



**Sustainability  
Report 2010**  
INSULATION MATTERS



<b>1</b>	Introduction
<b>2</b>	Chief Executive's message and selected performance indicators
<b>4</b>	Business overview
<b>6</b>	Transforming buildings
<b>14</b>	Products at the core of sustainability
<b>22</b>	Our company
<b>32</b>	Commitments and next steps

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**[www.knaufinsulation.com](http://www.knaufinsulation.com)**

## **About this Report —**

This, our first Sustainability Report, relates to Knauf Insulation, part of the Knauf Group of companies. We will report annually to stakeholders to describe our activities, progress and targets in managing key business, social and environmental issues.

The Report sets out our activities during 2009 and includes some information from 2010 on sustainability issues that are material to our operations. Any data reported cover the calendar year 2009, with 2008 data where relevant in order to show trends.

The content and quality of the information in our Report is guided by the Global Reporting Initiative's G3 sustainability reporting guidelines ([www.globalreporting.org](http://www.globalreporting.org)). An accompanying GRI index can be downloaded from our website. Nonetheless as a first report, we have endeavoured

to focus on the issues of most material relevance to our impact on sustainability. The contents of this Report are complemented by other online information at [www.knaufinsulation.com](http://www.knaufinsulation.com) and other local websites in local languages.

The data provided are as comprehensive as possible considering recent acquisitions and we intend to provide data on our entire operations in future reports. In 2009 the boundary of the reporting entity, Knauf Insulation, covered 29 manufacturing sites across Europe, CIS, North America and Asia.

The English version of this sustainability report will be downloadable from the corporate website in early 2011 as well as abridged versions in further languages.

***At Knauf Insulation we have experienced significant growth over the last decade becoming the world's third largest insulation company. With such growth, our impact on the environment has also grown and with it so has our obligation to manage these impacts responsibly.***

## **Welcome to our first Sustainability Report.**

An overview of the achievements and challenges we face as well as a snapshot of our company's performance in the last year.

We believe that our impacts and our ability to have a positive impact on sustainability fall into three distinct areas and the report's structure reflects this fact. Therefore, you will find one section on buildings, one on products and one on our company. In each area we have challenges:

### **1. Buildings**

Our products play a vital role in ensuring sustainable buildings but our role goes far beyond this. We have a responsibility to advocate with passion the need for a transition towards a near zero energy built environment and a major challenge to support both policy makers and the building chain to manage this transition. We must also engage actively in the debate around the wider issues of sustainable buildings and ensure that a transition to a near zero energy built environment is coupled with improvements in the overall sustainability of the built environment.

### **2. Products**

Buildings are more than a simple sum of their component parts, but clearly better performing and more sustainable products will be important to delivering a more sustainable built environment. On one hand, we need to understand the changing demands that low energy buildings will create, and provide products that support our customers in their efforts to deliver such buildings. On the other, we need to actively support an understanding amongst our stakeholders of the role insulation plays in delivering sustainable buildings. In particular, we need to ensure that real environmental performance is at the heart of this process and that the building industry has access to transparent and credible environmental data on construction products. Beyond this, we of course have a responsibility to deliver products that offer great thermal performance as well as great environmental performance; we are proud that with the launch of our new mineral wool with ECOSE® Technology we have begun to deliver this.

### **3. Operating in a more sustainable manner**

Understanding the sustainability challenges facing our industry means that we are also fully aware of the issues where our company's activities impact our environment both locally and globally. The production of insulation entails building and operating large factories, using energy, producing emissions, transporting materials and products and interacting with neighbours. But it also means creating jobs, creating value and building positive relations with the communities where we operate. And unlike many industries we can be proud that our products have a positive balance on sustainability – as one example a typical insulation product will save 400 times more energy than is used in its production. Still, we have a responsibility to constantly reduce our impacts, improve our relations and increase even further this positive balance.

## From growing responsibly to responsible growth

*Tony Robson — Group Chief Executive*

Those who work for or have followed the progress of Knauf Insulation over the last few years will be aware that things have been a little hectic, to say the least. In 2002, we were a family owned German company with four manufacturing plants in North America and, perhaps unusually for a German owned company, almost none in Europe. In 2010, the situation has changed radically; we now have 30 plants around the globe. However, as before, we remain a family owned German company and part of the wider Knauf Group of companies.

Such rapid growth does not come without challenges. This growth has included the acquisition of existing companies, whose approaches and systems have had to be merged with those of Knauf Insulation. It has led to the creation of a number of new manufacturing sites, where communities have had to get used to having Knauf Insulation as a neighbour. It has also meant that all of us at Knauf Insulation, me included, have had to get used to the changes that are part of such a transition.

*“Given our current position I believe that we now have a wider responsibility not only towards ourselves but also towards the world in which we are operating. It is therefore time for us to continue to grow responsibly but to put an even greater focus on responsible growth.”*



*“This Report sets out the challenges that we see the building industry facing over the coming decade, how we are evolving our product offering and range to deal with these challenges and finally how we as a company are improving our performance.”*

As part of managing this transition, one of the key areas of focus has been to ensure that we have grown responsibly. For obvious reasons this has meant a significant focus internally, making sure that we got to grips with who we are and what we have become.

At the same time we were able to take comfort that as a company that focuses on manufacturing insulation, the better we did as a company the better it was for the environment. To put this into context, the additional insulation that we sold in 2009 compared to 2002, will create carbon dioxide savings in 2010 alone of over 7 million tonnes. By 2050 it will have saved over 1 billion barrels of oil equivalent; enough to drive around the world 17 million times.

However, in 2010, whilst we were helping to save this energy we also became the world's third largest insulation group. We are no longer one of the smaller players but have become a major player both in North America and Europe and have the ambition to become the world leader. With such ambitions and given our current position I believe that we now have a wider responsibility not only towards ourselves but also towards the world in which we are operating. It is therefore time for us to continue to grow responsibly but to put a greater focus on responsible growth.

An important first step in this process is the launch of this, our first corporate Sustainability Report. Whilst the Report highlights many excellent initiatives across the company and some of the accolades we have received for our efforts in the area of sustainability, it also points out where we need to improve and where we need to focus in the future. It sets out the challenges that we see the building industry facing over the coming decade, how we are evolving our product offering and range to deal with these challenges and finally how we as a company are improving our performance. Yet it's also important to be honest, this Report is, as it should be, a starting point for us at Knauf Insulation. A starting point that nonetheless signals our commitment to ensure that as we continue to grow, we do so with a clear focus on responsible growth.

