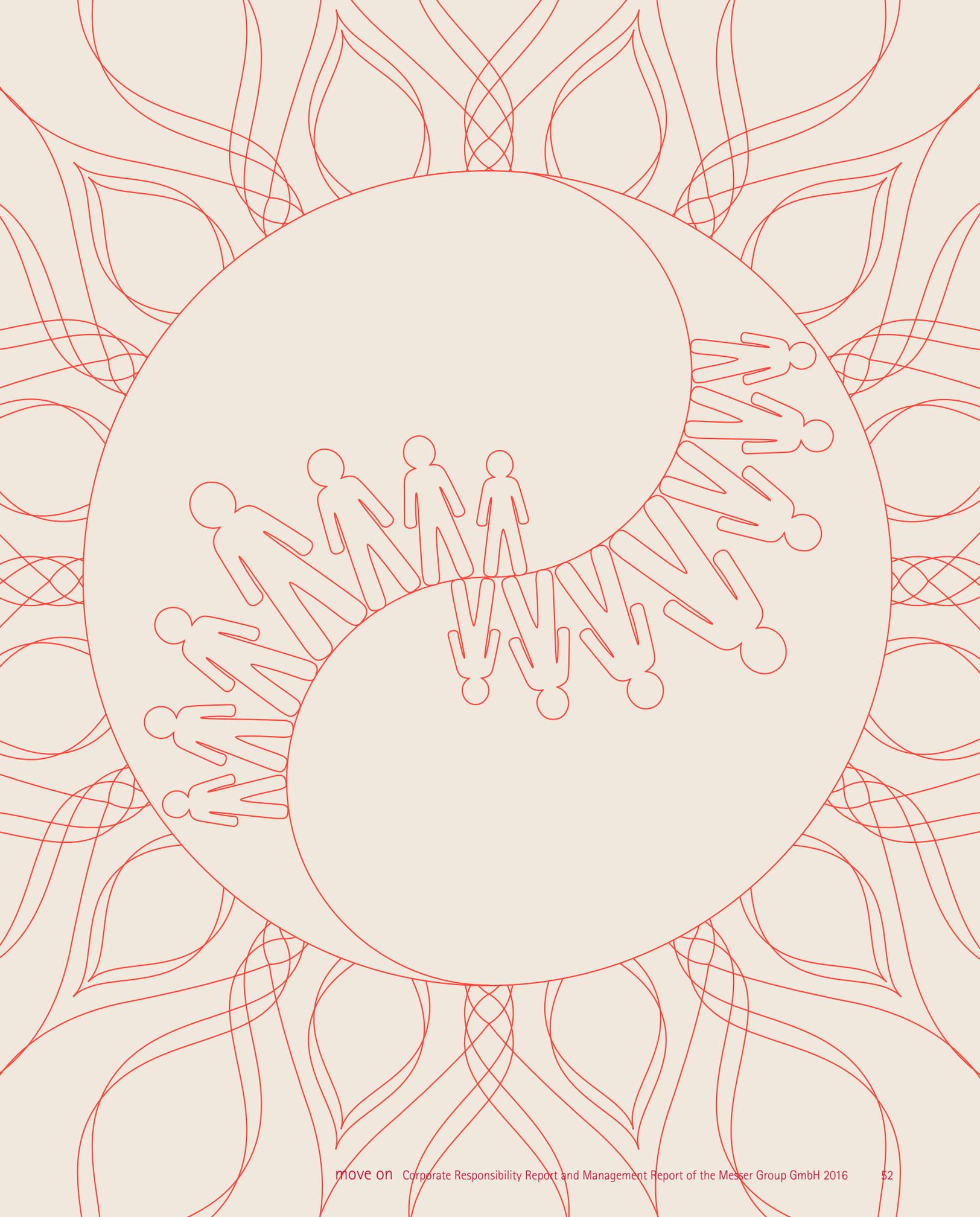
For its promotion of energy-saving technological transformation projects and the use of industrial water instead of drinking water in the production process, Messer Gas Products (Zhangjiagang) received the award for “Demonstrating Exemplary Industrial Recycling” from the Suzhou city authorities.



Messer in Serbia presented with the “Oscar of Quality 2016”

On 17 November 2016, Messer Tehnogas, Serbia, was awarded the “Oscar of Quality 2016” in the Real Economy category and was declared the absolute winner across all prize categories. The prize is awarded annually by the Fund for Quality Culture and Excellence (FQCE) in cooperation with the Serbian Ministry of Economy and the Serbian Chamber of Commerce. Messer’s accomplishments received the highest number of points ever awarded by the jury.

The “Oscar of Quality” has been awarded each year since 1995. Originally presented in recognition of quality, since the year 2000 the honour has been offered in recognition of business excellence in the categories of “Real Economy”, “Public Sector” and “Organisations Outside of the Scope of the Republic of Serbia”.



Employees

Retaining good employees at the company is also a question of creating the right atmosphere. When we talk about the “Messer Family”, we are talking about a shared commitment to common objectives that we can better achieve as a team.



"Sweetening" the daily work routine is part of what makes a good team: Andrea Petruska Simonyiné, Laura András and Viktória Koltai of Messer Hungarogáz enjoy an ice cream produced with the help of an ASCO pelletiser.





Our employees

G4-LA1

Staff structure and length of service

As at 31 December 2016, the Messer Group had 5,485 employees, 76 % of whom are male and 24 % female. A total of 2,785 employees work in the commercial sphere. 300 members of staff are first and second tier managers – 22 % of whom are female – with corresponding responsibility. The number of part-time employees has gone down from 204 to 140. By contrast, the number of employees on fixed-term contracts has gone up from 189 to 235. The proportion of our entire staff with severe disabilities is 0.5 %. In total, 46 employees are actively involved in supervisory bodies. In 2016, the Messer Group had a total of 449 new entrants.

Across the Group, the average length of service of our staff since the date of joining was 10.4 years in 2016. Total staff turnover thus decreased from 8.0 % to 5.6 %. Likewise, the number of sick days per employee decreased slightly from 3.9 % in 2015 to 3.8 % in 2016. This does not include employees who have been off sick for more than six months.

25 years of success in the Czech Republic

Messer Technogas celebrated its 25th anniversary in May. A location right on the banks of the Vltava provided the ideal setting. The event, which took place in lovely weather, involved not only celebrations but also team activities such as clambering up a climbing wall, taking part in a drum show and competing in a dragon boat race.



Our colleagues at Messer Technogas also showed real team spirit during the dragon boat race on the Vltava.

Training and professional development

G4-DMA Training and education,
G4-LA9

Messer employees are encouraged to make suggestions regarding their own advancement during the regular employee appraisal. In 2016, the average spend on training and professional development was 296 euros per employee. In the previous year, the figure was 214 euros. The average number of training days per employee is 3.75 a year. The proportion of apprentices and trainees is falling though. In 2016, Messer trained a total of 49 employees; the figure for the previous year was 56.

There are separate training plans at Group level for young executives. The Academy Messer Group launched its second “Junior Circle” international support programme in 2016. The training concept comprises intercultural training and a focus on a variety of topics for staff working in different fields. 70 % of lectures are given by Messer’s own experts while about 30 % are provided by external speakers. The “Junior Circle” extends over a period of two years and involves five one-week training courses. Messer has already successfully filled several management positions with “Junior Circle” participants.

G4-LA10

Furthermore, Messer offers English courses across the Group as part of the “English Initiative”. At the company headquarters, regular in-house seminars are also offered on the subject of “Lateral Leadership” (Leadership without title or position). These seminars – aimed at employees who want to operate successfully in intercultural teams – are proving very popular.

Germany: Insight into training

In May 2016, government representatives from education ministries and journalists visited Messer in Bad Soden under the auspices of Germany’s Federal Ministry for Economic Cooperation and Development (BMZ). The guests, who had travelled from countries including Myanmar, Laos, Vietnam, Thailand, Indonesia, India, Pakistan and Mongolia, learned about vocational training programmes at Messer. As part of this event, former trainees Marvin Strecker, Spectron Gas Control Systems, and Christine Fritz, Messer Group, provided insights into their industrial and commercial training respectively. The introduction of dual training for mechatronics technicians at Messer in Vietnam also generated a great deal of interest among the guests.

Employee orientation and integrity

Financial parity

G4-DMA
Non-discrimination, G4-LA2

Our salaries are based on performance, the market, the position and length of service. We do not make distinctions on the basis of gender. More information on our remuneration policy can be found in the Management Report 2016 of Messer Group GmbH.

Equal treatment and anti-discrimination

G4-HR3

If employees feel discriminated against or that they are not being treated equally, they can, at any time, turn to their local human resources manager or the Group Compliance Manager, who are obliged to clear up the matter and ensure that equality is maintained. The employee may also choose to put it on record during their annual appraisal. Two cases of discrimination were reported in 2016.

In such cases, provided it is a minor infringement, the possibility of resolving the problem through mediation or equivalent coaching is discussed in consultation with the parties involved. A serious violation may, however, result in the person who committed it having their employment terminated.

G4-11

Internal social partnerships

1.5 % of our employees are members of a works committee. At most of our Eastern European national subsidiaries, the local management negotiates joint pay agreements with trade unions. The relationship between our workforce and the management is characterised by trust, so there was not a single strike or anything similar within the Messer Group in 2016.

Family friendliness

Hungary: Science is “child’s play”

On 3 September 2016, Messer Hungarogáz provided exciting entertainment for employees and their families at its location in Budapest: the presentation by the “Palace of Wonders” – Hungary’s first interactive science museum – comprised a show stage covering extensive scientific topics and also featured our “Gases for Life” such as nitrogen, helium, dry ice and sulphur hexafluoride. In a minilab, the children and grown-ups were able to explore the fascinating world of physics and chemistry under expert guidance. A ‘popular science’ poster exhibition, arts and crafts activities, interactive games and sports activities made the family day a special experience for everyone.



Gábor Halász (l.), Welding Engineer at Messer Hungarogáz, and his family also took part in the interactive chemistry lesson in the minilab.

Romania: Third “Kids’ Day” in Romania

The “Kids’ Day” is now a tradition for Messer Romania Gaz. On 11 September 2016, families were invited to a festival with the motto “A day in the country”. The theme park offered numerous exciting attractions for the 20 young guests, including pony rides, a petting zoo and fun games. The children also got to bake pretzels and take small boats out on a pond – which was unquestionably the main attraction.



Paddling fun at Messer Romania Gaz with mini boats on an artificial pond.

Health management

Healthy cooking in the Messer World

“The Taste of the Messer World” is the title of a cookbook featuring 80 recipes by employees of Messer and Messer Eutectic Castolin. The first edition was published at the end of 2016. In it, the authors naturally write about culinary matters, but the book also features short profiles of the amateur chefs, in many cases with their families. Five thousand copies of the cookbook were distributed across the Messer World as a Christmas gift.



Messer Slovenija gets fit by dancing: a sports programme for employees and their partners.

Slovenija: Fitness in three-four time

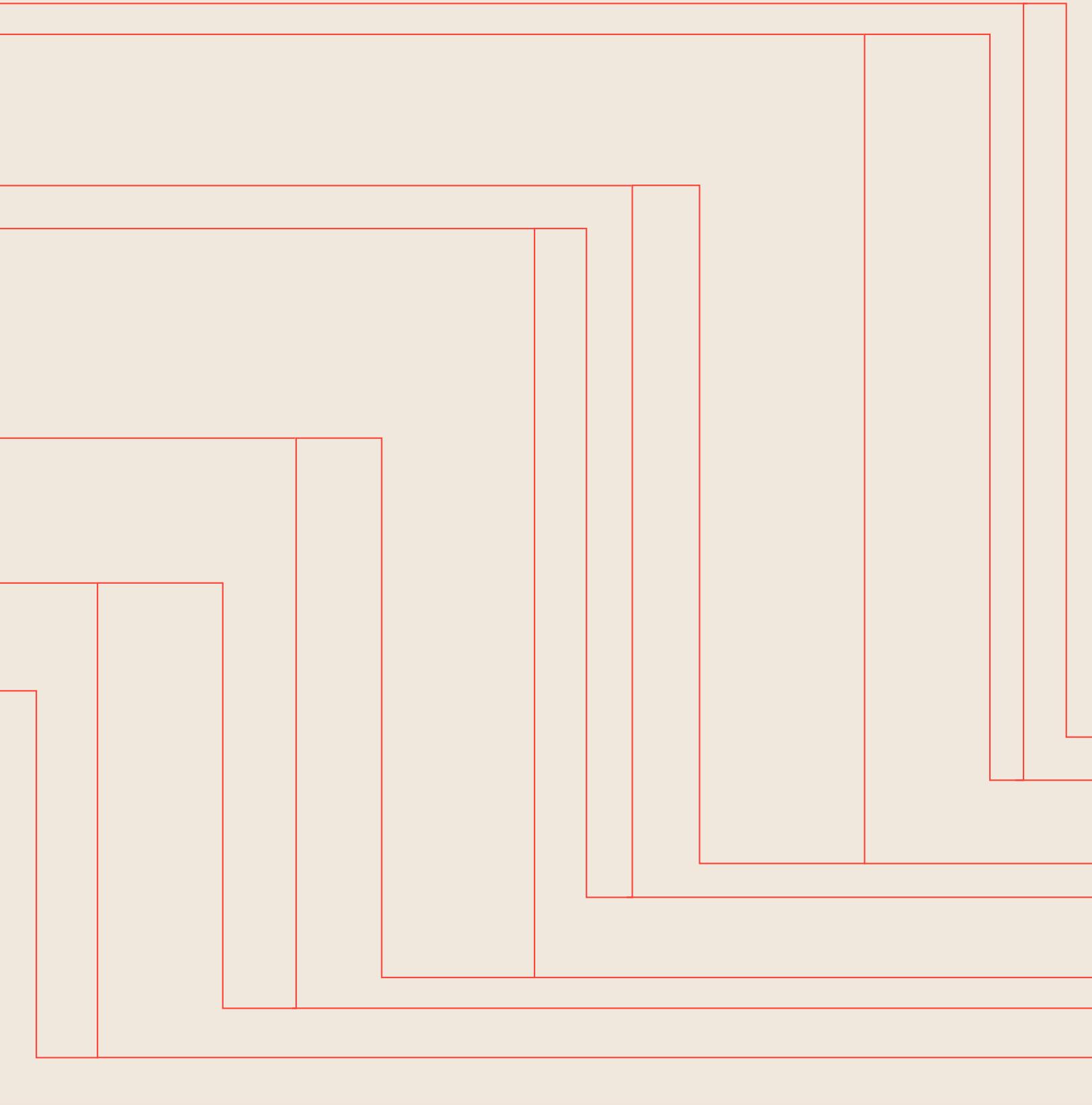
Healthy and motivated employees are crucial to the success of a business. Messer Slovenija is therefore offering its employees sports activities – including a dance class – as part of an in-house health promotion programme. Dancing not only has a positive effect on human wellbeing and physical fitness. Movement to music boosts energy and self-confidence, from which the dance class participants benefit in their day-to-day work.

France: Relay marathon

How do you maximise team performance? This question was answered by Kristell Faburel, Marc Chauvin, Florian Brigardis and Fabrice Farineau of Messer France in April 2016: for the first time, they took part as a team in the “Groupama Relay Marathon” in Nantes. Each runner ran a leg of the 26-mile (42-km) marathon route.



Strong as a team: (l. to r.) Marc Chauvin, Florian Brigardis, Fabrice Farineau and Kristell Faburel of Messer France proudly show off their marathon medals.

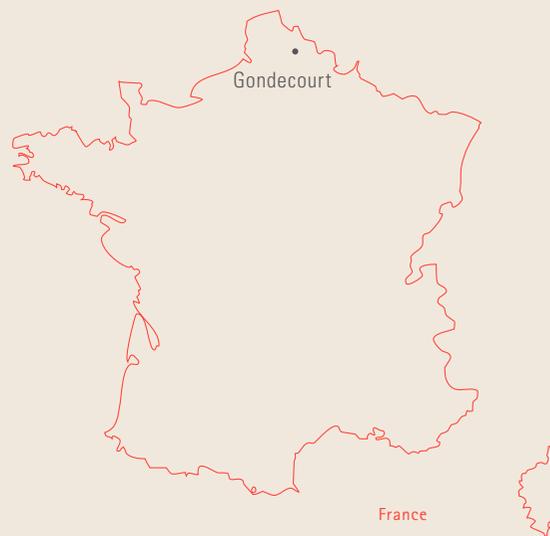


Economy and company





In 2016, Messer developed a number of new solutions and services for customers who need gases in cylinders. They range from comprehensive consultancy to more efficient processes and transportation as well as increased safety – in a nutshell, greater customer satisfaction.



The fourth FILTRAC upgrade has been successfully implemented at Gondecourt's filling plant in France. The fully automatic system developed by Messer permits safe and efficient filling of 300-bar gas cylinders.

Economy and company

Reliable product supply through investment

Hungary: Takeover of Air Liquide's industrial gases business approved

On 31 May 2016, the purchase of Air Liquide Hungary Ipari Gáztermelő Kft. by the Hungarian subsidiary of Messer was concluded with the approval of the competition authority. Messer Hungarogáz Kft. has thus taken over some 50 employees as well as the fixed assets and customer relationships of Air Liquide. The assets include an on-site air separation unit, two nitrogen generators, a filling plant for gas cylinders, plus tankers, customer tanks and steel cylinders.

Messer wants to use the takeover of Air Liquide Hungary Ipari Gáztermelő Kft. to enhance the reliability and flexibility of its gas supply and shorten delivery routes. Messer will fully integrate and merge the two companies in the short term in order to boost efficiency. In the meantime, Air Liquide Hungary Ipari Gáztermelő Kft. will continue to exist unchanged under the name Messer Iparigáz Kft Messer.

The acquisition fits Messer's growth strategy – to continually strengthen its own production and supply capacities by means of developments. In the near future, there are plans to commission a new air separation unit in Tiszaújváros, to increase the production capacity of the CO₂ plant in Ólbó, to install further on-site nitrogen generators on customer premises and to develop and modernise the tank container and gas cylinder inventory.

Poland: Messer invests in growing market



Official opening of Messer's second production facility in central Poland: (l. to r.) Michał Przybyszewski (Messer Polska), Stefan Messer, Romuald Antosik (Mayor of Turek), Agnieszka Sygitowicz (Vice President of Lodz Special Economic Zone) and Dirk Fünfhausen (Managing Director of Messer Polska).

In mid-June 2016, Messer celebrated the official opening of a new production facility for air gases and a filling plant for industrial cylinder gases in Poland. Messer has invested a total of around 31 million euros in the extension.

The new production plant located at the Łódź special economic zone in Turek is Messer's second production facility in Poland to produce gases in liquid form for the local market. The air separation unit has a daily capacity of 355 tonnes of liquid oxygen, nitrogen and argon – this amounts to around 16 tanker loads. The plant took two years to build. Messer now produces "food-grade" gases such as oxygen, nitrogen and argon in the Polish industrial town.

In comparison with other Central European countries, the Polish gas market has recorded consistently high growth rates in recent years. With its investment in Central Poland, Messer wants to share in the country's strong economic growth and strengthen its market position.

China: Messer strengthens its leading position in Hunan

In the summer of 2016, Messer successfully commissioned a new production facility for air gases such as oxygen, nitrogen and argon in the southern Chinese city of Hengyang. Concurrently, Messer signed a contract to supply gaseous oxygen and nitrogen over a period of 15 years with copper cathode manufacturer Minmetals Copper (Hunan) Co., Ltd. The investment in Hengyang will strengthen our leading position in Hunan province. In addition, our cooperation with Minmetals ties in with our strategy of diversifying our Chinese pipeline business. The new air separation unit has a capacity of 22,000 normal cubic metres of oxygen and 44,000 normal cubic metres of nitrogen per hour. It is the second production site of its kind in Hunan province. The first facility is in Xiangtan and was set up by Messer in 1998.

Minmetals Copper has opened a new production facility in Hengyang with an annual capacity of around 100 thousand tonnes of copper cathodes. The copper cathode manufacturer's industrial gas requirements resulting from this have been covered by Messer since June 2016.

Copper ore is converted to copper matte – the raw material from which copper cathodes are made – in melting furnaces. Oxygen is used to significantly increase the temperature in melting furnaces and at the same time remove impurities such as sulphur from copper ore. Nitrogen is used while stirring the copper matte in the rotary anode furnaces to prevent oxidation of the copper.



The air separation unit in the north of Vietnam supplies steel producer Hoa Phat Steel.

Vietnam: Messer commissions third air separation unit and secures market position

In July 2016, Messer commissioned its third air separation unit in Vietnam. From this plant, Messer is supplying gases to steel manufacturer Hoa Phat Steel, a long-standing partner, thereby increasing their daily capacity by 240,000 normal cubic metres of oxygen and 480,000 normal cubic metres of nitrogen.

In 2011, Messer in Vietnam and the Hoa Phat Group signed the company's first 25-year supply contract. The new air separation unit (ASU) is the largest industrial gases plant in the north of Vietnam. As well as supplying the steelworks, it produces gases in liquid form for the local market. Following a construction period lasting 15 months, the plant is in stable operation and producing air gases such as oxygen, nitrogen and argon. Together with the existing ASUs, the Hoa Phat Steel steelworks is now being supplied with 22,000 cubic metres of gaseous oxygen and 30,000 cubic metres of gaseous nitrogen via pipeline every hour.

In Vietnam, this is the first time that Messer has installed an air separation unit with a 'cold box' made up of five pre-installed modules, which made it possible to reduce the short project duration still further while maintaining quality.

Messer intends to continue strengthening its leadership position in the Vietnamese market. The plan is to supply other plants besides Hoa Phat Steel with gases in both liquid and gaseous form, particularly those in the northern Vietnamese industrial corridor from Hanoi to Hai Phong.

Belgium: Carbon dioxide recovery in Ghent

Messer and Belgian gases company IJsfabriek Strombeek have cooperated with biorefinery Alco Bio Fuel (ABF) to help reduce CO₂ emissions in Belgium. They jointly invested in a new carbon dioxide recovery facility at the Alco Bio Fuel site in the port of Ghent. The new facility went into operation in 2016. It recovers around 13 tonnes of CO₂.

This CO₂ is released at the ABF site during bioethanol production from biomass. Biomass is used, among other things, as an energy source for electricity and biofuel production. The CO₂ which is processed at the new facility can be put to further use in the food and beverage industry, in water treatment, for refrigerated transport or as a chemical raw material.

Slovakia: On-site facility produces nitrogen for inerting at Duslo in Sala

The successful start-up of a newly built cryogenic nitrogen generator (1,000 standard cubic meters N₂ per hour) took place in the spring of 2016. It was installed at Duslo Šaľa, one of Slovakia's largest chemical companies, which specialises in the production of fertilisers (urea, ammonium nitrate, complex and liquid fertilisers) and rubber chemicals (antidegradants, accelerators, pre-hardening inhibitors). The nitrogen produced by Messer is used to inert Duslo's production units. Since 2005, Duslo has been part of the Agrofert Group, which comprises over 200 companies including other chemical firms such as Precheza, Deza, Lovochemie, Synthesia and Fatra in the Czech Republic as well as SKW Piesteritz in Germany. The cryogenic nitrogen generator was built on the basis of a 10-year lease thanks to the expertise of the local Messer staff and good long-term relations with the customer.

Hungary: Rising demand for gases at Ibben in Hungary

Messer previously supplied its key account Ibben Hungary Ltd. with nitrogen from two PSA (Pressure Swing Adsorption) units and by means of liquid deliveries. Now the customer's increased nitrogen demand is being met by a N₂ generator with a capacity of 2,600 normal cubic metres per hour, operated in parallel with the two PSA units. Messer also supplies Ibben Hungary with the liquid argon it needs for production. The Japanese Ibben Group operates one of two European production centres for diesel particle filters in Hungary. The filters, made from ceramic raw material, are installed in diesel vehicles and filter out over 99 % of environmentally harmful particle emissions from the exhaust gas. This technology is used by car manufacturers worldwide.



