



# **Innovation, Efficiency and Responsibility**

Sustainability Report  
2013/2014

# About the Report

GRI: G4-18, G4-23

With its second sustainability report, Knauf gives an account of its corporate responsibility. The company describes the influence of its activities on society and the environment, and documents central indicators as well as goals and measures used to guide its activities. The contents of the report refer to eleven Knauf locations in Germany, Austria, Switzerland, Great Britain, Spain and Portugal. In the future, the report will include further company locations worldwide. The periods under review are business years 2013 and 2014 (1 January to 31 December). The report was generated in accordance with the "Core" option of the current G4 guidelines of the Global Reporting Initiative (GRI). Knauf conducted a materiality analysis in preparation. The sustainability issues prioritized in this analysis determined the contents of the report.

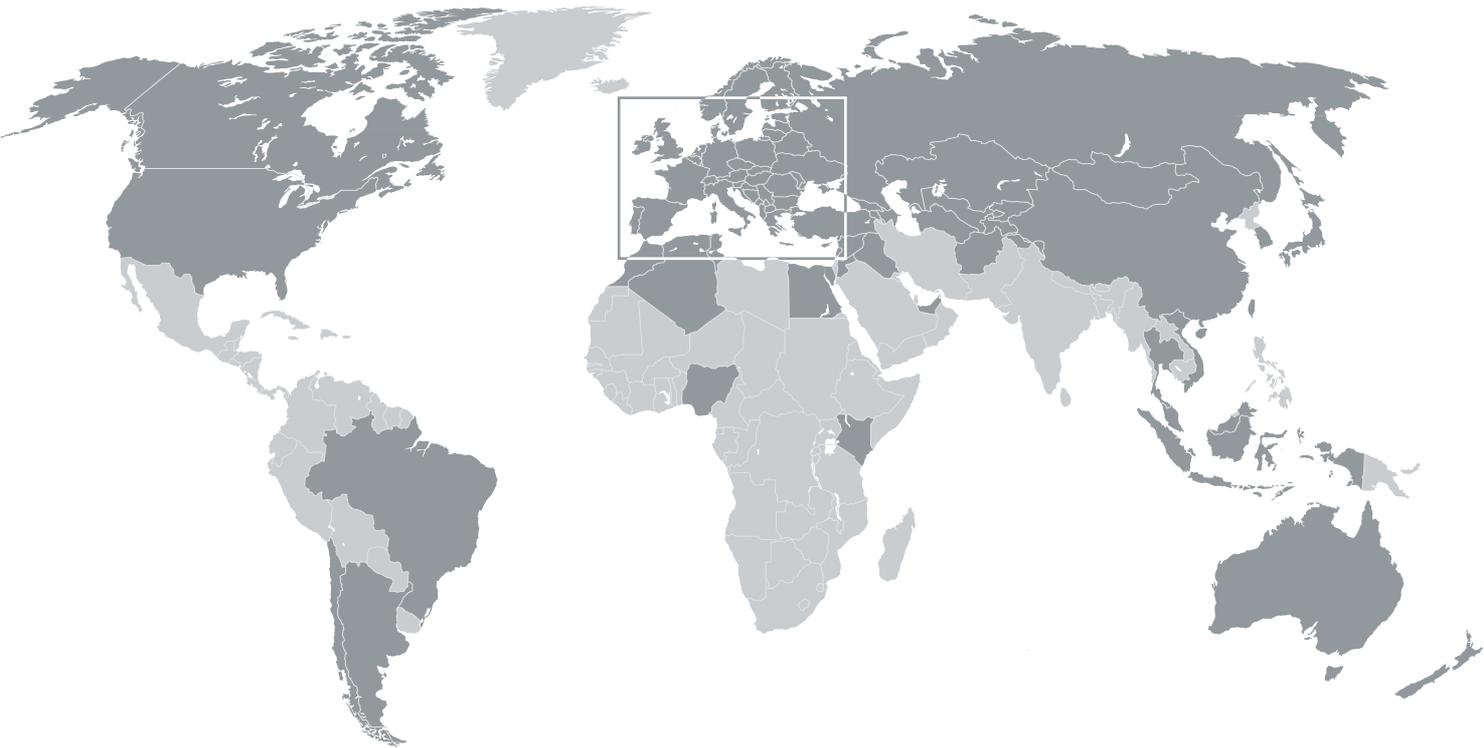
Editorial Notes: The editorial deadline was 30 June 2015. The sustainability report is available in German, English and Spanish. All versions are available for viewing online at [www.knauf.com](http://www.knauf.com). The Knauf sustainability report is released every two years.

## Membership in Associations

Knauf is a member of numerous associations; in some cases, Knauf employees work on panels and in working groups. The following list is a selection of associations in which the companies included in the report are represented.

- Arbeitsgemeinschaft Bayerischer Bergbau- und Mineralgewinnungsbetriebe e.V. (ABBM)
- Arbeitskreis „Lebensraum Steinbruch und Kiesgrube“ im Landesbund für Vogelschutz in Bayern (LBV)
- Asociación Nacional de Empresas de Rehabilitación y Reforma (ANERR)
- Asociación Técnica y Empresarial del Yeso (ATEDY)
- Austrian Standards Institute
- BauGenial
- Bayerischer Unternehmensverband Metall und Elektro (BAYME)
- British Safety Council
- British Standards Institute (BSI)
- Bundesverband Baustoffe – Steine und Erden (BBS)
- Bundesverband der Deutschen Industrie (BDI)
- Bundesverband Deutscher Baustoff-Fachhandel (BDB-BFH)
- Bundesverband der Gipsindustrie (BV Gips)
- Bundesverband Estrich und Belag (BEB)
- Constructing Excellence
- Deutsche Bauchemie
- Deutsche Gesellschaft für Nachhaltiges Bauen (DGNB)
- Fachverband Wärmedämm-Verbundsysteme e.V.
- Finishes and Interiors Sector (FIS)
- Fundación La Casa que Ahorra
- Green Building Council España (GBCe)
- Gütegemeinschaft Mineralwolle
- Gypsum Products Development Association (GPDA)
- Industrieverband anorganische Dämmstoffe (IVAD)
- Industrieverband Steine und Erden Baden-Württemberg (ISTE)
- Industrieverband Werkmörtel (IWM)
- Landesverband Bayerischer Bergmanns-, Knappen- und Hüttenmännischer Vereine
- Lignum – Dachorganisation der Schweizer Wald- und Forstwirtschaft
- Naturschutzbund Deutschland (NABU)
- Österreichischer Fertighausverband
- Schweizerische Gesellschaft für Akustik (SGA-SSA)
- Schweizerischer Maler- und Gipserunternehmer-Verband (SMGV)
- Schweizerischer Verband für geprüfte Qualitätshäuser (VGQ)
- Verband der europäischen Gipsindustrien (Eurogypsum)
- Verband Österreichischer Stuckateur- und Trockenausbauunternehmungen (VÖTB)
- WETEC Wet-felt Technical Committee

# Locations worldwide



## America

- Argentina
- Brazil
- Canada
- Chile
- United States of America

## Europe

- Albania
- Austria
- Belgium
- Bosnia-Herzegovina
- Bulgaria
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy

## Kosovo

- Latvia
- Lithuania
- Luxembourg
- Macedonia
- Montenegro
- Netherlands
- Norway
- Poland
- Portugal
- Romania
- Sweden
- Switzerland
- Serbia
- Slovakia
- Slovenia
- Spain
- United Kingdom

## Middle East/Africa

- Algeria
- Egypt
- Iraq
- Jordan
- Kenya
- Lebanon
- Morocco
- Nigeria
- Syria
- Tunisia
- Turkey
- United Arab Emirates

## CIS

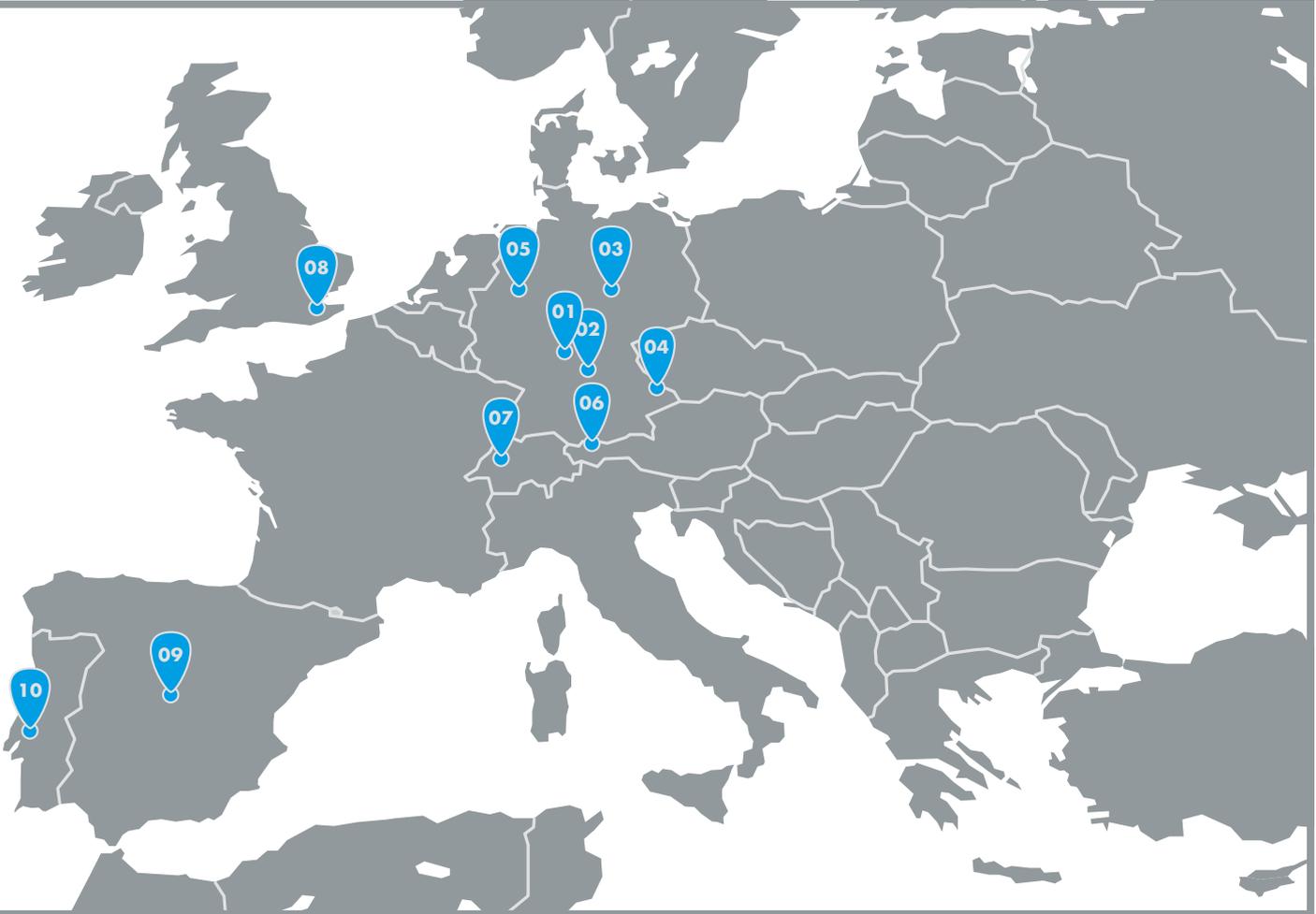
- Armenia
- Azerbaijan
- Belarus
- Georgia
- Kazakhstan
- Kyrgyzstan
- Moldavia
- Mongolia
- Russia
- Tajikistan
- Turkmenistan
- Ukraine
- Uzbekistan

## Asia/Pacific

- Afghanistan
- Australia
- China
- Indonesia
- Japan
- Malaysia
- New Zealand
- Singapore
- South Korea
- Taiwan
- Thailand
- Vietnam

# Companies in this report

GRI: G4-22



- 01 Knauf Gips KG (Iphofen, Germany)  
Knauf Bauprodukte GmbH & Co. KG (Iphofen, Germany)  
Knauf PFT GmbH & Co. KG (Iphofen, Germany)
- 02 Knauf Integral KG (Satteldorf, Germany)
- 03 Knauf Deutsche Gipswerke KG (Rottleberode, Germany)
- 04 Knauf AMF GmbH & Co. KG (Grafenau, Germany)
- 05 Knauf Aquapanel GmbH (Dortmund, Germany)
- 06 Knauf Ges.m.b.H. (Weißbach, Austria)
- 07 Knauf AG (Reinach BL, Switzerland)
- 08 Knauf UK GmbH (Sittingbourne, United Kingdom)
- 09 Knauf GmbH Sucursal en España (Madrid, Spain)
- 10 Knauf GmbH Portugal Lda. (Lisbon, Portugal)

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## “Together with the community and the environment”

Interview with Alexander Knauf and Manfred Grundke

In the interview, both managing partners of the Knauf Group express their views on the subjects of sustainability and responsibility, trust and transparency, innovation, employee development and challenges, today and in the future. Alexander Knauf has been in his current position since January 2013, and he is responsible for Financial Control, Legal and Fiscal, Information Technology, Materials Management and Marketing. Manfred Grundke’s areas of responsibility comprise Production Technology, Research and Development, Technical Product Support, Raw Materials Supplies and Technical Gypsum.

What is your understanding of the term “corporate responsibility”?



**Alexander Knauf:** Knauf is not just any old company, it is a special kind of company – a family business. As such we do not think on a short-term scale but from generation to generation. This means that long-term thinking is built into everything we do. It includes responsible treatment of resources, of all resources. This can mean how we treat the environment, how we treat the resource of time – in other words our employees – but also the way we treat capital.

**Manfred Grundke:** Corporate responsibility and sustainability do not represent any special challenge to a family business. Sustainability forms part of how a family business sees itself. While a publicly listed company is guided principally by the return on the capital it invests, a family business also pays particular attention to an orderly transfer of its assets to the next generation. The natural result of this process is that all decisions are based on sustainable factors and not on the short term.

The negative aspects of managerial decisions can also be sustained. How do you ensure that only the positive decisions and consequences are sustainable?



Sustainability forms part of how a family business sees itself.

**Manfred Grundke:** Seen from this perspective, sustainability has a very special status at Knauf, as our natural resources are hidden in quarries. Here we attach great importance to recultivation after we have finished using the quarry. There are a lot of positive examples showing how quarries used on an industrial scale have later been turned into real biotopes. And if you take synthetic gypsum, you can see that we now use several million tonnes of flue gas desulphurised gypsum (FGD) as a secondary raw material. In the coming years we will also increasingly feed recycled material back into the production process. In an ideal situation we first help to keep the air clean by desulphurising flue gases from coal fired power stations, and we use the resulting FGD gypsum back into the value added chain as a recycled material.



**Alexander Knauf:** Those are precisely the two points. It looks at first as if we are interfering with nature, but we are able to turn our actions into a benefit. A renaturalised quarry is a biotope with higher species diversity than was previously present. By doing this, we want to show that it's not just a question of mining resources but of achieving lasting success by working with people and the environment.

Family businesses are generally regarded as reliable and trustworthy, but at the same time as not very transparent. How far would you go to create trust through transparency? Where is your limit?

**Alexander Knauf:** I think the dividing line is really very clear. We have selected clear indicators in our sustainability reporting against which we want to measure our actions. In terms of these indicators we are clear and transparent. The dividing line with family businesses runs precisely between the company and the family. The family is private, as it is for all of us.

**Manfred Grundke:** You also have to differentiate between what is required to assess the company and its behaviour and what serves purely to satisfy curiosity. If it's only a question of curiosity and sensationalism, we are more reserved, even up to 100 percent so, I would say. But if it's a question of assessing the company and its behaviour in society and in the environment, in that case anyone can have any information required for this purpose.

Knauf is a worldwide diverse company with numerous subsidiaries and national companies, which in some cases act very autonomously. At the same time you have central guidelines such as your corporate values. How do you ensure that, for sustainability, everyone is singing from the same hymn sheet?

**Manfred Grundke:** I think that any short-term action that is not based on sustainable parameters does more harm to the company than good at the end of the day. For example, if a company in the Knauf Group were to plunder raw materials to save mining costs, it would very quickly get into trouble with the local community or the region. For us it is important to run our business together with the communities in the various regions and not at their expense. This is, if you like, a self-regulating factor because the person concerned would otherwise harm themselves.

**Alexander Knauf:** Our corporate values are the best way to impose a moral duty on the national companies. By acting in this way, we are telling them what's in Knauf's DNA and how they have to deal with the environment. I think this is the way it works best in a decentralised company.

#### To what extent does the concept of sustainability drive innovation at Knauf?



**Manfred Grundke:** I will take the classic example: flue gas desulphurisation technology was first developed by Babcock Noell and Knauf together. It was Knauf who built the first systems. Later we withdrew from the engineering business and concentrated entirely on the manufacture of building materials. As far as plaster is concerned, we developed plasters suitable for processing by machine. With insulation material, the first binding agents for glass and rock wool containing no formaldehyde came from Knauf. The list goes on. In each case the idea of environmentally friendly technology and modern building materials was specifically pursued through innovations.