### Selected performance indicators at a glance

For those who want more, here are some facts and figures for 2008–09. Future reports will refer to these figures to show trends. We aim for clarity in communicating performance changes and commitments.

Performance aspect	2008	2009	Trend
<b>People and Community (page 24)</b>			
Fatalities*	0	1 <sup>(1)</sup>	–
Number of lost time accidents (LTA)*	94	128	–
LTA Frequency rate*	16	20	–
LTA Severity rate*	43	29	+
Training (hrs/employee)	n/a	19.5	–
Gender diversity – % female employees	n/a	16.3%	–
<b>Environmental (page 28)</b>			
Energy use (MWh/tonne output)	3.02	2.99	+
CO <sub>2</sub> emissions (Tonnes CO <sub>2</sub> /tonne output)	0.58	0.52	+
Water use (m <sup>3</sup> /tonne output)	2.69	2.20	+
Water discharge (m <sup>3</sup> /tonne output)	0.45	0.59	–
Non-hazardous waste arisings (kg/tonne)	84.5	92.4	–
Hazardous waste arisings (kg/tonne)	2.16	2.42	–

(1) Please see page 26, where we explain more about the death of the contractor.

\* Accident statistics cover production plants only

+ Positive trend in performance

– Negative trend in performance

# 17m

By 2050 the additional insulation sold in 2009 compared to 2002 will have saved over 1 billion barrels of oil equivalent; enough to drive around the world 17 million times.



**Knauf Insulation is one of the fastest growing manufacturers of insulation materials. Our mission is to become the world leader in energy efficient systems for buildings.**

## Business profile

Knauf Insulation is one of the largest insulation manufacturers in the world, offering a wide range of insulation materials to meet the growing demand for energy efficiency and acoustic performance in new and existing homes, commercial buildings and industrial applications. Our employees are active in more than 35 countries across 30 manufacturing sites (including an engineering centre) for the production of Glass Mineral Wool (GMW), Rock Mineral Wool (RMW), Wood Wool (WW), Extruded Polystyrene (XPS), Expanded Polystyrene (EPS) and Extruded Polyethylene (XPE). Knauf Insulation products offer an unrivalled range for building insulation, industry and HVAC applications as well as OEM (Original Equipment Manufacturing) Solutions. Knauf Insulation is a part of the family owned Knauf Group, one of the world's leading manufacturers of building materials, which currently has a workforce of 24,000 in 50 countries.

## Governance

The Group CEO and Directors of the businesses have overall responsibility for Quality, Environment, Safety, and Health issues within the Company. The Group CEO and Directors ensure that they are informed of pertinent safety, health, environment and quality issues and seek to ensure that policies, procedures and resources are available and in place to meet the Company's objectives.

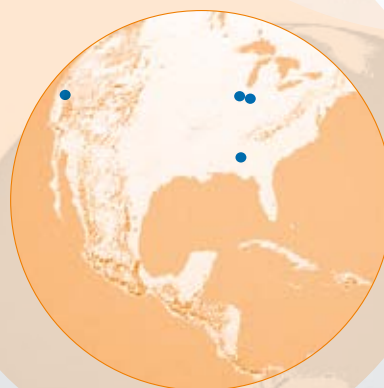
The Group Technical Director and the Regulatory Affairs Director report directly to the Board on policy development and policy non-conformities where they have responsibility. Technical Directors and Plant Managers are responsible for communicating Group Procedures, ensuring resources exist to deliver policies, systems, training, audits and quality as well as sharing best practice.

### Where we manufacture

#### Europe



#### North America



## Creating customer value

It is our policy to monitor customer satisfaction on service levels and product quality. In the US our studies show outstanding satisfaction levels, with analysis showing that customers expect strong environmental credentials of Knauf Insulation; some believe they are as important as product range and quality.

## Our pathway to growth

A mixture of expanding our own production facilities and a few significant acquisitions has marked our development, particularly over the last decade. Knauf Fiber Glass USA was formed in 1978 when the Knauf family purchased an existing plant in Shelbyville, Indiana. Between 1978 and 2000 our production capacity grew considerably in the US, with the opening of an additional plant in Lanett, Alabama as well as two additional facilities in the US. European activities started for us in 2002 with the acquisition of Owens Corning's European activities in a joint venture that quickly became fully owned by Knauf Insulation in 2003. Since 2002 we have grown from 4 plants in the US and 5 in Europe to now having 30 plants worldwide. New plants and further acquisitions in Europe and CIS, including Rock Mineral Wool and Wood Wool manufacturer Heraklith in 2006 marked this growth. Uniting the diverse companies we acquired over the past decade is and will be one mark of our success as a company. We believe that the future remains very bright for our industry and we expect to continue to grow in a similar manner. Given this, it will remain important to build a common culture whilst maintaining our entrepreneurial spirit.

### Key issues for Knauf Insulation

The issues that we cover in our Report are:

- Climate change and energy security
- Influencing sustainable buildings
- Policy advocacy
- Raw material use and innovation
- Recyclability/end of product life
- Product safety and indoor air quality
- Responsible manufacturing
- Community engagement

This list is based on the issues that we believe are most material for us as a company and where, through our activities, we can have the largest positive impacts on our company's overall contribution to sustainable development. We recognise that our stakeholders may have additional issues and perspectives and we intend that this, our first Report, will form the basis for a dialogue with stakeholders.

## Awards

During 2009, the environmental excellence of our mineral wool with ECOSE® Technology was recognized by a number of awards:

- **Global Insulation Product of the Year 2009**
- **DuBo Award 2009** – 1st prize for revolutionary sustainable construction innovations (Netherlands)
- **Construction Company of the Year 2009** – Category Construction Products and Technologies (Poland)
- **Innovation of the Year 2009 Award** – Association of Innovative Entrepreneurship of Czech Republic
- **Construction Product and Technology of the Year 2009** – Bronze Medal (Czech Republic)

And 2010 is already proving to be a good year for us, as we've already received nominations for the Belgian ECO-AWARD and have so far received the following:

- **Top Builder 2010** (Poland)
- **The Alabama Wildlife Federation (AWF) Governor's Conservation Achievement Awards: Air Conservationist of the Year** – In recognition of the 94% air emissions reduction at our Lanett plant following the switch to ECOSE® Technology (North America)
- **IBF prize 2010 Gold Medal** (Czech Republic)

See page 20 for further certification following introduction of ECOSE® Technology.