Messer Hungarogáz now meets the increased nitrogen demand from its key account Ibben Hungary Ltd. via an N₂ generator in addition to the existing supply.

Serbia: Messer signs 15-year contract with HeSteel

In June 2016, Messer signed a 15-year industrial gases supply contract with HeSteel Group, one of the largest steel manufacturers in the world. The Chinese company is taking over the Smederevo Steel Mill in an asset deal. Messer Tehnogas has operated two air separation units at the site of the steelworks in Smederevo since 2006.

The contract is a milestone in the further successful development of Messer Tehnogas.

Serbia: Plant for porous mass modernised

Messer Tehnogas has been producing porous mass for acetylene cylinders at its site in Kraljevo since 1976. The plant was modernised at the beginning of 2015, after which the production process for "Tehnogas AF" porous mass for acetylene cylinders with a volume of 5.8 to 50 litres was integrated into a quality management system. This allowed the company to be successfully certified in accordance with ISO 9001:2015, the international standard for quality management systems, as well as the environmental standard ISO 14000. The approval and certification, as well as the cooperation with G.L.I. Gaz Liquéfiés Industrie, a French supplier of acetylene cylinders, are ideal preconditions for further development of this business segment. Two significant contracts have been signed.

Slovakia: New cylinder testing facility

The principle of recycling has always been applicable to cylinders. Once their contents have been used up, they are refilled and delivered again. Since they are manufactured from high-grade steel of appropriate thickness, they can remain in this cycle for many years. Naturally, they undergo regular checks during this process. In 2016, Messer expanded and modernised its cylinder testing facility in Šafa, Slovakia. Similar to a car, each cylinder has an inspector's stamp confirming that it is in good technical condition. The intervals between checks are however longer than they are in the case of a motor vehicle. Depending on the cylinder type, its contents and where it is being used, these robust vessels can remain in continuous use for up to 15 years. At the end of this period, the cylinder has to undergo a comprehensive overhaul. Thanks to the expansion, it is now possible to test up to 100,000 cylinders a year from Slovakia, Poland, the Czech Republic and Hungary. Two technologies for periodic cylinder testing are available in Šafa – the classic hydraulic test and the ultrasonic test. The hydraulic test involves the cylinder body being filled completely with water and having its strength/resistance tested by applying a test pressure. The ultrasonic test is a dry test. The proper condition of the test specimen is checked by means of electronic evaluation of reflected ultrasonic waves. This allows reliable detection of faults such as cracks, unacceptable corrosion or non-compliance with the necessary minimum wall thickness. Once the cylinders have passed the test, they are fitted with a new valve and get a new inspection stamp as well as a barcode. The latter allows all the relevant data to be retrieved from Messer's central computer in Groß-Umstadt.

France and Belgium: Two nations – one logistical challenge

In March 2016, Messer France and Messer Benelux jointly organised the task of moving a 110-tonne CO₂ storage tank from Saint-Georges (near Lyon) to Antwerp/Belgium. In spite of adverse weather conditions, good teamwork between the two companies enabled them to transport the tank from France to Belgium – including by sea via Spain and Portugal – within three weeks. The aim of the logistics project was to increase Messer's CO₂ storage capacities at the Antwerp site. The space

that has become available in Saint-Georges fits in perfectly with Messer France's plans for the construction of a filling plant for medical gases.



The weather was still ideal during loading of the CO₂ storage tank.

Quality assurance for our products and processes

Corporate Supply Chain Management and Messer GasPack certified

The newly implemented Quality Management System for Corporate Logistics, Sourcing and Filling Plants at Messer Group as well as Messer GasPack has successfully undergone its first audit. The external audit was carried out by international inspection body Lloyd's Register Quality Assurance on 18 November 2016.

2015 the audit covered the processes of procuring tankers, storage tanks and vaporisers as well as the procurement, sale and renting out of gas cylinders along with their periodic inspection in accordance with ISO 9001. The supply chain for all pressure vessels that are supplied to Messer Group companies for use at customer sites has thus been fully certified in accordance with ISO 9001, which is particularly important for medical and food technology related requirements.

Austria: Shorter lead times for specialty gas mixtures from Messer

Messer Austria can deliver its entire portfolio of specialty gas mixtures faster thanks to the optimisation of all relevant production processes. The company delivers two-component mixtures in the >1 % range within two weeks of receiving a definite order. Multi-component mixtures in the percent

and ppm ranges as well as noble gas mixtures and xenon cylinder charges can be delivered after four weeks. Messer Austria offers an eight-week lead time for all specialty gas mixtures in the ppb range. The aforementioned periods apply to provision of the gas mixtures ready for dispatch in Gumpoldskirchen. Journey times must be allowed for separately. Since the second quarter of 2016, Messer Austria has also been delivering the test gases produced at the Gumpoldskirchen site to customers in various countries within an average of 2.5 weeks. The company has thus reached a level that allows it to guarantee short lead times on a sustained basis. This is a strong selling point which the sales team of Messer Austria can use to gain new customers.

Serbia: Successful recertification to new ISO 9001 standard

The revision of the ISO 9001:2015 standard published in October 2015 by the “International Organization for Standardization” replaces the previously applicable ISO 9001 standard with a transitional period of three years. Notwithstanding this transitional period for bringing the quality management system into line with the standard’s modified requirements, Messer Tehnogas decided to complete the process in 2016, becoming the first entity in the Messer Group to meet the new ISO 9001:2015 standard: Messer Tehnogas is among the first 100 companies worldwide to have been certified in accordance with the modified standard by TÜV SÜD. The revision of the standard has further significantly increased the quality assurance requirements and also made them more extensive. Nevertheless, thanks to good teamwork, it was possible to successfully implement all the improvements stipulated by the revised standard. The production centre for porous mass in Kraljevo was incorporated into the process for the first time. In parallel, the control audits for the ISO 14001-compliant environmental management system and the FSSC 22000-compliant food safety management system were also successfully completed.

Optimisation of gas production processes

A new model calculates optimal process conditions for the production of gases, taking into account various parameters such as fluctuating electricity prices and inconstant demand, especially in the case of liquid customers. This allows the production costs to be reduced. In this connection, Messer received an award on behalf of the Tarragona Chemical Industry Cluster, Spain, in June 2016. The model was developed in cooperation with the Rovira i Virgili University in Tarragona, and Messer employee David Fernández was in charge of the project. He was supported by the Technical Director and other Production staff of Messer in Spain.

New IT Self-Service Portal for employees of Messer and MEC

In 2016, the IT Ticket System previously made available to employees of Messer and MEC by Messer Information Services (MIS) was replaced by a new Self-Service Portal. The new IT Self-Service Portal is accessible via the Internet. It is available to Messer and MEC employees worldwide who use an MIS service such as SAP or BAAN.

The new Self-Service Portal can be accessed from any web-enabled terminal (such as PCs, notebook computers, smartphones and tablets) with the Citrix/Windows login details. It provides a quick and convenient way for users to report their IT issues or submit IT-related inquiries. Comparable to an Amazon order, the new portal offers the advantage of allowing users to track the current status of their IT inquiry via a ticket number. Once the problem has been solved, MIS closes the ticket. In parallel, users

can rate the performance of MIS. This valuable feedback is then included in the process of continuous system improvement. MIS introduced the new ITSM tool in order to make the process of submitting support queries more effective and user-friendly.

European General Data Protection Regulation comes into force

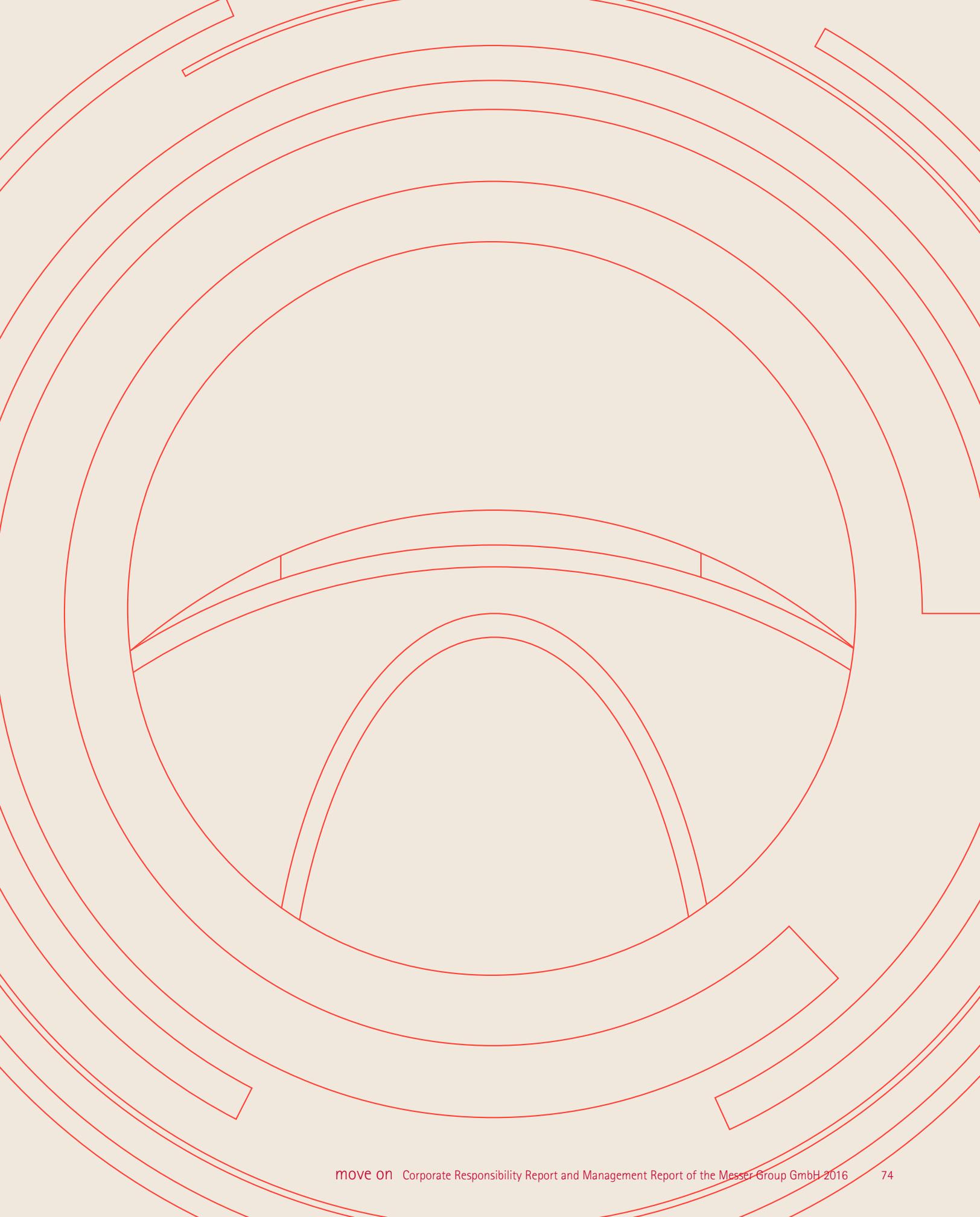
After almost four years of debate, the European Council, European Parliament and European Commission reached agreement about the final content of the new EU General Data Protection Regulation. The General Data Protection Regulation (GDPR) was published in the Official Journal of the European Union on 4 May 2016 and came into force on 25 May 2016. The new regulation replaces the EU Data Protection Directive (Directive 95/46/EC) which had been in force since 1995. The GDPR will take effect on 25 May 2018 after a transitional phase. EU member states have until then to implement the requirements.

For Messer Group's national subsidiaries affected by this change, the process of implementation will be managed centrally by the Corporate Office. This is to ensure a uniform approach and implementation across all national subsidiaries. The transitional period until 25 May 2018 offers Messer Group an excellent opportunity to establish new company-wide data-protection-related processes and bring them into line with the new legislation.

Documented supply chain

G4-12

Messer has a central purchasing policy, buying its tanks, tankers and gas cylinders for the whole of Europe. For these products, Messer works with long-standing suppliers who are regularly audited. Before concluding a contract with a new supplier, they first need to pass a comprehensive audit. All other products, in particular the electricity for the operation of our production facilities, but also traded goods, are bought locally by the national subsidiaries. These suppliers undergo regular checks as part of ISO 9001 certification.



Safety

As an industrial gases company, we are in a position of great responsibility – including for the safety of our customers and employees. We therefore continued our work safety campaign in 2016 and organised “Safety Days” throughout the company.



不燃气体

2

梅



Like all employees at the Messer plants in China, Lin Yuhao (left) and Zhang Zhixing, received new working clothes in 2016. In order to satisfy all the safety requirements, a material was chosen that does not become electrostatically charged.

G4-DMA
Customer health and
safety

Safety

Safety – both for us and our customers – when handling our gases, safety in the workplace, be it on the shop floor or in the office, plant safety as well as safe logistics and vehicles – all these elements are of fundamental importance to our customers, partners and employees. This is clearly reflected in our materiality matrix. Health and safety at work are firmly established in our company as well as our industry as a fundamental element. In our mission statement, our internal guidelines and our organisational approach, safety is a central feature for all business units, thereby enabling our experts to implement individual measures aimed at constant improvement.

With effect from 1 January 2017, Messer has reinforced the corporate SHEQ department (Safety, Health, Environment and Quality) by taking on a new employee whose responsibilities will include an focus on safety audits at Messer’s production sites in Europe.

G4-PR3 The last SHEQ conference at the end of May 2016 focused on the topic of improving the safety of Messer customers and employees. A total of 51 participants from 20 countries gathered in Bad Soden to look at the developments regarding our safety figures and to present selected local safety measures on topics such as “Safe transport of gas cylinders”, “Correct labelling of gas cylinders” and “Risks and identification of gas cylinders”. In addition, for the first time, an external lecturer raised the SHEQ managers’ awareness of the risks and dangers associated with human activity. Citing various concrete examples, she demonstrated how careless people become and how unconsciously prone they are to risky behaviour when frequently recurring situations become an everyday routine.

At the end of the event, Danilo Ritlop, Senior Vice President SHEQ, together with Stefan Messer and Dr Hans-Gerd Wienands, presented the SHEQ Award 2016. First prize for best performance in Safety, Health, Environment and Quality went to Messer Ibérica de Gases in Spain. Second prize was awarded to Messer Hungarogáz, Hungary. Messer Vardar Tehnogas, Macedonia, came third in the Messer world rankings.

Safety was also one of the main topics at Messer’s annual management conference in Bucharest, Romania, in November 2016. An external speaker gave a talk on risk awareness at this conference too. All the senior managers of Messer were also photographed for an internal safety campaign, which was launched at Messer in March 2017.

Safety of our customers

G4-PR1

In 2016, we operated 7,705 facilities of our own at our customers' sites. That was 148 fewer than in the previous year. These facilities underwent a total of 8,255 technical tests. Messer carried out 1,299 safety audits of its facilities installed on customer sites. Messer conducted 1,492 safety training events at customer sites, which were attended by a total of 4,366 participants. In 2015, 3,410 customers were provided with training in this area by Messer.

Messer wants to improve customer safety continuously. With its "Safety Pocket Guide" brochure series, Messer is providing basic knowledge – such as an overview of hazard symbols on cylinder shoulders and things to take note of when ordering and receiving cylinder gases – as well as essential know-how for the safe handling of gases. The Pocket Guides are designed primarily for users of cylinder gases.

Switzerland: Responsible service

Interspiro, a world leader in breathing apparatus, has placed an order with Messer for the testing and repair of breathing cylinders. This involves annually processing several thousand cylinders that are used by fire brigades, professional divers or for work in hazardous environments. From now on, gas cylinders from all over Switzerland will be checked at Messer Schweiz's own cylinder processing centre. Previously, the new customer's cylinders were tested exclusively by SVTI (Swiss Association for Technical Inspections), which is comparable to German testing and inspection organisations such as TÜV or Dekra.



Protective breathing equipment from Interspiro in use

Safety of our employees

G4-LA6

The number of industrial accidents reported with loss of working hours increased from 22 (2015) to 25 in 2016. The lost-time injury frequency rate per million hours worked (accident frequency rate) increased slightly by 0.2 to 2.4. The number of working days lost (industrial accident severity rate) per million hours worked increased from 65.1 to 77.9 in 2016. There were 88 reportable industrial accidents in 2016. In the previous year (2015), Messer had 87 reportable industrial accidents. The frequency rate of reportable industrial accidents per million hours worked decreased from 8.8 to 8.3. Once again there were no fatal industrial accidents in the Messer Group in 2016.

Order, cleanliness and hygiene: Messer Safety Day 2016

On 9 September 2016, Messer held its annual Safety Day at all its sites worldwide. This year, the focus was on order and cleanliness in the workplace as well as hygiene in the factories and premises. The potential hazards and problems associated with untidy or dirty workspaces are often underestimated. Messer also seeks to raise its employees' awareness of seemingly self-evident matters in order to protect the health of each individual while making further improvements in safety at work. Employees and the company alike benefit from impeccable hygiene as it promotes the employees' health as well as more efficient work processes.

China: New working clothes for a uniform appearance

All members of staff at Messer China's plants have been wearing uniform working clothes with a new design since 2016. In order to satisfy all the clothing safety requirements, a material was chosen that does not become electrostatically charged. As an eye-catcher, our "Messer – Gases for Life" slogan is emblazoned on the back of the clothing. The uniform working clothes also ensure a professional appearance when dealing with Messer China's customers.

Germany: New safety clothing

Production staff at the German plants in Siegen and Salzgitter now also have new, uniform working clothes. In future, the jackets and trousers will be professionally cleaned by an external textile service provider in order to preserve their protective function.

Germany: Rescue at the highest level

At the end of April 2016, an on-site visit took place at the Siegen air separation unit (ASU) involving the Siegen fire brigade and the works fire service. During the visit, the rope rescue team was introduced and it was agreed to stage a rescue exercise on the ASU's cold box. This exercise took place at the beginning of June and began with a safety briefing for all those involved. In addition, the firefighters were given a quick overview of the production activities at the site and there was a discussion of the planned exercises. These included lowering an injured colleague several floors on a rope as well as rescuing a casualty on a stretcher. The exercise involved going through the entire rescue procedure from the cold box's top service passageway at a height of approximately 60 metres to the emergency vehicle on the ground. All the exercises were repeated several times with different personnel.



In Siegen, at the beginning of June 2016, a rescue exercise was carried out for the first time on the air separation unit's cold box, which is approximately 60 metres tall.

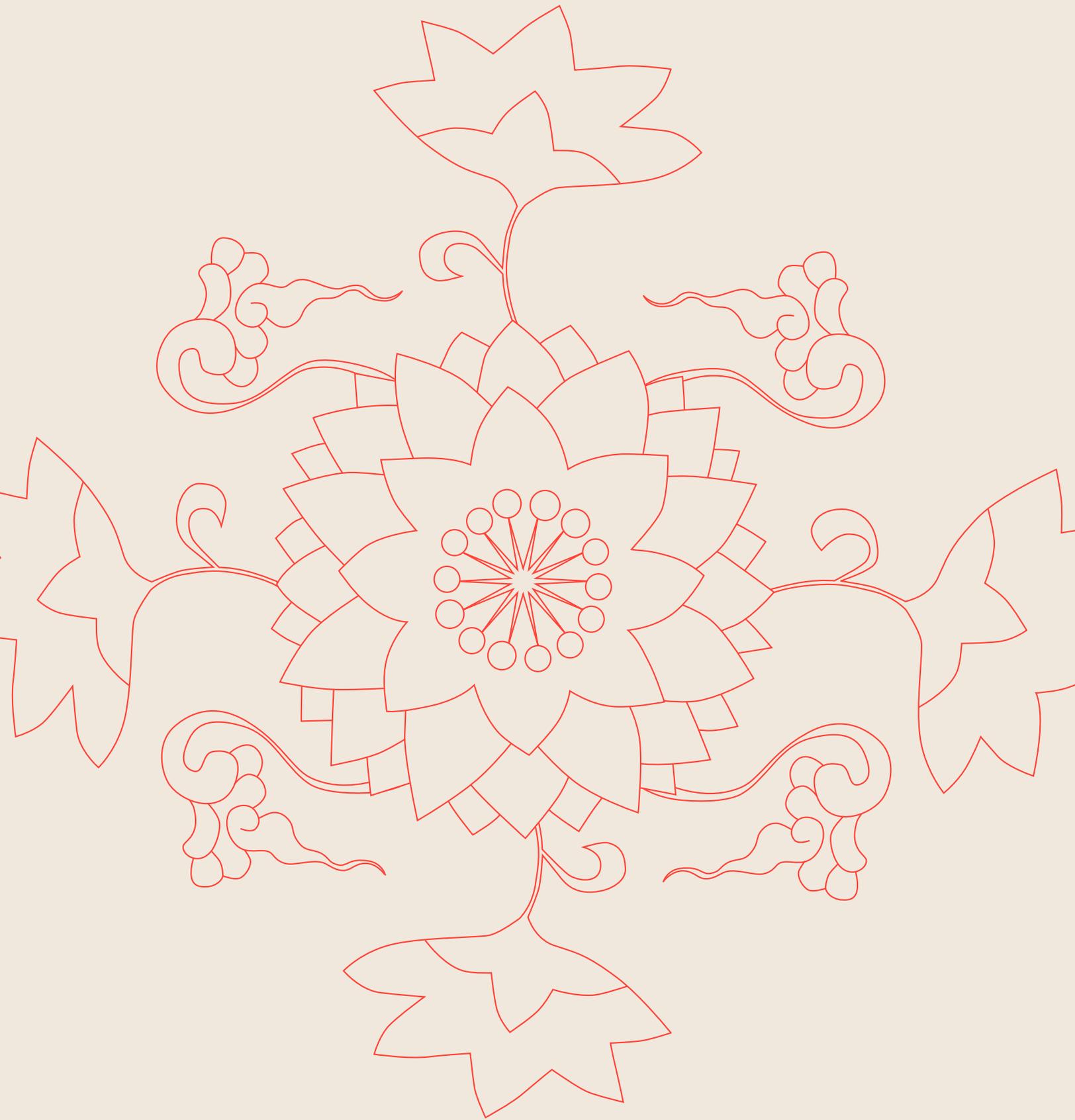
Safety of our logistics and vehicles

G4-DMA Transport,
G4-EN30

In addition to the statutory provisions on operating a vehicle fleet, Messer also implements its own safety concept for the transport of gases with tankers and cylinder trailers. The driver training prescribed as per ADR (European Agreement Concerning the Carriage of Dangerous Goods by Road) is thus supplemented by our own modular driver training programme. You can read about further measures in the area of transport safety in Messer Group's 2016 Management Report.

The relevant key performance indicators regarding the "safety of our logistics" show a largely positive trend. The number of avoidable accidents in connection with the transportation of gas cylinders decreased from 14 in 2015 to 12 in 2016. Per million kilometres driven, this signifies a decrease from 0.62 to 0.48.

The number of avoidable accidents in connection with the transportation of liquid gases, however, increased slightly. In 2015, there were 29 accidents, while in 2016 that figure rose to 31. Nevertheless, the frequency rate per million kilometres driven dropped from 0.51 to 0.49.



Environmental and climate protection

Acting in a sustainable and environmentally sound way is part of how we see ourselves. We therefore implement solutions that help save energy, use resources more efficiently, avoid emissions and make processes more environmentally compatible.