**Alexander Knauf:** There are internal and external drivers, which lead us to sustainability. Internally we of course have an inherent interest in optimising energy consumption, for example in our production. At the same time, our customers keep asking us: How can you design buildings to be even more energy-efficient? How high is the share of recycled material in the product? And in this way, internal and external forces combine and are reflected in our R&D work.

#### On the subject of your employees: Many companies are finding it an ever greater challenge to find and retain qualified staff. What is Knauf doing to ensure it is involved in the competition for talent?



Recognising achievement plays an important role at Knauf.

**Alexander Knauf:** I would like to summarise our policy in three words: attract, retain and develop. We attach great importance to making Knauf attractive to the best potential employees. That begins in the schools where, for example, we support the STEM initiative for the sciences (STEM: science, technology, engineering, and mathematics). Our employees provide information in universities and take part in graduate job fairs. Many highly qualified graduates decide to join a family business because here they can see the results of their work sooner than if they are just a number in a major corporation. We also do a lot when it comes to looking after our employees. Daily activities form part of it, but above all it's a question of recognising achievements. A major part of our annual staff meeting is when we honour those celebrating special anniversaries who have shown themselves true to the company through many years of competent, loyal service. Recognising achievement plays an important role at Knauf. In terms of employee development, we hold thorough discussions, which then serve as the basis for structured development – for training and career planning. For young people, the work-life balance is very important and we put this into practice at Knauf.

#### Where do you see the biggest challenges for the future at Knauf?

**Manfred Grundke:** Gypsum as building material has been successfully used for over 5,000 years, and – as regards our business – we are convinced that this will not change. As far as insulation material is concerned, the question of energy efficiency will again be a long-term issue in spite of the current low cost of energy, and we are well prepared for it. Now it is a question of creating the conditions for

the next 50 or 60 years of successful development by ensuring our staff have the right qualifications. Many companies may have a similar strategy but they don't have the same employees. It will be a central assignment to ensure we have the exact blend of well qualified and motivated employees who can outperform others in competition.

**What about political and economic risks? The Russia-Ukraine conflict must be having an effect on your business, too?**

**Manfred Grundke:** It's certainly having an effect. Knauf manages this effect by ensuring our value chain is invoiced in the same currency, confining the economic risks to exchange rate variation. We are therefore not as badly affected as other companies, which produce in a hard currency, for example, and now have to invoice in roubles. We are only affected by the exchange rate and we are well placed to be able to deal with this. Business in the local currency is running relatively undisturbed, as the Russian economy wasn't going very well anyway. When your business is global this should be expected.

**How would you describe Knauf and its products in 100 years' time?**



There are internal and external drivers, which lead us to sustainability.

**Alexander Knauf:** Maybe you have to consider to what extent the underlying conditions will be different in 100 years. I think we will probably be recycling considerably more. Our processes will also probably be less labour-intensive. Buildings will be built differently. The processes will be more automated, prefabrication will be more important in construction, and that is why we are thinking about how modular construction will be handled in the future, for example. They've already printed a house in cement! We want to be the Apple of the construction industry, the total solutions provider, the systems supplier, the innovation driver, when it comes to modern construction. We will continue to invest a very large part of our profit in the systematic expansion of the Group. That will mean investing in new countries or new pillars for the business, as well as securing our existing business.



**Manfred Grundke:** So far, Knauf has always demonstrated the ability to adapt to changes in the surrounding conditions. It's possible that two or three new areas of business will be added. New materials that are made with similar techniques or processes will be an interesting subject. But one thing is pretty certain: if we keep the dynamism and adaptability that we have shown over the last 80 years, a large part of the value added will be coming from Knauf.

# Portrait of the company

## Knauf: A global player with a team feeling

Knauf is a family-led business in the building materials industry with around 220 production facilities in more than 80 countries and around 26,500 employees. In spite of all its international activities, the company has always remained true to its principles. They include working together in a spirit of trust as well as hard work, visionary thinking and cohesion.

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Knauf is one of the world's leading manufacturers of building materials with its head office in Iphofen in Franconia, Germany. The company was founded in 1932 and is still in family ownership. Knauf is seen as synonymous with gypsum far beyond its own industry. Today, Knauf is one of the world's leading manufacturers of modern insulation materials, drywall construction systems, plasters and accessories, thermal insulation composite systems, paints, liquid screed, floor systems as well as construction machines and tools. In 2014 the Group posted sales of around 6.4 billion euros (2013: 6.27 bn euros), and it employed 26,500 people (2013: 25,700).

### Structure and management

The Knauf Group consists of numerous companies with around 220 production facilities in more than 80 countries. The Group is coordinated by Gebr. Knauf Verwaltungsgesellschaft KG, which is managed by the two managing partners, Manfred Grundke (since 2008) and Alexander Knauf (since 2013). The Shareholders' Committee acts as the supervisory body, and it is chaired in alternate years by Nikolaus Knauf and Baldwin Knauf, one acting as Chairman, the other as Vice-Chairman.

The subsidiaries and national companies in the Knauf Group enjoy a high degree of autonomy, particularly in central areas of management such as human resources and sales. Knauf is known as a business that operates particularly efficient-

ly - that is why we bring our experience of efficient (also energy-efficient) production processes to bear in all companies in the Group. Our corporate values, the Code of Conduct and our commitment to sustainability form the common framework for all Knauf companies when it comes to sustainability and social responsibility.

### Companies in this report

In comparison to the first Knauf sustainability report from 2012, the spectrum of reporting companies has been extended from four to eleven for the current report. The report now covers the companies listed below in Germany, Austria, Switzerland, United Kingdom, Spain and Portugal. These companies together make up around 20 percent of the sales and 14 percent of the employees of the Knauf Group.

### Knauf Gips KG

Knauf Gips KG has 2,160 employees and specialises in systems for drywall construction and floors, plaster and façades. Knauf drywall systems include gypsum boards and insulation materials for soundproofing, fire prevention and heat insulation in floors, walls and ceilings. The floor products include primarily liquid and levelling screeds. In terms of plaster, brands such as Rotband, Rotkalk, MP75 and SM700 are considered classics. The heat insulation composite system WARM-WAND is the most important product for façades. For more information please go to [www.knauf.de](http://www.knauf.de).

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**Knauf Deutsche Gipswerke KG**

This 215-strong company makes products for dry-wall construction as well as plasters and sections in its facilities in Rottleberode (southern Harz mountains) and Spremberg (Brandenburg).

**Knauf Integral KG**

At our company headquarters in Satteldorf, we use a procedure that is globally unique to produce the highly compressed gypsum fibre GI-FAtec for interior finishing. This material allows us to offer our customers innovative complete systems for premium and flexible solutions used in floors, walls and ceilings. For more information please go to [www.knauf-integral.de](http://www.knauf-integral.de).

**Knauf Bauprodukte GmbH & Co. KG**

Knauf Bauprodukte is one of the leading suppliers of interior decorating materials for the DIY market. Around 115 employees make drywall construction systems as well as plasters and fillers such as the Rotband range or Knauf EASYPUTZ for the DIY enthusiast, and also complete systems for laying tiles and stone. For more information please go to [www.knauf-bauprodukte.de](http://www.knauf-bauprodukte.de).

**Knauf AMF GmbH & Co. KG**

Knauf AMF with almost 360 employees today, has been one of Europe's leading manufacturers of ceiling systems for decades. They include mineral panels for suspended ceilings, specially de-

signed for soundproofing, fire prevention and hygiene, as well as wood wool sound-absorbing panels and the metal substructures for both systems. For more information please go to [www.amfgrafenu.de](http://www.amfgrafenu.de).

**Knauf Aquapanel GmbH**

This company with its 130 employees offers a broad range of natural building materials in three facilities. The main products are perlite-based granulate for the building materials industry and landscaping, insulating materials such as the TecTem® product range consisting of natural perlite and tough cement boards. For more information please go to [www.knauf-aquapanel.com](http://www.knauf-aquapanel.com).

**Knauf PFT GmbH & Co. KG**

Worldwide, PFT develops, produces and sells machine systems in modular form for conveying, mixing and pumping building materials. Among other applications, they are used for processing fillers, plaster, mortar, screed and paints. For more information please go to [www.pft.eu](http://www.pft.eu).

**Knauf Ges.m.b.H.**

Knauf Ges.m.b.H. was founded in 1970 in Weissenbach, Steiermark (Austria), and is now also located in Vienna. With 212 employees, it supplies Knauf products to customers in Austria and neighbouring countries in Eastern Europe. Raw materials from Austria and neighbouring countries are used in the process. For more information please go to [www.knauf.at](http://www.knauf.at).

**Knauf AG**

Knauf AG in Switzerland has around 100 employees and provides consulting and distribution of Knauf systems. The company is based in Reinach (near Basel) and has offices in all language regions in Switzerland. For more information please go to [www.knauf.ch](http://www.knauf.ch).



Knauf Main Administration in Iphofen (Germany).

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**Knauf UK GmbH**

Knauf UK employs 384 people at its head office in Sittingbourne (Kent), in Immingham (Lincolnshire) as well as in Dublin (Republic of Ireland). The company offers the entire Knauf product range, and it processes mainly synthetic gypsum for manufacture of its plasterboards and plasters range. For more information please go to [www.knauf.co.uk](http://www.knauf.co.uk).

**Knauf GmbH Sucursal en España and Knauf GmbH Portugal Lda.**

Knauf's subsidiaries in Spain and Portugal were founded in 1989 and employed a good 216 people in 2014, 211 in Spain, five in Portugal. There are production facilities in Guixers, Lleida (since 1991), and Escúzar, Granada (since 2008), Spain and sales offices in Sevilla, Barcelona, Lisbon and Madrid (headquarter). Almost

all of the product range of the Knauf Group is offered. For more information please go to [www.knauf.es](http://www.knauf.es).

**Products for drywall construction and façades**

Companies in the Knauf Group offer a wide range of building materials, substances and machines for drywall construction (walls, floors and ceilings) as well as for plaster and façade systems.

- **Wall systems:** Drywall construction means principally gypsum boards and their substructures (metal sections). In addition there are gypsum fibre boards, cement boards and partition panels as well as profile sections and an extensive range of accessories. Drywall construction is Knauf's strongest area in terms of sales.
- **Ceiling systems:** In the case of ceiling panels for interior ceilings, the range stretches from gypsum and mineral all the way to wood and metal for applications including design, fire prevention, acoustics, cleanliness and hygiene.
- **Floor systems:** Knauf offers an extensive range for floors. All technologies are supplied from classic liquid screeds to dry floorboards and cavity floors.
- **Plaster systems:** The range consists of gypsum, lime and cement-bound plaster and fillers for external and internal areas.
- **Façade systems:** Depending on the climate zone and different building traditions, Knauf offers a broad product range with warm-wall systems, solutions for ventilated façades and external plaster all the way to specialised insulation materials.
- **Machines:** Knauf PFT produces and sells plaster and conveying technology for the application of liquid and paste-like products.



Foundation of our business: gypsum is a natural resource.



Committed employees and reliable products – Knauf customers know what the company stands for.

### Awards in 2013 and 2014

Knauf's commitment to quality and sustainability has led to many awards in the last two years.



"Top Employer 2014"

- Supplier of the year 2013 and 2014:** Members of the Eurobaustoff technical group for plaster and thermal insulation composite systems voted Knauf supplier of the year for the fourth time in succession in November 2013. In 2014 there was another award for insulation systems as well as for the drywall product area. In giving the award, members of the technical group are once again honouring the spirit of partnership in which Knauf has continually worked with the building materials specialist trade.
- Hagebau Champion 2013 and 2014:** The German DIY chain, Hagebau, has twice voted Knauf Gips KG its supplier of the year: in 2013 as Building and Modernising Champion and in 2014 as Dry-Wall Champion.
- OBI Supplier's Award 2013:** The international DIY chain honoured Knauf with its Supplier's Award. Criteria were delivery ratio, complaint management, customer service and market support.
- Architects' Darling 2013:** Germany's architects confirm the excellent regard in which Knauf is held: at the "Architects' Darling 2013" awards, they voted Knauf the winner in the categories "Soundproofing/Acoustics" and "Best Further Education Programme". The award is the result of the largest national survey of architects that is conducted every year by the renowned information service provider for construction and architecture, Heinze. Around 2,000 architects and planners voted for their favourites in a total of 24 categories from over 200 manufacturers and brands in the building materials industry.
- Top employer 2014:** Knauf is among Germany's best employers. That was confirmed by a Focus survey conducted in collaboration with the professional network, Xing, and the employer evaluation portal, Kununu, which was published in January 2014. Knauf took 1<sup>st</sup> place in the category "Manufacture and Processing of Raw Materials and Building Materials" for medium-sized companies. The ranking is based on a representative survey of almost 20,000 employees as well as 23,000 assessments on Kununu. Assessment criteria included satisfaction with the management style of line managers, career prospects, salary and the employer's image.
- Safe by Design:** Knauf Gips KG's Hüttenheim pit was awarded the certificate "Sicher mit System" (SMS) (Safe by Design) by the Trade Association for Raw Materials and the Chemicals Industry (BG RCI) in August 2014. This certificate attests to the effectiveness of the health and safety management system - not just in this facility, incidentally.
- "Product of the Year" 2014 Knauf Aquapanel:** The cement boards from Knauf Aquapanel were awarded "Product of the Year" in September 2014 by the Global Gypsum organisation. The categories assessed were innovation, product quality, effectiveness and suitability to market needs.
- "Factory 2014" in Austria:** Knauf Ges.m.b.H. won 3<sup>rd</sup> place for the most efficient production in Austria in the "Fabrik 2014" competition jointly organised by the Fraunhofer Institute of Austria and the publishing house, Industriemagazin-Verlag. The finalists presented their production and subsequently submitted themselves to a hearing conducted by a star-studded panel of experts.

# Values & sustainability strategy



Our employees live by the values of "Menschlichkeit", partnership, commitment and entrepreneurship. These principles are rooted in the Knauf company history and make the family business fit for the future.



## An eye on the future: our strategy

As a family business, Knauf combines tradition, sustainability and a forward-looking approach. Our four corporate values, "Menschlichkeit", partnership, commitment and entrepreneurship, constitute our inner compass. As part of our sustainability strategy, we identify important trends and derive from them specific fields of action and objectives.

Around the world, there are engineers, architects, craftsmen and many other specialists working for Knauf in development, testing, marketing and service. With so many fields of activity, professional groups, qualifications and nations in the company, it is important to have something in common which unites us – that runs as a foundation through everything we stand for and shapes how we work. These are Knauf's values.

### Values as an inner compass

Knauf is firmly convinced that only a company founded on values can provide the assurance that it will be able to grow sustainably and find solutions to the challenges of the future. These values are encapsulated, as it were, in the form of an "inner compass" which plays the determining role throughout the Knauf Group. Our four values are based on the company's mission statement and vision; they are: "Menschlichkeit", partnership, commitment and entrepreneurship.



### Knauf values

**"Menschlichkeit":** We see ourselves and all others connected with our work as part of a large family. We stand for justice, decency and treating each other with respect. As a role model for society, we involve ourselves in the community and treat the environment responsibly.

**Partnership:** We trust each other and can rely on each other. As a team, we support each other wherever possible. In doing so, we are reliable and loyal.

**Commitment:** We take responsibility for our work and pay attention to the effects of our decisions. By committing ourselves fully to the task in hand, we create solutions and products of the highest quality. We pursue personal development for our common success and we share our knowledge with each other.

**Entrepreneurship:** We act pragmatically, we are results-driven and exploit opportunities. Through its entrepreneurship, Knauf has successfully developed from a family business to a worldwide group in family ownership. We manage to keep growing thanks to our pioneering spirit, innovations and a willingness to change.



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G4-27

### Collaborating as partners

We take our values very seriously – they specifically affect our daily work. When we say, “We see ourselves and all others connected with our work as part of a large family”, this includes all stakeholders who are affected by our entrepreneurial activities. And as in every “large family”, we work to achieve a common goal. When conflicts arise, we resolve them as partners.

Our stakeholders include our employees (including elected employee representatives and applicants), customers, suppliers, the shareholders, politics and administration, federations, science, the media and banks. We described the role and significance of these stakeholders in detail in our sustainability report 2012 (pp. 54-55).

### Major challenges

In the second half of 2014, Knauf initiated a process, which will enable us to better assess the significance of global challenges for the sustainable and strategic development of the company. A so-called materiality analysis was created in the course of a series of workshops held in collaboration with an external service provider; in this analysis, we compared our internal view of Knauf with the external views of our important stakeholders. In the process we looked mainly at

customers, suppliers and employees; the aspirations of other stakeholders were included on a case-by-case basis. The relevance of global megatrends for stakeholders was assessed, their expectations of Knauf with regard to the way it deals with such subjects as well as the business opportunities and risks resulting from these megatrends for Knauf. The contents of the present report also reflect the materiality analysis.