## Stakeholder engagement

We are clear that engagement with stakeholders will contribute to our approach to sustainability at Knauf Insulation. And whilst we regularly engage with our stakeholders, we plan to use this Report as the basis for a more structured engagement specifically on sustainability in our next reporting period.

Our stakeholders include, amongst others, employees, suppliers, retailers, architects, installation providers, unions, direct neighbours, community groups, national and international trade bodies, governments, regulators, energy technologists, academics and civil society organisations.

We engage with them in various ways across Knauf Insulation: from participating in international events to, for example, advocating side by side with environmental groups for better regulations for low energy buildings. We partner with architects, carry out training and seminars for installers and of course meet, through our sales and marketing force, with our customers on a continual basis. At the employee level we engage through a range of activities both formal and less formal, such as through work councils where they exist but also through programmes such as One Knauf Insulation.

*Rest of World*

# Transforming buildings

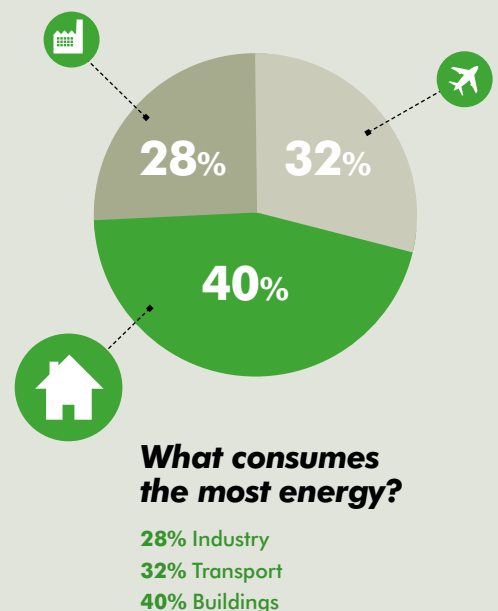
**More energy is used in buildings than in transport or industry. Does that matter? Well we think it does. It matters because our energy use is driving climate change and undermining our energy security.**

It matters because buildings are still being constructed inefficiently even though we have the solutions to deliver near zero energy buildings. It matters because it is time to save energy.

It may be time to save energy but time is running out. According to the UN body that researches and reports on climate change, unless we make changes to our carbon emissions in this decade, the world will face 'abrupt and irreversible consequences'. There is an overwhelming consensus among the world's climate change scientists that climate change is real, that it is dangerous and that humans have a noticeable influence on it. At the same time, our thirst for carbon based fuels makes us dependent on others for our prosperity.

This all sounds pretty scary. But the positive news is that we already have the technology to address our carbon emissions and reduce energy use. Buildings are responsible for 40% of energy use globally, yet simple insulation measures could cut the related GHG emissions by a third. Combined with other energy efficiency measures, it is possible to go much further. Some governments are already calling for an 80% reduction in energy use from the built environment, equating to a 32% reduction in total energy, the equivalent of all energy currently used for transportation.

Of course it is not as straightforward as that. Governments, companies and individuals have a huge task ahead to ensure that we seize the potential from buildings. At Knauf Insulation, we are working hard to engage governments and other key actors so they understand the significant role insulation can play in tackling climate change and improving energy security. And of course, we are working hard to reduce our own energy use. But going forward everyone will need to do significantly more.



Note: based on EU and US figures



*Buildings play a critical role in reducing energy use because of the enormous energy saving potential and associated CO<sub>2</sub> reduction, and while we do so we can save money, improve energy security and create jobs. 40% of our energy use is consumed in buildings. This is more than the energy used in transport or industry.*



*From Venice to Shanghai and from New York to London, our coastal cities face varying degrees of flood risk in the future. Buildings play a crucial role in mitigating this risk.*

**€270bn**

The cost to the EU of poor energy efficiency.

**3.3m**

The barrels of oil equivalent that could be saved every day through efficient energy use in buildings.

**460m**

The tonnes of carbon dioxide emissions that could be reduced each year from buildings.

**530,000**

The number of jobs that could be created through an ambitious strategy to improve energy efficiency in buildings.

Note: the above figures are for Europe only

## Climate change and energy security: a double challenge

Our position is that climate change and energy security are key threats to society and business. All the indications are clear. The planet is warming, the impacts have already started and we have less than ten years to start making significant changes to the carbon emissions we emit into the atmosphere. If not, we run the risk of being the generation that knew what was needed but did not step up and make a difference.

Our way of life is threatened by an overzealous thirst for fossil fuel energy sources. We risk our independence if we increasingly rely on foreign oil imports. We risk decimating ecological systems, communities and local economies through increasingly ambitious extraction practices. We risk losing a secure future if energy supply is threatened and world energy prices rise.

This gloomy picture can be turned rosy. Action is demanded from business, individuals and governments. Actions in the built environment will be critical, especially in cities, where energy consumption by buildings accounts for about 70% of global CO<sub>2</sub> emissions and where urbanisation is increasing. At Knauf Insulation we are taking this challenge seriously by cutting energy use in our plants and expanding the use of the new ECOSE® Technology binder which reduces the embodied energy of our products. Knauf Insulation's products themselves make a massive contribution to managing the challenges described; the better that we perform as individuals and as a company, the more we are doing to ensure a better and more secure future for everyone!

*“As an insulation business, we are extraordinarily well placed to make a significant difference on this global issue. It is an opportunity we cannot and should not ignore.”*

**Tony Robson**  
CEO, Knauf Insulation

## 6 weeks

The approximate amount of time that it takes our products to pay back the energy used to make them in a typical roof application.

As well as potential sea level changes other examples of real impacts of climate change and energy insecurity include...



### Higher temperatures over land

The most obvious sign of global warming creates conflict and commercial risk.



### Shrinking glaciers and snow cover

Follow-on impacts can become extreme, such as flooding.



### More extreme weather events

Incidence of extreme weather has increased, so local impacts become very apparent.



### Peak oil

We may have already peaked in fossil fuel extraction and production: it is environmentally and economically sensible to be efficient in energy use.



### Access to oil resources

Oil-producing nations have varying levels of political stability, protection of human rights and military defence of oil resources.

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## Buildings and energy: impossible to ignore!

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Whilst supporting non-fossil based energy is important, the huge saving potential from buildings needs to be recognised and acted upon. Based on 2008 figures, the saving potential from European buildings was equivalent to 15 times the installed wind power capacity in Europe – the best energy remains saved energy.