In 2016, the AmpaCity pilot project for efficient power transmission won the German Climate and Environment Innovation Award. Messer developed an innovative liquid-nitrogen-based cooling technology for the world's longest superconducting cable. Representatives of Messer Group, Messer Industriegase and RWE accepted the award for the joint project.



iKU

Der Innovationspreis für
Klima und Umwelt 2015



Environmental and climate protection

Environmental guidelines

As an integrated policy, our SHEQ (Safety, Health, Environment and Quality) guidelines reflect the Messer Group's commitment to environmental protection. In addition, Messer adheres to a set of general environmental guidelines.

The Messer Group will

- determine the material impact of its business activity on the environment and set itself targets for the continual improvement of its environmental compatibility
- reduce the environmental impact of its products and services
- endeavour to prevent pollution of the environment
- reduce waste generation and support programmes aimed at the prevention of pollution
- provide operating principles, processes, procedures and resources for the implementation of its environmental guidelines, taking into consideration the best available technology
- encourage its staff to act in an environmentally friendly way, both at work and at home
- promote continuous improvement in waste minimisation
- comply with or exceed the requirements of existing environmental legislation
- carry out environmental impact assessments before building new or modifying existing facilities
- strive for open and honest communication with all stakeholders and neighbours
- minimise energy consumption and, wherever possible, reuse materials in an economically viable way

Environmental protection through energy management

G4-DMA Energy,
G4-EN6

The Messer Group's objective is to reduce the specific energy consumption of our air separation units by 0.5 % a year from 2010 to 2020. We aim to achieve this through better capacity utilisation of our production facilities, continuous investment in even more efficient facilities, and targeted energy efficiency projects. Within the Messer organisation, responsibility for energy management rests with the Global Energy Officer (GEO), a position created in 2014.

The Messer Group develops and builds its own air separation units. Energy efficiency is a key aspect in their design. Efficient energy use and cost-effective procurement of energy are also of major importance to the Messer Group. Optimising electricity procurement includes Europe-wide calls for tenders, long-term general agreements and continuous monitoring of the futures and spot markets. A central electricity procurement unit supports and advises Messer's national subsidiaries on buying electricity and carries out regular checks of their electricity costs as part of a benchmarking exercise. The use of renewable energy is also checked on a regular basis.

Greenhouse gas emissions

G4-EN3, G4-EN5,
G4-EN7, G4-EN16,
G4-EN17, G4-EN19

Air separation units process ambient air without producing any toxic or environmentally harmful emissions. Even in the event of a shut-down or fault, only air components are emitted. Our products are gases which are delivered either by pipeline, via tankers to fill customer tanks or in cylinders. Only cylinder gases are packaged products. Steel cylinders are usually rented out to customers and returned empty after use. They are therefore 100 % reusable after the requisite cleaning and inspection.

Our total emissions of greenhouse gas equivalents are shown as CO₂ equivalents (CO₂e). The quantity of emissions is converted into greenhouse gas equivalents using the International Energy Agency's conversion factors. Our calculation of greenhouse gases is broken down into direct emissions (Scope 1) and indirect emissions (Scope 2 and Scope 3), in accordance with the GHG (Greenhouse Gas) Protocol. Scope 1 includes all direct CO₂ emissions from our production facilities.

Despite efficiency gains, CO₂ emissions increase in absolute terms as the number of new production facilities grows. The reduction in specific electrical energy consumption as the biggest factor influencing Messer's CO₂ equivalent can be demonstrated using the energy coefficient. Indirect CO₂ emissions represent the generation of purchased electricity (Scope 2). A total of 4,432.7 GWh of electricity was used to operate our production facilities and filling plants. In 2015, the figure was 4,231.5 GWh. Our electricity consumption, and therefore the absolute value of the CO₂e, increases with each new production facility and with greater capacity utilisation of existing facilities. The CO₂e for 2016 was 2,817,754 tonnes compared with 2,661,951 tonnes in 2015. The energy coefficient fell slightly from 1.376 in 2015 to 1.368 in 2016. The energy coefficient in Europe was slightly worse than in the previous year (plus 1.5 %), mainly due to the less than optimal operation of one of our largest air separation units. However, from a global perspective, the coefficient was down by 0.6 %. Indirect emissions that come under Scope 3 include all Group-wide emissions that are not covered by Scope 1 or Scope 2. This includes, for example, the electricity needed for administration buildings or the travel undertaken by employees. Here the CO₂ equivalent for 2016 was 64,772 tonnes compared with 65,887 tonnes in 2015.

The total CO₂ footprint for all production facilities as well as logistics came to 3,015,500 tonnes of CO₂e in 2016.

Fuel consumption and other emissions

G4-EN15

Total fuel consumption for 2016 was 36.7 million litres, compared with 28.6 million litres in 2015. Messer operates nitrous oxide (N₂O) production facilities in Croatia, the Czech Republic, Serbia and China. This gas is used in medicine and the food industry.

The total CO₂ equivalent for our fleet's fuel consumption and for emissions of N₂O and hydrogen is 132,981 tonnes of CO₂e (Scope 1). In 2015, the figure was 120,225 tonnes of CO₂e.

Water consumption

G4-DMA Effluents and
waste

Water consumption at our plants is relatively low as we use water in a closed circuit and only need to replenish what has been lost to flushing and evaporation. In 2016, our total water consumption was 8.2 million cubic metres, with most of this being used for cooling the compressors in the air separation units.

Waste generation

In 2016, the total quantity of non-toxic waste was 38,396.89 tonnes. The total quantity of hazardous waste was 494 tonnes.

Successful certification of energy management systems

Our commitment to environmental protection is also reflected in our Quality Management System, which applies across the Messer Group as a whole. We have ISO 14001 certification in 21 consolidated companies and ISO 9001 certification in a total of 37 companies, including the non-consolidated entities.

In April 2016, the energy management system of Messer Industriegase in Germany was certified in accordance with DIN EN ISO 50001:2011. This certification was based on MIGG's energy policy and a successful audit at the end of March 2016. Messer is committed to achieving a lasting reduction in the company's specific energy consumption through a continuous process of improvement. Energy consumption at every site and in every division is documented and assessed accordingly.

In June 2016, Messer Romania Gaz in Romania received ISO 50001:2011 certification for its production site at the air separation unit in Resita. This certification proves that the company meets all the standard requirements for a functioning energy management system. With the introduction of the ISO 50001:2011 standard, Messer Romania Gaz aims to continuously reduce the specific energy consumption for the production of air gases by making more efficient use of resources. This action will have a positive effect on energy costs as well as on the image of Messer's energy policy, while at the same time helping to protect the environment.

The project was launched in order to ensure the long-term competitiveness of Messer in Romania. As early as June 2015, Messer became the second company in Romania to qualify for a reduction in taxes on "renewable energy". ISO 50001:2011 certification is therefore an important element in terms of future qualifications.

Messer Hungarogáz in Hungary was successfully certified in accordance with ISO 50001:2012 on 21 November 2016. The certification covers all operations involving the production and filling of industrial, medical and food gases, specialty gases or gas mixtures, as well as the installation, operation and maintenance of on-site gas supply systems.

The certification covers the Messer Hungarogáz plants in Budapest, Győr, Dunaföldvár, Szolnok and Nyíregyháza, as well as three storage locations in Miskolc, Debrecen and Pécs. Cutting specific energy consumption in production and thereby lowering energy costs, reducing emissions, practising sustainability, gaining competitive advantages and fulfilling statutory provisions regarding energy efficiency are the most important objectives and advantages for Messer Hungarogáz in connection with the implementation of ISO 50001. Energy management has been conducted in Hungary for many years. With the introduction of ISO 50001, the Hungarian subsidiary has committed itself to implementing and adhering to continuously measurable energy efficiency measures.

Germany: Nitrogen for superconductivity

In 2016, the AmpaCity pilot project for efficient power transmission won the German Climate and Environment Innovation Award (IKU) 2015. Messer developed new cooling technology for the superconducting power supply cable used in energy utility RWE's project. Normally, it is not possible to cool anything to below minus 196 degrees Celsius using liquid nitrogen. However, Messer's new cooling technology vaporises liquid nitrogen at below atmospheric pressure. It thus reaches a temperature of minus 209 degrees Celsius, facilitating electricity transmission through the cable virtually loss-free. Superconductors are seen as a forward-looking solution for particularly space-saving and effective electricity transmission in towns and cities as well as at industrial facilities. The winners of the IKU were presented with their awards in person by Federal Environment Minister Barbara Hendricks.

Romania: Environmentally friendly invoicing

In 2015, Messer in Romania sent out more than 14,800 invoices to its customers electronically. Just 18 months after the introduction of "E-Invoicing", the proportion of online invoices had thus already reached 65 %. Only 35 % of invoices are still dispatched in paper form. The employees of Messer Romania Gaz also deserve credit for this success: their direct customer contact and targeted marketing measures ensured a high level of acceptance of "E-Invoicing".

China: Energy-saving logistics process

Messer has installed software in China that helps significantly reduce fuel costs and, therefore, CO₂ emissions in connection with gas deliveries. In 2016, the first six fleets were provided with the "Messer China Logistic System". Messer runs a total of ten tanker fleets in China with a total of 127 tankers and 41 tube trailers. The total distance covered in 2016 was 13.3 million kilometres with 56,000 individual trips. The software is supposed to be in use nationwide by the end of 2017.

China: Compressors reused for product supply

Messer has transferred air compressors and an oxygen compressor that are no longer required from Panzhihua to Xichang in China. This allowed the product supply in Xichang to be optimised, resulting in an annual energy saving of approximately 15 million kWh.

Energy saving for our customers

Our gases also help to make our customers' products and processes more environmentally friendly. In 2016, we carried out 187 new installations of tank systems for our customers, providing them with a supply of our gases for environmentally friendly processes. In the previous year, the number of tank installations was 204. But the sustainability of processes is also being boosted with the help of our cylinder gases. There are projects in this area at all Messer companies, some of which are described below.

Austria: Doubly efficient

In 2007, the electronics manufacturer SVI Austria (formerly Seidel Elektronik) became Messer Austria's first customer for the EcoVap process. Seidel Elektronik was awarded the Republic of Austria's federal environmental award in recognition of this fact. Today, many customers – including fruit juice producer Rauch and Voestalpine Tubulars – use EcoVap technology: it ensures that the liquid gas's coldness, which more often than not is wasted when the gases are vaporised, is used to lower the return temperature of the refrigerating installation. This results in lower energy costs and reduced CO₂ emissions.

Germany: Oxygen for fish in distress

In the space of two days in August 2016, Messer Industriegase installed an oxygen tank, including a vaporiser, next to the Möhnesee reservoir in Germany for the Ruhrverband water management company. Urgent assistance was needed as the oxygen concentration in the lake had reached a critical level. Injecting oxygen into the lake allowed an adequate oxygen supply to be restored to the cryophilic fish in the lower, oxygen-deficient water layers. This is particularly necessary during the warmer months of the year. In autumn, the natural temperature stratification in the lake breaks down, resulting in the oxygen content returning to a similar level at all depths. When full, the Möhnesee reservoir is up to 36 metres deep.



Messer Industriegase on site at the Möhnesee reservoir: with a capacity of 134.5 million cubic metres, the Möhnesee lake is one of the largest reservoirs in North Rhine-Westphalia.

Spain: Detecting emissions with gases

Technical service provider TÜV Rheinland has been operating in Spain for 30 years and working locally with Messer since 2014. We supply the TÜV sites in Barcelona and Tarragona with calibration gases such as nitrogen, synthetic air, hydrogen and certified gas mixtures for emission control. They are used at the Tarragona petrochemical complex, for example, where Messer also has air separation units. Measuring emissions helps monitor compliance with statutory regulations, thus forming the basis for reducing or avoiding harmful emissions.

Slovenia: Hotter flame, greater efficiency

Steklarna Hrastnik has been manufacturing high-quality glass products such as drinking glasses and glass tables for over 150 years. Since 2013, the Slovenian company has been an important Messer Slovenija customer with a constantly growing requirement for gases. The reasons for this are expanded production and the use of new technologies: at its factory in Hrastnik, the glass producer operates a state-of-the-art melting furnace with Messer oxyfuel technology. This technology involves supplying almost pure oxygen to achieve a higher flame temperature and reduced quantities of flue gas, thereby improving energy efficiency as well as the quality of the glass. CO₂ emissions are significantly lower compared with conventional melting furnaces.

Hungary: Argon for window panes

Messer installed liquid argon tanks for window manufacturer Kalatherm in August 2016. The company's plant in Komló manufactures double and triple glazed windows mainly for the Hungarian market. The space between the panes is filled with argon because the noble gas is a much better insulator than air thanks to its low thermal conductivity. In this way, it contributes towards heat energy savings.



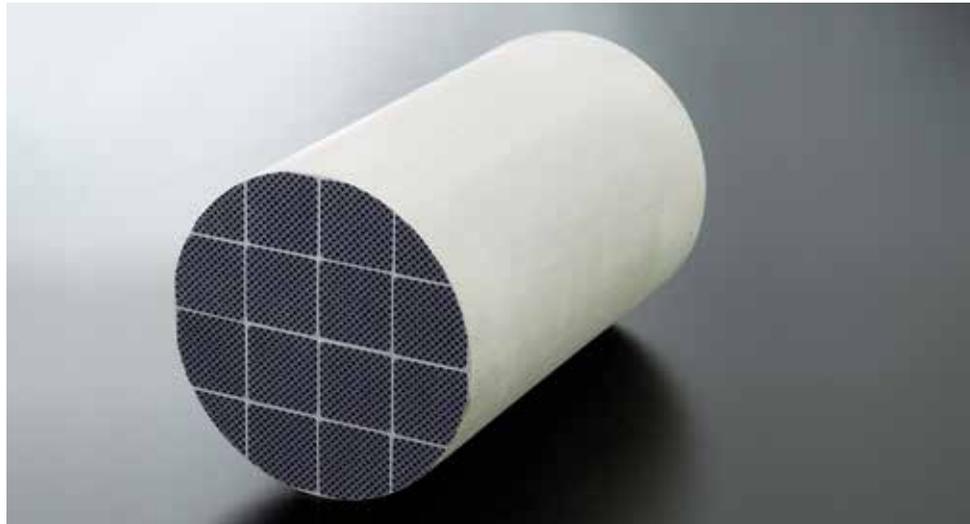
Krisztina Forisek, Sales Assistant at Messer in Hungary

Serbia: Refrigerator recycling

Messer supplies liquid nitrogen to Božić & Sinovi, a Serbian company that collects and recycles refrigerators, computers and small electrical as well as electronic appliances. The recycling unit, which was supplied by the Italian company Forrec, also allows Božić & Sinovi to recover the environmentally harmful CFCs which are released during the process of grinding the polyurethane refrigerator insulation. The gaseous CFCs are liquefied by the cold nitrogen and can then be collected. This allows 40 refrigerators per hour to be recycled, thereby benefiting the environment. Nitrogen is used to defrost the unit again overnight.

Hungary: Gases in particle filter production

The Japanese Ividen Group operates a production centre for soot particle filters in the Hungarian town of Dunavarsány. The filters are made of porous ceramics. They remove over 99 % of environmentally harmful particles from the exhaust gas flow of diesel vehicles. The manufacturing process involves inserting the kilns with nitrogen and argon. Ividen has so far been getting the nitrogen from two pressure swing adsorption units, which Messer installed on the factory premises, as well as through additional liquid gas deliveries for peaks in demand. A further nitrogen generator is to be added next year in order to cover the plant's increasing consumption. Ividen Hungary also receives the liquid argon that it needs for production from Messer.



Soot particle filters remove over 99 % of environmentally harmful particles from the exhaust gas flow.

Customers and markets

Gases that meet customer demands, innovative solutions and comprehensive services are our strengths. But the product we are actually selling is “customer satisfaction”. We are committed to this at many levels and are continuously improving our performance.





Annett Beier, General Manager of Messer Benelux (left), together with the "Customer Service Desk", which is specialised in recording the concerns of callers in detail and immediately passing them on within the organisation. She is assisted by (left to right): Karen Dewaele, Anja Wittenbol and Ken Heyman.



Customers and markets

Messer's sales division is geared to the needs of customers. Smaller customers are frequently looked after by local sales partners, while deeper partnerships are developed with medium-sized customers who are looked after personally by our local sales departments. International customers, who tend to have complex needs and requirements that span several countries and an international approach to purchasing and/or production technology, are looked after by a Key Account Management Team which operates with international scope. Apart from anything else, this allows us to fully exploit the associated business development potential.

Messer places particular emphasis on gaining small customers for cylinder gases. We are actively expanding the cylinder gases segment and increasing the level of experience sharing within the Messer Group. Messer sees itself as being closer to customers in this area than its competitors.

All the managing directors of the national subsidiaries have jointly developed an idea catalogue aimed at boosting our cylinder business's profitability and growth. Implementation of the individual measures will be checked once a year.

In China, the focus remains on our business with liquid gases. But here, too, our cylinder business is being developed and expanded, particularly in the specialty gases segment. We have opened an office in Singapore, which will be used as a base for probing the markets in the ASEAN region and identifying and realising specific projects aimed at further boosting our overall growth in Asia.

G4-PR5 Customer satisfaction as a factor for success

Customer satisfaction is an essential factor in the success of the Messer Group. We therefore monitor the services provided by us and verify the effectiveness of the measures that have been implemented. This enables us to continually raise the level of customer satisfaction and improve the long-term commercial success of the Messer Group.

In 2016, a total of 9,029 customers in seven European countries were asked about their level of satisfaction in an online questionnaire. Of all those questioned, 976 customers provided their assessment by completing the questionnaire. This gives a response rate of 10.8 %. The Messer Group's overall performance in Europe was given a total rating of 8.39 on a scale of 1 for very dissatisfied to 10 for extremely satisfied. In the previous year, taking all the countries together, an overall satisfaction rating of 8.51 was achieved. The questionnaire focuses on 15 detailed questions covering conduct, customer service, implementation and equipment as well as sales. The best rating was given to our sales staff's correct and fair conduct as well as their expertise. In Peru, a further 367 customers were asked about their level of satisfaction.

Customer service centre in Belgium

Messer Benelux has been operating a Customer Service Desk for almost a year now. Callers are put through directly to a three-strong service team. They are specialised in creating a detailed record of the caller's query, immediately passing these details on – via a Customer Relationship Management (CRM) tool – within the organisation. Soon afterwards, the customer receives feedback about the status of their query from the member of staff handling the matter, for example someone in Sales or Customer Service. The advantage of this system is that the customer is guaranteed to receive quick and satisfactory feedback. What is more, all customer enquiries and their processing status are transparently documented via the CRM tool.

Cylinder business and service

In 2016, Messer launched a service campaign for cylinder gases. It basically consists of two modules. The first module concerns all the cylinder-related services offered by Messer. The service catalogue is derived from the catalogue of measures for our cylinder business and consists of established as well as new services in the categories E-Services, Transport, Safety, Engineering, Consulting and Optimisation, Training and Information, and Customer Satisfaction. Each national subsidiary has defined which services it offers its customers. The service campaign is supported by appropriate communication measures.

In 2016, Messer also took measures in the areas of Online Service and Support, Sales Optimisation and Engineering. In addition, there is a broad training offensive for sales staff.

Online tools for employees and customers

The companies of the Messer Group can access an online sales support tool to calculate the contribution margin. It allows very detailed calculations to be performed for cylinder gas offers, with the simulation of various supply options permitting quick identification of the best variant. The tool is rounded off by an approval workflow feature that facilitates offer price approval by the sales manager. Another online tool has been created for on-site PSAs. It allows sales managers to quickly and easily draw up a rough cost estimate for the supply of nitrogen. It takes account of the most important parameters of the customer's requirements. The tool is designed as a "screening tool" and is available for the sales managers to use. Messer has 14 apps that provide comprehensive answers to questions relating to gases and applications. About ten % of users have used the "Welding Gases" app to find out which shielding gas meets their welding requirements. The "Welding Positions" app, too, has already been accessed well over ten thousand times for Android alone. This app helps users find the correct position in accordance with DIN EN ISO 6947. The range of apps for welding experts is rounded off by the "Cylinder Valves" application. It provides users with quick access to country-specific information on the right valve for the cylinder gases they are using.

G4-DMA

Product and service labelling

Serbia: New logistics concept for small customers

Messer in Serbia has developed a new sales and distribution concept for customers with small gas requirements. A minivan is making on-demand deliveries to cash-paying customers in Belgrade – and a further four Serbian cities in the near future. The delivery service is available for all cylinder gases, coolants, propane/butane, dry ice, electrodes and filler wire. The service is much more flexible because the minivan makes direct deliveries, whereas previously a large HGV used to do its rounds. Customers can place orders 24/7 via a free telephone number or via www.moj.messer.rs. For an additional charge, deliveries can also be made at night and at the weekend.

New packaging for cylinder gases: MegaPack C

The MegaPack cylinder gas bundle has set new standards in terms of safety, efficiency, ergonomics, sustainability and design. In 2016, three years after its launch, the MegaPack family was expanded with the addition of the compact C4 and C6 models with four and six cylinders respectively. While offering the same capacity of 600 and 900 litres, the new MegaPacks have overall dimensions of 0.92 x 0.93 x 1.95 and 0.92 x 1.33 x 1.95 metres (width x length x height) respectively, making them considerably shorter than their predecessors. Once again, the successful Duplex version is also available.

Training offensive for sales staff

The provision of appropriate training for sales staff is an important element in strengthening our cylinder business.

Human Resources organised training events for sales staff in Europe. Each training session includes a sales-oriented part as well as a technical part. The sales staff receive training in gas applications that involve the use of cylinder gases, such as in the food industry, in welding and cutting or in the specialty gases segment. Within the companies, there is particularly strong demand for sales training in



Dr Bernd Hildebrandt (bottom row, left) and Dr Dirk Kampffmeyer (left) provided training to employees of Messer Technogas in the Czech Republic.

the area of welding technology: Messer generates around two thirds of its total European cylinder gas sales in this segment. The “I’m a triple saver” campaign with on-site customer consultancy has been integrated into our training provision. Its aim is to support Cylinder Gas Sales in bringing our ternary mixtures to market.



Welding training at Messer France with Achim Wankum from Messer Group in Krefeld

February 2016 saw the start of the “Triple Saver” campaign at Messer France. Welding experts from Messer Group initially provided training on the specific technical features to sales staff and application specialists. This was followed by a targeted e-mail marketing campaign: in May and June 2016, with a view to promoting sales of the new ternary mixtures, Messer France sent a total of three electronic circulars to Ferroline C8 and C18 customers in Brittany, in western France. In response, 40 customers requested on-site consultancy. 35 of them decided to switch to the new product line. The experience gained during this campaign will come in useful for further sales drives in other parts of the country as we seek to convince potential customers in France of the quality and efficiency of our ternary mixtures. Our cylinder gas business is also supported by a rapidly growing distribution network. A new specialist dealer near Colmar was added in September 2016.

Selected projects with our gases in cylinders

Germany: Diving gas mixtures



Messer supplies pure gases under the Diveline brand which can be used to mix diving gases.

Diving to great depths places particular demands on divers, their equipment and the diving gas mixtures they use. Underwater, it is necessary to take account of the depth itself as well as variables such as the duration of the dive and the corresponding decompression time. Diving gas mixtures are used to react to the specific conditions that exist deep underwater. For example, the greater the depth, the higher the oxygen partial pressure, which can have a toxic effect on the human body at certain oxygen concentrations. Divers therefore use special diving gas mixtures which are individually calibrated for each dive in order to ensure safe diving. Under the brand name Diveline, Messer supplies helium, oxygen and nitrogen as pure gases, in accordance with the EN 12021 standard, which can then be used to prepare diving gas mixtures.

Netherlands: Gases for box production

Gepro Box produces pick-up boxes, underbody toolboxes and similar structures for trucks and delivery vehicles. In addition to a wide range of standard products, the company, which is based in Gouderak in the Netherlands, also offers tailor-made structures. The boxes are manufactured from aluminium, stainless steel or steel. Gepro uses nitrogen bundles as well as oxygen and welding gas cylinders from Messer in the manufacturing process. Oxygen is used in the sheet metal cutting process, while the welding gases – argon and Ferroline C18 – are used for joining the parts. Messer also supports Gepro with service and expertise.