On the basis of these varying perspectives, global trends were evaluated on a significance scale ranging from 1 (insignificant) to 10 (highly relevant). The trends discussed included macro-economic questions such as population growth, the increase of urbanisation and poverty, demographic changes; ecological aspects such as climate change, environmental pollution, the diversity of species (biodiversity), resource scarcity and access to water and finally social questions such as human rights, health issues as well as diversity and equal opportunities.

### Megatrends will shape the future

**Resource scarcity:** While from a stakeholder perspective the availability of products appears more relevant than the question as to how they are produced, this subject is certainly an important one for Knauf. One of our most important raw material resources, synthetic gypsum, is created from the process of flue gas desulphurisation in coal-fired power stations. As these power stations are slowly being shut down for reasons of climate protection, we are moving ahead with the recycling of used gypsum boards. In the future, therefore, we will have three raw material sources – natural gypsum, synthetic gypsum and now recycled gypsum.

**Health:** Health is a precious commodity. Knauf reacts to this insight by bringing its suppliers and customers “healthy” and safe construction materials. Within the company, we fulfil our obligation by applying some of the highest work safety standards in the world. As this trend was recognised a long time ago, Knauf sees itself as well prepared in this area.



With Knauf products, buildings are ready to meet the needs of the future.

GRI: G4-19, G4-20, G4-21, G4-27

**Environmental pollution:** The pollution of the environment, above all through waste, is very obvious in many areas of the world. A company such as Knauf is expected to be well structured in this regard, and we meet the expectation through efficient materials and waste management, high production standards worldwide and recycling initiatives, to name some of the measures.

**Urbanisation:** Rural exodus is a trend that can be seen worldwide. Urban metropolises are growing and with them the need for affordable living concepts, among them loft conversions and adding floors to existing buildings. For Knauf, the opportunities arising from this trend are significantly greater than the risks because our drywall products meet this need.

**Climate change:** Although the increase in extreme weather events as a consequence of climate change can be observed everywhere, the

phenomenon is very different from one region to the next. As a result, media attention and awareness of the issue is not equally well defined in all of Knauf’s markets. Many of our products and systems help to reduce energy consumption and with it emissions of greenhouse gases.

**Population growth:** Many stakeholders are not yet aware of the consequences of population growth. Nevertheless, the expectations of Knauf are clearly formulated in many areas: space-saving, modular construction and the availability of building materials in conurbations are basic requirements.

**Diversity and equal opportunities:** The increasing multi-culturalism of society and gender equality are major issues, above all at an employee level and also in some cases in talking to customers. Expectations of Knauf in this context are high as we are an internationally structured company. We tackle this subject very specifically in our

Essential challenges and associated GRI aspects\*

(significant inside [i] or outside [o] of the organisation)

<p><b>Health</b></p>  <p>Evaluation on scale of 1-10: 6.75</p> <p><b>Aspects:</b> Occupational health and safety (i, o), supplier environmental assessment (o), customer health and safety (i, o), product and service labeling (i, o), materials (i, o), products and services (environment; i, o), labour practices grievance mechanisms (i, o), environmental grievance mechanisms (i, o)</p>	<p><b>Resource scarcity</b></p>  <p>Evaluation on scale of 1-10: 6.75</p> <p><b>Aspects:</b> Materials (i, o), energy (i, o), water (i, a), effluents and waste (i, o), products and services (environment; i, o), supplier environmental assessment (o)</p>	<p><b>Environmental pollution</b></p>  <p>Evaluation on scale of 1-10: 6.25</p> <p><b>Aspects:</b> Materials (i, o), emissions (i, a), effluents and waste (i, a), transport (i, a), products and services (environment; i, o), supplier environmental assessment (o), environmental grievance mechanisms (i, o), product and service labeling (i, o)</p>	<p><b>Climate change</b></p>  <p>Evaluation on scale of 1-10: 5.5</p> <p><b>Aspects:</b> Economic performance (i), energy (i, a), emissions (i, a), products and services (environment; i, o), transport (i, a), supplier environmental assessment (o)</p>
<p><b>Urbanisation</b></p>  <p>Evaluation on scale of 1-10: 6.25</p> <p><b>Aspects:</b> Materials (i, o), energy (i, o), effluents and waste (i, o), products and services (environment; i, o)</p>	<p><b>Population growth</b></p>  <p>Evaluation on scale of 1-10: 5.5</p> <p><b>Aspects:</b> Materials (i, o), energy (i, o), effluents and waste (i, o), products and services (environment; i, o)</p>	<p><b>Diversity and equal opportunities</b></p>  <p>Evaluation on scale of 1-10: 5.25</p> <p><b>Aspects:</b> Diversity and equal opportunity (i)</p>	<p><b>Demographic change</b></p>  <p>Evaluation on scale of 1-10: 5.0</p> <p><b>Aspects:</b> Employment (i), training and education (i)</p>

\*The following challenges were rated at a value of less than 5 and are therefore less significant for the purposes of this analysis: poverty, human rights, access to water, biodiversity.



The health of our employees and the considerate use of resources are the basis of all our processes.

human resources strategy. At a marketing level, we adapt our customer strategies to the specific cultural circumstances.

GRI: G4-27

**Demographic change:** The ageing of society is having different effects in many countries around the world. In our business it will lead to greater demand for innovative solutions to redesign living space. Our employees will also place more emphasis on pension benefits and the company health management scheme. Knauf sees itself as well prepared in these areas.

#### **Integrity is indispensable**

Last but by no means least, the integrity with which we present ourselves in the market is essential for our customer relations. For Knauf it goes without saying that we respect the laws and regulations in place in every country where we operate. All employees are obliged to observe our [Code of Conduct](#) and to act with integrity in our dealings with customers, suppliers and authorities. We win our orders fairly and through the quality and price of our products and services, and not by offering others inadmissible benefits. The Code of Conduct also stipulates that no employee may hold a stake in a supplier, customer or any company in competition with the Knauf Group.

As part of our compliance procedure, every employee has the right to point out circumstances to his line manager or the Compliance Officer in

his company or in the Knauf Group which suggest that the Code of Conduct has been breached. Any such information can also be given anonymously. No employee giving such information in good faith need be concerned about disciplinary action.

#### **Protection through risk management**

There are established management systems in place in the Knauf Group for risks resulting from compliance aspects, but also in the medium to long term from the fields of action identified as being of significance. This refers to possible risks in the areas of environmental protection, health and safety at work, quality and product safety.

Our general risk management system covers aspects such as corporate environment, corporate strategy, procurement, production, logistics, sales and marketing, human resources, information technology and finance. We are aware that the success of the company depends to a large extent on controlling risks and exploiting opportunities accordingly.

#### **Sustainability strategy and objectives**

The sustainability strategy of the Knauf Group is derived from the materiality analysis and the targets set by our management systems. To this end we drew up eleven fields of action at the end of 2014, which the sustainability management will specifically address in the future (see illustration page 15).

There are specific, quantitative targets in place for almost all these fields of action. For example, for health and safety issues, our facilities work to defined safety management systems, as for instance OHSAS 18001. Accordingly we have performance indicators (KPIs), reporting processes, certifications and targets in place worldwide. In almost all areas regulated by legislation, we have in some cases drawn up much tougher requirements, for example in the area of user protection. If subjects are not covered by a management system or regulatory specifications,

Read more about our Code of Conduct:  
<http://www.knauf.de/wmv/?id=13556>

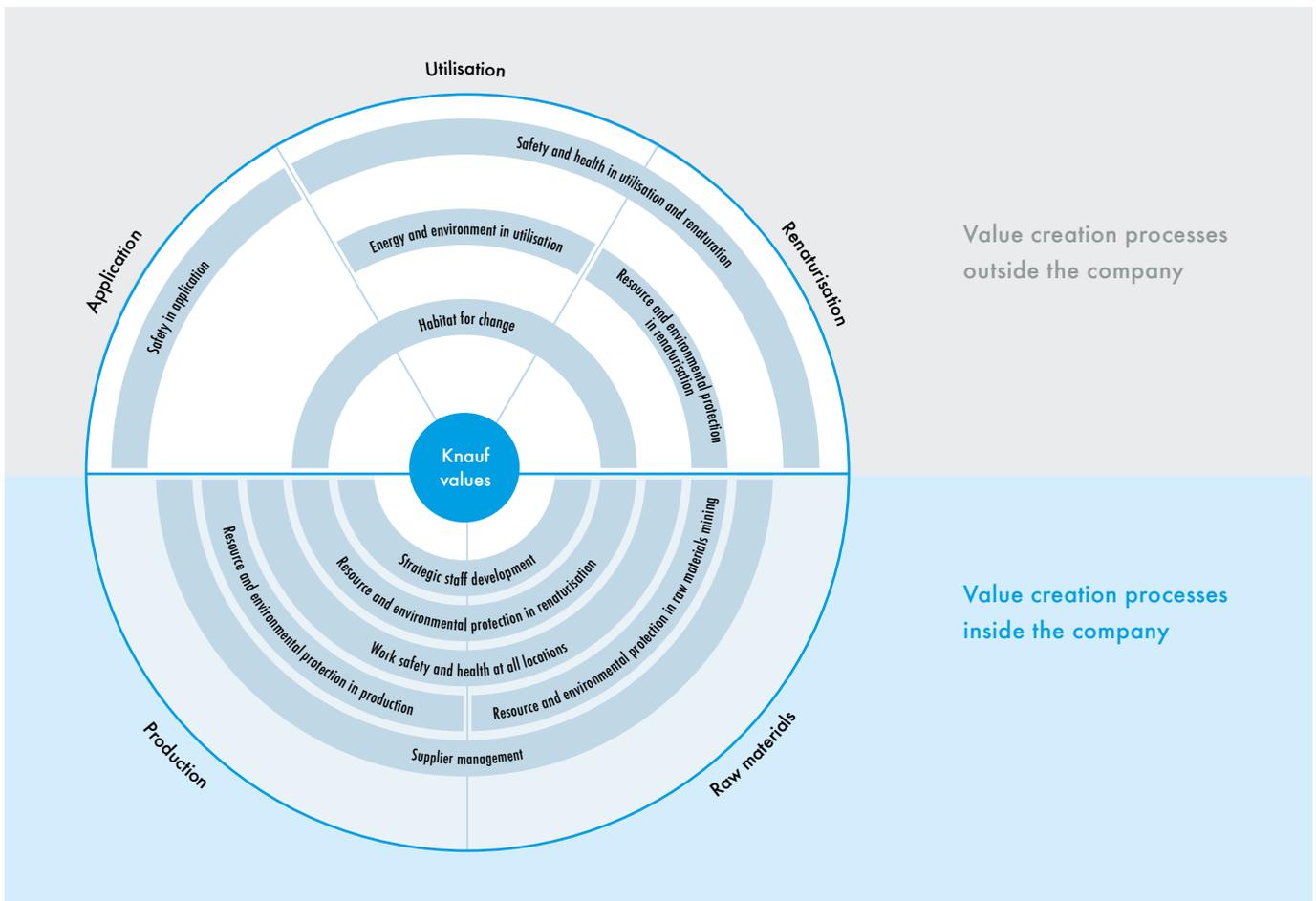
GRI: G4-22, G4-27

Knauf develops product solutions on its own initiative by systematically identifying opportunities and closing gaps in the market, so as to protect the interests of our customers over the long term. You will find numerous further details on the following pages.

The focus of our strategy is on our customers – their satisfaction, their safety, their health and natural environment. This way – and only this way – will we secure the future of Knauf.

In some cases we have decided, for competitive reasons, not to disclose our measurable, quantitative targets in this report. We regard quality, efficiency and safety as our greatest competitive advantages – and as the secret of our success.

Sustainability along the entire valuation chain: Knauf fields of action



# Products & product responsibility



Sustainable building with Knauf products is environmentally friendly and cost efficient. Responsible thinking and action goes into everything, from development to disposal.



# Greater sustainability with Knauf products

Knauf products demonstrate our claim to being of the highest quality and with high regard to environmental protection. Our products and systems stand for sustainable construction that enables energy-efficient and healthy living and working. At the same time, we meet our product responsibilities in terms of health and safety for those who work with them and those who use them.

Gypsum is a natural raw material, which can be easily extracted and is also easy to process. It is usually extracted from quarries through blasting or other methods, selected, broken and further processed. Knauf has more than 70 quarries worldwide. From a sustainability point of view, gypsum is a resource, which is available in large quantities, and mining it is environmentally safe. Knauf spares no expense in renaturalising or recultivating disused quarries. An alternative method of production is synthetic gypsum – mostly in the form of FGD gypsum. FGD stands for flue gas desulphurisation systems. Gypsum produced in this fashion is a by-product of burning coal – more details on this from page 27.

## Saving energy and reducing emissions

However, gypsum is not just an environmentally friendly construction material. The products made by Knauf from gypsum and other minerals also exhibit outstanding sustainability characteristics. Most of the gypsum processed by Knauf comes to the market in the form of plasterboard where the gypsum is sandwiched between two layers of paper. Many gypsum boards are finished with special characteristics with the result, for example, that they exhibit heat and sound insulating properties or improve protection against damp, in other words ensuring that energy is saved and living comfort enhanced.

Drywall systems and thermal insulation systems from Knauf are therefore in demand for the construction of low-energy and passive houses and even in energy-plus buildings. Buildings are responsible for around 40 percent of energy consumption worldwide. On average, 30 percent of

the heating energy escapes unused through un-insulated external walls. In new buildings, Knauf products for drywall construction, plaster and floors contribute towards saving energy and reducing emissions, even in the floor where, for example, thermally conductive self-levelling coatings can be combined with modern underfloor heating systems.

We are also working on future-proof solutions for the refurbishment of old buildings. When historical and listed façades are to be renovated with a view to energy savings, they have to be insulated from the inside. Knauf is one of the founding members of the Benediktbeuern European Centre of Excellence for the energy-saving refurbishment of old buildings and the conservation of historical monuments where we work with the Fraunhofer Institute for Building Physics and the Fraunhofer Information Center for Planning and Building, the Bavarian Regional Office for the Conservation of Historical Monuments as well as with further partners. The aim is to optimise the thermal conductivity and thermal transfer of wall and floor products.

## On the way to the 2,000 watt society

One current example of future-proof construction with systems from Knauf is the residential development in Sihlbogen in Zurich-Leimbach, Switzerland (cf. photo p. 16). The buildings containing 220 apartments which were occupied in 2013 realise the objective set by the city of Zurich to reduce the primary energy requirement of, on average, 6,300 watts per person by two thirds – to around 2,000 watts. A timber system was used for the supporting structure, a rear-ventilated façade of



timber and clay tiles as well as wall systems from gypsum boards and Silentboard soundproofing boards from Knauf as the main elements of the interior construction and internal insulation.

#### Use of secondary raw materials

Product responsibility starts with raw materials. Knauf predominantly process gypsum – natural gypsum as well as synthetic gypsum from industrial processes and power stations. Natural gypsum is a non-renewable raw material but it is available in large quantities. Synthetic or FGD gypsum is considered a secondary raw material, as it is generated at high quality as a by-product in the desulphurisation of coal-fired power plants.

The ratio of FGD gypsum used at Knauf varies depending on the location. In 2014, across all companies and countries covered by this report, we have been using 39 percent natural gypsum (2013: 41 %), 57 percent FGD gypsum (2013: 58 %) As to recycling gypsum, we were able to

increase the portion to 4 % (2013: 1 %) (see page 28). The lining paper used for gypsum boards is always 100 percent recycled paper.

As far as our most important product in terms of volume, gypsum boards, is concerned, water and additives are used besides gypsum and paper. Additives are used to achieve certain product characteristics, which facilitate work on the building site or which protect façades from negative environmental effects and damage, for example. Our search for ever more environmentally friendly products means that we are continually testing the use of additives with a view to their reduction. The use of water in plasterboard production is being reduced every year as this shortens the drying time and therefore the energy consumption.

#### User protection as point of differentiation

At Knauf we know that we can only protect our good reputation if we put products on the market, which pose no danger to those that use them. As



### Efficiency: Less water and energy in the production of gypsum boards

In order to make gypsum boards, gypsum (from quarries, flue gas desulphurisation or recycled material) is ground and mixed with water, creating a gypsum mush. This is then applied to a layer of paper on a long conveyor belt, covered with a second layer of paper, cured by drying and finally cut into boards. The drying or calcination (heating) is the most energy-intensive part of the production process. Efficiency gains can

only be made if the boards contain less water, in other words if they contain less material overall. These thinner boards must achieve the same stability as before through a new additive formula. Knauf is succeeding in this year on year: within the last five years, the average board weight in the companies included in this report has fallen by two percent. The energy consumption fell in line with this development by 5.5 percent.

a manufacturer of products, which often contain chemical substances – as well as natural products – we are subject to the duties of information imposed by the European Chemicals Directive REACH (Registration, Evaluation and Authorisation of Chemicals; EU No. 1907/2006), UN Directive GHS (Globally Harmonised System of Classification and Labelling of Chemicals) as well as, since 1 July 2013, the EU Construction Products Directive (EU No. 305/2011). At Knauf Gips KG, around 55 percent of the products are subject to a statutory specification or industrial standard with regard to health and safety, and at Knauf Bauprodukte GmbH & Co. KG, this figure is 78 percent.