Since buildings consume so much, the savings opportunities are huge. €270 billion could be saved in Europe through energy efficiency. This translates into the equivalent of 3.3 million barrels of oil a day for the European Union alone or the equivalent energy that would be saved by taking 230 million cars off the roads in Europe.

The cost of doing so is low and the benefits are extensive. Simple solutions such as insulation exist today and are simply waiting on the shelf to be deployed. Insulation can cut energy use and thus carbon dioxide emissions from existing buildings by a third.

If buildings consumed so much energy but were incapable of improving energy efficiency and security then one could excuse the lack of attention. But in the industrialised world we need energy reductions in the built environment of around 85% by 2050 in order to help mitigate undesirable impacts of climate change.

It's time to take serious action. Fortunately, the 'elephant' in this room has been spotted. Legislation and financial mechanisms are starting to respond. At Knauf Insulation we believe that over the next ten years this will accelerate rapidly across the globe.

We know that we are well-placed to make a significant difference on this global issue, and we believe that we have an obligation to continue to make the case as strongly as possible. Through our own actions and partnerships we advocate the need to dramatically reduce energy from buildings and we are committed to taking leadership roles in making this a reality.

*“The road to significant fossil fuel and greenhouse gas emissions reductions runs through the building sector. Globally it is the largest energy-consuming sector; and changing the way we plan and design the built environment offers the greatest hope for addressing the climate change crisis.”*

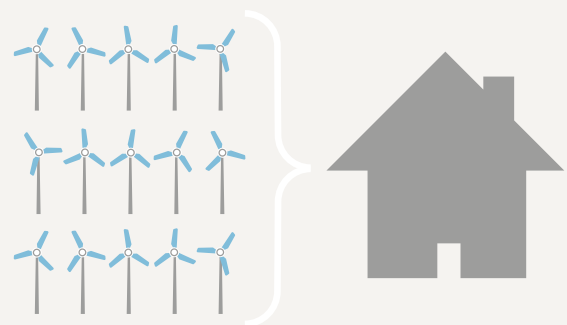
**Ed Mazria**

Architect and founder of 'Architecture 2030'

*“The US built environment is a long way from where it needs to be in terms of energy efficiency. Government action is needed now to get things moving rapidly in the right direction. It's high time that industry made the case for action. For this reason the Council of the North American Insulation Manufacturers (CNAIMA) was founded in 2009, bringing together for the first time a coalition of insulation producers to advocate for strong measures to improve the energy efficiency of buildings.”*

**Jeff Brisley**

Senior Vice President Sales and Business Development,  
Knauf Insulation USA; Chairman of the Council of NAIMA.



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### The best energy is saved energy

Whilst supporting non-fossil based energy is important, the huge saving potential from buildings needs to be recognised and acted upon. Based on 2008 figures, the savings potential from buildings was equivalent to 15 times the installed wind power capacity in Europe – the best energy remains saved energy.





## Shifting gear – to 'near zero' energy

Thanks to European legislation all new builds across the entire EU will need to be 'nearly' zero-energy by 2020. But ensuring that all new build is near zero energy will only stop the problem getting worse. To remove carbon from the built environment almost ALL existing buildings will need to undergo deep energy efficiency renovation by 2050, that's 3% of all buildings per year!



## Influencing best practice through the Knauf Academy in Germany

Wide-ranging seminars with specialists from across the Knauf Group allow us to engage in innovative ways to influence world-class design, specification, planning and execution of buildings and interiors. The Academy is accompanied by a contractor and architect training programme, the 'Ausbausymposium' ([www.ausbausymposium.de](http://www.ausbausymposium.de)) of which we will have had 13 in 2010 in Germany.

## Contributing to a better built environment

### The Hestia Project:

Understanding emissions building by building: In the US, we provided an unrestricted research grant to develop the Hestia Project whose objective is to develop an online system that will provide CO<sub>2</sub> source mapping to aid consumers, city planners, and community developers to understanding the climate impacts of their buildings.

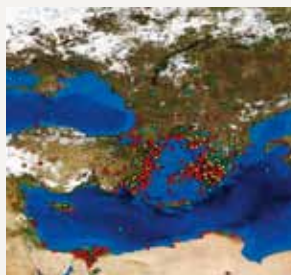
### The Carbon War Room:

Knauf Insulation has been actively supporting the Carbon War Room's Green Capital Global Challenge, an initiative by Sir Richard Branson to help deliver billions of euros of finance to cities across the world to allow them to dramatically improve the energy efficiency of their building stock.

**COP 15:** Whilst world leaders met in Copenhagen to discuss a way forward to tackle climate change, Knauf Insulation's global CEO, Tony Robson, was present advocating the need for strong measures to seize the carbon dioxide reduction potential from the building stock.

### Knauf Insulation North America:

CEO Mark Andrews met with President Barack Obama in March 2010 to discuss, and show support for, pending HOMESTAR legislation which will create jobs and deliver energy efficiency across the United States.



## Buildings and energy: winds of change

Governments around the world are now setting their sights on an 80% reduction in carbon emissions by 2050: an extremely challenging target. In the built environment (where an even higher reduction in energy use is likely to be needed), a revolution in the way we build and renovate buildings is required.

### The emerging regulatory environment

Today across the world, governments are beginning to gear up for this coming change. In Europe the process has already started, with EU governments jointly agreeing ambitious targets for improving buildings. Thanks to the Energy Performance of Buildings Directive Recast that took place in November 2009 all new builds will need to be 'near zero energy' by the end of 2020 and all buildings that are renovated will need to upgrade their energy efficiency. In the US, action is also under discussion with many calling for a similar approach to be taken to new buildings, as well as the new HOMESTAR legislation being proposed to also tackle existing buildings. Individual cities are also pushing ahead faster. For example, as part of the Green Capital Global Challenge, cities from across the globe are committing to improve the energy efficiency of their built environment.

### Addressing the low carbon challenge

The changes that we expect to see in the way we build and renovate buildings globally is unprecedented from Knauf Insulation's perspective. On one hand, the huge need to renovate buildings to low energy standards and build near zero energy new buildings, will create major opportunities for our sector as a whole.

At the same time, this change will create major challenges, creating unprecedented needs for up-front capital investment in energy efficiency, unheard of demands in the real energy performance of buildings as well as a massive requirement for a workforce that is fully ready to renovate and build low-energy buildings. Not understanding and tackling these challenges will put at risk the whole endeavour of delivering a near zero energy built environment.