Belgium: Gases for construction group

Heijmans NV, one of the Benelux countries' largest construction and real estate companies, gets gases for welding and cutting from Messer. The supply contract includes argon, Ferroline C18, propane and oxygen. The service provided by Messer also includes the CCTS cylinder tracking system. Barcode scanning is used to record each cylinder prior to delivery and assign it to the customer and

destination – in the case of Heijmans, this is the relevant construction site. The customer can check their current stock of cylinders on the Internet at any time. When the cylinder is returned, another scan ensures that the deposit and rental are always correctly assigned, even if – in the hurly-burly of a construction site – a cylinder ends up at another company.

Spain: Gases for research laboratory

In 2015, the AINIA research institute in Paterna carried out some 208,000 tests on behalf of 700 companies in the industrial and agricultural sectors. It deals with, among other things, the enhancement of food safety, the development of new additives, compounds and packaging materials, as well as the use of waste products for energy generation. The AINIA laboratories use gases such as argon, synthetic air, nitrogen, CO₂, hydrogen and special gas mixtures from Messer, the last of which primarily in chromatography. Various analytical methods are used, for example, to detect heavy metals in foodstuffs or pharmaceutical residues in animal products.

Czech Republic: Dry ice for cleaning and cooling

4-les Ve Výškách, a service company based in Bor near Pilsen (Plzeň), cleans surfaces with dry ice on behalf of its customers. It produces the necessary dry ice pellets in-house from liquid carbon dioxide. Among other things, the pellets are used to clean moulds for customers in the automotive and mechanical engineering sectors. 4-les Ve Výškách also supplies pellets for food refrigeration. The company has been getting the CO₂ from Messer and renting a pelletiser from ASCO since April.



Dry ice facilitates gentle cleaning of dirty surfaces.

Romania: Welding gases for metal construction

Three new pedestrian bridges offer holidaymakers in the Romanian Black Sea resort of Mamaia additional barrier-free connecting paths – plus they are also quite eye-catching. The design of each bridge is based on a maritime theme and the bridge named accordingly: Yacht, Crest of a Wave, Seagull & Fishing Net. The footpath on the cantilever span of the “Yacht” bridge is also planked in tropical wood, which is reminiscent of a ship’s deck. The constructions were created by Polaris, a metal construction company. Acetylene, Argon 4.8, Ferroline C18 and CO₂ from Messer were used for the welding work.

Romania: Perfect supply with MegaPack

For customers whose gas requirement is not big enough to justify installing a liquid gas tank, MegaPack represents an ideal solution. This also applies to MPO Prodivers Rezistent, a long-standing customer of Messer in Romania. Its facility in Piscani, Romania, annually manufactures some two million components such as air filter brackets and bonnet release handles for the automotive industry. This involves the use of the Ferroline C8 shielding gas, which Messer supplies in MegaPack bundles with 300-bar technology. The benefits are higher product quality and greater efficiency.

Switzerland: New customer brings market leadership

The acquisition of the Graubünden Canton Hospital as a new customer was a real milestone for Messer: this sales success allowed us to become the market leader in the hospital sector in eastern Switzerland. Messer has been supplying the hospital in Chur, which has three buildings and approximately 350 beds, with medical gases in cylinders and bundles since February 2016.

Croatia and Serbia: Hydrocarbon mixtures for the Croatian gas network

Since 2015, Messer Croatia Plin has been part of a supplier consortium for the “Rebuilding and upgrade of the quality system for natural gas” project being implemented by Plinacro d.o.o., the national gas network operator. We are supplying all the process gases – helium 5.0 and calibration gases – and have installed gas supply systems for 22 customer sites. The project was completed on time in just ten months. All hydrocarbon gas mixtures are produced at the Messer Tehnogas specialty gases plant in Serbia and are ISO 17025 accredited. Cooperation between the two Messer companies is excellent and constantly being expanded in order to continuously increase the product range and, therefore, the number of potential customers in the South-East Europe region, thereby reducing our dependence on the competition. The plant in Pančevo recently started producing hydrocarbons with sulphur components.

Slovenia: Gases for maximum precision

Messer Slovenija supplies industrial gases for the state-of-the-art laser units used by Elba Novo mesto. Elba Novo mesto is Slovenia’s leading supplier of products in the electrical installation and telecommunication segments. These include cable ducts, control boxes and sockets for installations, computers, telephones and optical networks. In addition, Elba Novo mesto recently expanded the laser cutting services it offers. They are intended to help achieve maximum precision and quality when cutting sheet metal.



The Zirc Cistercian monastery gets Gourmet CO₂ from Messer for "Zirci Apátság" beer which is brewed in the monastery's own brewery.

Hungary: Gourmet gas for monastery beer

Messer is supplying Gourmet CO₂ to the beer-brewing monks at the Zirc Cistercian monastery. The monastery's history dates back to the year 1182. The monks of the Cistercian monastery have been brewing beer in their own brewery according to traditional recipes since 2015. As well as being offered for sale in the monastery shop, "Zirci Apátság" beer is also served in many restaurants and clubs throughout Hungary.

Hungary: Expert metalworking

Wrought-iron gates, fences, railings and banisters are very popular in Hungary. Rabacsa Metalltechnik, a customer of ours based in Alsószőlőnk, has been doing classic wrought-iron work since the mid-19th century. Today, the family business uses our Ferroline shielding gases as well as argon in the process of welding its products. Using a laser cutting machine, Rabacsa also manufactures high-precision workpieces in no time. The cutting gases used for this are oxygen and nitrogen. Messer Hungarogáz ensures that the customer is optimally supplied via cylinder gases and on-site storage tanks.





Hungary: Protective gases for fire safety components

Kö-Jó Tűzvédelmi Zrt., an import/export wholesaler based in Budapest, has been using our MegaPack cylinder bundles since June. This covers the company's requirements in terms of "Ferroline" inert welding gases. The new Messer Hungarogáz customer produces and sells fire extinguishing equipment such as hydrants, nozzles, fire blankets and fire extinguishers under the "Maxima" brand. Our gases are used for welding the pressure vessels. The fire extinguishers bear a CE marking, which proves that they comply with the relevant EU directives.

Hungary: Safe ascent with argon

The mast of a wind turbine generator can be over a hundred metres tall. Inside the mast there are long aluminium ladders which facilitate access all the way to the top. These ladders are supplied by Zarges – they are welded using argon from Messer. Zarges is an international specialist in high-quality aluminium products for the packaging, transport and storage sectors. The company, which is part of the Zargestubesca Group based in Weilheim, Germany, employs some 1,300 staff at seven production sites across Europe.

Hungary: Welding gas for major construction site

Hungary will play host to the Swimming World Championships in 2017. The "Dagály" swimming pool on the banks of the Danube in Budapest is being renovated and expanded for this major sporting event. CO₂ in cylinders from Messer is being used in this work. The sports pool will hold 5,000 spectators in normal operation, with temporary extensions increasing the capacity to 15,000 during



Gases are being used in the modernisation of the swimming world championship venue in Budapest.

the world championships. The steel concrete reinforcements needed for the extension are being supplied by building contractor Royals Expert, among others. The CO₂ is being used to weld the reinforcing cages for the pile foundations. The steel constructions give the finished concrete elements shear, compressive and tensile strength.

Hungary: Expanded gas supply for Hungary's oldest medical school

Founded in 1769, Semmelweis University (SOTE) is the oldest medical school in Budapest. It has been a Messer customer for over 20 years. However, until 2015, Messer only supplied it with bulk gases. In 2016, the supply of cylinder gases was also secured. The result is a doubling of the quantity of gases supplied. Messer in Hungary has invested in 1,100 new cylinders to cover the customer's increased requirements. The gases supplied are also used for study purposes – SOTE's five faculties have some 10,000 students from 60 different countries enrolled on their courses. But SOTE is not just a university – with over 9,000 employees, it also plays an important role in the Hungarian health service, covering around six % of the Hungarian population's health care requirements.

Serbia: Johnson Electric solders under nitrogen

Messer has signed a liquid nitrogen supply contract with Johnson Electric in Niš, Serbia. The tank will be installed this year as part of an expansion being undertaken by the manufacturer of drive solutions, motors and solenoids. Up to now, Messer has been supplying nitrogen in MegaPack bundles for tests with an automatic soldering machine for point soldering. This wave soldering process involves the use of nitrogen for inerting to prevent adverse reactions and therefore production faults.

China: Xenon chloride for display production

Messer supplies the BOE Technology Group, China's largest manufacturer of flat-panel displays, with neon mixtures for the operation of excimer lasers, which are used in the photolithographic process. Excimer lasers generate broad laser beams with wavelengths in the ultraviolet range. The beams are emitted by the noble gas halide's electrically excited molecules. The lasers are used to recrystallise silicon in the production of low-temperature polysilicon (LTPS). LTPS technology allows the production of thin, lightweight and elastic displays with a particularly high resolution. Messer is one of the few gas suppliers who offer this gas mixture in China.

Peru: Welding in the jungle

A natural gas pipeline approximately 1,000 kilometres in length is being built in southern Peru. Inert welding gases from Messer are being used by Sicim, an Italian pipeline specialist, right there in the jungle; Elecnor, a leading Spanish pipeline construction company, is using the gases in Cusco, which lies at an altitude of 3,400 metres. The 2.4 billion dollar project is an investment in the country's infrastructure. The pipeline runs from Abancay through the rainforest and over the highlands all the way to Juliaca on Lake Titicaca.



Technologies for all industrial sectors

Germany: Härterei Nabi hardening plant as a new customer

With a “one-stop-shop concept”, Messer succeeded in acquiring the Härterei Nabi hardening plant in Remscheid as a customer: besides a nitrogen tank with air vaporiser, Messer also installed an EcoVap vaporiser. This transfers the liquid gas’s unused coldness directly into the circulating cooling water, ensuring environmentally friendly operation of the cooling system and reduced energy costs. Furthermore, the customer commissioned Messer to install all the piping. The methanol tank facility, the ammonia supply system in the container, the CO₂ expansion station and the pressure regulator were also supplied by Messer. To produce protective gas and reaction gas atmospheres in the furnaces, the gases nitrogen, ammonia, CO₂ and methanol are required.

Czech Republic: Drinking water treatment with ozone

The Podhradí waterworks uses ozone to improve the quality of its drinking water. The facility, which has a capacity of 2,200 litres per second, belongs to the northern Moravian water supply and sewerage company SmVaK (Severomoravské vodovody a kanalizace Ostrava a.s.), which operates one of the most extensive water and sewerage networks in the Czech Republic and supplies the city of Ostrava as well as a large part of northern Moravia with drinking water. Messer in the Czech Republic provides SmVaK with a tank for liquid oxygen and supplies the gas for the process. The ozone used to treat the water is produced on site from the oxygen.

Austria: Messer wins back customer

The Messer sales team succeeded in winning back a key customer – Schaeffler Austria. Schaeffler uses the liquid nitrogen supplied by Messer for the heat treatment of bearing rings and roller bearings at its Berndorf production facility. Schaeffler develops and produces high-quality roller bearings, spherical plain bearings, plain bearings and linear products worldwide under the product brands INA and FAG. They are used in some 60 industrial sectors, including automotive applications.

Czech Republic: Cutting gas for air-conditioning technology

GEA Heat Exchangers (DencoHappel CZ) in Liberec gets Nitrocut cutting gas and rents the gas supply system for its new cutting laser from Messer. The reason for purchasing the cutting laser was to enhance product diversity and reduce delivery times. GEA Heat Exchangers (DencoHappel) is one of the technology leaders in air, climate and filter technology as well as process air cooling. The company has been active in this field for more than a 100 years.

Czech Republic and Serbia: Gases for aquaculture and processing

Fish live in water, so you don’t necessarily associate them with gases. But they too breathe oxygen. When farming fish in closed systems, it is therefore necessary to supply a sufficient quantity of this gas. In subsequent fish processing, the priority is to preserve the perishable product quickly and without loss of quality. Cryogenic nitrogen and carbon dioxide play an important role here.

To achieve the required oxygen content in ponds for artificial fish farming, the gas is needed in its pure form. The fish farmers at Fish Farm Bohemia in the Czech village of Rokytno have been getting

liquid oxygen from Messer since 2012. A second installation in Kořenov was added last year. At both locations, the oxygen is taken from a storage tank and passed through an evaporator unit before being fed into the water in gaseous form. At Fish Farm Bohemia, it supports the farming of trout, pikeperch, sturgeon and catfish. Recently, ServFood, a subsidiary of PTC Germany, also put a fish processing plant into operation in the Serbian town of Smederevo. Its centrepiece is a twelve-metre-long tunnel freezer, which Messer rents out to the company. It uses cryogenic nitrogen to rapidly freeze the processed fish. Messer has further modified the freezer, among other things by equipping it with an additional spray bar. This further speeds up the cooling process while allowing lower temperatures to be achieved. The result is improved freezer efficiency, which is a precondition for putting ServFood's big plans into effect. Fish processing is due to begin with a capacity of 10,000 tonnes a year, which will be followed by an increase to 30,000 tonnes at a later stage. Space has also been planned for a second freezer in the future.

Hungary: Gases for welding and cutting of bus and coach bodywork

On 10 June 2016, a bus factory with a production capacity of 500 buses a year was officially opened at mechanical engineering firm Kühne's site in Mosonmagyaróvár, just in time for the company's 160th anniversary. Hungary's Economics Minister Dr Mihály Varga also attended the event in the town near the Austrian border. The buses are sold under the brand name Credo. Kühne builds the frame and bodywork, while final assembly of the buses is carried out by partner company Kravtex in the neighbouring town of Győr. Kühne gets liquid argon and the cutting gas Oxycut from Messer in Hungary.



Welding and cutting gases are used in the production of frames and bodywork for buses.

Hungary: Indispensable in labs and operating theatres

Medicine and science need nitrogen: among other things, the gas is used to cool superconducting magnets, biological samples and stem cells. As a cryogenic gas, nitrogen is used to lower the body temperature of a patient undergoing heart surgery or an organ transplant. As an extra-dry protective gas, the vaporised nitrogen facilitates controlled chemical reactions and solid-state physical experiments. Nitrogen is used in medical applications, laser research and various types of spectroscopy, as well as to exclude paramagnetic oxygen from magnetic resonance processes. The list could be extended almost indefinitely.

The list above is from the University of Szeged, one of the most renowned universities in Hungary – and beyond. Alongside many other research awards, the university also boasts, for example, a Nobel prize for one of its scientists, the physiologist Albert Szent-Györgyi. Messer recently started supplying this academic institution with all the liquid and gaseous nitrogen it requires. The gas is used mainly at the university hospital and in the natural science faculties' numerous laboratories. Messer also supplies all the other gases that are needed for scientific research and patient care.



Organic material such as egg cells and tissue samples can be preserved in a bath of cryogenic nitrogen.

Hungary: Gases for pharmaceutical testing

In the development and testing of drugs, in vitro studies (not carried out on live animals), such as cell cultures, are indispensable. Scientists can gain important insights from the reaction of the different cell cultures to the potential active substances contained in the drugs. Solvo Biotechnológiai Zrt., a Hungarian company with a presence in some 40 countries, is one of the leading producers of cell culture products. At its headquarters in Szeged, Solvo carries out cell culture tests on behalf of over 450 customers. The focus for the cell culture products as well as the company's own tests is

the transport of the drug molecules through the cell membrane. Solvo needs various gases for the tests, which are supplied by Messer. Liquid nitrogen is used to freeze the samples; carbon dioxide is used to set the desired air mixture in the incubators; high-purity argon and nitrogen are required for analysing the samples.

Hungary: Dry ice cools shots

ICE'N'GO! is an international franchise company with a plant in Budapest, where it produces ice cream shots. The shots get their special shape through targeted, dropwise introduction of the product into a nitrogen bath at minus 196 degrees Celsius. An investment in one of our ASCO pelletisers has enabled ICE'N'GO! to further increase its on-site production capacities: dry ice pellets are used to keep the ice cream frozen during delivery and storage. It reaches the shops at a temperature of between minus 28 and minus 35 degrees Celsius, allowing a shelf life of up to 18 months to be guaranteed.

Hungary: Gases for cast aluminium

Messer supplies large quantities of liquid oxygen and liquid nitrogen to Alumetal's new aluminium smelter in Komárom. The oxygen ensures highly efficient combustion in an oxyfuel burner, also supplied by Messer; the nitrogen is used to purge and purify the aluminium melt. The Polish Alumental Group recently put its fourth production facility into operation in the northern Hungarian town. The plant is designed to produce 60,000 tonnes of aluminium alloy from 100,000 tonnes of scrap metal a year. The light metal base material is mainly produced for the automotive industry, including original equipment manufacturers (OEM) which have major production centres in the region.



Aluminium melt is purged and purified with nitrogen.

China: Rapid cooling for popular products

Hongteng Abattoir, a subsidiary of ChenggongRuide Food, is the only company in Chenggong to operate a government-authorised pig slaughterhouse. Due to the high demand for tripe, especially in Sichuan and Guangdong provinces, the Chinese company decided to invest in a nitrogen tunnel freezer. In the nitrogen fog, the tripe freezes in a matter of minutes, preserving the quality and taste of the meat. In addition, long freezing times are avoided and the product is prevented from drying out. In this case, nitrogen freezing is superior to conventional mechanical freezing. Yunnan Messer has installed a liquid nitrogen tank to provide an on-site supply of cold nitrogen. More than 50 tonnes of frozen tripe has been produced since the plant went into operation in June 2016.



Li Jiang, Application Technology Manager at Yunnan Messer, is the account manager for Hongteng Abattoir. Tripe stew is a very popular dish in southwest China, for instance.

China: Nitrogen for extruders

Bicycle manufacturer Giant is, as the name suggests, one of the largest in its sector worldwide. In the eastern Chinese city of Kunshan, the Taiwanese group manufactures aluminium parts for its bicycles by means of extrusion. This involves heating aluminium blocks and pressing them through dies, giving the extruded light metal the desired profile. A nitrogen cooling system was installed in Kunshan for the first time last year. After consulting existing Messer customers in Germany, Giant opted for the Incal process. Messer installed the cooling system and supplies the necessary liquid nitrogen. The process ensures efficient and precise cooling of the extrusion die. Thanks to the use of nitrogen, it also creates an inert atmosphere that prevents oxidation of both the heated aluminium and the die. As

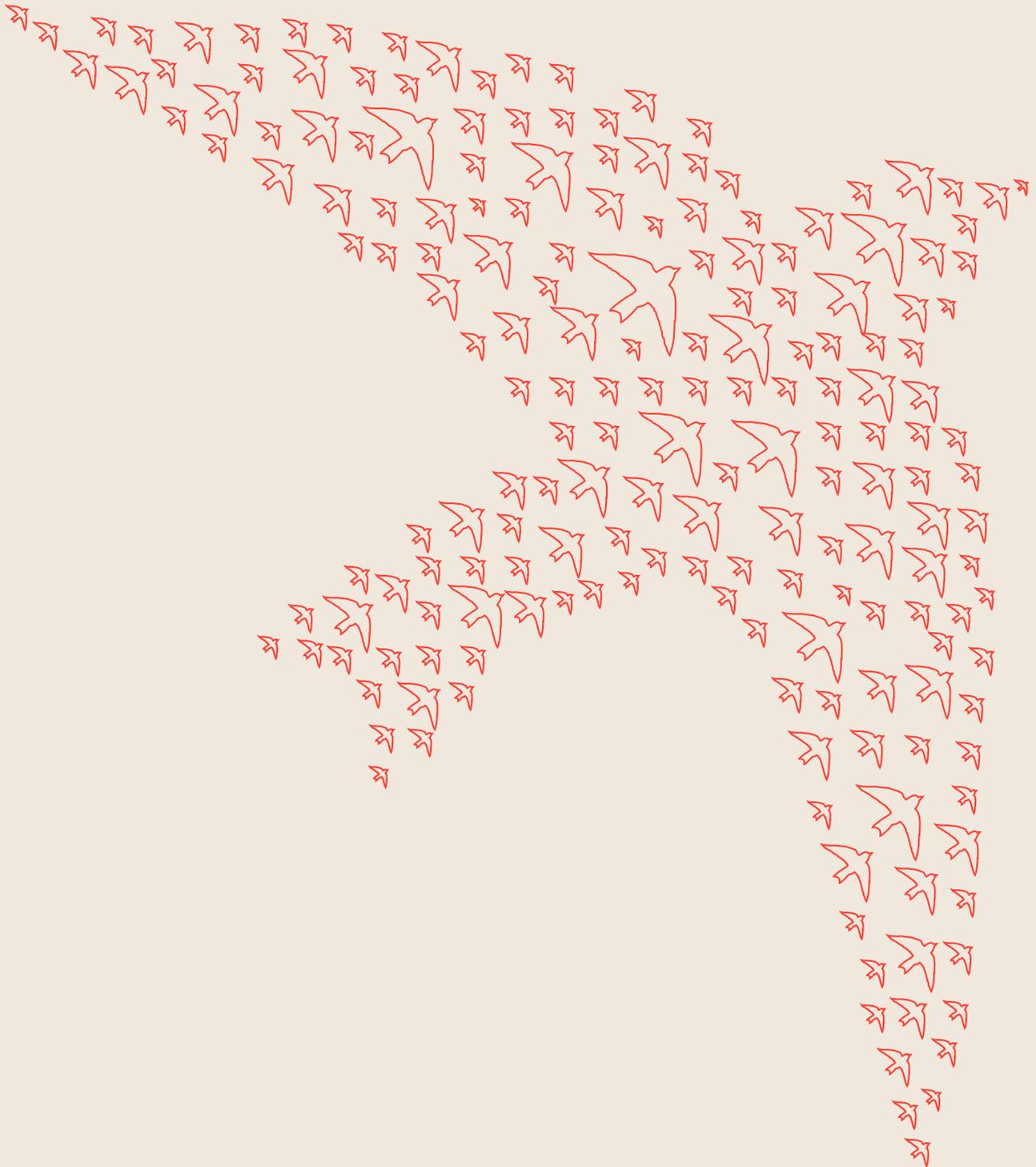
well as allowing the efficiency of the extruder to be increased by ten %, the process has also led to a significant improvement in the surface quality of the frame tubes. The company now wants to equip other extruders with the Incal process.



Zhangjiang Messer employees value the quality of Giant bicycles.

Vietnam: New customers in the energy sector

The growing importance of renewable energy sources is obvious in Vietnam as well. Messer Haiphong (MHP) is also profiting from this development: in the first quarter of 2016, MHP gained two new customers, Vina Solar and Boviet Solar, both manufacturers of photovoltaic cells. MHP supplies Vina Solar and Boviet Solar with high-purity nitrogen by tanker as well as with silane and ammonia in drums. The gases are used for the manufacture of electronic assemblies. MHP has signed another contract with Boo Kwang. This customer requires hydrogen/nitrogen mixtures for the heat treatment of steel components.



Society

Economic success is an important objective for Messer – but not the only one. We have a tradition of supporting social projects, helping young academics via our foundations and making charitable donations.



The "Day for Children with Cancer" is an annual event in Serbia. In 2016, 22 towns and cities took part in it. Messer Tehnogas also demonstrated its solidarity by donating balloon gas for the city events. The proceeds from the sale of balloons benefited the construction of a new cancer centre in Niš.





Social commitment

Many of Messer's subsidiaries are involved in social projects. The type of involvement depends on the needs of the country in question, for in such matters Messer is usually guided by the immediate environment. In 2016, the main focus of social activities was on "Education and Health".