Karl Singer of Knauf Austria (3rd from left) with the successful environmental product declaration in Brussels.

EPDs are externally certified life cycle assessments while **supplier declarations** are produced by Knauf itself. By the end of 2014, EPDs were available for the following product areas: gypsum products, reinforcement fibre plaster, normal plaster, calcium sulphate screed, mineral tiles, wood wool panels, as well as for further products from companies in the Knauf Group, which are not yet covered by this report, such as Knauf Insulation. Knauf Ges.m.b.H. in Austria has had an EPD for its gypsum boards from its Weissenbach facility since October 2014. It was produced by the Austrian Institute for Healthy and Ecological Building. Supplier declarations provide information on the production locations, sources for raw materials, proportion of recycled material used and much more. At the end of 2014, supplier declarations were available for 23 products on the German market.

This documentation contains starting points for improving the sustainability of buildings – which is important, for example, if a construction project has to be classified in accordance with a sustainability standard, certifications in accordance with the German Society for Sustainable Building (DGNB), LEED (“Leadership in Energy and Environmental Design”, a US standard) or BREEAM (“Building Research Establishment Environmental Assessment Method”) from the UK. As well as on Knauf websites, our product declarations are also available in databases such as

We provide our customers with performance explanations, safety data sheets and CE markings for all the products in question. These documents contain details on the composition, physical and chemical properties, handling and storage, possible dangers, environmental information and tips on their disposal – to be found on the internet for the German market at <http://pd.knauf.de>, and for the Swiss market from July 2015 at <http://pd.knauf.ch>.

Knauf takes the safety of its users – craftsmen as well as DIY fans – very seriously and in many cases we go further than the legislation demands. In doing so, we want to differentiate ourselves from our competitors. For example, the World Health Organisation (WHO) specifies thresholds for formaldehyde in liquid screed, to name one example. Here we are already significantly below the limit, and we are working on reducing its use still further.

#### **Environmental information for architects and developers**

As well as the safety data sheets and CE markings required by legislation, Knauf provides declarations on the environmental compatibility of its products – either in the form of Environmental Product Declarations (EPDs, according to DIN EN ISO 14025) or Environmental Supplier Declarations (according to DIN EN ISO 14021).

Read more about Knauf EPDs  
(in German):  
[www.knauf.de/epd](http://www.knauf.de/epd)



Specialist companies can count on Knauf to teach them the best processes for using their products.

GRI: G4-26

Read more about the Institut Bauen und Umwelt:

<http://construction-environment.com/hp421/EPD.htm?ITServ=CY4b5470acX14f416ba3a8Xf3>

Read more about the DGNB Navigator:

<http://www.dgnb-navigator.de/?language=en>

Read more about the Green Building Products database:

<http://www.greenbuildingproducts.eu/?lang=en>



maintained by the [Institute for Building and the Environment](#), the [DGNB Navigator](#) or the platform, [Green Building Products](#).

### Designing with BIM

With BIM (Building Information Modelling) Knauf offers another contribution to sustainability in cooperation with architects and developers. BIM allows the integration of quality and environmental data into an electronic construction plan. It can also be helpful in the deconstruction of buildings in order to determine the recycling volumes.

For incorporating environmental considerations in its product design, Knauf in Spain has been certified according to ISO 14006 – as the first company of its sector in Spain and for all products manufactured in the country. Carbon neutral gypsum boards have been used in the construction of “La Vela”, a LEED Gold certified headquarter of a well-known Spanish bank, a project by architects Herzog & De Meuren. To achieve the emissions compensation, Knauf invested in two development projects in Africa and South America.

### Training for architects and specialist companies

To enable Knauf products to have a noticeable effect on sustainability in the building sector, they must be familiar to planners, the trade and contractors and their correct use guaranteed. Knauf therefore invests a lot of time in informing and training its partners. To this end, we have set up collaborative arrangements with colleges and established networks for customers and other

partners. With the aid of these active partnerships, we make a contribution towards the targeted spread of products and technologies that protect the environment.

### Networks for research and further education

Thanks to our long presence in the market and the decades of work we have put into training the next generation, we have now firmly established collaborative arrangements with more than 70 colleges and their architectural and interior design faculties. Since 2008 these alliances have been run under the umbrella of Knauf Campus, which is supervised by a special team.

In the architectural faculty at Darmstadt, Knauf is supporting the first endowed professorship of this institution together with DAW SE. It is devoted to the holistic design and construction of interior space at its interface to the building shell. The focus of the teaching is on the subjects of drywall and lightweight construction. An important sub-project of this alliance is the joint development of the “ClimaDesign\_Labor”, which is particularly relevant from a sustainability viewpoint. Here, architects can learn to combine energy-optimised construction with their design and planning work. The lab offers space for experimenting with various materials, equipment and techniques. In addition, energy concepts are developed, design workshops held and exercises carried out on measurement equipment.

At the Rosenheim University of Applied Sciences we support the Timber Construction and Interior Works course. The most talented graduates can also apply for the Knauf graduate prize. The close collaboration with corporations such as Knauf enables students to gain valuable insights into the production processes for construction materials, take part in practical workshops and to be given the chance to put their studies into practice.



### “Great benefits to both sides”

“The REWE Group sells the whole range of Knauf’s Do-it-Yourself products in its toom DIY stores – from drywall construction systems and plaster to products for tiles. Our collaboration has proven itself over many years and continues to grow in a very positive fashion. Over the years, we have contributed a series of new concepts and ideas which have been of great benefit to both sides. For three years in succession, Knauf was voted top supplier of the year from among our approximate 600 suppliers.”

Rudolf Mertens,  
Building Materials Buyer, toom Baumarkt GmbH

GRI: G4-26

#### Knauf Academy for partnerships with contractors and the trade

The Knauf Campus programme is part of the Knauf Academy. Its main objective, to be achieved jointly with Knauf’s customers, is to ensure that developers are satisfied. Throughout the process we offer diverse, high-quality, practical further education programmes. They provide participants with state-of-the-art technology and current trends. The products on offer comprise technical seminars for craftsmen and the specialist trade where, besides Knauf products, the focus is also on conveying knowledge in areas such as marketing, sales and running a business. Members of our Specialist Contractors Club (see below) benefit from tailor-made seminars as do

representatives of the construction materials trade. Special areas such as energy efficiency and building physics are also covered. In 2014, we educated 2,150 participants.

A new focus of the Knauf Academy is the development of study aids and teaching material, e.g. for teachers at vocational colleges and inter-company instructors. A multi-modular seminar programme has also been developed for this target market, which is currently in its pilot phase.

#### Networking partnerships

For years we have maintained particularly close relations with our partners from their various trades and with the retail trade. In the last few years, we have systemised these contacts in order to reach our partners even more efficiently and to establish good product innovations more quickly. One essential component of this strategy is our Knauf Partner Programme, which has been in existence since 2010. Here we reward special achievements in the construction materials specialist trade in the form of an extended range of services tailored to the location of the shop. An objective and transparent performance evaluation is integrated into the pricing conditions, resulting in a mutual performance promise between Knauf and its retail partners. Knauf’s Partner Days are a fixed element of the programme, and they are held once a year in up to six different locations.



At the Knauf Academy, innovations are introduced regularly.

## GRI: G4-26

The Specialist Contractors Club has been in existence since 2012 and is aimed at contractors and specialist companies, which use our products. Members are characterised by their special technical qualifications and their loyalty. Knauf supports members of the club with personal service and exclusive trade events.

The "Knauf Works Days" held every two years, the "Iphofen Days", numerous specialist conferences as well as further events organised by our companies also beyond Germany, contribute to a high degree of networking among our target market. For example, Knauf's subsidiaries in Austria, Switzerland, United Kingdom and Spain/Portugal all have extensive catalogues of product training measures for customers' employees, and they take part in marketing activities staged by the building materials trade.

#### Satisfied customers

The satisfaction of our customers and trade partners is a key benchmark for the refinement of products and services in the Knauf Group. For this reason we regularly conduct customer satisfaction surveys with the support of external market research institutes, including market tests with products before their launch.

We had the Knauf Partner Programme evaluated in May and June 2013 as part of a telephone and online survey. 72 percent of our trade partners took part in the survey. The overall satisfaction was at the same high level as for the previous survey in 2011. Critical attention was given to the low level of exclusivity in the programme, which goes with the rising number of participating partners. In a survey of architects conducted in the early summer of 2013, the focus was on the degree of awareness and the reputation of the Knauf Group's product range. It turned out that none of the 80 architects questioned was aware of Knauf's entire service spectrum. Its market leadership in drywall construction was generally confirmed, but there are further markets to

be developed in the areas of plaster, façades, floors, ceilings and heat insulation composite systems.

#### Living safely with Knauf products

Our commitment to health and safety does not end with the protection of the user on the building site. Whether private residents or company employees – Knauf also focuses on the people who use the buildings in its product development. In one respect it is a matter of providing a healthy room environment – through heat, a balanced level of humidity and clean air to breathe – and in another of protecting users from noise, fire and other interference. A few years ago, Knauf also conducted a special research project that proved the positive effects of drywall systems on the earthquake safety of buildings.

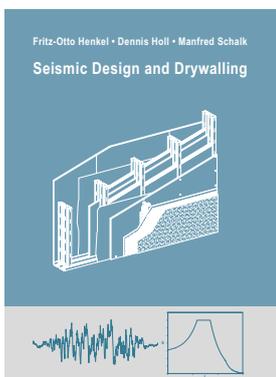
#### Insulating – to provide thermal insulation, soundproofing and fire prevention

Even if energy prices in 2014 fell for the first time in a long while, it should be clear that this trend will not continue. In the medium term, prices will rise again. Moreover, considering climate change, the low oil price and the burning of fossil fuels like oil and coal is rather counterproductive. From an environmental and economic perspective, therefore, improving the performance of buildings must be considered.

Refurbishing the outer shell of buildings with regard to their energy characteristics is the obvious way to increase their energy efficiency, but it is not the only one. Gypsum drywall, but also gypsum ceilings and floors show outstanding insulation properties, for example when used between storeys, apartments and also bordering on staircases and neighbouring houses in semi-detached or terraced design.

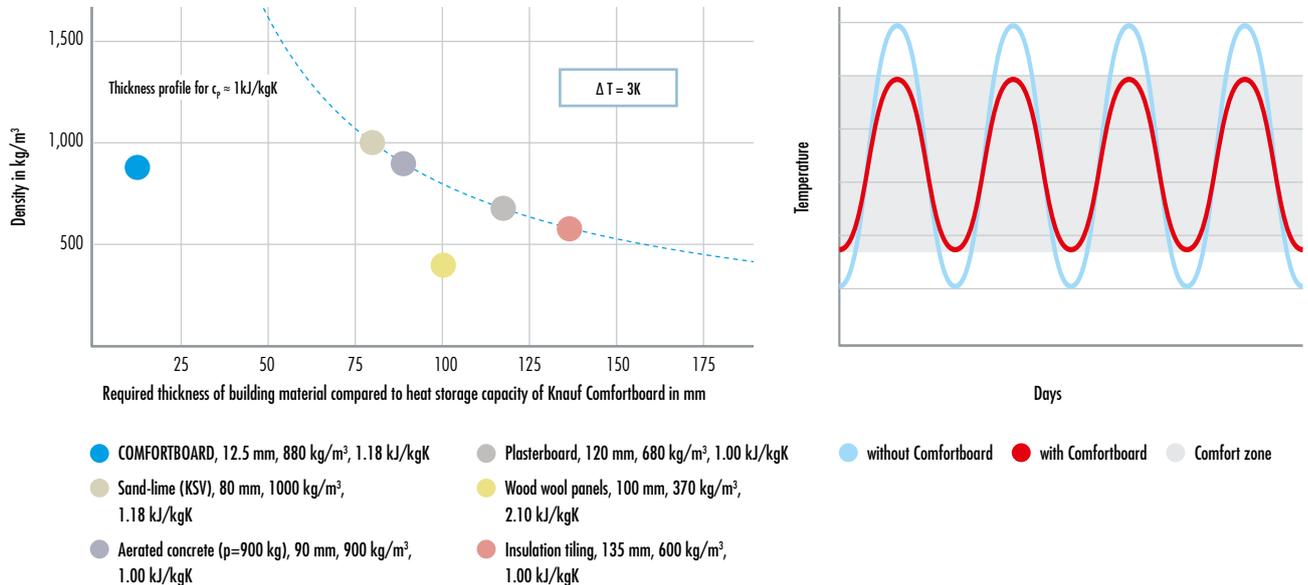
Gypsum construction materials also stand for optimum soundproofing. Intrusive noise – even within buildings – can have a considerable effect on personal well-being. Good soundproofing is therefore a factor that affects the success of rent-

> continued on page 24



Earthquake-safe construction with drywall systems: Knauf experts have published their research results in a textbook.

By innovative materials Comfortboard 23 avoids temperature peaks



Case study:

Gypsum board with active temperature compensation enables sustainable construction

The Department of Agriculture and Built Environment at the University of Nottingham in England was faced with the task of setting up a new research unit, which in terms of its construction met its own research purpose – applied environmental protection. Working with building contractor, Mark Group, it had an eco-house built with two and a half floors plus cellar or underground garage. Objective: The building was to meet the “Level 6 Code for Sustainable Homes” – the most demanding (and seldom achieved) level of sustainable building in the UK.

One of the core elements of this “Mark Group Eco House”, which was completed in September 2014, is the Comfortboard 23 special gypsum board by Knauf. It can be used on the inside of the external walls as well as on ceilings. The gypsum material in the boards contains microscopically small Micronal® PCM (= Phase Change Material) beads with a core of wax, which serve as a temperature storage medium. The beads become active at a temperature of 23 degrees Celsius and their core melts. Heat is captured in this phase change and absorbed over a lengthy period. In this way, temperature peaks are capped and the room temperature is reduced by a few degrees. If the room temperature falls again

in the evening, the process is reversed. The core in the PCM beads cools down, solidifies and is ready again to accept the next temperature spike.

The Comfortboard achieves the same heat storage capacity as around 135 millimetres of heat insulation tiling or 80 millimetres of sand-lime or a 100 millimetre thick wood wool panel. And in the process it is much more effective with a thickness of only 12.5 millimetres. For every millimetre of board thickness, Comfortboard has a storage capacity of around 19 kJ/m<sup>2</sup> (for a 3K temperature spread). By comparison, sand-lime achieves around 3 kJ/m<sup>2</sup> and heat insulation tiles 1.8 kJ/m<sup>2</sup>. Knauf Comfortboard is therefore a latent heat storage system for lasting temperature management, but looks similar to a normal gypsum board and is just as easy to work with.

Comfortboard constructions can be considered sustainable as they are totally energy-neutral and work without the slightest maintenance. This enables the use of air-conditioning units to be reduced and in most regions to be avoided altogether. In 2014, Knauf UK won a product innovation award with Comfortboard from the Finishes and Interiors Sector (FIS).

ing apartments. Knauf meets this need efficiently with drywall and special products such as the Silentboard.

Knauf gypsum construction materials are also best when it comes to fire prevention. They are non-flammable and give off moisture in the event of a fire, which slows down the spread of any fire. Every ton of gypsum contains around 200 litres of crystal water. To this can be added a range of special boards such as the Fireboard, the surfaces of which are covered by an non-flammable, anhydrite-coated glass fibre fleece.

#### Products for a healthy living environment

Gypsum has the same pH value as human skin, is odour-free and harmless. This building material regulates humidity naturally in closed spaces as humidity can be absorbed and given off again if required. This creates a healthy living environment.

But humidity is not the only factor that affects room air. Many building materials, coatings and furnishings contain harmful substances that can affect the health of users. Especially when there is little flow of air, high concentrations can accumulate which represent serious danger to health. These pollutants, which can also trigger allergies, are involuntarily breathed in and out.

Our solution to this problem is our Rotkalk series consisting of plasters of different grain sizes for foundation, plaster and a smooth finish. Rotkalk consists of kaolin and clay dust. It absorbs harmful substances such as nitrogen oxides and formaldehyde from the room air and breaks them down. The proportion of volatile organic compounds (VOCs) is already reduced by 60 per cent two hours after application.

Lime plasters have been used for centuries. That is why Rotkalk is also ideal for preserving historic monuments when there is a demand for plasters based on traditional methods.