### Maintaining the pace – a key issue for Knauf Insulation

Whilst major changes are on the way for the built environment, at Knauf Insulation we have a responsibility to continue to force the pace of change. Whether it is speaking directly with world leaders, supporting key initiatives that help cities to take on this challenge, working within industry wide groups to push for change or simply advocating our position with passion, we take our responsibility very seriously. Like everyone else in the building industry we are just starting to gear up. But we have started.

1

#### Understanding the scale of the challenge of deep renovation

We are working to understand the amount of financial and human capital required and the number of buildings to be renovated. As a board member of the European Alliance of Companies for Energy Efficiency in Buildings (EuroACE), Knauf Insulation has played an active role in supporting the creation of the Renovate Europe Campaign, a campaign dedicated to researching the challenge and then advocating the need for action.

#### Making renovation affordable

We push international initiatives and we seek out innovative financing solutions. An example is the Pay As You Save (PAYS) pilot programme now in the UK governments 'Green Deal'. It offers the opportunity to invest in energy efficiency and micro-generation technologies with no up-front cost. (see [www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk))

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#### Ensuring that buildings work as intended

Research is showing that the assumed energy performance of buildings can sometimes be far from design performance. A mix of factors is causing this but the gap needs to be closed. Knauf Insulation is supporting efforts to close this gap, including chairing one of the key European standards groups that is developing common methods for evaluating the problem.

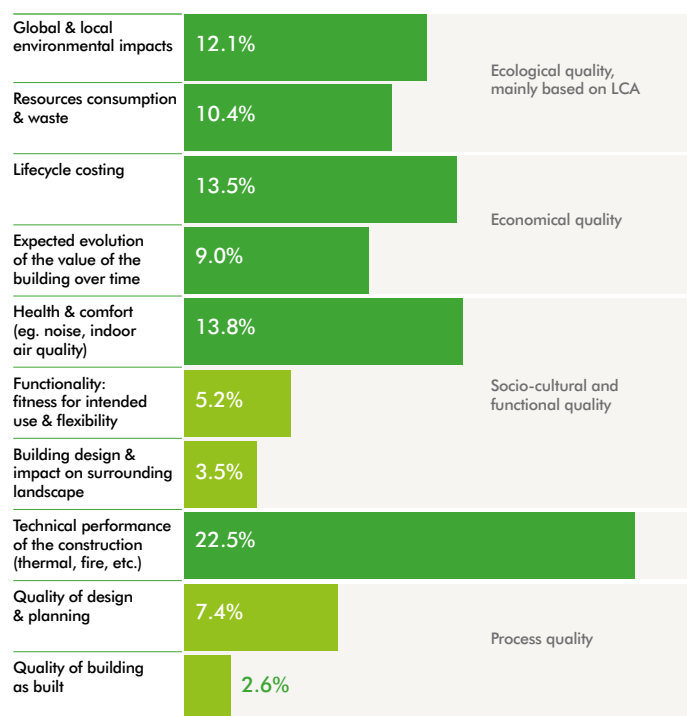
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#### Pushing for change

During 2009, Knauf Insulation created advocacy positions in many of our key markets from Washington to Berlin, from Brussels to Prague and beyond. We team up with our colleagues from other energy efficiency companies, like the European Mineral Wool Manufacturers Association (Eurima), to push for a more sustainable built environment but also go it alone when needed.



**DGNB (German sustainable building scheme) assessment criteria and weighting.**


■ Criteria on which Knauf Insulation product has an impact

## Sustainable buildings: an important emerging trend

Given the global imperative to tackle energy and climate security, it is not surprising that significant attention has been focused on the energy use of buildings. With a growing understanding of the different environmental issues that buildings affect, there is an increasing need to consider wider sustainability concerns in the built environment.

### “Going low” a key element of a building’s sustainability

With the development of a wider view of the sustainability of buildings, it is critical to remember that from a building lifecycle perspective the overwhelming environmental impact of any building comes from its energy consumption during the time it is used; if a building is not very low energy, we at Knauf Insulation believe that it cannot be considered truly sustainable.

Voluntary programmes have been created and regulations have been tabled and adopted to drive more sustainable approaches for buildings. Voluntary initiatives such as LEED in the US, HQE in France, BREEAM in the UK and DGNB in Germany have helped to raise awareness about the environmental impacts of buildings. Green public procurement rules create a real incentive for companies to provide solutions that help to improve sustainability performance in buildings.

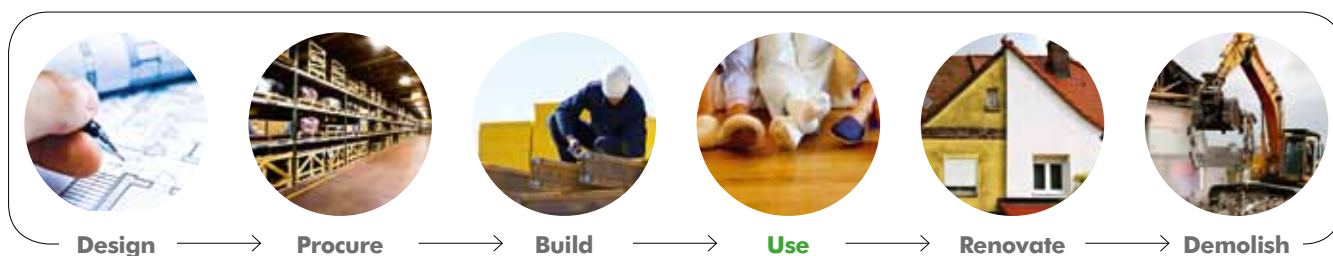
What most of these different approaches and schemes share is an attempt to consider a building from a holistic perspective: to broaden the view of a building to not only include its materials and energy but also how it impacts and relates to the local environment. The LEED scheme for example looks at how a building supports sustainable mobility as one criteria, whereas BREAM takes into account a weighted life cycle analysis of products. To provide an overall example, we have taken below the approach of the German DGNB sustainable building scheme and considered the role that insulation can play:

DGNB criteria	The role of insulation
Ecological quality of the building, mostly based on life cycle analysis (LCA) of the building products used in the construction	As an important construction product, insulation will influence this criteria. With DGNB using LCAs as a basis, insulation products will need to have LCAs to support this scheme as well as to continually improve their environmental performance
Economical quality, particularly viewed not through the up-front cost of the building but through a life cycle costing and expected impact of different choices on the long-term value of the building	Increased energy efficiency, driven by better insulation levels will typically drive down the life cycle costs, as the additional costs of the insulation are outweighed by energy savings. Additionally, a more energy efficient building will be less affected by any future energy price increases, supporting better long-term value
Socio-cultural aspects and functionality, in particular the health and comfort aspects of a building as well as how it impacts its local environment	Insulation has an important role to play in ensuring good indoor comfort, for example by reducing exposure to disturbing noises as well as supporting good indoor air quality
Technical quality, especially regarding the thermal performance of the building but also other key issues such as fire safety	This criteria is key to insulation, as it has an important role in delivering improved thermal performance, but also the different choice of insulation can make a major impact on the fire safety and, for example, acoustic performance of a building
Process quality, a focus on ensuring a good planning process and a high level of quality as built	Whilst insulation itself does not as such impact the process or the end quality, as manufacturers we have a role to support the building process in making sure our products are performing as designed

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### The building lifecycle

By understanding the lifecycle of a building we understand where we can make the biggest improvements in making it sustainable; for buildings this is clearly the 'Use' phase.



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## Four key areas where insulation supports a more sustainable built environment

### Air quality

Buildings play an important role in terms of air quality. On one hand, the energy used to heat and cool buildings, whether produced on site or at large fossil fuel power stations, creates air pollution. For example, in Europe buildings have become the number one source of particle emissions according to data from the European Environment Agency. On the other hand, with most people spending a majority of their time indoors, good indoor air quality is also important. Energy efficiency impacts both these issues. More energy efficient buildings mean less air pollution being produced from and because of buildings. With better outdoor air quality being an important factor for indoor air quality, improved energy efficiency can and should support better indoor air quality. At the same time, the move towards more energy efficient buildings needs to be coupled with an appropriate consideration of how to manage indoor air quality to ensure that these benefits are fully realised.

### Comfort

Related to indoor air quality, comfort relates to how well a building helps people get on with their life or work within it. Comfort is part of the Indoor Environmental Quality (IEQ) category in LEED standards, for example. Considerations include personal temperature, ventilation, healthy air conditioning and use of daylighting.

### Fire safety

Fire safety is a crucial part of constructing and managing a building sustainably. Mineral wool insulation is the best option for fire safety – Knauf Insulation's unfaced mineral wool products achieve A1 Euroclass for fire reaction. For polystyrene and polyethylene foam products, flame retardants help protect against any accidental ignition. See our Product chapter for more on fire safety.

### Noise issues

A sustainable building should control noise emissions to ensure no gradual increase in ambient noise levels occurs over time. Insulation materials are a key part of different noise protection systems and therefore help significantly in reducing negative effects of noise. In particular mineral wool products help to protect against indoor and outdoor noise thanks to their excellent sound absorption properties. Furthermore, acoustically absorptive surfaces such as Knauf Insulation's Heraklith Wood Wool products ensure outstanding acoustic conditions in rooms and buildings.

# Products at the core of sustainability

***Our products are at the core of the drive towards a sustainable built environment. They are vital to ensuring that buildings are sustainable and they pay back far more energy than is required in their manufacture.***

Climate change and energy efficiency are major issues and it's easy to forget the important role that insulation has in delivering a sustainable built environment. Its contribution helps to reduce harmful air pollutants such as carbon monoxide and fine particles, to reduce the costs of heating and cooling a building and to ensure a comfortable indoor climate.

However, despite the benefits that insulation brings, we have a responsibility firstly to ensure that we improve the sustainability of each of our products and secondly to ensure that the market has clear and fair information on their performance; the market is demanding that we demonstrate how our actions produce real benefits. With the launch of our mineral wool with ECOSE® Technology during 2009, we took a major leap forward on this first challenge and as we roll out life cycle analysis across our product range, we are taking an important step towards the second.





*A little energy goes a long way. Within weeks of being installed, our products have already saved the energy used to manufacture them. For example, a typical Glass Mineral Wool product will, over its lifetime, save more than 400 times the energy used to manufacture it, paying back its initial energy costs in approximately six weeks.*



### Standardisation

Knauf Insulation is actively contributing through trade associations to the development of a single LCA methodology for construction materials and buildings in Europe. The project is called CEN/TC 350, a multi-stakeholder standardisation project. As a uniform, scientific approach that applies to all products equally, it will provide the basis for proper and fair comparison.

## Beyond energy saving

Energy efficiency from insulation is positive for the environment but we look beyond this and aim to reduce impacts at every stage of our products' lifecycles – from using renewable or recycled materials and reducing production energy use, to minimising the use of regulated chemicals and improving the handling and safety characteristics of our products. Going forward we intend to use life cycle analysis of our products as an additional tool to identify and target improvements both in design and manufacturing of our products.

### Life Cycle Analysis and credible claims

In a market where 'green claims' can sometimes be rather creative, there is a danger that information on the environmental benefits of products will lose meaning for our customers. Against this backdrop it is important that companies communicate credible, fact-based information on the environmental impacts of insulation products.

We believe the best way to ensure the reliability of green claims made about construction products is to use Life Cycle Analysis (LCA). As a result, we are committed to conducting LCA profiles for our products and communicating these to our customers and other stakeholders. The diagram below shows the complete and scientific nature of impact assessment by LCA (a cradle to grave approach to impact assessment).

We use the results to target environmental improvements in our manufacturing processes and increasingly we seek improvements from suppliers, distributors and retailers. Currently, LCA studies of products have been completed, or are being undertaken, at more than 50% of our manufacturing plants.

*“While sustainable construction is developing across most regions in the world, PE International believes that Life Cycle Analysis offers the best means of analysing the environment impact of construction products. Knauf Insulation are using LCA results to target their own environmental impact reduction as part of their sustainable development journey.”*

**Johannes Kreissig**  
PE International.

*“We are committed to ensuring that LCA studies are undertaken at all our manufacturing plants by the end of 2011.”*

**Vincent Briard**  
Head of Strategy and Sustainable Development

### Life cycle analysis principle







Find out more about  
how sustainable our products are  
[http://www.knaufinsulation.com/en/buildings\\_solutions](http://www.knaufinsulation.com/en/buildings_solutions)  
<http://oem.knaufinsulation.com/>

## The right product for the job, every time

As a manufacturer of a wide range of insulation materials, we believe that it is important to consider the right product for the right job. And with the environmental benefits from all our insulation products dwarfing the production-related impacts, you can be confident that you are improving the sustainability of your project, whichever product you choose.