In 1978 in memory of Adolf Messer, who would have turned 100 on 6 April 1978, the Messer family set up the Adolf Messer Foundation. Today, as a Messer Group shareholder, the foundation supports young scientists in their research and training. Prizes and funding are awarded in recognition of outstanding achievements in the natural sciences and engineering as well as in economics, social science and the humanities.

Messer also implements its commitment to the social and health sectors through the Dr Hans Messer Social Foundation set up by the Messer family. It makes donations to help people worldwide who find themselves in need through no fault of their own.

Commitment to education, culture and economic cooperation

Bosnia-Herzegovina: Messer supports welder training

In January 2016, Edvard Bjelajac of Messer Slovenija gave a talk at the Welding Technology Institute in Tuzla. The talk was aimed at prospective welding engineers who, as part of their training, are given practical knowledge of inert welding gases and their effects on the welding process. Edvard Bjelajac was supported by Messer welding experts from Bosnia-Herzegovina. In all likelihood, this cooperation with the institute will be continued.

Bosnia-Herzegovina: Gas handbook for students and business people

In April 2016, in the town of Gračanica, a gas applications handbook was published for practically oriented lessons at secondary schools. The work is the result of a project in which three Bosnian schools, Messer and German international development organisation GIZ (Gesellschaft für Internationale Zusammenarbeit) were involved. It is targeted at students as well as business people who deal with gases, and presents the gases and their applications using a wide range of examples from different fields. The country's educational institutions are distributing the handbook to other schools so as to spread knowledge of the uses of gases.

Serbia: Practical support for education

Messer Tehnogas was the main sponsor and co-organiser – along with Belgrade University's Mechanical Engineering Faculty – of the practically orientated "Welding and welding fabrication" training module. Numerous students and professors took part in this information session and seminar in May 2016. Messer promotes the quality of training through practical applications and donations as well as welding equipment. In addition, Messer awards grants to students. Messer has been working closely with the faculty for ten years and will continue to develop this cooperation.



Our colleague Dušan Batalo gave a fascinating series of lectures at Belgrade University, covering topics such as Castolin Eutectic's brazing technology.

Germany: Industrial gases museum welcomes children

Messer offered some 70 children aged ten to twelve the opportunity to explore the exciting world of gases as part of Ferienspiele, a programme of organised holiday activities in July 2016.

Employees of Messer showed small groups of young visitors around the permanent company exhibition, which offers lots of scope for discovery and fascinating experiences. The centrepiece of the exhibition is a 60-year-old restored air separation unit, the inside of which is visible to visitors so as to enable them to gain a better understanding of the process of separating air into its main components – nitrogen and oxygen. Ground rubber and a doll's refrigerator illustrate even more clearly for children how industrial gases are needed for environmental protection, for instance in the recycling of reusable materials. Xenon lamps, helium balloons and a welded bicycle frame then make it clear that while the world of gases may be invisible, it is no less exciting.

Commitment to health and social issues

Serbia: Fighting cancer together

Cancer, for example leukaemia, is one of the main causes of death among children and young people. In Serbia, too, a child falls ill with this insidious disease every day. In order to show solidarity and support aid projects, a “Day for children with cancer” is organised in Serbia every year. On 15 February 2016, 22 cities took part in it. The patrons of the day of action were the ministries for health as well as education, science and technology development. The involvement of famous personalities and a social media campaign entitled “I am a fighter!” further enhanced the spirit of solidarity. Messer Tehnogas also demonstrated its solidarity by donating balloon gas for the city events. The proceeds from the sale of the balloons benefited the construction of a new cancer centre in Niš. Furthermore, Messer Tehnogas employees visited children with cancer who are accommodated with their families in one of the care homes in Belgrade.

Germany: Donation for children with cancer

In 2016, Messer organised a Christmas market on the Messer-Platz square in Bad Soden for the second time. Over two days, visitors had the opportunity to buy arts and crafts, home accessories, toys and much more besides from local suppliers while enjoying different culinary specialities. At Bad Soden’s historic railway station, the Messer Group itself sold mulled wine, sparkling wine and cakes. The proceeds were donated to Hilfe für krebserkrankte Kinder Frankfurt e.V., a Frankfurt-based organisation that helps children with cancer.



Messer donated the proceeds from a Christmas market to “Hilfe für krebserkrankte Kinder Frankfurt e.V.”, a Frankfurt-based charity that helps children with cancer.

**Darmstadt University of Technology's Adolf Messer Award 2016:
In search of fresh approaches for new cancer treatments**

Her research seeks to develop fresh approaches for the development of new cancer treatments: Dr Julia Weigand, research fellow in the Biology Department, received the Adolf Messer Award 2016 with its 50,000-Euro endowment – the most highly endowed award for research work at Darmstadt University of Technology. The award is given annually by the non-profit Adolf Messer Foundation.

All multicellular organisms, including us humans, need oxygen for their cells to produce energy – in other words, for survival. Normally, the vascular system supplies oxygen to each and every cell of our body. If that supply is not adequately assured, however, the cell dies.

Many diseases can lead to a reduction in the supply of oxygen to the cells: a heart attack or a stroke, for example. 35-year-old Julia Weigand is particularly interested in the way oxygen deficiency contributes to the onset of cancer. After all, cancer essentially amounts to uncontrolled cell growth. As a result, the cancer cells soon outgrow the existing blood system and, together with that, also the oxygen supply. Rather than dying, however, cancer cells are able to adapt to the low oxygen concentration and can even make use of that capability to spread to other parts of the body (metastasis). Weigand's research examines how cancer cells adapt to oxygen deficiency at the molecular level. Specifically, she studies changes in ribonucleic acid, the molecule which mediates the flow of genetic material for protein biosynthesis. Weigand analyses how different types of cancer react to oxygen deficiency, with the aim of identifying fresh approaches for the development of new cancer treatments.

Messer Group – GRI Content Index – 'in accordance' Core

The GRI Content Index shows at a glance how the Messer Group's corporate responsibility report meets the requirements of GRI. The Index shows the standard indicators we have considered and to what extent, as well as where these can be found on the company's website or in the Corporate Responsibility Report and Management Report (CRR&MR). In addition, the GRI Content Index includes explanations and supplementary information on selected standard indicators. Further information can be found in the GRI Annex under www.messergroup.com/gri-index. For this report, GRI conducted a Content Index Service. GRI hereby confirms that the GRI Content Index is accurate and aligned with the requirements of disclosure G4-32, and the Standard Disclosure Labels are clearly indicated in the report (e.g. "G4-18", "G4-DMA" or "G4-EN5"). The disclosures on material issues that are not represented by a GRI aspect (at the end of the Index) are not within the scope of GRI's service.



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General standard disclosure	Page or link	External Assurance
Strategy and analysis		
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G4-32	This GRI Content Index. Further information can be found in the GRI Annex published on the Internet at: www.messergroup.com/gri-index		–
G4-33	CRR&MR p. 19; the corporate responsibility report has not been audited externally		–
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G4-EN19	CRR&MR p. 87		–
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Category: Environmental			
Aspect: Effluents and waste			
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Aspect: Compliance			
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G4-EN29	none		–
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Aspect: Compliance			
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Further material issues for Messer Group (not represented by a specific GRI Material Aspect)			
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G4-DMA & Indicators	CRR&MR p. 41, see G4-24 - G4-26 and G4-30		–
Issue: Independence, secure finances/sustainable economic resources			
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Group Management Report

of the Messer Group GmbH 2016

General Information on the Group

Overview of the activities of the Messer Group

G4-3 Messer Group GmbH (“the Company”), an industrial gases manufacturer, has its registered office in
G4-5 Sulzbach/Taunus near Frankfurt am Main and its postal address in Bad Soden am Taunus. It acts as management holding company and, together with its subsidiaries and affiliated companies, forms the Messer Group (“the Group”).

G4-4 From acetylene to xenon, the Messer Group offers a product portfolio that must surely count as one of the most diverse in the market – the Company produces industrial gases such as oxygen, nitrogen, argon, carbon dioxide, hydrogen, helium, shielding gases for welding, specialty gases, medical gases and a wide variety of mixed gases.

In state-of-the-art competence centers, the Messer Group develops application technologies for the use of gases in almost all branches of industry, in foodstuffs technology, medicine and research and science.

G4-6 The Group has its own operating facilities in 36 countries. Messer is therefore represented in each of the main European markets (with the exception of the United Kingdom and Scandinavia) as well as in China, Vietnam, Singapore, Algeria and Peru.

In Willich, Germany, Messer operates a highly specialized technical center for testing in the areas of cold grinding and recycling. In the area of welding and cutting, the Messer Group’s specialized technical centers in Germany, Hungary and China develop new technologies, mixed gases and applications. Our prime focus is on a future-oriented approach to our products, tailored to the needs of our customers. Gumpoldskirchen, near Vienna, Austria, is the hub for ongoing development of high-temperature processes, with customers, cooperation partners and research institutes. Our technical center in Mitry-Mory, near Paris, France, with 1,150 square meters of usable space, has facilities for carrying out tests relating to the food-processing, pharmaceuticals and chemicals/environment sectors.

Changes in the group reporting entity in the fiscal year 2016

G4-13, G4-23, G4-28 The group reporting entity changed as follows during the year under report:

First-time consolidations

The following entities were founded and commenced operations in 2016:

- ASCO Carbon Dioxide Inc., USA, 100 %
- Changsha Xianggang Messer Gas Products Co, Ltd., China, 100 %

Effective May 31, 2016, Messer Hungarogáz Kft. acquired 100 % of the shares of Air Liquide Hungary Ipari Gáztermelő Kft. from Air Liquide Eastern Europe S.A. The name of the acquired entity was subsequently changed to Messer Iparigáz Kft.

The acquisition of Air Liquide Hungary Ipari Gáztermelő Kft. enables us to reinforce our strong competitive position on the Hungarian market. Once the new entity has been integrated with the Messer Hungarogáz Kft. operation, the objective is to achieve the planned efficiency improvements as quickly as possible. Synergy benefits are expected to be generated on the back of benefits of scale in the production, distribution and administration areas. The production facilities and sites of Messer Iparigáz Kft. fit well with the existing structures of Messer Hungarogáz Kft. The product range of the operations acquired strengthens Messer's market position. Customers in Hungary will benefit as a result of the new sites and the broader range of products. The move is part of Messer's strategy of strengthening operations in its European home market.

Acquisition of an interest in an associated company

On December 2, 2015, Messer Group GmbH signed a purchase agreement for the acquisition of 30 % of the shares in Smart-Gas Pte. Ltd., Singapore. The purchase price consideration amounted to K€ 3,871. The acquired interest is included in the group reporting entity as an associated company.

Increases in majority shareholdings

On January 22, 2016, Messer Griesheim (China) Investment Co. Ltd., Shanghai, increased its majority holdings in Shaoxing Messer Gas Products Co., Ltd. ("Shaoxing") and Messer Sunshine (Ningbo) Gas Products Co., Ltd. ("Ningbo") to 100 %.

Deconsolidations

Our production site in Podgorica, Montenegro was closed effective December 31, 2015 due to changed market circumstances. Following definitive completion of activities, ProGas d.o.o. was de-consolidated in the fiscal year 2016.

Other

Shares in Universal Industrial Gas Sdn. Bhd. Malaysia, were acquired in accordance with a purchase agreement dated December 16, 2016. In addition to Messer Group GmbH, which acquired 60 % of the shares, Messer Group GmbH's 30 % subsidiary, Smart-Gas Pte. Ltd., Singapore, acquired 15 % in the Malaysian entity. The first down payment for the purchase consideration amounting to K€ 174 was paid by Messer Group GmbH in December 2016. The transaction was closed on February 28, 2017.

Financial performance indicators

The Messer Group uses parameters based on operating performance indicators to manage its business. The principal indicators are sales, EBITDA, investments, net debt and ROCE. Further explanations and the make-up of the indicators are provided in the sections on earnings performance and financial position.

Non-financial performance indicators

Safety, health, environmental protection and quality ("SHEQ") have been firmly embedded in Messer's guiding principles since its foundation in 1898 and continue to have the utmost priority in the operations of the family-owned company. Messer is aware that well-organized safety and quality guidelines form the basis for dealing safely with operational risks and improving operational performance. For this reason, the health and safety of our workforce and the protection of the environment are firmly embedded in total quality management systems and are reflected in various Messer Group Standards.

To take account of the growing importance of ensuring a healthy environment, social justice and effective business management, the Messer Group has embarked on the introduction of Corporate Responsibility Management ("CRM"). CRM follows a long-term approach and will contribute to the sustainable development of Messer. To this end, the Messer Group has also enhanced its SHEQ performance indicator system.

During the past fiscal year, 946 (2015: 878) SHEQ-related inspections and checks were carried out throughout the Messer Group (of which 816 in Europe), resulting in numerous improvement measures.

In addition, 208 ideas and suggestions for improvements were submitted by our staff members throughout the Messer Group (of which 95 in Europe). The suggestion rate within the Messer Group therefore stood at 0.04 ideas per employee.

Occupational safety

Occupational safety is of the utmost importance for all Messer companies. The Messer safety guidelines clearly reflect our position: "All industrial illnesses, injuries and accidents are avoidable".

Messer uses its global management system to identify and control potential operational risks. The principles of this system are carefully documented in its SHEQ manual and cover all safety-relevant areas: risk management, safety training, safety inspections, personal protective equipment, communication safety, accident investigations, etc. The SHEQ manual is a constituent part of the Messer Group's Compliance Management system.

In 2016, additional safety guidelines were drawn up especially for work in acetylene plants and made available to staff and customers.

2016 also saw the launch of a new series of "Safety Pocket Guides" for the benefit of staff and customers. The three Pocket Guides are part of the CC7 campaign "Focus on Cylinder", which aims to improve the safety of customers when handling gas cylinders. In addition to providing new basic knowledge as to what to do when ordering and receiving cylinder gases, they also convey further know-how that is essential for safe and secure handling of gases.

During the fiscal year 2016, ten safety audits were conducted in five countries to underline and ensure compliance with the SHEQ standards in all of the Messer Group's operational activities. The success of the safety measures and initiatives is assessed by means of the following annual performance indicators: working accidents causing lost days and accident frequency (number of working accidents causing lost days per million hours worked) and accident severity (days lost per million hours worked).

In 2016, 25 working accidents causing lost days were reported. Accident frequency has therefore risen since the previous year (22 working accidents). The level of accident severity rose to 77.9 days lost per million hours worked.

	2012	2013	2014	2015	2016
Working accidents causing lost days	23	38	18	22	25
Accident frequency	2.2	3.6	1.7	2.2	2.4
Accident severity	74.4	61.3	47.6	65.1	77.9

As a specialist in industrial gases, Messer is aware of its duty in relation to its staff and customers to efficiently identify and avoid potential work-related risks. With campaigns such as our “Safety Day”, we highlight potential hazards and endeavor to raise safety-at-work consciousness. The themes for this year’s Safety Day, which was organized Group-wide, were hygiene, cleanliness and tidiness at the workplace and at customer sites. Further key points were “organization of surroundings” and “hygienic handling of medical gas cylinders”. At the same time, we also commend commitment to safety throughout the Group with our Safety Award.

Messer continues to be an active member of the European Industrial Gases Association (EIGA) and our experts actively exchange experience, knowledge and what they have learnt from incidents in the industrial gases sector. In addition, some Messer Group entities cooperate with local research institutes and universities to enhance safety in production processes.

Transport safety

The transportation of gases and equipment on the road and customer deliveries are activities which involve the most risks in the gas industry. For this reason, the Messer Group has put its signature to the European Road Safety Charter, thus undertaking to place particular emphasis on transport safety. As well as complying with applicable laws and regulations for operating a vehicle fleet, the Messer Group’s own transport safety plan has proved invaluable.

A large proportion of the drivers working for Messer are employed by external transport firms, which are responsible for training the drivers in accordance with the ADR (European Agreement concerning the international carriage of dangerous goods by road). Messer has also drawn up its own modular driver training package, which is used to train drivers. The main themes covered by the training are:

- Laws and regulations (ADR and national provisions)
- Technical aspects (hazards arising from product, vehicle and tank technology, vehicle checks, safety technology)
- Accident avoidance
- Defensive, economical driving

In addition, all drivers receive a driver manual specific to their work (bulk, cylinders or service vehicles). This ensures that drivers have immediate access to all important information relating to their activities.

Furthermore, Messer specialists are actively involved in all relevant bodies of the European Industrial Gases Association (EIGA) and to a large extent too in the national associations. The findings from the

activities conducted within these bodies are incorporated in the driver manual and the driver training scheme on an ongoing basis, with a view to enhancing transport safety. In this way, the Messer Group is making its contribution to a steady reduction in the number of transport incidents.

Employees and corporate culture

G4-DMA Employment,
G4-10

Worldwide workforce

The Messer Group had an average worldwide workforce in 2016 of 5,487 employees (2015: 5,515 employees), each contributing to the success of the business with his or her extensive knowledge, ideas, know-how, motivation, attitude to work, active commitment and in many cases longstanding experience.

The average number of employees per region was as follows:

	Jan. 1 – Dec. 31, 2016	Jan. 1 – Dec. 31, 2015
Western Europe	1,083	1,071
Central Europe	749	730
South-Eastern Europe	1,346	1,357
China, Vietnam, Peru and Singapore	2,309	2,357
Total number of employees	5,487	5,515

As at December 31, 2016 approximately 88 % of our employees were working in non-German-speaking countries.

Training and the Messer Group Academy

The expertise and experience of our workforce of well-motivated and well-qualified employees provides the foundation for the Messer Group's success. They are constantly being required to rise to the practical challenge of highly demanding tasks and projects, at which stage they can also draw on the knowledge gained through regular attendance at internal and external training courses, specifically designed to meet their needs. This combined approach gives them the wherewithal to master the vast array of constantly changing work requirements, while at the same time enhancing the professional manner with which they go about their work. A transparent leadership style, based on an "open door" principle, allows for open communication and represents a core element of our management culture.

We endeavor to make school pupils and students aware of the potential of the fascinating world of gases, also with an eye to winning well-educated staff in the future. It is considered to be a crucial aspect of business to develop employee skills from an early stage. The Messer Group is committed to providing educational and vocational training opportunities to young people, based on the tenet that vocational training for the next generation is essential for the future competitiveness and underlying strength of our business. In Germany we offer vocational training to ambitious school and college leavers in the areas of industrial business studies, mechatronics, IT data processing and IT support. Training takes place at various sites, in some cases supplemented by several weeks spent at international locations.

The Messer Group Academy was established to expand the range of systematic development programs available to employees. The Messer Group Academy offers various training courses and lec-

tures, including the annual autumn lectures for our managers and junior executives. A further series of seminars was held in 2016 for the Junior Circle, our program for the next generation of managers, with participants from various national companies and specialist areas.

The focus is on the dissemination of knowledge by our own experts from various functions within the organization. Aspiring managers will attend five one-week modules covering various fields of focus, including inter-cultural training. The principal objective of the Messer Academy will be to provide an insight into our products, technical solutions, structures and specific internal issues based on a comprehensive and practice-oriented approach. Effective networking of the participants is also a primary concern. Training in the Junior Circle is organized over a two-year period, with candidates being selected and invited directly by the management under an internal application procedure.

In 2016, the Academy launched the transnational training course for cylinder salesman "Focus on Cylinder", with training provided in the Messer national companies in Slovenia, Croatia and France. Staff from six European companies participated in the training program.

This international, standardized sales training course consists of six modules, is offered to a maximum of 14 participants and takes place in the respective national language. In addition to internal and external speakers, the respective sales manager and deputy are trained as co-trainers who are then able to provide support for future training courses. Throughout, country-specific needs are taken into account in terms of training content.

The Messer Group has drawn up specific training plans for some 380 employees, while the local human resources departments are in charge of the others. Training needs are always discussed during employee performance reviews.

An "English offensive" has been launched worldwide to increase knowledge of English in the Group. In each company, employees, split into three groups, have the opportunity to improve their language skills.

Each year, the succession planning for managers and technical specialists is updated. Here too, the need for training is determined. Alongside the horizontal succession planning within each company, vertical cross-company succession planning was started in 2016 for the various specialist areas.

Uniform employer branding

The Messer Group's Employer Branding project is an international program aimed at depicting a corporate culture that is easy to recognize and understand. It is seen as a way of tying in new and current employees more closely to the business, but also as a means of getting potential employees to be enthusiastic about us, our products and our solutions. The job ads to recruit new employees have also been adapted groupwide, achieving the anticipated result of receiving fewer, but qualified applicants. As a flanking measure, image promotion films and posters have been completed and the Group's website optimized, including a redesigned career page. An in-house job applications portal has been created and was made available to the national companies for adaptation from spring 2016 onwards. In this way, the Messer Group, via uniform employer branding, will be able to showcase itself as an international, versatile, attractive employer.

Messer invests in vocational training for young employees. This human resources strategy, in combination with the know-how of our workforce and our high-quality products, ensures that we enjoy an excellent reputation among customers, partners and job-seekers alike.

Environmental management

The environment must be protected at all times and in all places. As a company, Messer takes this obligation very seriously and employs its global management system to further the protection of the environment. Internal environmental protection guidelines are documented in the Messer Group's SHEQ manual. These and the environmental management systems in place at all the subsidiaries follow international standard ISO 14001 and recommendations of the European Industrial Gases Association EIGA (for example, IGA IGC Doc. 107 – Guidelines on Environmental Management Systems). In 2016, 21 of our subsidiaries obtained external certification of their environmental management systems, compared with 19 companies in 2015.

Efficient use of energy goes without saying at Messer and is clearly in the Group's own interests. With the main aims of cost-cutting and economic use of resources, energy management is an ongoing process which also makes a contribution to reducing our CO₂ emissions. Our energy management system has been certified in accordance with ISO 50001 at all Messer production facilities in Germany and Spain.

Messer uses atmospheric air and electrical power at its production sites as the main raw materials to produce the air gases nitrogen, oxygen and argon. Production by means of air separation plants accounts for over 75 % of total energy consumption. Particular emphasis is therefore placed on the ongoing improvement of energy efficiency. Accordingly, Messer has assigned the specific task to a global energy manager to increase the energy efficiency of the Group's air separation plants.

Continuous monitoring of plant efficiency brings to light any energy variations and enables potential for improvement to be identified. Working together with local managers, projects are continuously initiated in order to improve energy efficiency.

The key environmental data of Messer's production activities during the past year are as follows:

The volumes of gases produced rose by 8.2 % compared to the previous year, as a result of which the electricity consumption of the Group's air separation plants also rose. On the other hand, energy efficiency, measured in terms of energy consumption per cubic meter of gas sold, declined by 0.5 % compared to the previous year.

New on-site plants were commissioned again in 2016 with a view to bringing about a reduction both in transport costs for the delivery of liquefied gases and at the same time in CO₂ emissions. These plants are used for on-site gas production and save approximately 1,200 truck journeys and 220 tons of CO₂. As a result, local customers benefit from flexibility and security of supply.

In Belgium, we commissioned a production plant for CO₂ for use in the food industry. The raw material comes from waste gas from a bioethanol plant. After cleaning and liquefying the raw gas, the CO₂ extracted can be used, for example, in the manufacture of soft drinks. Each year, up to 100,000 tons of CO₂ from waste gas can be converted into CO₂ for industrial applications.

In addition to new construction projects, there are also a large number of smaller-scale activities that contribute to improving energy efficiency.

In Germany, replacing the plug-in units (investment costing over K 500) reduced annual energy consumption at a large plant by up to 1 million kWh, which is equivalent to the electricity consumption of more than 250 private households.

In Serbia, solar panels with production capacity of 100 kWp were installed on the roof of a machine hall.

In many national companies, the old light bulbs in production halls and administrative buildings have been replaced by low-energy LED bulbs.