#### Safety – through high performance products

Thermal insulation, soundproofing and room acoustics, fire resistance, humidity control – in all areas Knauf products increase living quality in residential homes and at the workplace. But in many environments, the requirements are even higher. In the health care sector, for example in hospitals and medical practices, but also in the sanitary installations in schools and other public buildings, there are rooms that require special protection. Constructive solutions are required, which are moisture-resistant but which also prevent dust, dirt and spores from adhering to surfaces. The use of especially robust boards and flush fitting without edges where dust and dirt can accumulate are important in this context. Hygienic ceilings from Knauf AMF that are used in clean rooms such as operating theatres and laboratories also have a special coating, which slows the spread of spores and fungi.



#### Efficiency: Economic plasterwork repair suitable for historic monuments

When the Ducal Museum in Gotha (Thuringia) was refurbished, the historical plaster on the interior walls was considered to be preserved. Completely removing the old plaster and renewing it would have been not only uneconomic but also not in keeping with its status as an historic monument. Nevertheless, in order to achieve a smooth, crack-proof finish to walls and ceilings, heavily damaged areas were first repaired with Rotkalk foundation. Then Rotkalk Fine was applied to a depth of six millimetres (partially with reinforcing fibre), and finally a two millimetre coating of Rotkalk Smooth was applied for the finish.



The radiation protection Safeboard makes lead in X-ray rooms obsolete.

X-ray rooms require special protection for neighbouring rooms through screening measures. Here Knauf's offers the radiation-protection Safeboard. It screens out radiation without the use of lead, is flexible to shape, simple to use, and proven to be cost-effective.

Even in buildings with high security requirements, Knauf offers solutions to protect the people working in them – for example, in banks, embassies, police stations or military facilities. Knauf's Torro gypsum fibreboard is a system component in the bullet-resistant wall system W161. It is certified to resistance class FB4 NS to DIN EN 1522, i.e. it can withstand even the largest calibre of handgun.

#### **Safety in deconstruction**

The recycling of gypsum boards has been the subject of much discussion in recent years. While production waste generated in factories is already recycled, the focus of interest is shifting increasingly towards the waste from construction and demolition sites. Gypsum boards can only be recycled if they are collected separately. In the past this was seldom practised for reasons of cost. However, the Waste Management and Product Recycling Act in Germany, which came

into force in 2012, now requires an environmentally compatible exploitation of products after they have been used (to read more about recycling, go to page 28).

In order to ensure the protection of the users of gypsum boards while buildings are being deconstructed, Knauf as the manufacturer makes sure that its drywall systems can be easily dismantled without danger. The emphasis is on preserving the boards as far as possible and on designing the dismantling process in such a way that little dust is created. The core requirement for our products, therefore, is that they can be safely and easily dismantled.

# Environment



It doesn't get more environmentally conscious: Resource-protecting FGD gypsum is transported right into the production hall by rail.



## Environmental protection, efficiency of resources and energy

Knauf is aware of the environmental effect of its business activities. As a manufacturing company dependent on processing natural raw materials, we bear a major responsibility. That is why we do everything we can to use resources as efficiently as possible and to limit the adverse effects on nature.

Knauf relies largely on synthetic gypsum in order to protect natural gypsum resources as far as possible. In particular, synthetic gypsum is created as a by-product of the desulphurisation of flue gases from fossil-fuelled power stations, and is also known as FGD gypsum (FGD = flue gas desulphurisation). Beyond that, small amounts of other synthetic gypsums, generated for instance in the manufacturing process of citric acid and titanium oxide, are also used. Their use is very beneficial for the environment:

- In Germany alone, around 7 million tons of FGD gypsum are generated and put to new uses this way.
- By replacing natural gypsum with FGD gypsum, Knauf makes a considerable contribution towards the efficient use of resources in the manufacture of its gypsum products.

Moreover the use of FGD gypsum is beneficial from a logistical viewpoint. For example, in 1998 we constructed a rail connection at our Knauf parent factory in Iphofen and an FGD gypsum unloading station, which facilitated the environmentally friendly delivery by rail of more than 500,000 tonnes per year. As a result of this highly efficient logistical system operated in collaboration with power station operators and Deutsche Bahn, it is now possible to deliver and unload a complete train laden with 1,200 tonnes of FGD gypsum every day. Across the Knauf Group, in 2014, FGD gypsum made up around 57 percent of the production volume for gypsum boards and plasters, at Iphofen even 63 percent. To be sure that the gypsum materials they use –

especially the synthetic gypsums – have no negative effects on human health and the environment, Knauf has implemented a comprehensive, certified quality management system.

Synthetic gypsum offers further benefits beyond its positive environmental properties. FGD gypsum, in particular, is often purer and has different physical qualities than natural gypsum and is therefore suitable for further applications – also outside the construction industry (e.g. as a fertiliser).

### Environmentally friendly transport logistics

Conversion to FGD gypsum has saved more than 50 percent of primary energy in production and more than ten million litres of diesel through rail transport. However, this measure is only part of a broad strategy for transport logistics driven by climate protection considerations: the planning of production facilities in the direct vicinity of mining operations (“factory at the quarry”, or “at the power station”), optimising the loads carried by trucks and their routes and the use of low-pollution and noise-reduced vehicles represent further strategic considerations. Some of our plants have direct access to rivers or canals, or to the North Sea and Baltic coasts in the UK and northern Europe – and in these cases delivery is made by ship. When selecting suppliers, we also always pay attention to keeping distances as short as possible. In our Austrian plants, for instance, half of the approximately 250,000 tonnes of gypsum is delivered by truck from our own quarries and half of the synthetic gypsum by rail. The paper for gypsum boards is delivered by rail: approximately 1,500 tonnes of paper correspond to a saving of around 60 truckloads





In England, used gypsum boards are separately collected and recycled.

a year. Our production facilities in Spain are located close to natural gypsum resources, which is logistically beneficial, too.

Transport from the factory to the customer is by truck as most domestic customers have no rail or ship connections. For export, we rely mainly on deep sea containers. In the case of Knauf AMF, customers have the option of choosing the means of transport themselves or of buying the goods ex works. The number of journeys is falling, mainly due to route optimisation. From 2013 to 2014, the number of truck journeys at Knauf Gips KG fell from 67,374 to 59,195. In Austria, too, truck journeys are falling as we are relying increasingly on the rail trans-shipment hub of Vienna, which means we only have to cover a maximum of 45 kilometres by truck. In the United Kingdom and Ireland, we have optimised our loads with the result that the average mileage per journey has decreased.

#### **Avoidance of waste**

Knauf makes a further contribution towards the efficient use of resources and the avoidance of waste by directly recycling the waste from board production. Production rejects are fully recycled in the production process. Waste paper from the plant's own processes can also be recycled. We

exceed our statutory obligations by always working with our customers to find the best possible ways to recycle our products.

#### **Recycling of used gypsum boards**

The recycling of gypsum boards after use, i.e. after the completion of new buildings or refurbishments or after demolition/restoration, has not played any significant role in the gypsum industry hitherto, principally because used boards are not collected separately. In the UK, the plasterboard industry including Knauf signed up to the Ash-down Agreement in 2007, which requires the industry to improve recycled content. More specifically, changes in landfill guidance from April 2009 requires that visible plasterboard waste must not be disposed in general landfill, but can only be disposed of in specialist non-hazardous mono cells. The greater costs associated with landfill have therefore led to development of cost effective closed-loop recycling.

Waste plasterboard is widely collected from construction and demolition sites and recycled to approved specifications (Environment Agency and WRAP Quality Protocol and BSI PAS 109 Specification for the Production of Gypsum from Recycled Plasterboard), and the resulting processed gypsum can be re-used. Knauf UK uses this post-consumer gypsum (as well as FGD gypsum), and it is our intention to increase the proportion of post-consumer gypsum in all of our products.

The German Federal Association for the Gypsum Industry (BV Gips, Bundesverband der Gipsindustrie e.V.), under the leadership of Knauf, developed a concept for the recycling of "external" gypsum board waste in strategically important locations. The annual yield of recyclable gypsum board waste is estimated to be currently around 300,000 tonnes. The German gypsum industry's recycling concept will ensure that in the medium term this entire volume of waste will be reused.

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Germany's second gypsum board recycling plant was opened in Deisslingen-Lauffen in Baden-Württemberg in November 2014. It is in the direct vicinity of a Knauf gypsum board plant, has a capacity of 50,000 tonnes per year and is operated by STRABAG Umwelttechnik GmbH. The recycled gypsum is used directly by Knauf in its plant. Dr. Jörg Demmich from Knauf Gips KG was instrumental in driving the process and attended the opening on behalf of BV Gips in his capacity as Chairman of the raw materials and environment committee.

rogypsum. With a project budget of around 3.6 million euros, the project receives half of its funding from the European Commission and it brings together 16 demolition and recycling companies as well as manufacturers, including Knauf. The objective is to increase the ratios of recycled material and in the long term to use up to 30 percent recycled gypsum in new gypsum boards.

The European gypsum industry has declared that it is willing to accept recycled gypsum with a level of quality based on the quality criteria for FGD gypsum. Extensive trials have confirmed that recycled gypsum can meet these quality requirements. The process is principally about reclaiming the gypsum. The paper content could be used as a replacement fuel or for compost.

Read more about HISER:  
<http://www.hiserproject.eu>

Read more about IRCOW:  
[www.ircow.eu](http://www.ircow.eu)  
> Case Study Nr. 4

### European recycling initiatives

A second initiative to reuse old gypsum boards is the GtoG Project ('Gypsum to Gypsum') initiated by the European gypsum industry federation, Eu-

In 2014, our Spanish subsidiary joined the international research consortium, [HISER](#), along with 25 companies from ten member states of the European Union. HISER stands for "Holistic Innovative Solutions for an Efficient Recycling and Recovery of Valuable Raw Materials from Complex Construction and Demolition Waste (C&DW)"; the budget amounts to more than 7.7 million euros. The project is intended to help develop new, cost-efficient technologies to recycle mixed construction waste by considering circular economy approaches throughout the building value chain. The solutions will be demonstrated in demolition projects and five case studies across Europe. Knauf Spain was also involved in a previous EU project [IRCOW](#) ("Innovative Strategies for High-Grade Material Recovery from Construction and Demolition Waste"), which was completed in 2014.



### Efficiency: Camp in Austria

Knauf Ges.m.b.H. in Austria has won a prize in the "Factory 2014" competition among others with a "camp". This refers to three tents for gypsum boards, which will in future make the storage and despatch of products considerably more efficient and less expensive. The idea: high sales products such as gypsum boards are stored loose in tents while products with lower sales volumes stay outside. The boards in dry storage made up of three tents of 900 sq.m. each, no longer have to be shrink-wrapped in plastic film, and based on around 55,000 so-called shrink hoods, this will bring savings of around 280,000 euros in material and personnel costs compared with previous years. There is also no need to dispose of used film. The products are ready to be loaded at any time without any preliminary work.

### Investment in environmental protection

Every year Knauf invests considerable sums of money in environmental protection. This includes operational environmental protection in its facilities, renaturalisation or recultivation of disused quarries as well as investments in the general upkeep of our plants. The subject of biodiversity alone requires high commitment in terms of,



Spanish Knauf employees are cooperating with the University of Granada on research projects about biodiversity.

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among other things, organising in-house training on environmental protection and also for reporting and PR work on nature conservation. Our graduate geologists are in demand as experts in renaturalisation, and every year they lead excursions for schools and universities through our former mining areas. These extensive, largely voluntary contributions cannot be pinpointed in financial terms.

#### **Saving energy benefits climate protection**

Saving energy helps not only to reduce costs but is also a necessary contribution towards reducing emissions associated with the generation of energy and thereby aiding climate protection. Knauf has therefore adopted principles governing its energy policy, which apply throughout the company. They are as follows:

- Knauf undertakes to reduce its energy consumption in production over the long term, and to increase its energy efficiency in a continuous process of improvement.
- All employees commit to achieving the corporate objectives and play an active role in implementing them.
- Products and production processes must be checked with regard to their energy efficiency. Through its own efforts and by working closely with customers and suppliers, Knauf aims to achieve energy-saving production – as far as technically and financially feasible.

- Costs are to be reduced and emissions lowered by making appropriate savings in the energy sector.
- Statutory requirements will be quickly implemented.

#### **Certified energy management system**

To achieve these objectives, Knauf introduced an energy management system in 2012. From the outset, the aim was to obtain certification to the international ISO 50001 standard. To do so, measurement systems have been gradually expanded and unified, consumption figures recorded and potential for savings identified. Appropriate key indicators are developed and pursued, which cover the raw materials used and their quality characteristics as well as energy consumption. This puts us in a position to draw up specific energy balance sheets for selected products and to find the best procedures from an energy viewpoint.

Every facility now has energy management officers who regularly share and exchange their know-how. They are also the contacts for employees who wish to contribute ideas for reducing energy consumption as part of the continuous improvement process (CIP). CIP – the company suggestion scheme – is actively promoted by us and we reward projects that are implemented with awards. Most CIP processes at Knauf today are indeed related already to the subject of energy.

By the end of 2013, all the facilities in Germany were certified to ISO 50001, and in 2014 we began the process of extending it to other Knauf facilities. With this aim in mind, all the energy management officers in Eastern European facilities were briefed at a workshop in Weissenbach, Austria, in March 2014. Newly designed energy reports for the monthly report packs were presented. The energy management manual, which describes all process steps in detail, had been revised for Eastern Europe, and it was presented and discussed.

The energy consumption in the companies covered by this report, rose slightly by almost 1.5 percent in the reporting period due to production factors, which is significantly less of an increase than that of the sales volume.

#### Efficiency measures bring measurable benefits

Board drying and calcination represent particularly energy-intensive processes at Knauf. For that reason, our energy efficiency measures in the reporting period concentrated on these areas in particular. What is important is the overall efficiency of the way electricity and fuels are used.

A key part of the optimisation process was a new combined heat and power plant (CHP) in the Iphofen II facility, which went into operation in the spring of 2014. Thanks to the compact, container-like construction of the CHP, it was possible to quickly assemble the main power unit. The plant consists of a gas engine that generates electricity with a power output of 600 kilowatts. The exhaust heat created by combustion and from cooling the engine is used for calcination in the rotary kiln; the electricity generated flows directly to the production systems. This led to a reduction in CO<sub>2</sub> emissions by around 4,000 tons per year thanks to the saving on fossil fuel.

As well as the highly efficient power production through co-generation, work also started in 2014 in some pilot plants to reduce specific power consumption.

The aim is to reduce power consumption in all German plants by ten percent by 2017. Concepts for modernising fans and other electrical drives and for increasing their efficiency are being drawn up in the pilot plants. A further important building block is minimising the requirement for compressed air and its efficient production. The measures implemented already brought about savings in 2013, which led to a reduction of CO<sub>2</sub> emissions of over 2,000 tonnes.

Knauf UK also achieved considerable energy savings in the drying process through efficiency measures. 10 gigawatt hours (GWh) of gas were saved at the Sittingbourne facility, and a further 2.8 GWh at the Immingham plant. The principle focus was on the drying process during gypsum board production. The plants in Spain also succeeded in recording considerable efficiency gains through the use of heat exchangers and other measures; energy consumption fell by 3.2 GWh.

We are often far ahead of our competition when it comes to matters of efficiency. For example, on taking over facilities from other manufacturers, we have frequently achieved efficiency gains of 25 % in a short space of time.

#### Reducing emissions

The choice of energy supply has a direct effect on the level of hazardous emissions of greenhouse gases such as carbon dioxide (CO<sub>2</sub>). Knauf Gips KG has been buying green electricity since 2012, which brings a reduction of CO<sub>2</sub> emissions of around 50,000 tons by comparison with previous years.

Knauf commits to protecting our climate on three different levels. The purchase of green electricity is intended, wherever possible, to enable us to do without fossil fuels such as oil or coal, which give off CO<sub>2</sub> emissions when they are burned. A second package of measures that every facility can implement, comprises our diverse components for optimising our energy efficiency (cf. page 30 and above). The third level focuses on



Decentralized power stations help to avoid energy loss.



Energy efficiency is an important competitive factor.

our increasing use of decentralised combined heat and power plants with co-generation producing heat and power simultaneously.

The fuel utilisation ratio of such highly-efficient CHP plants can exceed 80 percent. A gas or coal-fired power station cannot achieve such figures because the exhaust heat can usually only be partially used, or is dependent on season. Classical power stations also take a long time to power up and down whereas combined heat and power plants can be switched on and off at relatively short notice, making them more flexible. The advantages of this technology are based above all on the fact that power and heat are generated directly to where they are also used.

Compared to centralised power generation in power plants, we can avoid almost all transport and performance losses of energy. Knauf will continue to invest in new CHP plants in its facilities. In the reporting year, further CHP plants joined the grid in Iphofen I and Grafenau (Knauf AMF) besides the example already given of Iphofen II (page 31).

Emissions of greenhouse gases rose slightly in 2014 in the companies covered by this report for production reasons: direct emissions (from burning fossil fuels) by 1.2 percent and indirect emissions (from power consumption) by 0.8 percent. The fact that our production volume grew significantly more strongly in the same period, however, is evidence of our efficiency gains.