It is important to choose the best-performing product for the job. Environmental considerations should always be part of the decision, but so should other important considerations such as fire safety, noise protection and simply being appropriate for the application.

Knauf Insulation manufactures a wide range of building insulation types allowing us to have our own view of how their strengths and weaknesses vary.

\* "Turning our Victorian terrace into an ecohome: part two – insulation"  
The Ecologist magazine, April 2010; [www.theecologist.org](http://www.theecologist.org)

## 6 weeks

Approximate pay back time of  
GMW 040 (200mm) in pitched roofs.

## 9 weeks

Approximate pay back time of  
RMW 035 (100mm) in external walls.

## 10 weeks

Approximate pay back time of  
EPS 035 (100mm) in external walls.

*"After  
discussions with  
the ever-patient guys at  
Knauf Insulation who do  
both internal and external  
systems (so I reckoned they had  
no bias), we decided external  
insulation wasn't suitable."*

**Sue Wheat**

Knauf Insulation customer\*



## Staying at the top of our game in sustainable insulation

Knauf Insulation's products make a massive contribution to managing the challenges of sustainability. The following provides a summary of the sustainability characteristics of our product range.

### Materials and recycling

Our products are made from a range of materials. These include readily renewable resources, such as the wood in Wood Wool or starch in ECOSE® Technology, recycled materials such as CDs in our XPS production and glass bottles in Glass Mineral Wool, and abundant, naturally occurring materials such as sand for Glass Mineral Wool or stone in our Rock Mineral Wool. We also use finite resources such as petroleum based materials in our XPS and EPS foams. Clearly each material offers stronger or weaker environmental profiles.

Over the last few years we have made strides in reducing the amount of finite resources we use, whilst increasing both readily renewable content and recycled content.

### Glass Mineral Wool – more for less

The LCA-based Green Guide rating from the UK Building Research Establishment (BRE) gives Glass Mineral Wool the highest rating of A+, mainly due to the high proportions of recycled glass and efficient energy use. And over the last few years we have further increased recycled content: up to 85% in several of our European Glass Mineral Wool operations. The increase in recycled content and the use of ECOSE® Technology has reduced the energy needed to produce Glass Mineral Wool: we get more for less.

*Using post-consumer recycled glass means we use less energy to melt the glass. An LCA summary of the effects of using recycled glass in the place of virgin material was used in the decision to increase recycled content.*

### Extruded Polystyrene and Expanded Polystyrene – sourcing is an issue

For Extruded Polystyrene (XPS) and Expanded Polystyrene (EPS) manufacturing, the main barrier to recycling is, as with all recycled content, a lack of feedstock of suitable quality for use in the extruding process. As a thermoplastic, waste polystyrene can be milled and reused in production; this can be up to 40% for XPS. When off-cuts are clean we are sometimes able to take back remnants from construction sites. Dust arising from the shaping process in EPS manufacture cannot be reused but is sold to other building materials manufacturing companies. Our plastic foam insulation, XPS and EPS, are made from polymers that are derived from finite fossil fuel resources. There are currently no viable alternatives for this raw material, but given that its prime job is to save energy there is still a major net benefit from this type of insulation.

### Rock Mineral Wool – moving in the right direction

Recycled content and recycling rates vary across our Rock Mineral Wool plants due to the large number of acquisitions we have made in the past few years; we use up to 37% recycled content. In our most established plants we use large quantities of post-industrial waste and we provide our waste to other manufacturers to be made into new products; we will be working to roll out our best practice standards more widely through 2011 and 2012.

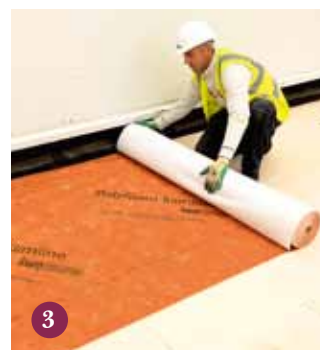


### A major bottleneck for recycled content?

We use a range of good sources including bottles, TV screens and perfume bottles! However, in some countries where we operate getting recycled glass of sufficient quality can be a challenge, causing a major bottleneck in our efforts to increase recycled content.

The table below outlines many of the sustainability characteristics of our product range.

Product category	Sustainability	
<b>No. 1</b> <b>Glass Mineral Wool</b>	<ul style="list-style-type: none"> <li>• ECOSE® Technology bio-based binder from plant starches with no added formaldehyde or phenol</li> <li>• Very low impact across LCA categories</li> <li>• Highly compressible (up to 10x) reduces transport impact</li> <li>• Waste water cleaned and reused, reduces demand by up to 80%</li> </ul>	<ul style="list-style-type: none"> <li>• Major raw material is silica which is abundant</li> <li>• High recycled content – glass bottles, plate glass and internal waste</li> <li>• Manufacturing waste fed back into process</li> <li>• Product waste recycled into other construction products in some countries</li> </ul>
<b>No. 2</b> <b>Rock Mineral Wool</b>	<ul style="list-style-type: none"> <li>• Low impact across LCA categories.</li> <li>• Up to 80% of process water cleaned and reused</li> <li>• Major raw materials from abundant resources</li> <li>• Some plants include up to 30% post-industrial waste</li> </ul>	<ul style="list-style-type: none"> <li>• Manufacturing waste fed back into process</li> <li>• Coke from other industries' by-products used to fire furnaces</li> <li>• Product waste recycled into other construction products in some countries</li> </ul>
<b>No. 3</b> <b>Extruded and Expanded Polystyrene (XPS, EPS)</b>	<ul style="list-style-type: none"> <li>• Free of HCFC blowing agents/other ozone depleting gases</li> <li>• HFC blowing agents being replaced by CO<sub>2</sub> in XPS</li> <li>• EPS uses blowing agents with lower environmental impacts</li> <li>• Polystyrene is recyclable, where infrastructure available</li> </ul>	<ul style="list-style-type: none"> <li>• Virtually all manufacturing waste fed back into our process</li> <li>• XPS increasingly uses EPS waste and other polymers with 'stable characteristics' such as CD cases</li> <li>• Increasingly taking back site off-cuts for recycling</li> </ul>
<b>No. 4</b> <b>Wood Wool</b>	<ul style="list-style-type: none"> <li>• Wood is renewable and stores carbon for the lifetime of the product</li> <li>• Mainly uses locally sourced spruce, or other fast growing wood types</li> <li>• We use PEFC (Pan-European Forest Certification) certified suppliers where possible</li> </ul>	<ul style="list-style-type: none"> <li>• Reusable if in a suitable condition</li> <li>• Recyclable but need to work with industry to ensure more practical recycling is possible</li> <li>• Compostable or can be used in energy recovery</li> </ul>