Health management

Messer is aware of its social responsibility and its impact on employees, as employees play a decisive role in all work processes. Messer therefore aims to ensure the health and well-being of the individual through its working standards. For instance, Messer introduced various health programs, such as free access to fitness and wellness centers for employees and their families. Measures of this kind are designed to promote a healthy lifestyle among employees.

Furthermore, a comprehensive training program for handling gas cylinders was initiated, with a view not only to reducing accidents associated with this, but also to improving the prevention of industrial diseases such as musculoskeletal disorders.

Customer satisfaction

Our values include focus on the customer and high degree of technical competence. To boost their confidence in our products and applications, we invite customers to regular seminars at our sites worldwide. New developments and improvements to existing processes to enhance the health of our workforce, environmental protection and process efficiency are the main focuses of these events. They provide customers with the opportunity to experience the advantages of new technologies in practice.

Most of the Messer Group companies are certificated in accordance with ISO 9001. This standard lays down the requirements for the Group's quality management system, which include regular customer satisfaction surveys. Our customers are aware that where gases are concerned there is far more at stake than merely the price of the products.

Customer satisfaction is gauged using an online questionnaire. A Messer survey tool was implemented under the protection of the Messer Group's firewall. This tool has the advantage that online responses by customers are immediately visible to the sales staff on the spot, who can react more swiftly to specific customer needs where necessary. The open-source software we use maximizes functionality and at the same time minimizes costs with stringent data protection requirements.

Customer participation has so far been gratifyingly high. In total, 9,029 of our customers were asked whether they were satisfied with the services received in 2016. The number of customers completing the questionnaire in full fell from 1,811 in 2015 to 976 in 2016.

The online questionnaire on general customer satisfaction consists of a total of 30 questions. To measure satisfaction, an analysis is carried out of whether the customers were satisfied with the services in general, whether customers consider it advantageous to be supplied by Messer and whether they are prepared to recommend Messer. The questionnaire focuses on the importance of 15 services, for which Messer's performance is then evaluated.

On a scale of 1 for very dissatisfied to 10 for very satisfied, the overall performance of the Messer Group in Europe as a whole achieved a rating of 8.39. This represents a slight deterioration on the previous year, when, in the country compilation, satisfaction with the overall performance was rated at 8.51.

The services assessment has turned out very satisfactorily, with all scoring within a range of 7.9 to 9.34. In the compilation of the results in Europe for the previous year, customers had already given their best evaluation for complete and on-time delivery. On a scale of 1 for unimportant to 10 for very important, the importance of this service was rated at 9.34. Product quality and staff technical skills were rated at 9.10. Only the online services, such as electronic invoice processing, use of the customer online platform my.messergroup.com to download relevant product information, etc., were allocated a score of 7.94.

The survey results are evaluated at regular intervals and are taken as an opportunity to make improvements to the relevant areas.

Financial report

General economic conditions and sector environment

The various products, services and technologies of the industrial gases business are used in almost all branches of industry, but also in the foodstuffs technology, medicine and research and science sectors. For this reason, gross domestic product (GDP) is a highly relevant indicator for the Messer Group's performance.

The scale of global economic recovery failed to meet expectations again in 2016. According to analyses of the International Monetary Fund (IMF)¹ and the World Bank², the pace of growth again slowed down slightly year-on-year. For example, the World Bank figures indicate that GDP in 2016 grew by only 2.3 % in real terms, compared to 2.7 % in the previous year. The signs are that emerging and developing countries have at least managed to maintain GDP growth at similar or slightly higher levels, whereas the developed industrialized countries are likely to fall short of expectations with significant slower growth rates. With this combination of developments, the wide growth gap in GDP terms between developed industrialized countries (at 1.6 % overall) and emerging and developing countries (at 4.1 % overall) would remain almost unchanged.¹

Economic growth in Europe stabilized in 2016 at a low level. According to the figures of the Organization for Economic Cooperation and Development (OECD)³, GDP in the euro area rose by an estimated 1.7 % in 2016. If this figure turns out to be correct, the growth rate in the region would have accelerated by a further 0.2 percentage points compared to the previous year. In this connection, as far as the major economic regions are concerned, economic growth stabilized in France and Spain and continued to pick up slightly in Germany and Italy. Estimated GDP growth in Europe outside the euro area was again stronger in 2016, as can be seen, for example, with the growth rates for Slovakia (3.6 %), Poland (2.6 %) and the Czech Republic (2.4 %). On the other hand, GDP growth is still waning in all of these countries compared to the growth rates of 3 % and over still being achieved in 2015. This is shown the most clearly in the Czech Republic and Hungary, for example, where GDP growth is expected to have halved in 2016.

In China, the GDP growth rate continued to slow down in line with expectations and, based on the World Bank's figures, is likely to finish 2016 at 6.7 %, compared to 6.9 % one year earlier. The Chinese Government continues its endeavors to reduce the Chinese economy's dependence on exports by boosting domestic demand, with a corresponding focus on consumption and services, resulting in more moderate growth rates. Nevertheless, Chinese GDP growth remains the strongest in the world.

¹ World Economic Outlook, Update January 16, 2017

² Global Economic Prospects, January 2017

³ OECD Economic Outlook – No.100, Update November 2016

Review of operations

General economic conditions in the fiscal year 2016 were largely unchanged compared to the previous year. In China, the continued weakening of the economic sectors relevant for the Messer Group, and especially low steel production, was evident, although from the middle of the year, stabilization and in some areas even a slight recovery were recorded. Europe's economy continued to pick up slowly, albeit at a more sluggish pace towards the year end. These developments prevented the Messer Group from achieving revenue growth in 2016. Overall, sales fell slightly by just under 2 %. Successful measures undertaken meant that our prediction of a sharp drop in sales in 2016 did not materialize. However, a one-time impact arose on sales recognized for newly commissioned plants in conjunction with the application of IFRIC 4: the amount recognized in 2015 (€ 44 million) was significantly higher than in 2016 (€ 6 million). Adjusted for these amounts, sales grew by approximately 2 %. EBITDA was slightly down (-1 %) year-on-year, an outcome that was significantly better than our prediction of a sharp fall in EBITDA for the fiscal year 2016. Factors contributing to this better-than-forecast result included a significantly lower expense for bad debts and a generally better-than-expected performance in Asia.

Including the impact of the USPP currency hedge, the Messer Group again managed to reduce net debt during the twelve-month period under report from K€ 409,079 to K€ 379,335 at December 31, 2016. The "significant rise" in net debt forecasted one year earlier was therefore averted.

Overall situation

Results of operations

Messer Group generated worldwide sales of K€ 1,145,790 in 2016 (2015: K€ 1,165,517) which can be analyzed by region as follows:

Sales	Jan. 1 – Dec. 31, 2016	Jan. 1 – Dec. 31, 2015	Change in 2016
China, Vietnam, Peru and Singapore	402,049	433,511	
Western Europe	368,622	356,019	
Central Europe	186,936	191,713	
South-Eastern Europe	188,183	184,274	
	1,145,790	1,165,517	-2 %

The Messer Group's sales in the fiscal year 2016 were 2 % down on the previous year's figure. Business developed in the various regions as follows:

China, Vietnam and Peru

Sales generated in China fell by 12 % year-on-year; excluding the one-time sales recognized for commissioned plants in accordance with IAS 17 (in conjunction with IFRIC 4), sales went down by 1 %. The remainder of the decrease was attributable entirely to the depreciation in value of the Chinese currency compared to the previous year and the resulting negative impact on translation into the Group's reporting currency, the euro. In local currency terms, sales in China grew by a solid 4 % in 2016, despite the continuing slowdown in the growth rate of the Chinese economy. The percentage

increase in sales was therefore lower than the increase in GDP, reflecting unchanged difficult business conditions for the steel industry.

In Vietnam sales rose once again in 2016 by two thirds compared to the previous year, driven in part by increased demand of our on-site customer, Hoa Phat, and the utilization of further production capacity for liquefied gases in the north of the country. In this context, the third air separation plant was taken into service at the beginning of the year for the on-site customer, Hoa Phat. The strong sales performance was also boosted by a one-time contribution to sales resulting from accounting for one plant in accordance with IAS 17 (in conjunction with IFRIC 4).

Business in Peru fell by 2 %, whereby the decrease was attributable entirely to the depreciation in value of the local currency compared to the previous year and the resulting negative impact on translation into the Group's reporting currency, the euro.

Western Europe

Sales in this region rose 4 % year-on-year, with operations in the Germany, Spain and the CO₂ hardware business of ASCO Kohlen Säure AG in Switzerland making good contributions to the sales figure. By contrast, sales fell in the Benelux and France. In the Benelux countries, this fall was attributable mainly to the cessation of the one-off temporary deliveries of acetylene to a major customer, made by our Dutch company in the previous year. In France, on the other hand, the generally weaker economic climate had a perceptible impact on industrial gases business.

Central Europe

Compared to the previous year, sales recorded for the Central Europe region were down by nearly 3 %. With the exception of slight sales growth in Slovakia, the decline affected all Messer activities in the region. In the Czech Republic, the massive economic difficulties of the coal mines stood out in particular. The continuing relatively good business climate in Poland, which was reflected in the sales trend in Messer activities, was unable to fully offset the negative impact on translation into the Group's reporting currency, the euro, resulting from the year-on-year devaluation of the local currency.

South-Eastern Europe

Despite the generally difficult economic climate, exacerbated by a strained financial situation in several countries, the Messer Group's sales in South-Eastern Europe rose by 2 %. With the exception of our operations in Bosnia, all national entities achieved growth in sales revenue of between 1 % and 7 %. In Bosnia, the change in accounting rules in relation to an on-site customer which had no impact on earnings showed up negative in the sales figures. Sales growth in the region was also bolstered by the acquisition of the industrial gases activities of Air Liquide in Hungary with effect from June 1, 2016. On the other hand, the Messer group had already sold its company in Turkey in September 2015.

The Group recorded an EBITDA of K€ 249,057 for the fiscal year 2016 (2015: K€ 251,795).

EBITDA	Jan. 1 – Dec. 31, 2016	Jan. 1 – Dec. 31, 2015
EBIT	107,026	98,551
Amortization/ depreciation of intangible assets and property, plant and equipment	141,977	152,949
Dividend income ¹	54	295
EBITDA	249,057	251,795
as % of sales	1,145,790	1,165,517
Margin:	21.7 %	21.6 %

¹ Dividend income from non-consolidated companies

The Messer Group's EBITDA for 2016 was 1 % lower than in the previous fiscal year. This outcome reflects the successful impact of measures undertaken to counter the originally forecasted "sharp fall in EBITDA". Factors contributing to this better-than-forecast result included a significantly lower expense for bad debts and a generally better-than-expected performance in Asia.

Messer Group

Overall the Messer Group recorded a group net profit (including profit attributable to minority interests) of K€ 67,238 for the fiscal year 2016 (2015: K€ 47,058). The gross profit amounted to K€ 478,436 (41.8 % of sales) and the operating profit amounted to K€ 107,026 (9.3 % of sales). Compared to the previous year, the operating profit increased by K€ 8,475. Cost of sales includes impairment losses of K€ 4,400 recorded on property, plant and equipment in the fiscal year 2016. In the previous year, cost of sales included a net expense of K€ 7,926 in conjunction with impairment losses and the reversal of impairment losses on property, plant and equipment. In addition, impairment losses on goodwill amounted to K€ 6,711 in the previous year, whereas none were recorded in 2016. The one-time positive impact of sales recognized for newly commissioned plants in conjunction with the application of IFRIC 4 fell from € 44 million in 2015 to € 6 million in 2016.

Profit before tax and minority interests is stated after a net interest expense of K€ 21,210, which represented an improvement of K€ 760 on the previous year due to the lower level of debt during the year. Other financial result for the year 2016 improved by K€ 6,041 compared to the previous year, mainly reflecting favorable changes in the fair value measurement of derivatives with income statement effect.

Taking into account all of the above factors, the group profit attributable to equity holders of the parent company totaled K€ 51,678 and was therefore K€15,111 higher than in the previous year.

G4-9 **Financial position**

Group Treasury is responsible for overall liquidity, interest rate and currency management. The most important objective of Group Treasury is to ensure that a minimum level of liquidity is always available to ensure solvency at all times. High levels of liquid funds help to improve our flexibility, security and independence. If necessary, we can call on additional liquidity potential under further various available credit lines amounting to € 52.5 million.

Financing

Net debt as of December 31, 2016 stood at K€ 379,335 (2015: K€ 409,079) and is broken down as follows:

	Dec. 31, 2016	Dec. 31, 2015	Change in 2016
Financial debt	526,661	582,192	
Currency hedge USPP	(33,342)	(28,609)	
Gross financial debt	493,319	553,583	
Cash and cash equivalents	(113,984)	(144,504)	
	379,335	409,079	-7.3 %

The Messer Group reduced net debt in 2016 by K€ 29,744 compared to the previous year. Based on financial liabilities of K€ 526,661 at the end of the reporting period, the ratio of financial debt to the balance sheet total was 23.7 %.

On June 8, 2011 the Messer Group took up a US Private Placement ("USPP I") with various investors. The USPP II has a term of ten years and falls due for repayment at the end of the term.

Amount	Interest rate p. a.	Maturity
€ 80.0 million	4.55 %	June 14, 2021
€ 80.0 million	4.6975 %	June 14, 2021
USD 57.0 million	4.86 %	June 14, 2021

The further US Private Placement ("USPP III") for USD 100 million and € 46.3 million was completed on August 2, 2012. It falls due for payment at the end of the term and is broken down as follows:

Amount	Interest rate p. a.	Maturity
K€ 23,148	3.680 %	August 2, 2022
K€ 23,148	3.680 %	August 2, 2022
K'USD 12,500	4.040 %	August 2, 2022
K'USD 25,000	4.160 %	August 2, 2024
K'USD 25,000	4.430 %	August 2, 2027
K'USD 37,500	4.040 %	August 2, 2022

The USD loans in connection with USPP II and USPP III totaling USD 157 million are fully hedged by cross currency interest rate swaps.

A Term and Revolving Facilities Agreement (RFA) was concluded with a volume of € 160 million on July 28, 2015. The RFA has been made available by UniCredit Bank AG, Bayerische Landesbank, ING Bank (a branch of ING-DiBa AG) and Landesbank Hessen-Thüringen Girozentrale. It consists of two tranches: tranche A amounts to € 60 million, with an initial margin of 0.70 % p.a. Tranche A has been drawn down in full and will be repaid in six-monthly instalments of € 5 million, with a final instalment of € 30 million falling due on June 30, 2019.

Tranche B amounts to € 100 million, with an initial margin of 0.65 % p.a. This represents a revolving credit line to finance investments and working capital. The original term is five years with two successive renewal options for one year each.

Guarantees provided by a number of group entities serve as collateral for USPP II, USPP III and the RFA. Of the covenants existing for these financial agreements, mention should be made in particular of the net debt (i.e. gross debt less liquid funds)/EBITDA covenant, which also contains a computation for the Messer Group excluding China.

Cash flow statement

Abridged version in K€	Jan. 1. – Dec. 31, 2016	Jan. 1. – Dec. 31, 2015
Profit before taxes	89,093	71,350
Cash flows from operating activities	229,328	219,427
Cash flows from investing activities	(137,653)	(127,900)
Cash flows from financing activities	(127,457)	(103,677)
Changes in cash and cash equivalents	(35,782)	(12,150)
Cash and cash equivalents at the beginning of the period	144,504	155,900
Currency translation impact on cash and cash equivalents	5,262	742
Cash, change in group reporting entity	–	12
Cash classified as held for sale	–	–
at the end of the period	113,984	144,504

At K€ 229,328, cash flows from operating activities were K€ 9,901 higher than in the previous year. In addition to the higher net profit for the year, the increase was mainly due to the fact that expenditure on the construction of new air separation plants, which fall under the requirements of IAS 17 (in conjunction with IFRIC 4), was lower.

The change in cash flows from investing activities again reflected the continued high level of investments by the Messer Group. The acquisition of Air Liquide Hungary Ipari Gáztermelő Kft. resulted in a higher level of cash outflows.

Cash outflows from financing activities amounted to K€ 127,457, which was K€ 23,780 higher than the previous year's figure, reflecting repayment of financial debt on the one hand and a capital repayment of € 11.9 million to shareholders on the other.

Liquid funds held by the Messer Group at December 31, 2016 totaled K€ 113,984, compared to K€ 144,504 one year earlier.

In 2017, the Messer Group will require further capital to fund its expanding business operations and scheduled capital expenditure and to repay loans and interest as they fall due, even though our focus in the medium term will be to consolidate net debt levels relating to operations outside China. These funds will be generated out of cash flows from operating activities, existing funds and credit lines

available to the Group. The Messer Group's strong position in the various markets in which it already operates, combined with expansion into new markets, will enable us to maintain our robust financial position.

The Group has committed to purchase or to invest in the construction and maintenance of various production facilities. Obligations under these agreements represent commitments to purchase plant and equipment at market prices in the future. The Group is also party to long-term contracts which give rise to obligations. As of December 31, 2016, purchase and capital expenditure commitments and long-term contracts amounted to K€ 73,655 (2015: K€ 77,158).

Capital expenditure

Capital expenditure continues to be focused on safeguarding existing business and opening up opportunities for growth. In accordance with normal business principles, the Messer Group invests primarily in projects which will secure supply capabilities and/or which create opportunities for profitable growth. Furthermore regular investments are made in the modernization of production plants and distribution channels.

The Messer Group's capital expenditure on property, plant and equipment and financial investments totaled € 144 million. The capital expenditure ratio corresponds to 13 % of sales. The principal investments in property, plant and equipment related to the construction of new air separation plants in Vietnam, Poland, China and Slovenia and two CO₂ plants in China and Hungary. Overall, capital expenditure on property, plant and equipment totaled € 119 million in 2016, compared to € 138 million in 2015. As predicted, the volume of investment was lower than one year earlier. The largest addition to financial investments related to the acquisition of Messer Iparigáz Kft., Hungary. In addition, as part of the strategy of entering the ASEAN market, a minority shareholding was acquired in an industrial gases company in Singapore and a majority shareholding was acquired in an industrial gases company in Malaysia. In this context, reference is made to the disclosures provided in the section "Changes in the group reporting entity in the fiscal year 2016".

Capital expenditure by region was as follows:

Capital expenditure in K€	Jan. 1. - Dec. 31, 2016	Jan. 1. - Dec. 31, 2015
China, Vietnam, Peru and Singapore	39,972	58,905
Western Europe	41,563	36,538
Central Europe	17,473	24,315
South-Eastern Europe	44,528	22,355
	143,536	142,113

In China, Messer's investment projects are currently focused on pushing ahead with the strategy to diversify the existing business model. In 2016, this included the completion of a third CO₂ plant in Jiangsu province. Including a CO₂ plant already operated under a joint venture in Sichuan province and a CO₂ plant in Yunnan province, the Messer Group therefore has available CO₂ production capacity in China totaling 300 tons per day. Furthermore, an air separation plant was taken into service in the middle of the year in Hunan province for a new on-site customer outside the steel sector. The largely

completed construction of a state-of-the art specialty gasworks in Jiangsu province is a further aspect of business diversification in China. The second in-house krypton and xenon production unit has also been taken into service in Hunan province. Finally, the expansion of the liquefied gases business started in 2011 was brought to a successful close for the time being by the near-completion of the air separation plant in Zhejiang province towards the end of 2016.

In Vietnam, construction work on the third air separation plant for on-site customer Hoa Phat was completed at the beginning of 2016 and it was successfully taken into service in February.

In Europe, investments in distribution channels and selective growth projects still form the main focus of our capital expenditure. The selected growth projects include the expansion of our existing air gas and CO₂ production capacities in Hungary, the construction of a first air separation plant in Slovenia, aimed at securing the future product supply independence of our industrial gas activities in that country, and selective expansion of filling plants in Croatia, Poland, Slovakia and the Czech Republic.

G4-9 **Net assets**

The balance sheet total at December 31, 2016 amounted to K€ 2,223,547, of which the largest proportion (79.2 %) related to non-current assets (2015: 79.1 %). Tangible and intangible assets represented the largest combined item on the assets side of the balance sheet (68.6 %). The carrying amount of these two items together increased by K€ 21,694. Non-current lease receivables and cash at banks account for 7.2 % and 5.1 % respectively of total assets.

Currency factors had the effect of decreasing the balance sheet total by K€ 22,868, which were attributable mainly to our Chinese and Serbian companies.

The equity ratio (including minority interests) increased to 59.3 % (2015: 58.3 %). Gross debt accounted for 23.7 % of the balance sheet total and decreased by K€ 55,531 compared to one year earlier. The refinancing concluded in 2015 and debt repayment in 2016 led to further improvement of the financing structure in terms of the long-term financing of assets.

Cost of capital percentage for employed capital

The ROCE for the past year was 7.23 %, calculated as follows:

ROCE	Jan. 1. – Dec. 31, 2016	Jan. 1. – Dec. 31, 2015
EBIT	107,026	98,551
+ Amortization of/Impairment losses on goodwill	–	6,711
EBIT adjusted	107,026	105,262
: Capital employed	1,481,264	1,507,691
ROCE in %	7.23 %	6.98 %
Derivation of capital employed from the balance sheet		
Other intangible assets and property, plant and equipment	1,207,758	1,233,867
Finance lease receivables	173,509	186,764
Net working capital	99,997	87,060
Capital Employed	1,481,264	1,507,691

Operating assets

Net working capital stood at K€ 99,997 at the end of the reporting period (2015: K€ 87,060) and comprised the following:

Net working capital	Dec. 31, 2016	Dec. 31, 2015
Inventories	54,158	57,131
Trade accounts receivable	206,561	189,056
Trade payables	(145,706)	(147,281)
Advance payments received	(15,016)	(11,846)
	99,997	87,060

The increase in net working capital compared to the previous year is largely attributable to a growth in trade receivables. In addition to a generally higher level in China, which was up by K€ 5,594, the invoicing of customer projects at year-end at our companies in Switzerland led to an increase of K€ 6,072. This development was offset by a significant rise in advance payments received for plants under construction. The decrease in inventories in the fiscal year 2016 was mainly due to the commissioning of plants accounted for in accordance with IAS 17 (in conjunction with IFRIC 4).

The ratio of inventories less advance payments from customers plus receivables on the one hand and trade payables on the other was, as in the previous year, approximately 2:1; the ratio of net working capital to sales went up from 7.5 % to 8.7 %.

DSO (Days Sales Outstanding) increased by seven days from 58 to 65 days. The calculation of this key performance indicator includes one-time sales recognized for commissioned plants in accordance with IAS 17 (in conjunction with IFRIC 4). The corresponding amounts of sales recognized for such items were K€ 5,874 in 2016 and K€ 44,411 in 2015. Excluding these amounts, DSO increased by four days from 61 to 65 days. There were, however, no significant bad debts in 2016. The increase in DSO was particularly noticeable in China.

Overall statement on the Group's financial condition

Sales of the Messer Group fell by 2 % year-on-year against the background of an ongoing difficult economic climate. The application of IFRIC 4 to account for newly commissioned plants contributed to the decrease, with only K€ 5,874 of sales recognized in 2016 compared to K€ 44,411 in 2015.

The EBITDA margin remained almost unchanged at 21.7 %, with EBITDA down slightly by € 2.7 million to approximately € 252 million.

The Messer Group's return on capital employed (ROCE) amounted to 7.23 % (2015: 6.98 %). In the previous year, the higher net expense in connection with impairment losses and the reversal of impairment losses on property, plant and equipment had the most significant impact (2015: expenses totaling € 7.9 million; 2016: expenses totaling € 4.4 million). Instead of the decline in ROCE forecasted for 2016, ROCE actually increased slightly as a result of the EBIT performance.

Good progress is being made in consolidating net debt levels relating to our operations outside China, which forms the focus of our medium-term planning. In 2016, for instance, net debt relevant for the net debt covenants was reduced year-on-year by a further € 17.7 million to € 330.6 million. This trend is also reflected in the net debt figure of approximately € 379 million for the Messer Group as a whole, which was down by a further € 35 million compared to the end of the previous year.