**Water consumption falling**

Water is indispensable for the production of gypsum products. Both natural gypsum and FGD gypsum are available in hemihydrate form - the gypsum becomes workable only after calcination (partial extraction of crystal water) and mixing with water. The added water facilitates the desired setting, excess water is then removed during gypsum board production by means of drying, and the evaporated water rises and returns to nature's cycle in the form of rain. There are therefore hardly any losses and practically no waste water. In most regions in which we produce, there is also no shortage of water. If we want to save water, therefore, the main reason for doing so is to save energy used in the drying process.

Knauf has succeeded in the last few years in steadily reducing its use of water per gypsum boards. More than 40 percent of the weight of a plasterboard panel evaporates during the drying process. Today, the boards can be lighter than previously as a result of new formulas and different additives, and as a result they require shorter drying times.

**Reduction in the use of water in gypsum board production**

	2011	2012	2013	2014
average board weight (Typ GKP 12,5) (kg/m <sup>2</sup> )*	8.61	8.53	8.50	8.48
average volume of evaporated water (kg/m <sup>2</sup> )	3.65	3.56	3.49	3.50
	42.39%	41.73%	41.06%	41.27%

\*based on all reporting companies. In Germany the figure for 2014 was 8,7 kg/m<sup>2</sup>, the average weight of GKP 12.5 here must not fall below 8,5 kg/m<sup>2</sup> according to DIN 18180.

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**Collaboration with suppliers**

To exercise even greater control over the sustainability of our products through the supply chain, Knauf as the manufacturer, will in the future work even more closely with our materials suppliers. In the process we want to ensure health and safety at work and environmental protection in the supply chain as one of our fields of action, as well as to drive our joint research into products that meet sustainability requirements. In the next two years, we want to draw up a guideline for suppliers which will refine our value added chain further in the direction of a closed material cycle.

**Back to nature**

In previous years, around 40 percent of the gypsum processed in Germany came from quarries (cf. page 18), the majority of raw gypsum, therefore, was synthetic. In other facilities in Europe, too, Knauf can largely rely on synthetic gypsum. Synthetic gypsum, however, will never be able to completely replace natural gypsum. Quite the opposite. The proportion will tend to decrease again in the future when coal-fired power stations are turned off for reasons of climate protection, the main source of synthetic gypsum will dry up in the long term.

As recycled gypsum is also not available in sufficient quantities and there are still major qualitative and logistical hurdles to be overcome in this area, there will be no alternative to quarrying

gypsum. However, extracting the raw materials needed from quarries must be carried out in a way that protects the environment and shows consideration for the flora and fauna in the extraction areas. Even if gypsum quarrying takes up relatively little space by comparison with other raw materials, it nevertheless involves interfering with a cultural landscape – even if only to a minor degree.

A quarry is normally operated for several decades. Even during this phase, we try to minimise any negative effect on the infrastructure of the region by using our own access roads and implementing tolerable working hours. We make a conscious decision not to employ blasting wherever local conditions allow it.

**Dialogue with residents and associations**

In all matters concerning gypsum quarrying and recultivation, we maintain a close dialogue with residents and nature conservation and countryside associations. For example, we are a member of the working group on quarry and gravel pit habitats set up by the regional association for bird protection in Bavaria (“Frankenbündnis”) for short. We also maintain contact and dialogue with environmental associations via the Bavarian Stone and Soil Industry Association and the Association of Bavarian Mining and Mineral Extraction Companies. At a national level, we have drawn up a joint declaration on the subject of

**“Intensive technical exchange”**

“BASF has been supplying Knauf with water-based dispersants, superplasticisers and additives as the basis for several construction products for many years. In the process, we use our innovative raw materials to develop sustainable solutions for the construction industry. Here we appreciate the intensive technical exchanges within our common R&D projects that lead to new, environmentally friendly prod-

ucts. For example, this is evidenced by the new Comfortboard 23, which, for the first time, makes functional energy efficiency directly available for traditional drywall construction.”

Dr. Markus Lohscheidt,  
Marketing Manager

Polymer Dispersants for Construction, BASF SE

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raw material mining and nature conservation with the German Society for Nature Conservation. Our companies abroad also maintain dialogue with relevant bodies. For example, at Knauf UK where the production facility in Sittingbourne borders the conservation area, "The Swale", we also cooperate with local authorities and nature conservation organisations.

Since 2012, work has been underway to create a new quarrying plan for the site where Germany's largest gypsum deposits are located. The Rottleberode site (southern Harz) offers a total extraction area of 315 hectares. The site is to be given a new planning approval process, which will allow more consideration to be given to the landscape by swapping areas. This would mean that the quarry would no longer be noticed by the surrounding villages. In this way it would be possible in future to avoid incisions that in the past have left a mark on the landscape such as the mining wall on the Krebsbach river, which has now been recultivated. This planning process will also allow some more precious areas from a nature conservation viewpoint to be avoided. Even before the procedure was opened, approval authorities, environmental associations and residents were included in the process. However, the dialogue has not yet been concluded, and the public are invited to propose further ideas for improvements.

#### Renaturalisation and recultivation

The extraction of gypsum rock above ground always goes hand in hand with recultivation. That means that while gypsum is still being extracted at one end of the quarry, recultivation has already started at the other end. By working in this way, Knauf is able to keep the area of incision to a minimum. Like all quarry operators, we are legally obliged to recultivate the areas we work. In doing so, we frequently exceed the specifications laid down in legislation. Knauf attaches great importance to not leaving "scars in the countryside".

There are basically two options after a quarry is closed: recultivation or renaturalisation. The purpose of recultivation is to prepare the land for agricultural or forestry use. It requires the site to be made reusable as a "fruitful location" and the typical appearance of the countryside to be restored. This includes filling in the quarry, i.e. levelling the variations of elevation and returning the original soil (which has been professionally stored for later use). It can also include planting appropriate trees or sowing blends of grass and herb seeds. In renaturalisation, areas are allowed to develop naturally - whereby small ponds and periodically wet areas often form in the course of time and typical plant communities and numerous animals settle. This renaturalisation process can be accelerated by specific initial planting or guided in a particular direction with the appropriate care. High-quality biotopes rich in species normally form within a short time, characterised by an unusual wealth of rare and especially threatened species.

Overall, the renaturalisation of gypsum quarries can lead to an increase in biodiversity in our intensively used cultural landscape. They also act as a refuge for particularly threatened species. Scientific studies show that an increase in biodiversity can materialise even in quarries still in operation. Quarries can thus act as "stepping stone biotopes" and make an important contribution towards connecting protected elements of the countryside, thereby bringing greater benefits to the conservation of nature than harm.

In the case of other minerals, too, Knauf supports the renaturalisation of mining areas. For example, Knauf Aquapanel GmbH is involved in the open-pit mining of raw perlite on the Greek island of Milos. Ten percent of the area (around 17,000 square metres) was renaturalised in 2014 in consultation with the Greek authorities.



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### Recultivation in Pyhrn, Austria

A particularly successful example of recultivation is the former gypsum mine in Pyhrn in the Upper Austrian Alps. Gypsum was extracted here for almost 40 years, between 1971 and 2010, in open cast mining – around 4.3 million tons in an area of 40 hectares. Recultivation provided for three different areas: meadowland for cows, woodland including streams, bushes and trees as well as around ten percent of succession areas, i.e. terrains for natural re-growth.

iversity to be managed in active quarries. Among other aspects, these indicators look at the number and frequency of species in general and of especially endangered species (“Red List”) in particular, the number and area of certain types of biotope, the size of renaturalised areas, the quality of the water, the possible presence of undesirable, invasive species and a list of the communication and participation procedures with the public.

Since 2013, Knauf has been a signatory to the “Leadership Declaration” of the “Biodiversity in Good Company” Initiative and it supports the seven objectives for preserving biological diversity set out in the declaration. In addition, Knauf plays an active role in the working group “Management Indicators for Biodiversity” set up by the federal initiative “Biological Diversity Enterprise 2020”. Knauf is also participating actively in the development of a biodiversity database by the Stone & Soil Industry Association of Baden-Württemberg which, in conjunction with the biodiversity indicators, will in future become an indispensable part of any comprehensive biodiversity management.

Knauf also supports research outside Germany. For example, our Spanish subsidiary is helping the Botanical Department of the University of Granada with research into the recultivation and renaturalisation of gypsum quarries.

Read more about the “Business and Biodiversity” initiative: [www.business-and-biodiversity.de/en/](http://www.business-and-biodiversity.de/en/)

Read more about the German initiative “Unternehmen Biologische Vielfalt 2020” (in German, with English summary): [http://www.biologischevielfalt.de/ubi\\_plattform.html](http://www.biologischevielfalt.de/ubi_plattform.html)

Mineral material originating from the area was used for backfilling, such as the former intermediate layers in the gypsum consisting of anhydrite. Water retention ditches and basins for rain and meltwater were constructed, and stable roads were cut. In the north-western part of the area, which was closed down first, ponds and other habitats were set up at an elevation of 1,200 metres as early as 2005. These are now home to numerous species of frogs, dragon flies and microbes.

### Commitment to research

We incorporate the experience we have gained in the fields of nature conservation, recultivation and renaturalisation in a series of international research initiatives on the subject of biodiversity. For example, we are leading work within German and European gypsum industry associations, BV Gips and Eurogypsum, on the biodiversity indicators published in 2014, which are intended to deliver uniform standards throughout the industry for recording and evaluating the diversity of species and subsequently to enable biodi-



Pyhrn: The new pond 2005 ...



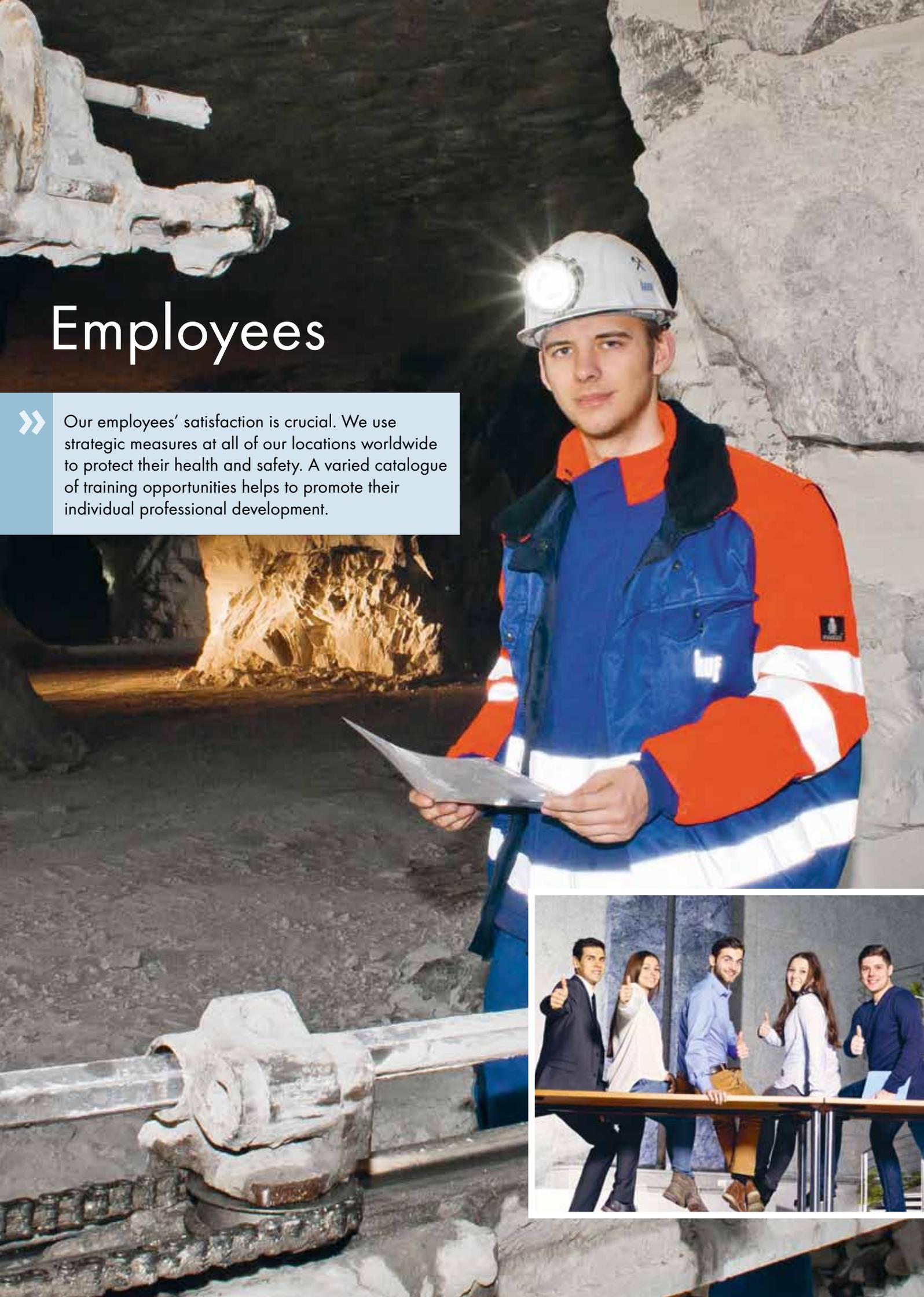
... changes from 2006 ...



... into habitat by 2012.

# Employees

» Our employees' satisfaction is crucial. We use strategic measures at all of our locations worldwide to protect their health and safety. A varied catalogue of training opportunities helps to promote their individual professional development.



# Responsibility for employees

Knauf's employees have a major share in the company's success. We therefore ensure they are protected from health risks and offer them further training in order to maintain their performance, skill and motivation. The growth of our staff also reflects the increasing international nature of the Knauf Group.

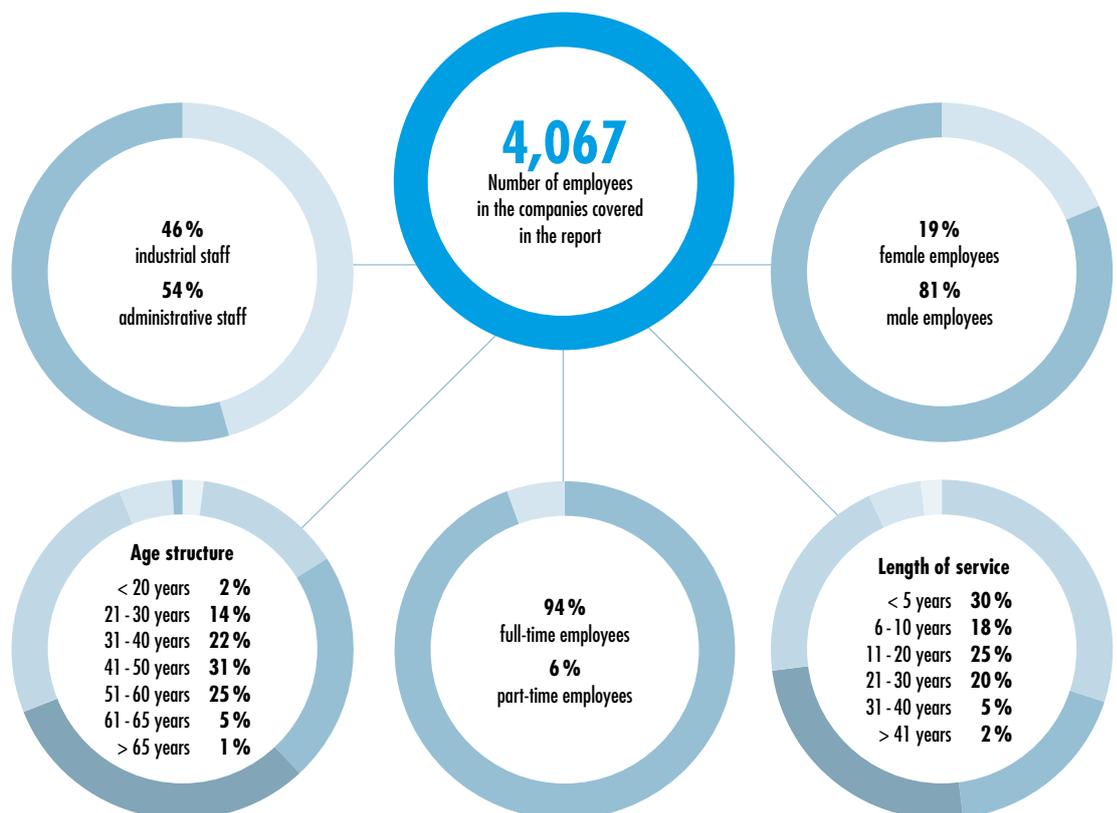
At the end of 2014, the Knauf Group employed around 26,500 people worldwide (2013: 25,700). Of the employees (excl. managers) covered in this report, 46 percent work in the industrial area while the others are in administration. As is usual for companies in our sector, the proportion of female employees is significantly lower: 19 percent (2% in industrial and 33% in administrative jobs) – this is not intentional, but due to the physical demands of working in industrial areas. Knauf is working on various measures to increase the proportion of women in the company (cf. pages 44–45). The age structure at

Knauf is, on the whole, evenly balanced – there is no acute problem of ageing staff as is the case in many companies now. Divisions that are significantly above average are prompted to generate action lists.