These overall favorable developments represent good progress and are testimony to the stability and sustainability of the Group's business model. The Messer Group, operating in the two principal regions of Europe and China, has a global presence and good regional diversification in a number of countries or provinces within the two principal regions, so that falling demand in individual markets or downturns in specific sectors can often be offset.

Outlook report

Macroeconomic and sector-specific risks

The pace of global economic growth again failed to live up to expectations in 2016, causing leading economic institutes to scale down their growth expectations. For example, the World Bank now expects global GDP growth in 2017 of 2.7 %, following forecasts in the previous year of 2.9 % and in 2015 of as much as 3.2 % for the same period. Even though the pace of growth had already slowed down slightly during the past two years, the economic research institutes have not discarded their expectations of a renewed acceleration in the growth rate. The forecasts of GDP growth rates published by the International Monetary Fund ("IMF")¹ and the World Bank at the beginning of 2017, approximate the rates predicted for 2016. The IMF expects global GDP to grow in real terms by 3.4 % in 2017, an improvement of 0.3 percentage points over the previous year, while according to the World Bank the global growth rate will accelerate in real terms from 2.3 % in 2016 to 2.7 % in 2017. Further smaller increases are predicted for subsequent years. For 2017, the two institutes forecast improved growth rates both for developed industrialized countries and for emerging and developing economies. The positive expectations this time are driven mainly by the prospect of economic impetus on the back of US fiscal policies and the hope for individual stimulus programs in emerging and developing economies. For instance, the IMF forecasts GDP growth for developed industrialized countries of 1.9 % compared to 1.6 % in 2016, including in particular the prediction that GDP in the USA will accelerate from 1.6 % to 2.3 %. In the case of emerging and developing economies, 2016 is seen as the year, in which the slowing, at times even negative economic trend, is likely to have bottomed out. In China, on the other hand, a further slowdown in the growth rate is forecasted as a consequence of the process of change embarked upon with a view to strengthening domestic demand on the basis of consumption and services. The IMF and World Bank forecast GDP growth rates for 2017 of between 6.4 % and 6.5 %. Overall, GDP growth is expected to accelerate in emerging and developing economies by between 4.2 % and 4.5 % in 2017, compared to the 3.4 % to 4.1 % estimated for 2016.

The World Bank and the IWF again point out clear forecasting risks in their pronouncements for 2017, which arise primarily from increasing uncertainties concerning the effects of singular events, which due to global networking potentially have a worldwide impact; examples include "Brexit" or the political change in the USA. Moreover, the indications seem to point to generally slower global economic growth rates.

Outlook for the Messer Group

The Messer Group's net financial debt to EBITDA ratio stood at 1.52 at December 31, 2016, while the corresponding ratio for our operations excluding China was 1.94. The focus of the medium-term planning of the Messer Group remains the consolidation of net debt levels for our business activities outside China. As well as the pursuit of investment activities at a level conducive to achieving this aim, we also intend to grow sales at a pace appropriate for the prevailing economic conditions and to take advantage of selected opportunities in order to stabilize or improve the profitability of the Messer Group.

¹ World Economic Outlook, Update January 16, 2017

We continue to view economic prospects in Europe with cautious optimism, although regional pressure on prices and intense competition and a re-emergence of the crisis in the steel industry, could hold down growth. The main focus of our business performance in Europe is on exploiting new production capacities created in recent years (in particular in Germany, France, Austria, Poland and Spain) to the maximum extent, and successfully creating new production capacities and customer projects at selected locations (e.g. in Serbia, Slovenia and Hungary). Future investment decisions will be taken in line with the stated strategy of continuously consolidating net debt levels.

The China region accounted for approximately a third of sales and EBITDA of the Messer Group in 2016. The net debt/ EBITDA ratio for the China region is 0.62 and hence significantly lower than that of the Messer Group as a whole (1.52), underlining the continuing importance of Chinese operations for sales, profitability and internal financing of the Messer Group. We remain confident in our prediction that the market will continue to grow in this region at an above-average rate. The processes that are bringing about economic change in China, which in our business are reflected in particular in temporary pressure on prices and intense competition in the liquefied gases market and surplus capacity in the steel industry, highlight the need for a more diversified business model. In this respect, we have reached an advanced stage in the implementation of a comprehensive package of measures. These measures include concentrating on on-site projects in non-steel sectors, developing applications technology for the liquefied gases business, expanding the specialty gases business and entering the CO₂ business.

According to the current estimates of the various economic research institutes, we expect energy costs, which are all-important for our industry, not to rise disproportionately for the time being. We have continued to assume in our forecast that the two largest on-site customers of our Serbian subsidiary will remain in business. This assumption is supported by the privatization of the larger of the two on-site customers which occurred in mid-2016. Delays in interim payments or even in some cases defaults on future receivables are taken into account in the forecast.

The main financial performance indicators for the Messer Group are forecast to develop as follows in the coming year:

	2017 compared to 2016
Sales	Slight decrease
EBITDA	Sharp decrease
Capital expenditure	Sharp decrease
Net debt	Slight increase
ROCE	Sharp decrease

Overall assessment by management

Growth in Europe is expected to carry on rising slightly in the fiscal year 2017, albeit at a slower pace than in 2016. China's growth rate is likely to continue to decelerate. Global economic conditions are being impacted by a growing sense of uncertainty, thereby creating major challenges to predict growth rates accurately. Risks and uncertainties which may impact on economic conditions that are relevant for the Messer Group's business are seen primarily in the uncertain outcome of the continued transformation of the Chinese economy, the still incalculable impact of "Brexit" and political changes

in the USA. This will continue to be accompanied by the unforeseeable stresses and strains from the trouble spots, especially in the North African and Arabian region.

The Messer Group considers that it is well placed to meet the forthcoming challenges, although it continues to deem it wise to adopt a prudent stance with regard to short-term expectations. This caution arises from the expected decline in sales, especially as a result of the assumption of the growing strength of the euro, the Group's transaction currency. EBITDA and ROCE on the other hand are likely to be impacted by the downward trend in other operating results.

Future investment decisions will be taken in line with the stated strategy of consolidating net debt levels for existing operations in the medium term. Investment activities at a level conducive to the pursuit of this aim, combined with a sound earnings performance, should ensure that the Messer Group's net debt does not increase on a lasting basis.

Forward-looking assertions

The Outlook Report contains forward-looking assertions which are based on the management's current appraisal of future developments. These assertions are not to be interpreted as a guarantee that these expectations will in fact be met. Future business performance and earnings of the Messer Group are dependent upon a number of risks and uncertainties and may therefore diverge significantly from the forward-looking assertions made here.

Opportunities report

As an international supplier of industrial gases, opportunities basically arise for the Messer Group from the multifarious usages of industrial gases to produce products needed in all fields of life and in all countries of the world. Through investment, we are able to exploit available opportunities to realize the full potential of the business and to maintain/ strengthen our market position. We are also taking advantage of the opportunities arising from internationalization – in particular in the light of positive developments on the emerging economies – by purposefully expanding our facilities in these regions. This also enables us to engage in new markets with long-term growth potential. We encourage the identification of new opportunities by embedding employee motivation in the Group's corporate values and by fostering ideas management.

The main opportunities which could be significant for the net assets, financial and earnings position of the Messer Group are as follows:

Macroeconomic opportunities

The general economic environment plays an important role for our operations, our financial and earnings position and our cash flows. Our forecast for 2017 is based on the expectation that future macroeconomic conditions correspond to the description provided in the Outlook Report section of the management report. If the world economy as a whole or in regions or countries of relevance for our business performs better than described, our sales and earnings could exceed the forecasted amounts.

Market opportunities

We still expect the market to grow sharply, particularly in China, but, for the purposes of the outlook for 2017, have not assumed a further increase in the growth rate. A sharp economic upswing could have a positive impact on the Group's sales and earnings.

We forecast a modest economic recovery in Europe. A faster economic recovery, especially in the southern European countries of the euro area, could have a positive impact on our sales and earnings.

Opportunities arising from industrial gases applications

Our products are used worldwide in a variety of production processes. In the field of application technology, the Messer Group continuously analyzes multifarious processes in order to facilitate more efficient production processes for our customers through the use of industrial gases. New applications identified in this way may open up new business opportunities which could have a positive impact on our sales and earnings.

Opportunities arising from optimization measures

The strategic program "C7" implemented in 2013 with a view to improving profitability includes specific measures aimed at boosting sales, improving business processes and reducing costs by 2015. This program was developed further in 2016, with an emphasis on the cylinder gas business. If the various measures are implemented more quickly or more successfully than expected, this could have a positive impact on our sales and earnings.

Opportunities created by our employees

The Messer Group promotes "ideas management" throughout the group and employees are encouraged to submit improvement proposals with local and/or international relevance. Furthermore, human resources development programs and other training offers are available to encourage the systematic development and exploitation of our employees' potential. If we achieve better progress with these measures and methods than currently expected, this could have a positive impact on our sales and earnings.

G4-14 Risk report

As an international supplier of industrial gases, the Messer Group is exposed to opportunities and risks which inevitably arise in connection with entrepreneurial activities. Moreover, future earnings will depend both on the operating performance of the gases business and on the state of the economies in individual countries, a factor over which the Messer Group has no influence. It is the task of all concerned to take advantage of opportunities when they arise, whilst at the same time ensuring that risk is kept to a minimum and pro-actively managed.

The main risks which could be significant for the net assets, financial and earnings position of the Messer Group are as follows:

Macroeconomic risks

The industrial gases business is subject to intense competition. The level of competition is increasing in conjunction with the process of globalization. This highly competitive environment could reduce Messer's earnings and cash flows in the future. The Messer Group operates globally, making it susceptible to local political, social and economic conditions and to the resulting risks arising in each market.

Market risks

We supply a cross-selection of industries and sectors (including steel, metal processing, chemicals, petrochemicals, food and beverages, healthcare and glass) on the basis of long-term contracts over periods of up to 15 years in Europe and up to 30 years in Asia. A significant reduction in market demand in any one of these key industries or sectors – particularly given the prevailing critical situation in the steel industry which is suffering from worldwide over-capacity – could adversely affect future earnings. Our strong position in China also means that this region makes an above-average contribution to earnings, and conversely, that any economic downturn on this market cannot be fully compensated by improved performance in other markets.

Cost risks

Regulatory or government amendments or interventions in the energy sector may lead to rising energy prices in some countries. The re-occurrence of crisis situations within oil-producing countries, the growing demand for energy in emerging economies, particularly in China and India, give reason to believe that oil and energy prices will rise again in the long term with a corresponding impact on supplies and primary products necessary for the Messer Group's business. Purchase prices of some important bought-in products, such as helium, fluctuate considerably. Although Messer is often able to pass on cost increases partially to its customers via price escalation clauses in supply contracts (in particular for electricity price increases) or reduce the risk by entering into long-term purchase agreements, it is possible that price increases for energy and bought-in items could adversely affect the profitability of the Messer Group.

Selling price risks

Intense competition may lead in certain countries to disproportionate downward price trends, as currently in China, which could have a negative impact on future sales and earnings. The integration of member states which have only recently joined the EU entails risk in that many previously state-run businesses will need to be privatized and restructured in accordance with EU and International Monetary Fund requirements. The number and scale of state grants could be drastically reduced, culminating in numerous closures and mergers in these countries, and an adverse impact on the Group's sales. In these circumstances, the downward pressure on selling prices would probably increase.

Operational risks

An operational interruption at one of our production facilities can result in loss of supplies to customers. We endeavor to avoid this situation by regularly maintaining and monitoring our equipment. In the event of breakdowns or defects, emergency plans and instruments are in place to reduce the financial consequences of a business interruption at one of our customers. The Messer Group is currently expanding its supply structure and maximizing flexibility in order to ensure that supplies to customers are safeguarded even in emergency situations. The range and quality of our products depend on the availability of bought-in hardware and on the production equipment used (e.g. cylinders, tanks) on the one hand and on the quality of service/products of our suppliers and business partners on the other.

Acquisition risks

The Messer Group is continually developing new strategies. As well as expanding and strengthening our existing business and continually optimizing our sourcing and logistics processes, we are intent on achieving growth both organically and through other means such as acquisitions and joint ventures. Our aim is to consolidate operations on existing markets and to divest non-core business operations. The sale of entities or business activities can, however, result in retrospective risks for the Group. Appropriate provision is recognized if a risk is probable. When deciding to make acquisitions or entering into new partnerships there is always a risk that future market potential and the feasibility of projects being put into action may have been wrongly predicted. The Messer Group therefore has internal committees which highlight the development potential of a project prior to its approval and analyze any information which has a bearing on decisions which need to be made. In order to be as certain as possible that M&A projects have future development potential, due diligence investigations are carried out by experienced staff in specialist departments before any acquisitions are made in connection with M&A projects. Risk is also reduced by including relevant terms of agreement in sales contracts.

IT risks

The use of state-of-the-art information technology plays a decisive role in handling and securing business processes within the Messer Group. Our IT center in Germany provides the scope to create a modern and efficient infrastructure and to improve our business processes where necessary. This concentration does, however, mean that there is a greater risk of business interruption, cyber criminality and sabotage, caused by natural hazards or human error. In order to avoid this risk, our IT center applies its own IT risk management system, including ongoing testing of the system architecture. Particular attention is paid to the provision of IT infrastructure and services and especially to guaranteeing fail-safe and interference-free operations. The integrity and reliability of the data and important information are ensured by means of appropriate measures, services and systems. Most of the busi-

ness processes of the Messer Group are provided by internal or external IT services. The security and compliance of the information systems are set out in the IT strategy objectives, on the basis of which the Messer Group designs, implements and reviews measures to ensure protection of data, applications, systems and networks on an ongoing basis. Both preventive and corrective measures are considered in this process.

Financing risks

We require funding to finance our growth and ambitious capital expenditure program. We are therefore dependent on the financial sector remaining stable and liquid. The Messer Group is reliant on cash flows from operating activities to repay debt. This is dependent to a large extent on the ability to generate positive cash flows from operating activities.

The Group has recognized goodwill in the consolidated balance sheet. The application of IAS 36 (i.e. the performance of impairment tests) could result in the requirement to recognize impairment losses on goodwill, if the business and market prospects of a group subsidiary or cash-generating unit deteriorate compared to the original date of measurement. Impairment losses could have a significant adverse impact on earnings and on balance sheet/ performance ratios. In Serbia, RTB Bor, the second largest on-site customer of Messer Tehnogas AD, is currently restructuring. The resulting uncertainties were taken into account in the forecast through corresponding write-down rates on future receivables.

There is always a risk that financial and debt crises could result in global economic downturns or slowdowns. The Messer Group will continue to observe developments very closely. Cost reduction measures and capital expenditure programs initiated and implemented in recent years have helped to counter the negative impact of previous financial and economic crises. Many of these programs remain in place. A potential deterioration in the creditworthiness of our customers increases the risk of bad debts and delays in joint projects.

It is essential that we ensure compliance with the covenants attached to the USPP and RFA financing arrangements. Particularly worthy of mention is the net debt (i.e. gross debt less liquid funds)/EBITDA covenant which is required to be complied with for the Messer Group as a whole and for the Messer Group excluding its subsidiaries in China. Financial risks can also arise for the Messer Group from changes in exchange and interest rates. The management of interest rate, currency and liquidity risks is handled by Group Treasury in compliance with guidelines approved by executive management. Group Treasury identifies, measures and hedges financial risks. The Messer Group currently employs marketable forward currency contracts, interest rate swaps and cross-currency interest rate swaps as hedging instruments. Treasury guidelines contain general risk management principles and specific rules for defined areas such as the exchange rate risk, interest rate risk, the use of derivative financial instruments and the investment of surplus cash. The related risks are observed continuously and the scope of hedging adjusted where considered necessary.

Currency risks

Transaction risks arising in conjunction with the export of products are generally hedged as soon as the order is received. At an operating level, for the most part the individual Group entities transact their business locally in their functional currency. For this reason, the currency risk element of transaction risks is generally considered to be low. However, some Group entities are exposed to foreign currency risks that arise on transactions that are not denominated in their functional currency. These transactions relate mainly to payments for imported products or services and are hedged to the maximum extent possible. Like any other market participant, we may be confronted with the unexpected appreciation of a functional currency which weakens the international competitiveness of the country concerned and hence the ability of our local business to export its products. Translation risks which may arise when converting foreign currency exposures into euro are classified as customary for the business.

Legal and contractual risks

Enterprises are confronted from time to time with allegations that they have infringed industrial rights or legal obligations, that defective products have been supplied or that environmental protection laws have not been adhered to. Regardless of their prospects of success, this type of claim can result in very high defense costs. In cases like these, the Messer Group defends itself energetically with the support of both in-house and external experts.

Our international operations are subject to a wide range of country-specific environmental legislation and regulations in areas such as gas emissions, groundwater pollution, the use and treatment of dangerous substances as well as ground surveys and decontamination. This can give rise to liability risks in conjunction with either past or current operations. New environmental requirements, partially resulting from the adoption of EU directives in the new EU Member States, necessitate that our existing environmental standards (which are already at a very high level) are brought into line with the new requirements. This may result in higher production costs and modifications to the production process. The fiscal year 2016 shows, however, that the implementation of stricter environmental regulations often results in a more efficient production process and a higher quality product.

Overall assessment by management

The above-mentioned opportunities show that both internal and external potential are involved. We endeavor to develop in-house potential on a targeted basis and will put external potential to good use whenever the opportunity arises. The risks presented above are not the only ones to which the Messer Group is exposed. Some risks, which have not yet been identified or which are not considered to be significant from today's perspective could have an adverse impact on the Messer Group if general business or economic conditions were to change. However, no risks were identified in 2016, either individually or in aggregate, which could have a material adverse impact on the going-concern status of the Messer Group. From today's perspective, no such risks are pending in the foreseeable future. The principal risks during the period under report encompassed market developments, with at times intensive competition and price pressure, as currently in China, and production processes. Organizational measures are in place to identify potential risks at an early stage. Our vigil risk management system (described below) and pro-active management of risks enable us to reduce risk.

Risk management

The principles that dictate our approach to risk management are stipulated by the Executive Management. Risk management is directed at safeguarding the going-concern status of group entities and increasing the value of the business; for this reason it plays a crucial role in all decision-making and business processes. The existing management structure and the reporting processes which are in place ensure that not only developments that could jeopardize its going-concern status are reported regularly and in good time to the relevant levels, but also that other developments which pose a threat to the achievement of short-term performance targets (such as EBITDA or cash flow) are reported. This allows management to initiate measures at an early stage to mitigate any business and/or financial risks. Risk managers have been designated at each of the subsidiaries with responsibility for ensuring the proper functioning of local reporting systems. Working together with local risk managers, the group risk manager prepares a risk report for the Messer Group as a whole at the start of each year which is discussed by the Executive Management and communicated to the Supervisory Board of the Messer Group in good time. The risks recorded in the risk report are categorized by nature and classified by probability of occurrence. Risk perception in the current selling environment has exacerbated the risk profile of Messer Group entities in the fiscal year 2016 compared to the previous year.

Messer is adequately insured against potential claims or liability risks, to which it is exposed; these policies ensure that the financial impact can be kept within defined limits or completely avoided. The scale of insurance coverage is continuously optimized in response to the specific situation of group companies.

The Messer Group GmbH's internal audit department carried out ten status audits (all follow-up audits) at European Messer Group companies during 2016. In addition, a first-time audit of the Danish operations was carried out. In China, the local central organization carried out internal audits during the year (most of them relating to tax matters) and some status audits. The regular follow-up audits (in total seven audits), which check at appropriate intervals that the previous findings and recommendations have been implemented effectively, are still considered to be a core aspect of the internal audit department's activities. The audits by the internal audit department at the same time include advisory activities in the sense that information on best practice is passed on and cross-border assistance is organized; this takes account of the respective current standards of the entities in the various countries. In addition, a regular exchange of information takes place with the external auditors in order to make the best use of available know-how, on a results-oriented basis, during the respective audits. Where necessary, other central functions are also called upon in an advisory capacity (including SHEQ, Corporate Logistics, Central Sales Functions). Compliance with corporate guidelines is tested and sample testing of voucher/document controls performed within the various business processes, in order to check the effectiveness and commercial sense of processes as well as the accuracy and reliability of financial reporting. Findings were clarified and recommendations made to improve the transparency of business processes. The Supervisory Board of the Messer Group regularly reviews the quality and appropriate intensity of the audits.

The Group's Safety, Health, Environment, Quality (SHEQ) department continues to carry out audits and risk analyses in order to reduce the accident ratio even further.

State-of-the-art technologies are employed in the IT area in order to keep the risk from electronic data processing to a minimum. Unauthorized access to data and systems and a significant loss of data are

ruled out to the greatest extent possible. The efficiency, operational availability and reliability of systems are constantly being monitored and improved. Messer's security concept also includes a detailed emergency plan. In order to minimize risks, the various technologies employed by the Messer Group are regularly tested to ensure that IT-based business processes are safe.

Tax laws and competition regulations can also give rise to business risks. In order to mitigate these risks, the Company relies upon the advice of both in-house and external experts.

Income and operating cash flows are, to a large extent, unrelated to market interest rates, since the Group does not hold any significant interest-bearing assets. Loans or credits subject to variable interest rates are hedged partly with the aid of interest rate swaps (cash flow hedges of future interest payments). Under these arrangements, loans with variable interest rates are converted in substance to ones with fixed or maximum rates. In conjunction with the interest rate swaps, the difference between fixed contract interest rates and variable interest rates is settled at specified intervals (computed by reference to an agreed amount). At the balance sheet date, derivative financial instruments had only been entered into with renowned international financial institutions.

Corporate Governance within the Messer Group includes a whole range of in-house rules and measures aimed at preventing the occurrence of risks. The first stage of the risk management system is to assess risks throughout the organization. This risk assessment is conducted by the Group's corporate departments for the respective areas of responsibility and by each consolidated subsidiary for its own business. The assessment of risks is updated each year. All information relating to risks is collated centrally by the Corporate Compliance Officer (CCO). Training is organized and carried out as appropriate to cover identified risk areas and to highlight best practice for avoiding the occurrence of a risk as far as possible. Mandatory compliance guidelines are in place for all Messer Group entities, including in particular the "Code of Conduct" and "Group Guidelines". All first and second-tier managers of the Messer Group and its consolidated subsidiaries have confirmed that they have received these guidelines, examined their content and comply with the regulations contained therein. Furthermore, all employees have been informed of the content of compliance guidelines of relevance to them and have also confirmed compliance with them. Management and staff are regularly informed about, and receive training on, the content of these guidelines, other policies and code of conduct rules.

On the basis of a matrix structure, the Compliance department cooperates closely with the SHEQ, Medical, IT, Audit, Legal and Insurance departments. Internal audits are carried out to check that compliance guidelines – in particular the Group Guidelines – have been appropriately implemented, thus ensuring good risk management procedures throughout the organization, including conduct and reporting rules, the requirement for approval at the appropriate level as well as application of the dual control principle for legally binding agreements with third parties. Incidences of non-compliance are followed up and the appropriate actions taken where necessary. At the same time, any such incidences are used to reflect on how additional preventive measures could reduce the risk of non-compliance in the future.

Bad Soden am Taunus, March 16, 2017

Messer Group GmbH

Consolidated Balance Sheet

of Messer Group GmbH, Sulzbach/Taunus, as at December 31, 2016 (in K €)

		Dec. 31, 2016	Dec. 31, 2015
Assets	Intangible assets	411,727	412,256
	Property, plant and equipment	1,114,653	1,135,818
	Investments accounted for using the equity method	53,280	49,703
	Investments in other companies and financial investments	6,186	5,924
	Deferred tax assets	14,830	13,520
	Other non-current receivables and assets	160,123	172,853
	Non-current assets	1,760,799	1,790,074
	Inventories	54,158	57,131
	Trade receivables	206,561	189,056
	Income tax assets	4,833	5,090
	Other receivables and other assets	83,212	78,370
	Cash and cash equivalents	113,984	144,504
	Current assets	462,748	474,151
	Non-current assets held for sale	-	92
	Total assets	2,223,547	2,264,317
	Equity and Liabilities	Share capital	100,000
Reserves		966,620	947,068
Profit after income tax		51,678	36,567
Other comprehensive income		43,097	62,083
Equity attributable to shareholders of the parent company		1,161,395	1,145,718
Non-controlling interests		156,515	173,517
Equity		1,317,910	1,319,235
Provisions for employee benefits		56,857	50,831
Other provisions		5,017	4,714
Non-current financial debt		467,174	499,695
Deferred tax liabilities		33,164	34,965
Non-current liabilities		562,212	590,205
Other provisions		24,824	24,931
Current financial debt		59,487	82,497
Trade payables		145,706	147,281
Income tax liabilities		7,518	7,338
Other current liabilities	105,890	92,830	
Current liabilities	343,425	354,877	
Total equity and liabilities	2,223,547	2,264,317	

Consolidated Income Statement

of Messer Group GmbH, Sulzbach/Taunus, for the Year Ended December 31, 2016 (in K €)

	Jan. 1 – Dec. 31, 2016	Jan. 1 – Dec. 31, 2015
Net sales	1,145,790	1,165,517
Cost of sales	(667,354)	(701,470)
Gross profit	478,436	464,047
Distribution and selling expenses	(287,363)	(281,631)
General administrative expenses	(98,782)	(93,073)
Other operating income	20,280	23,814
Other operating expenses	(5,545)	(7,895)
Impairment losses on goodwill	–	(6,711)
Operating profit	107,026	98,551
Income from investments accounted for using the equity method	1,479	(1,339)
Other investment results, net	35	386
Interest income	1,163	2,398
Interest expense	(22,373)	(24,368)
Other financial result, net	1,763	(4,278)
Financial result, net	(17,933)	(27,201)
Group profit before tax	89,093	71,350
Income taxes	(21,855)	(24,292)
Group net profit for the year	67,238	47,058
Of which attributable to:		
shareholders of the parent company	51,678	36,567
minority interests	15,560	10,491

Consolidated Cash Flow Statement

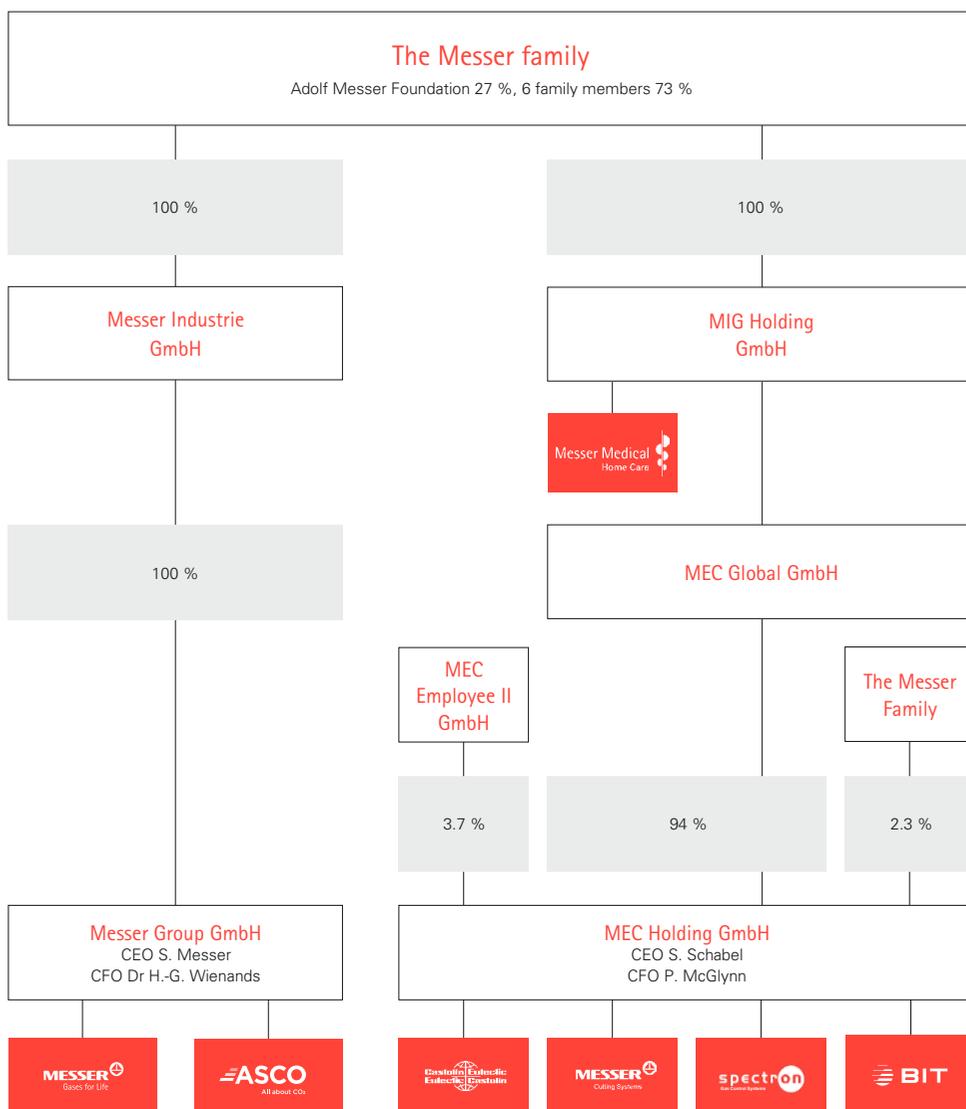
of Messer Group GmbH, Sulzbach/Taunus, for the Financial Year 2016 (in K €)

	Jan. 1 – Dec. 31, 2016	Jan. 1 – Dec. 31, 2015
Group profit before tax	89,093	71,350
Income taxes paid	(24,086)	(22,030)
Depreciation and amortization of property, plant and equipment and intangible assets	141,977	150,045
Gains arising on change in group reporting entity	–	(33)
Loss / (gains) on disposals of fixed assets	(1,450)	(1,026)
Changes in investments in associated companies	(1,479)	1,339
Interest result, net	21,210	21,970
Other non-cash financial result	(1,763)	4,278
Changes in assets resulting from finance lease arrangements (IFRIC 4)	14,453	(10,707)
Changes in inventories	1,767	8,514
Changes in receivables and other assets	(26,750)	14,749
Changes in provisions	841	(5,531)
Changes in trade payables and other liabilities	15,515	3,537
Cash flows from operating activities	229,328	219,427
Purchase of property, plant and equipment and intangible assets	(118,798)	(138,868)
Purchase of investments and other non-current assets	(3,919)	(757)
Sale / (acquisition) of shares of other shareholders	–	–
Capital reductions at the level of associated companies	2,000	2,100
Disbursements for the acquisition of subsidiaries	(21,703)	(3,875)
Proceeds from disposals of property, plant and equipment and intangible assets	2,960	4,048
Proceeds from disposals of investments and loans	650	7,034
Interest received	1,157	2,418
Cash flows from investing activities	(137,653)	(127,900)
Changes in capital by shareholders of Messer Group GmbH	(11,958)	–
Proceeds from non-current financial debt	4,065	86,137
Proceeds from current financial debt	6,207	10,838
Repayments of non-current financial debt	(4,915)	(1)
Repayments of current financial debt	(65,650)	(142,093)
Dividends paid to minority shareholders	(23,974)	(19,093)
Contributions by minority shareholders	–	583
Repayment of liabilities relating to purchase rights	–	(6,908)
Acquisition of shares of other shareholders	(2,833)	–
Interest paid	(22,823)	(25,874)
Other financial result, net	(5,576)	(7,266)
Cash flows from financing activities	(127,457)	(103,677)
Changes in cash and cash equivalents	(35,782)	(12,150)
Cash and cash equivalents at the beginning of the period	144,504	155,900
Exchange rate impact on cash and cash equivalents	5,262	742
Cash relating to changes in group reporting entity	–	12
at the end of the period	113,984	144,504

G4-7 **Messer World**

Along with Messer Group and ASCO Carbon Dioxide, “Part of the Messer World” also includes the business areas of the sister companies Messer Cutting Systems, Castolin Eutectic, BIT and Spectron Gas Control Systems – as well as Messer Medical Home Care. They all offer application-specific expertise and products which help optimise manufacturing processes, extend the life of production equipment and materials, or significantly enhance quality.

Organisational structure



ASCO CARBON DIOXIDE LTD

Technology focus and geographical expansion

In 2016 ASCO modernised its own visual market presence. Simple and up-to-date, the new ASCO logo represents the company changes and portfolio extensions of recent years. ASCO has also invested heavily in the further development of its dry ice technology. In the last few months, the Swiss company has launched two new product innovations: The ASCO Dry Ice Pelletizer P28 is a compact and powerful machine for the production of dry ice pellets. At the same time, the ASCOJET portfolio has been extended by the handy yet powerful dry ice blaster ASCOJET 608. Another highlight was the founding of the US subsidiary ASCO Inc. based in Jacksonville, Florida. With this strategic step, ASCO guarantees optimal on-site customer support by committed, well-trained employees as well as rapid availability of dry ice machines for US customers. In the complex field of CO₂ recovery, it was also possible to maintain the new market position and to seize and implement a large number of new projects. In order to continually push the various technologies, ASCO has strengthened its staff structures in the development department and sales.



Positive outlook

ASCO is going to continue with the ongoing optimisation of the product portfolio in the coming years. Especially in the field of CO₂ recovery, the implementation of further large-scale projects is intended to demonstrate the strengthened market position. The modernised visual identity and the foundation of the US subsidiary let us believe in a sustainable growth for years to come.

Broad product portfolio

ASCO CARBON DIOXIDE LTD is a provider of customised and complete CO₂ solutions. The product portfolio includes automatic dry ice production machinery, CO₂ production plants and recovery systems, dry ice blasting equipment, CO₂ storage tanks, CO₂ cylinder filling plants, CO₂ vaporisers and other CO₂ accessories. Product development and service are built on two solid foundations: decades of practical experience in everything pertaining to CO₂ and dry ice, and a highly qualified and dedicated workforce. This unique combination of extensive expertise and broad product portfolio provides our customers with complete and customised solutions from a single source.

The entire Messer Group relies on ASCO as its competence centre for CO₂ and dry ice.

www.ascoco2.com

Messer Eutectic Castolin Group

The 2016 financial year saw a continuation of the difficult economic environment. The MEC Group's main divisions are geared towards highly cyclical and commodity-related areas of industry. So there is a direct correlation between the steel processing industry's falling worldwide capacity utilisation – particularly in the thick steel segment – and demand for the steel cutting machines produced by our subsidiary Messer Cutting Systems. Our subsidiary Castolin Eutectic operates in the industrial wear protection sector, another market that has not received any favours from the general economic situation in recent years. The oil drilling industry is a case in point. In the year under review, the average number of drilling rigs in use worldwide fell by 744 units or 32 %. The economic situation in other major target markets, such as mining, the production of metals and many branches of the processing industry also saw a downward trend. By contrast, a ray of hope was provided by the cement industry, which managed to increase sales in the year under review, which in turn had a direct positive impact on our sales performance in this segment.

In 2016, the MEC Group achieved sales of 522 million euros, a drop of 2.3 % compared with the previous year. Thanks to continuous efforts to boost profitability, we again generated a profit before taxes, which exceeded the previous year's figure in spite of the difficult climate. Once again, we concluded the 2016 financial year with a positive cash flow; we managed to further reduce our net debt.

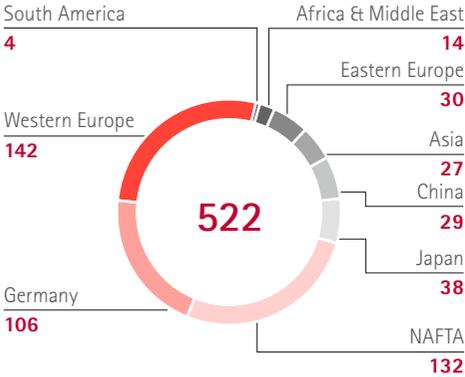
Considering the difficult market environment, we are reasonably satisfied with the results we achieved in 2016, even though our expectations were not fully met in the end. Temporary upturns in demand both at the beginning and end of the past financial year provided a glimpse of our operating companies' earning potential in positive economic conditions. In particular, after the US election, we saw an upturn in economic activity. There was a clear rise in commodity prices, leading to increased activity in commodity-related industrial sectors. As a result, our order book improved in the last few months of 2016, with incoming orders above the average for the year as a whole.

Overall, therefore, we are confident about 2017, though our optimism will have to be measured against the global macroeconomic environment. There are potential risks associated with, among other things, current geopolitical developments as well as the course of action taken by the international central banks, which, in view of the economic upturn and the first signs of rising inflation, have to decide on interest rate increases and focus on ending the quantitative easing programmes. It therefore remains to be seen whether the economic recovery is just a short-term phenomenon or something more vigorous and long-lasting.

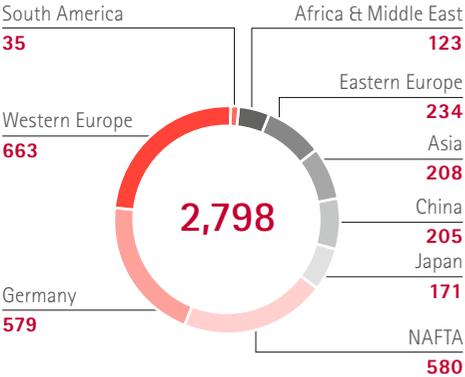
The MEC Group – with its divisions – is well positioned for the future. We have made considerable investments in the past few years and look forward to what the current financial year has in store for us.

Key figures 2016

Sales of MEC Group by region
in million of euros



Number of MEC Group employees by region
as of 31.12.2016



Castolin Eutectic

Sales and earnings trend



In 2016, our sales were almost unchanged from the previous year's figure. It is gratifying that we were able to significantly improve adjusted EBITDA compared with the previous year. This increase can be largely attributed to the successful implementation of the structural and strategic projects begun in 2015. At the end of 2015, we announced the merger of our activities in France, which led to a marked reduction in operating costs in the region. In the Africa and Middle East region in particular, we managed to significantly expand our business activity, which among other things led to a marked improvement in the utilisation of our fixed costs. We have been consistent in investing heavily in the expansion of our service activities over the past few years.

Our service strategy is one of the focal points of the Castolin Eutectic Group's strategic development. Across all our locations, we have continuously invested in expansion and in the range of technical services we offer. This was based to a considerable extent on our acquisitions: with Monitor Coatings, England (2013), we made a move towards high-technology applications in the oil and shipbuilding industries. Whertec, USA (2014), provided us with additional technological expertise in the energy and waste management industries. We have transferred these technologies to new regions and expanded our infrastructure. In the 2016 financial year, this yielded the first significant successes. Going forward, we will continue our efforts and seek to further boost the service segment's importance to the company.

Extensive Castolin Eutectic product range

The Castolin Eutectic business unit is one of the world's leading suppliers of products and services in maintenance, repair and wear protection for industrial facilities and factory equipment. Our product range includes consumables and equipment for technologically sophisticated applications in the areas of welding, coating and brazing. In addition, we offer our industrial customers specially developed product packages for complex applications in their segment. Our products and services are available via our subsidiaries in over 35 countries as well as through a worldwide dealer network. Castolin Eutectic employs 1,590 people worldwide with field staff comprising more than 530 highly qualified engineers and international application specialists.

www.castolin.com, www.eutectic.com

Messer Cutting Systems

World of Excellence

The highly cyclical capital goods sector for cutting machines is correlated with the economic situation in the steel market, which did not provide us with any support in the year under review. The previous year's high sales level could not be maintained, with a year-on-year decrease of 4.5 %. The collapsed markets in Russia did not recover, while the Chinese market also suffered from structural problems associated with local overcapacity, resulting in a deterioration compared with the previous year.

Messer Cutting Systems is the world's leading supplier of high-quality oxyfuel and plasma cutting technologies. There are currently well over 22,000 Messer Cutting machines in use at our customers' sites worldwide, amply illustrating our position as the global market leader.

In the past few years, fibre laser technology has acquired a greater market share. Messer Cutting Systems, too, has launched a new fibre laser machine – the Fiberblade – in this segment of the market. The pace of change in markets and technology is noticeably greater in the laser segment than it is in the established plasma and oxyfuel cutting segment. Our Chinese and German development sites are focused, among other things, on taking account of the laser market's strategic importance for our future.

The companies of the Messer Cutting Group are growth- and market-orientated. By focusing our entire organisation on complex and technologically demanding cutting systems, a broad product portfolio for various requirements and applications in the cutting sector and a sales and service organisation geared to customer needs, we will also position ourselves in a technologically demanding customer segment in the future. In addition, there are new challenges in terms of interlinking: Industry 4.0 is not a mere catchword, but a strategy that is intended to facilitate future interlinking of our machines with the Internet. We are working at full stretch to make this happen.

Partner for cutting systems

Messer Cutting Systems is a global supplier of products and services for the metalworking industry. As a leader in the sector, we supply complete solutions and concentrate on advising our customers as well as developing customer-focused innovations. Messer Cutting Systems employs approximately 900 people at five main production centres and is represented in over 50 countries with sales companies and service partners. The product portfolio includes oxyfuel, plasma and laser cutting systems ranging from manually operated machines to special machines for shipbuilding. Our portfolio is rounded off by spare parts, a repair service, modernisation of older systems, maintenance and customer service, including all the environmental technology requirements. Software solutions from MesserSoft optimise production and business processes. We focus on intensive dialogue with our customers. This commitment is clearly expressed in our state-of-the-art training centre, the Messer Cutting Systems Academy.

www.messer-cs.com



Spectron Gas Control Systems



Sales and earnings

In addition to the headquarters in Frankfurt on the Main, Spectron also operates production and distribution centres in Coventry/UK and Shanghai/China. Our activities developed well in the 2016 financial year. The high sales levels of previous years were once again achieved in the period under review, with a further increase in results.

Broad spectrum of products

Spectron Gas Control Systems is the gas supply system specialist. Our product family comprises the appropriate fittings and instruments for a broad spectrum of gases. It covers the full range of applications from simple valves through to gas cylinder cabinets for semiconductor gases. Spectron also supplies alarm and control systems for gas applications as well as purification systems for ensuring the purity of gases. Our goal is to provide our customers with the highest levels of service, quality, reliability and technological expertise. With an additional production centre in the UK and a worldwide network of sales and distribution partners, Spectron is well positioned globally and always close to its customers.

Spectron thus continues to be a leading and innovative international manufacturer and supplier of fittings and systems for the efficient and safe use of gases across a wide range of applications.

www.spectron.de

BIT Group

Sales performance and profitability

2016 was a successful year for the BIT Group. While sales were down year on year, the Group managed to increase its profits significantly in the year under review, with the reference period – 2015 – having been rather weak due to special factors.

Over the past few years, we have acquired a number of companies in the in-vitro diagnostics sector. In the 2016 financial year, we made significant progress in terms of integrating these formerly independent companies with a view to creating a well-coordinated group of companies. To this end, we made considerable investments in 2016, including in standardising and modernising the computer systems and, in particular, in creating a uniform brand presence under a clear company name.

In December 2016, we opened Edan Messer Diagnostics (EMD), a new joint venture in Shenzhen, China. EMD is focused on the production of medical devices, which are sold in cooperation with our partner EDAN.

By integrating our companies, developing a standardised IT system and expanding cost-effective production in China, we have laid the foundation for further growth in the coming years.



Comprehensive services

The BIT Group offers OEMs made-to-order product development and production, plus after-sales-service for Life Science, medical and IVD equipment. The quality standards offered include GMP, FDA registration, ISO13485 & 9001, as well as QSR, Class I, II and III. BIT's global locations in the USA, Germany, France and China supply precise system solutions which are developed on a cost-efficient basis. BITSMARTSOLUTIONS™ are flexible platform solutions which reduce development costs and time to market. Efficient production and a global supply chain permit competitive product costs.

At the end of December 2016 the BIT business unit had about 300 employees, approximately a quarter of whom work in development.

www.bit-companies.com

Messer Medical Home Care

Broad portfolio for the home care sector

Messer Medical Home Care Holding (MMHCH) offers products and services to prescribers and patients in selected European countries. These product and service offerings allow oxygen therapy at home, therapy for sleep apnea, monitoring for sudden death syndrome with small children, ventilation support and all training measures connected to these therapies.

Treating patients at home is key to health care systems across the world. It alleviates the strain on resources deployed in hospitals. Therefore home care is a solution for health care payers to manage cost and resources in a world whose population is ageing.

Focus on home care

Within the Messer World, MMHCH concentrates solely on the home care area. In the past, these activities were integrated separately in the Messer Group, which made it difficult to focus and align them clearly.

We will continue to develop and market innovative solutions for patients, doctors and health authorities. We expect this to give us a sustainable and leading position in this emerging health sector. MMHCH currently has around 140 employees working day in day out dedicated to this mission.

www.messer-medical.at



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G4-6, G4-17

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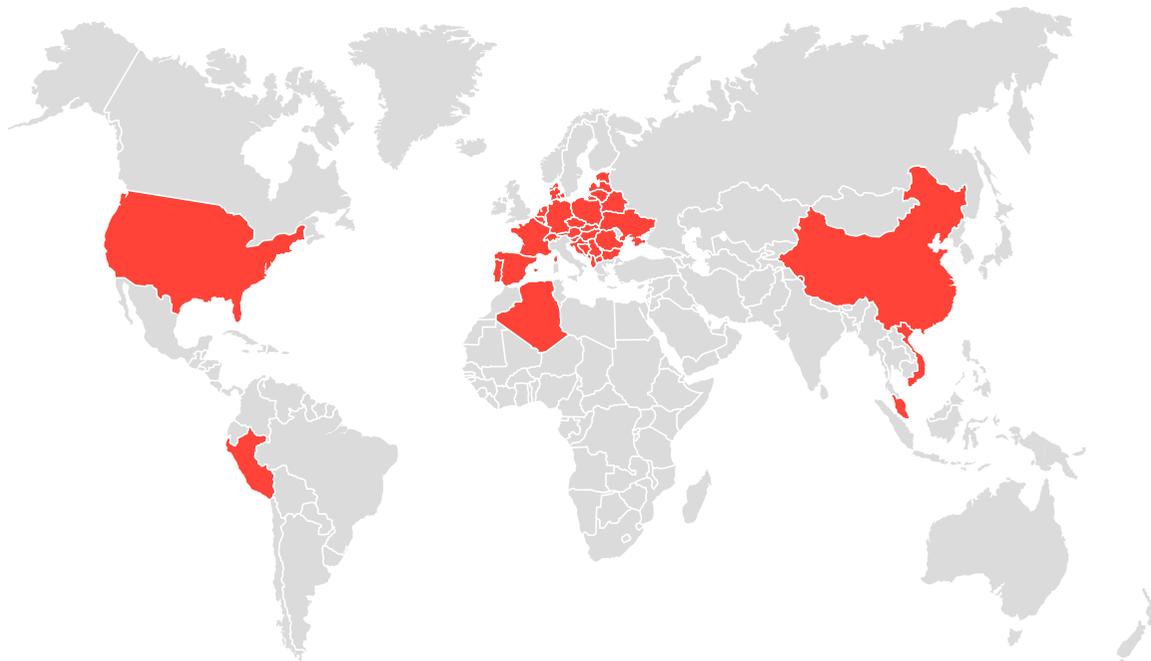
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