In 2014, the companies covered in the report took on 260 new employees and 149 employees left the company. Staff fluctuation was therefore 3.65 percent.

Number of employees in the companies covered in the report: 4,067

(as of 2014)



### Safe, healthy place of work

The safety and health of its employees is a very high priority at Knauf. This applies both to health and safety in our production facilities and to protecting health in all areas. During 2012, as part of our health and safety policy, we defined relevant objectives such as the systematic prevention of safety risks through educational and further training measures, an effective health and safety management system in all areas of the company, a policy of continuous improvement, analysis of accidents at work and not least the integration of Knauf safety standards.

The Knauf Safety Standard (KSS) represents a health and safety plan of action that is binding on all managers. Among its main components are the levels of authority and areas of responsibility as well as regulations governing risk assessment, measuring the effectiveness of health and safety measures, emergency planning and the contents of training programmes. The KSS meets

the criteria of the international health and safety at work standard OHSAS 18001 (Occupational Health and Safety Assessment Series) – our facilities abroad have been certified accordingly even if this was not a requirement in some countries. In Germany, the KSS corresponds not only to OHSAS criteria but is also certified by the Trade Association for Raw Materials and the Chemicals Industry (BG RCI) with its seal of quality, "Sicher mit System" (SMS) (Safe by Design). As part of our health and safety management system, we publish an internal newsletter ten times a year, which reports on our specific safety requirements.

Workplace limits are prepared at regular intervals by the committee for hazardous substances and communicated by the German Federal Ministry of Labour and Social Affairs in order to keep abreast of the latest insights regarding health. For example, the general dust limit was lowered from 3 mg/m<sup>3</sup> to 1.25 mg/m<sup>3</sup> in Germany in February 2014. This affects the manufacture and processing of gypsum products in which, among others, further hazardous substances such as calcium hydroxide are present (limits lowered in September 2014 from 5 mg/m<sup>3</sup> to 1 mg/m<sup>3</sup>).

Technical measures are taken in the production facilities to fulfill the statutory requirements. Changes to statutory provisions are carefully monitored by Knauf and immediately relayed to downstream users, dealers and customers as part of the communication process in the supply chain (e.g. current safety data sheets).

### Safety concerns everyone

When it comes to issues of health and safety at work, all employees must be involved regardless of the type of work they do or at what level in the hierarchy. This is the only way to achieve the objective of "zero accidents" within the entire Knauf Group. Safety subjects are therefore always discussed with members of the Works Council, union members or other employee associations and decisions are taken jointly. Knauf's Code of Conduct also covers this subject. Even



Work safety is a top priority.



At "Fit@Work" in Switzerland, having fun is on the agenda.

#### GRI: G4-26

in small production plants, there is always at least one employee representative and the works manager who fulfil this function; usually the works manager, a safety officer, a works doctor and one staff representative each for shop floor workers and salaried employees form the relevant committee. Employees are also approached during the regular inspections of the facility. In Switzerland, where there are no unions connected with health and safety issues, a separate safety officer cooperates with the plant management.

The safety measures at Knauf also cover suppliers and sub-contractors working on the site. Wherever it is a statutory requirement, we strictly look after the wearing of hard hats, ear protection and protective clothing.

#### Training and campaigns on health management

Knauf supports the health protection of its employees with a comprehensive training concept and regular campaigns as part of its "Fit@Work" programme. Facilities hold regular health days on which the company health management system is explained in detail and training exercises completed. In both the large plants in Iphofen, the health days in October 2014 were held to-

gether with AOK Bayern (health insurance company), which drove its "AOK Health Truck" onto the site. Under the instruction of sports scientists, exercises were performed to make employees aware of how to protect their health at work and at home. We also took this opportunity to ask our employees to identify any possible safety or health weaknesses in the company.

During the "Fit@Work" days in 2014 in Switzerland, participating employees were equipped with a pedometer for 40 days. The aim was to walk as many steps as possible in this time, i.e. to walk more than they normally would, and in this way to climb an imaginary "Mount Everbest". 64 percent of the 90 participants reached the summit, which is certainly not a bad result.

Knauf employees also commit to many health initiatives on a voluntary basis and are supported by the company in doing so. In this way, new training opportunities constantly arise which Knauf supports, for example, by paying the cost of hiring sports facilities. These include offers such as football, basketball, beach volleyball, gymnastics, yoga, swimming, hiking and going to fitness studios.

### Knauf values worldwide

The Knauf Group has had an international structure for many years. Wherever there are sufficient gypsum deposits and there is high demand for construction, there you will find a Knauf factory. Many economic, environmental and quality-related factors determine how this expansion is organised. We have been working for some years now on how to put the spotlight more on Knauf's identity as a brand and an employer. The unifying elements that apply across all facilities and cultures are Knauf's values of "Menschlichkeit", partnership, commitment and entrepreneurship.

### Strategic staff growth

Knauf is and remains a family business, which sees its various facilities as network partners in a decentralised structure. One important priority of our human resources work stems from our headquarter in Iphofen. The various national organisations and partner companies of the Knauf Group act independently in most areas relating to staff.

Regardless of this independence, strategic staff development is focussing increasingly on the creation of a common identity and corporate culture extending beyond national boundaries. As a result, this area is going through a phase of dynamic change. The aim is to manage questions of human resources, which have hitherto been

the responsibility of the different regions centrally in the future, at least in certain core areas. This is not about curtailing responsibility but embracing common values and, if necessary, balancing the "global workforce" in a sensible way.

To enable employees to fully experience Knauf's values, the objectives of the company's human resources work, which contributes to the establishment of a corporate identity at Knauf, are to be harmonised around the world. This extends from finding global definitions for processes and areas of responsibility to creating comparable career paths within the Knauf Group. Employee interviews, feedback for managers, agreements on targets and similar aspects should in future be carried out using comparable processes. For example, employee interviews for assessing performance have been handled very differently up until now. Such interviews are only reserved for salaried employees and production managers in most facilities. In the case of the companies in the present report, the proportion of employees with regular performance assessments varies between 50 and 100 percent depending on the company.

The insights gained from the new measures are intended to facilitate international exchange and, where applicable, managers moving from one country to another. A newly created database for senior managers comprising around 2,000 employees worldwide (extending beyond the companies covered in this report), will at the same time enable staff levels to be balanced if there is an excess in one place and a requirement in another. We are confident that this strategic change in our human resources policy will overall lead to greater transparency and comparability between facilities, targeted succession planning when managers leave, an improvement in our ability to respond quickly during the year when new appointments have to be made and thereby contribute to more efficient management of the company.



Knauf offers training for many formal trades.



The proportion of women in the company is steadily increasing.

#### Local recruitment

Regardless of the central processes, however, recruitment and further training for employees is to remain the responsibility of local units in the future. This also applies to the recruitment of managers. We attach importance to employing managers who are well embedded in their regional environment as this benefits both the employees who have short commuting distances and to the business through their special local knowledge. Both in Germany and in facilities abroad, therefore, the staff at all levels of the hierarchy are predominantly local. For the purpose of this analysis, managers are considered to be all those who manage employees in an organisational unit. In Switzerland where the company has no production unit, the term is defined as those with central functions within management and those taking part in managerial meetings. In our company, "local" means within an average circumference of 30 kilometres from the facility. In percentage terms, the proportion of locally hired managers stands at between 29 and 100 percent depending on the facility; relative to the size of the company, the average figure is around 80 percent.

#### Proportion of locally employed managers at Knauf (2014)

	%
Knauf Gips KG	92
Knauf Bauprodukte GmbH & Co. KG	85
Knauf Integral KG	79
Knauf Deutsche Gipswerke KG	95
Knauf AMF GmbH & Co. KG	80
Knauf Aquapanel GmbH	100
Knauf PFT GmbH & Co. KG	70
Knauf Ges.m.b.H., Austria	87
Knauf AG, Switzerland	80
Knauf UK GmbH	29
Knauf GmbH, Spain/Portugal	88
Total	80

#### Promoting from within the company and beyond

At Knauf we generally have a good age spread among employees. When employees retire, move location or leave the company, there was previously no need for any explicit succession management as it was normally possible to fill positions that became vacant from within the company's own ranks. Nevertheless we actively look for specialists and managers, less because of the demographic age pyramid, however, as is the case with many other companies, than due to the growth of the Knauf Group and the associated increase in staff numbers. At the same time, we try to keep older employees in the company until they reach retirement age because we appreciate them and would like to benefit from their expertise in training younger employees. Our company health management system also serves to conserve their energy (cf. page 38-39).

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**Promoting social and technical skills**

Knauf's most valuable resources include not only the raw material gypsum but above all the employees with their professional expertise and the company culture. A broad-based programme of further training is devoted to both aspects.

By the end of 2013, all employees had attended sessions on Knauf's values ("Menschlichkeit", partnership, commitment, entrepreneurship). The focus was on objectives associated with the values and how they are put into practice in everyday life throughout Knauf. The sessions started with a 15 minute corporate film, which explained the values and their importance and focussed on the cultural differences experienced in different regions. Working in groups, participants drew up the three most important steps for themselves and

their departments, which would have to be taken to translate the values into practical action. Since 2014, all newly employed staff go through similar sessions.

**Progress requires further education**

A broad range of courses and events are devoted to technical training and further education. Knauf is part of the technical progression as we are constantly refining our products to open up new areas of application and to optimise the quality of our products and their safety aspects. At the same time we have to keep pace with increasing regulatory requirements.

The Knauf education programme is open to all employees. That is why this forms an important part of the annual employee interview where the focus is not just on assessing performance but also on how to develop the employee's skills. The spectrum of educational opportunities on offer ranges from learning new methods and key skills for employees' particular field of work, through specific Knauf know-how and sales seminars all the way to managerial skills and opportunities to promote health. The interest in seminars on managerial skills, in particular, has risen sharply.

In Germany, a total of 210 seminars were organised in 2014 (2013: 196), and a total of 18,032 seminar hours were recorded (2013: 17,218), which would correspond to a time commitment of 11.8 hours per employee for 1,530 participants. This number does not include numerous correspondence courses, attendance at evening classes, certificated courses from external suppliers and other external products. Knauf bears the cost of such offers if the measures involved make sense from a corporate perspective. Around one third of the time spent on further education takes place in our employees' free time, which speaks for the high status enjoyed by further education among our employees.

**Further education statistics for Knauf Germany\***

Course	2013		2014	
	Sal. Emp.	Workers	Sal. Emp.	Workers
Learning new methods and key skills	331	5	266	11
Knauf Know-How	189	24	308	56
Technical seminars	18	5	-	-
Sales seminars	87	-	72	-
IT systems and applications	269	40	186	54
Foreign languages	108	-	219	1
Managerial skills	126	14	108	26
Health management	89	18	98	21
Special seminars	57	13	92	12
Total participants	1,274	119	1,349	181
Ratio salaried employees/ shop floor workers	91%	9%	88%	12%
Total seminars	196		210	
Total hours	17,218		18,032	

\* plus compliance training by regional compliance officers and workshops on values



Our dynamic industry demands continuous education and training.

At Knauf Austria a total of 624 hours were invested in further education measures in 2014 (2013: 1,112). Most of them went on language courses (sales seminars in 2013), and also on a pneumatics course, logistics training and various product seminars. Added to this, there are numerous internal and external offers for foreign languages, telephone skills, etc. In the case of Knauf's other foreign companies covered by this report, employees' further education commitment refers primarily to technical and administrative courses. Knauf Spain/Portugal, for example, reported 12,900 further education hours for 2014, which corresponds to almost 60 hours per employee.

#### **Specific preparation for career**

For young people with an interest in learning a trade or in technical and administrative careers, Knauf offers a broad range of apprenticeships in commercial, industrial, technical and IT-oriented spheres. In 2014, there were 140 young people in apprenticeships in the companies covered by this report. The number of apprentices in the twelve possible fields has risen steadily in the last few years – and at the same time Knauf has invested in educational facilities and training

rooms. Around 90 percent of apprentices who complete their course successfully, receive a job offer from us – some also from Knauf companies outside the scope of the present report. The fact that our apprentices are frequently among the best of their year in the vocational schools speaks for the quality of our training.

Prospective specialists and managers are given targeted individual support in the Knauf Group to suit their potential. There are programmes available at the St. Gallen and other business schools. International support programmes complete the further education of this target group and give them the tools to take on responsibility at an early age.

In Spain, a country with youth unemployment rates of around 50 percent, Knauf and another four companies in the Guixers area signed an agreement for a new training course for students. With the collaboration of the Ministry of Education they offer a course for electromechanical maintenance in industrial processes. On finishing, the students can start a trial period working at Knauf.

#### **Attractive benefits**

Knauf employees enjoy a series of attractive benefits. The benefits cover the company pension and the company health plan but also social gatherings such as office parties, barbecues and Christmas parties. Monetary gifts or other presents are given on key work anniversaries and on family occasions such as weddings or births. In the parent company in Iphofen, a limited number of company housings are also available.

### Family-friendly and promoting women

Employee satisfaction depends to an increasing degree on whether work demands can be reconciled with one's private life. Combining family and career is a major issue especially for employees with children or family members in need of care.

At Knauf, employees can take advantage of flexible working hour models. In certain circumstances, it is even possible to work from home. There are job-sharing offers and a growing number of part-time jobs that make it easier especially for parents with small children to pick up their career again after taking parental leave.

At Knauf in Germany, more than half of the employees on parental leave were male in the reporting period. Of the 107 employees who took advantage of parental leave in 2014 (2013: 92 employees), 58 were men (2013: 53). The 31 (29) men working in the factory took an average of 30 days leave; in the case of the office workers, the 76 (63) employees, among them 27 (24) men, took an average of 94 days leave. In

Austria, there were three employees on parental leave in 2014 (2013 no-one), among them one man.

By family-friendly we also mean supporting our employees in their search for a place in a kindergarten or providing corresponding advice. For employees who have to commute to our facility, we help with finding a day nursery or in finding an apartment or house.

Providing the opportunity to combine family and career is an important starting point for Knauf to increase the proportion of women in the company and to make it easier for them to pursue careers. Traditionally, our industry is dominated by men, which is understandable in production in view of the physical demands there. However, in management and in administration, this is of no importance – and here the proportion of women at Knauf Germany in 2014 stood at 18.8 percent, but with 13.6 percent among managers, there is still room for improvement. In Austria, the proportion of women in production is 2.3 percent, among salaried employees 24.2 percent; 3.9 percent of the managers at Knauf Austria are female. The proportion of women at Knauf in Switzerland is 22 percent, and of the 22 managers, four are women. In the UK, one member of the nine-strong Senior Management Team is female. In Spain and Portugal, the proportion of women overall is 17.6 percent; nine of the 32 managers are women.

### Girls' Day promotes young women

By participating regularly in Girls' Day, we advertise the job opportunities at Knauf. The national job orientation day for girls is intended to overcome their fear of supposedly male (and often technical) sectors of industry. In 2014, for example, ten girls visited the training workshop at Knauf in Iphofen and there they saw jobs such as electronics technician and industrial mechanic. At the mechanical engineering company, Knauf PFT, 25 girls were given an insight into jobs such



Companies of the Knauf Group participate in Girls' Day every year.



Cultural diversity in the company benefits all of us.

GRI: G4-26

as technical product designer, mechatronics technician, metalworker, electrician and warehouse logistics specialists.

#### Cultural diversity

Besides increasing the proportion of women, Knauf is also interested in increasing the diversity of its workforce overall. We are convinced that different nations, religions and other social orientations can enrich the working environment and raise motivation in employees. Any discrimi-

nation on the basis of age, handicap, origin, sex, religion or sexual orientation will not be tolerated on the grounds of Knauf's Code of Conduct. We are committed to providing a non-discriminatory and fair working environment that judges employees solely on the basis of their performance and their potential.

#### Participation

Cooperative dealings with employee representatives constitute one element of the open corporate culture at Knauf that is seen as a matter of course. Works Councils and unions participate in numerous relevant company decisions such as on questions concerning employees and health and safety issues. In every country in which we operate, we adhere to the national laws governing notice periods for company changes.

#### **"Dynamic, proactive team"**

"At Knauf I work in a dynamic, proactive team that is committed to the energy-efficient production of high-quality gypsum boards. The company promotes the safety and health of its employees and of all who share in ensuring that the production processes run so efficiently. Knauf listens to the voice of its customers and wherever possible, it exceeds their expectations and experience."

David Musgrove,  
Compliance Officer, Knauf UK



# Social commitment



Knauf helps in many ways across the globe. In keeping with our values, our locations lend long-term support to the people around them – from children in a Würzburg hospital to typhoon victims in the Philippines.

I ♥ KNAUF

Laura S

Laura S

## Commitment to a world worth living in

As with everything we do, Knauf's social commitment is based on our corporate values of "Menschlichkeit", partnership, commitment and entrepreneurship. These values help us to take decisions and do the right thing even beyond our daily business, in order to promote society, culture and sport.

At Knauf, our commitment to charity allows us to support the communities in which we live and work, enhancing our reputation in the communities local to our facilities. We are aware, of course, that our actual responsibility lies in our daily business and that social commitment can only represent the icing on the cake for a responsible corporate culture.

Knauf only supports projects and initiatives that have a long-term benefit for the locations where our business operates. In this process we only work with organisations whose principles match the values of our company. It is also important to us that our partners show integrity with regard to the implementation and efficiency of the project as well as in their financial management. Our support is not only financial in nature: we often help with donations in kind, services or in the form of charitable work performed by our employees (corporate volunteering).

### Support for social projects

Social projects and initiatives have always been the focus of our commitment. For example, for a number of years we have made it a rule that we no longer give our business partners Christmas presents but instead donate the money saved to needy organisations – each year around 10,000 euros. Our employees make suggestions as to which projects should be supported. In 2013, the amount was split between the Rainbow Ward in Würzburg, a parents' initiative for children with leukaemia and tumours, the Carmelite Sisters of an old age care home in Iphofen and the Sant'Egidio community in Würzburg for a canteen for old and homeless people as well as a language school for refugees. In 2014, cheques went to the KIWI Club, which supports the intensive care wards in the University Children's Clinic in Würzburg, and also to the Carmelite Sisters again as well as to two local sports clubs for their children's and youth sections.

Knauf Austria has also done away with Christmas presents for customers and for years has been donating money to charitable organisations such as the Liezen relief agency (given to needy families in the region) or the Sterntalerhof (they take care of families with very sick, chronically ill or dying children).

Numerous other international projects receive support from Knauf, usually through the local factory or through independent national companies. For example, the mechanical engineering company, Knauf PFT, supported the Humanitas organisation in a drinking water pump project in Mali (Africa) where two pumps have been providing clean water since 2013. Knauf Bauprodukte organised a social marketing campaign: for every



In Mali, Knauf PFT installed pumps for clean drinking water.

bucket of EASYPUTZ sold, 50 cents went to the "ARCHEMED – Doctors for Children in Need" organisation for building a new maternity hospital and neonatal clinic in Eritrea (East Africa). As well as donating building material, 15,000 euros was collected for technical equipment in the first step of the campaign. Knauf UK sponsors in a particularly original fashion: in 2013, a regional cancer relief charity received support through the "Octobearfest" where male employees grew a beard and in the process undertook to donate money. In 2014, every employee wore red clothes to support the homeless organisation CRASH. Knauf Spain took part in a Red Cross food donation programme for needy families dur-

ing Christmas 2013. More than 400 kilograms of non-perishable food items were collected and distributed.

Knauf's headquarters also spring into action when major natural disasters occur abroad, for example, to help relieve the aftermath of the Haiyan typhoon in the Philippines in 2014. In this case donations were collected from employees, the management doubled the contribution and the total was divided between the Children in Need organisation and Médecins Sans Frontières.

#### Projects for sustainability in construction

Knauf AG in Switzerland focused its commitment on the subject of sustainability in the construction sector. Here, sustainability is regarded as a challenge for architecture and construction technology for which primarily university research is sponsored. For example, Knauf AG supports a series of titles published by the Competence Centre Typology and Planning at the University of Lucerne as well as the "Meet2Create" research unit in the NEST trial building of the Swiss Material Testing and Research Facility (EMPA) and the University of Lucerne. In this research project, the focus is on the interplay between man, space and technology – in the form of future-proof solutions for the world of work. The "Living Shell" project is a further collaboration with the University of Lucerne, and it looks at the densification of living space in urban areas caused by loft conversions and extending façades. And finally, Knauf AG also sponsors the annual ETH Housing Construction Forum in Zurich.

Our subsidiary in Spain was the main sponsor of the "Re-Think Hotel" competition in 2014. The objective was to give new impetus to the subject of sustainability in the Spanish hotel construction business – and particularly in the area of refurbishments. 80 percent of the hotels in Spain are more than 20 years old and are at important



In Spain, Knauf supported a competition for hotels in need of renovation.



Knauf Spain collected food donations for the Red Cross.



Handing off the baton at the Knauf miner's band, with Nikolaus Knauf (left) and Baldwin Knauf (right).

Regular special exhibitions enrich the cultural life of the region. Either they pick up on aspects of the permanent exhibition or are devoted to separate subjects such as the cultural history of Tibet, Japan or Egypt. Local artists are also given a platform here.

For example, from March to June 2013 there was a special exhibition entitled "A stroll through old Japan", which focused on, among other things, the doctor and natural scientist Philipp Franz von Siebold (1796-1866). He came to Japan in 1823 as one of the few foreigners in the country at the time, and today he still stands for the reciprocal cultural exchange between East and West. Between July and November 2014, an exhibit on witch-hunts in the 15th century was on display. You can find more information on our website at <http://www.knauf-museum.de>.

#### Nurturing regional musical traditions

Knauf has also been lending support in the field of music for many years. The Knauf miners' band and the Knauf miners' choir, for example, traditionally enrich the musical life of the region around the company's original location in Franconia's Iphofen. Both formations consist of both current and former Knauf employees but also of music fans from the surrounding area. As well as solemn, classical and folkloristic pieces, their repertoire also includes modern productions from Swing to modern day hits. In January 2014, the leader of the miners' band changed after more than 20 years. The aim of the new leader is to increase the number of performances in order to raise the profile of the band still further. The chairmen of the shareholders' committee, Baldwin and Nikolaus Knauf, did not let the opportunity escape to stage the symbolic handover of the conductor's baton in Knauf's head office, thereby expressing the appreciation of the company's management.

Read more about the Knauf Museum (in German only): <http://www.knauf-museum.de>

crossroads for their refurbishment, particularly with regard to energy efficiency. One hotel each in Barcelona, on Ibiza and Tenerife won awards.

As a member of the Water Association for West German Canals (WWK), Knauf Aquapanel in Germany sponsors the maintenance of Germany's canal network, an environmentally friendly means of transport that Knauf also makes use of. At Dortmund's canal port, Knauf helps to explain the economic connections between different means of transport, particularly to young people.

#### Sponsorship of art and culture

One particular focus of Knauf's social commitment is on the sponsorship of culture. The Knauf Museum in Iphofen forms the centrepiece. Since 1983, the baroque building with a modern extension has housed one of the world's largest permanent exhibitions for collections of reliefs from all major cultural epochs of mankind. Around 200 original casts of major works of art from large museums around the world are on display.



With biathlete Kati Wilhelm (3rd from right), Knauf supports popular sports.

### Donating books in England

In England, Knauf UK GmbH is one of the first corporate partners of the Dolly Parton Imagination Library, an initiative of the well-known country singer to promote the reading ability of under fives with the aid of book donations. Children who register receive a book every month through the programme, and the parents are encouraged to read it together with their children. Knauf also encourages children of its own employees to take part in the programme.



By our commitment we promote inclusion in a playful way.

### Sport matches Knauf's values

Sport, too, offers a welcome platform to represent the company. While Knauf is very well known among its industrial customers, sports sponsorship is particularly well suited to bringing the Knauf brand closer to the private consumer. Knauf Bauprodukte GmbH & Co. KG, which operates in this market, has therefore been sponsoring sport for many years – both on a regional and national level. The main roles in this context fall to basketball, biathlon and swimming. There are long-standing partnerships with s.Oliver Baskets in Würzburg as well as with sports stars Kati Wilhelm and Thomas Lurz. The focus of Knauf's sports sponsorship is not on professional sport, however, but on sport at a grass roots level, youth work and sport for the disabled.

With our professional partners, and Knauf's testimonials, we have found down-to-earth, likeable, successful athletes who stay true to Knauf even after their sporting career has ended – as is the case with Kati Wilhelm. This successful biathlete has succeeded in making a seamless transition from her sporting success to her career as a sport's reporter for ARD German TV, and she is still involved with Knauf. In swimming world champion, Thomas Lurz, we have also found an athlete who is a model of discipline, willpower and ambition. In his presentations, he always impresses in the way he can identify the parallels between competitive sport and working life. Thomas Lurz has therefore been active as Knauf's health ambassador since 2014 and has become a fixture in the company's health management system.

### Sponsoring young talent and sport for the disabled

One important sphere of activity for our commitment to sport is sponsoring young talent in the various different sports. For example, we support the youth work of s.Oliver Baskets, young biathletes in the Kati Wilhelm Talent Camp which we stage exclusively once a year in Oberhof, as well as swimming talents who we sponsor together

with Thomas Lurz and his brother Stefan (national coach of the German Swimming Federation). As, for example, with the 5th Würzburg Mass Swim in the Main river in August 2014 – here for the first time there was a separate competition, the “Knauf Try Out” for young people from twelve to 14.

Sport is a good fit with Knauf as here too, values such as commitment, partnership and humanity are embraced. That is why we also support campaigns such as “No Limits” which are organised every two years by the Thomas Lurz and Dieter Schneider Sports Foundation for the Promotion of Disabled Sport in the sports centre of the University of Würzburg. Here the watchword is inclusion – people with and without disabilities play sport together. This helps to break down barriers in a playful way.

#### **Knauf Integral donates to Satteldorfer Spielvereinigung**

Knauf Integral KG and Satteldorfer Spielvereinigung also maintain a reciprocal relationship. As the oldest company in Satteldorf, a borough in

the district of Schwäbisch-Hall, Knauf Integral is the place of work for many members of the sports club. In 2014, Knauf supported the purchase of new training outfits with a donation of 3,000 euros. Local sports clubs often have to bear high costs which cannot be financed from membership fees alone. It is already traditional for Knauf Integral to support the sports club. They associate their support with the hope of raising interest among young people to start an apprenticeship with Knauf.

#### **International sports sponsorship**

The various national companies in the Knauf Group are also committed to sports sponsorship. For example, Knauf Ges.m.b.H. in Austria supports local sport in the area surrounding their facility in Ennstal. Here we are the main sponsor of SC Knauf Liezen, an amateur football club in the Styrian league where also Knauf employees play. Knauf also sponsors the annual “Stoderzinken Challenge”, a popular ski-tour race which is open to all skiing fans in the region.

In England, Knauf UK supports the Paralympics medal-winner, Ross Wilson, a disabled table-tennis player who is local to our facility in Sittingbourne. Knauf in Spain supported local youth football teams in a national competition.

#### **Diverse commitments**

The type of commitment entered into reflects the diversity of the Knauf Group and the freedom of discretion that individual companies enjoy. While some companies prefer to look for market-aware sports sponsorships (Knauf Bauprodukte, Knauf Integral, Knauf Aquapanel, Knauf G.es.m.b.H.), other companies seek more altruistic, social commitments (Knauf Gips, Knauf AMF, Knauf UK, Knauf Spain). In Switzerland, Knauf has chosen a third way by sponsoring science.



In Spain, Knauf is involved in bringing environmental education to children.

# GRI Content Index



The Knauf Sustainability Report 2013/2014 "Innovation, Efficiency and Responsibility" was prepared in accordance with the Global Reporting Initiative (GRI) guidelines and fulfils the "in accordance" Core option. The G4 guidelines in force since May 2013 were applied. An external audit of the contents of the report was not performed.

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G4-EC7	Infrastructure investments and services provided	27, 35, 47, 49	
<b>Environmental</b>			
<b>Aspect:</b>	<b>Materials – Management approach</b>	17 et seq., 27	
G4-EN2	Percentage of materials used that are recycled input materials	18, 27	
<b>Aspect:</b>	<b>Energy – Management approach</b>	17, 30 et seq.	
G4-EN6	Reduction of energy consumption	27, 31	
G4-EN7	Reductions in energy requirements of products and services	23	
<b>Aspect:</b>	<b>Water – Management approach</b>	12 et seq., 18, 32	
G4-EN8	Total water withdrawal by source		No consumption data due to competitive reasons
<b>Aspect:</b>	<b>Biodiversity – Management approach</b>	3, 34-35	
G4-EN12	Impacts on protected areas or areas of high biodiversity value	29 et seq., 34 et seq.	
<b>Aspect:</b>	<b>Emissions – Management approach</b>	17, 30	
G4-EN19	Reduction of greenhouse gas (GHG) emissions	31 et seq.	
<b>Aspect:</b>	<b>Effluents and Waste – Management approach</b>	28, 32	
G4-EN24	Total number and volume of significant spills	None	
G4-EN25	Handling of hazardous waste	28	
<b>Aspect:</b>	<b>Products and Services – Management approach</b>	17 et seq.	
G4-EN27	Mitigation of environmental impacts of products and services	17-23, 28 et seq., 34 et seq., 48 et seq.	
<b>Aspect:</b>	<b>Transport – Management approach</b>	27 et seq.	
G4-EN30	Significant environmental impacts of transporting products	27 et seq.	
<b>Aspect:</b>	<b>Overall – Management approach</b>	27	
G4-EN31	Environmental protection expenditures and investments	29 et seq.	Expenditures classified as confidential information
<b>Aspect:</b>	<b>Supplier Environmental Assessment – Management approach</b>	27, 33	
G4-EN32	Percentage of new suppliers that were screened using environmental criteria	14, 33	None so far; guideline for suppliers to be developed by 2016
<b>Aspect:</b>	<b>Environmental Grievance Mechanisms – Management approach</b>	12, 34	
G4-EN34	Grievances about environmental impacts	34	Number classified as confidential information
<b>Labor Practices and Decent Work</b>			
<b>Aspect:</b>	<b>Employment – Management approach</b>	37, 40	

<b>Disclosure of G4 Indicators</b>		<b>Page</b>	<b>Omissions</b>
G4-LA1	New employee hires and employee turnover	37	Hired employees and employee turnover by gender, age group, and region classified as confidential information
G4-LA3	Return to work and retention rates after parental leave	44	Numer of entitled employees as well as re-entrants by gender to be reported in 2017
<b>Aspect:</b>	<b>Labor/Management Relations – Management approach</b>	45	
G4-LA4	Minimum notice period(s) regarding operational changes	45	
<b>Aspect:</b>	<b>Occupational Health and Safety – Management approach</b>	38	
G4-LA8	Health and safety topics covered in formal agreements with trade unions	38 et seq.	
<b>Aspect:</b>	<b>Training and Education – Management approach</b>	42 et seq.	
G4-LA9	Average hours of training	42	By gender classified as confidential information
G4-LA10	Programs that support the continued employability of employees	39	
G4-LA11	Percentage of employees receiving regular performance and career development reviews	40	
<b>Aspect:</b>	<b>Diversity and Equal Opportunity – Management approach</b>	44 et seq.	
G4-LA12	Composition of governance bodies and breakdown of employees by aspects of diversity	37, 44	
<b>Aspect:</b>	<b>Labor Practices Grievance Mechanisms – Management approach</b>	14	
G4-LA16	Grievances about labor practices	14	Number of grievances to be reported in 2017
<b>Human Rights</b>			
<b>Aspect:</b>	<b>Non-discrimination – Management approach</b>	44	
G4-HR3	Incidents of discrimination and corrective actions taken	None	
<b>Aspect:</b>	<b>Freedom of Association and Collective Bargaining – Management approach</b>	45	
G4-HR4	Operations and suppliers identified in which the right to exercise freedom of association may be violated or at risk, and measures taken	None	
<b>Society</b>			
<b>Aspect:</b>	<b>Local Communities – Management approach</b>	3 et seq., 33 et seq.	
G4-SO2	Operations with actual and potential negative impacts on local communities	33 et seq.	
<b>Aspect:</b>	<b>Anti-competitive Behavior – Management approach</b>	14	
G4-SO7	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	None	
<b>Aspect:</b>	<b>Compliance – Management approach</b>	14	
G4-SO8	Fines and sanctions for non-compliance with laws and regulations	None	
<b>Aspect:</b>	<b>Grievance Mechanisms for Impacts on Society – Management approach</b>	3 et seq., 33 et seq.	
G4-SO11	Number of grievances about impacts on society	None	
<b>Product Responsibility</b>			
<b>Aspect:</b>	<b>Customer Health and Safety – Management approach</b>	18, 22, 24 et seq.	
G4-PR1	Percentage of significant product and service categories for which health and safety impacts are assessed	19, 24 et seq.	
G4-PR2	Incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services	None	
<b>Aspect:</b>	<b>Product and Service Labeling – Management approach</b>	18 et seq.	
G4-PR3	Principles/ procedures for product and service information and labelling	19	
G4-PR4	Incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling	None	
G4-PR5	Results of surveys measuring customer satisfaction	22	
<b>Aspect:</b>	<b>Marketing Communications – Management approach</b>	21 et seq.	
G4-PR6	Sale of banned or disputed products	None	
G4-PR7	Incidents of non-compliance with regulations and voluntary codes concerning marketing communications	None	
<b>Aspect:</b>	<b>Compliance – Management approach</b>	14	
G4-PR9	Significant fines concerning the provision and use of products and services	None	

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