## Win win win... with ECOSE® Technology

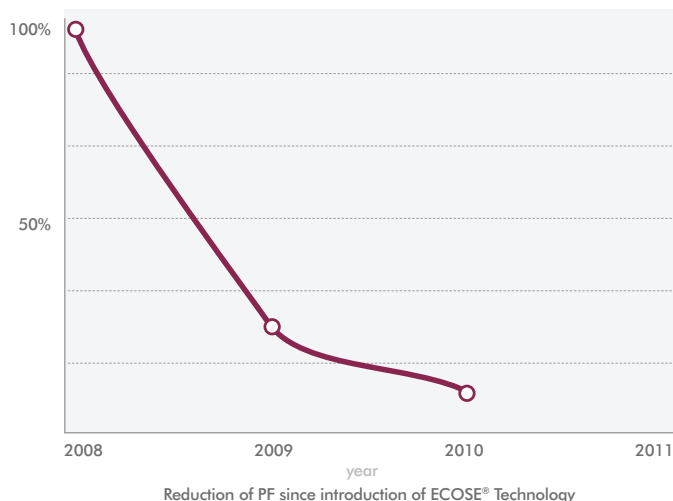
2009 saw the global launch of our new range of Glass Mineral Wool with ECOSE® Technology, a revolutionary new binder containing bio-based materials free from petrochemicals and using a formaldehyde-free and phenol-free formulation. By switching over our entire Glass Mineral Wool production from the traditional phenol formaldehyde binder to ECOSE® Technology, we offered customers a step change in sustainability performance whilst retaining great insulation performance and all at no additional cost to customers.

Mineral wool was already one of the best performing insulation materials in terms of its environmental impact, for example achieving an A+ rating in the UK Green Guide to Insulation Products. But the development of mineral wool with ECOSE® Technology extends the leading position of mineral wool as the most important insulation product of the future, as shown in preliminary LCAs.

By using a formaldehyde-free binder formulation, we have also become the first product manufacturer ever to gain the Eurofins Indoor Air Comfort Gold Standard certification; a certification that we obtained for our Glass Mineral Wool with ECOSE® Technology. Eurofins Gold Standard is a guarantee that our tested products comply with emission requirements lower than the most stringent legal emission requirements across Europe.

### ECOSE® Technology bringing plant improvements

By eliminating phenol and formaldehyde (PF) from our manufacturing process, the resulting workplace exposure and controlled pollutant emissions from manufacturing are significantly reduced.



The great performance of our products in Europe is matched in the United States, where Knauf Insulation's Glass Mineral Wool products were the first in any category to achieve GREENGUARD certification from the GREENGUARD Environmental Institute (GEI), an independent, not-for-profit organisation that establishes standards for building materials to protect health through the control of mould, moisture and indoor pollutants.

### ECOSE® Technology – a case study for a new resource policy

Over the last decade, environmental management has moved from a focus on end of pipe solutions to one of re-engineering products that have fewer environmental impacts from their design stages. ECOSE® Technology is a case study for how this can be done. Not only does it reduce the impact of our mineral wool products in use but it also reduces emissions of controlled pollutants from manufacturing where our US factories, for example, have shown an 87% reduction in phenol and formaldehyde emissions!

In addition, by using rapidly renewable materials rather than petrochemicals as the principal ingredients in the ECOSE® Technology binder, we are reducing the amount of finite resources and reducing the energy needed to manufacture our products.

### Further applications

There is a multi-million tonne global market in formaldehyde-based binding agents, and insulation accounts for a small percentage of this. ECOSE® Technology provides a clear potential to move away from petrochemical based binders in applications such as plywood and fibreboard. We are currently conducting laboratory trials on other potential applications with recognised global institutes, research centres and industry partners.

### Improves indoor air quality compared to our traditional mineral wool

Glass mineral wool with ECOSE® Technology products meets the industry's most stringent standards and guidelines related to Indoor Air Quality (EUROFINS Indoor Air Comfort GOLD – Der Blaue Engel, Germany – M1/RTS, Finland, Greenguard for Children and School™ / USA).



### Reduces impact on environment through lower embodied energy

Binder embodied energy is reduced by up to 70% compared to traditional binder, which contributes to further lower the expected GWP (Global Warming Potential).

*"We applaud Knauf Insulation for their commitment to sustainability and good indoor air quality. Knauf Insulation is a visionary company that pioneered product emissions testing in the insulation industry. They are one of GREENGUARD's most valued partners, and we look forward to continuing our work together to improve public health and quality of life."*

**Henning Bloech**  
Executive Director, GEI

### Fire safety – time to tighten the rules

Whilst Europe sets the standards for the fire safety of products, it is left to each EU country to decide on fire safety standards for buildings. As an example, some countries mandate that only fire-safe materials should be used in public buildings such as schools and hospitals, whereas others do not demand any specific rules on this subject. Given the need to ensure that buildings are safe as well as comfortable, at Knauf Insulation, we believe there remains significant room across the EU to tighten national standards for fire safety.



## Safety and comfort

Our products bring a range of safety and comfort benefits, as well as some challenges. As before, the important question is to balance the different performances within a given application. Regulators may, for example, demand a much higher level of fire safety performance for construction products used in public buildings, such as schools and libraries, than in other buildings.

Indeed, fire safety and acoustic performance are two of the most striking examples of where product choice can deliver significantly different performance levels. It is therefore important that designers consider a building's function when selecting materials. Rock mineral wool and Glass Mineral Wool, for example, achieve a Euroclass of A1 for fire safety whereas our foam products are classified from Euroclass C-E for fire safety. In terms of noise performance our mineral wool and Wood Wool products provide strong acoustic performance.

### Balancing safety... with safety

Over the years, like in any industry, people have raised questions about product safety, questions that we have always tried to address in a balanced and open manner.

A current area where a balance has to be found is around maintaining the fire safety of our foam products. A chemical known as HBCD (Hexabromocyclododecane) is an important fire retardant that we use in both our EPS and XPS products. HBCD is also currently included on the candidate list of substances which will require authorisation for use under European REACH legislation (Registration, Evaluation, Authorisation and Restriction of Chemical substances). Given the regulatory concerns that have arisen we are fully engaged with other industry players to identify a viable alternative; until then, we feel that it is in the public interest to use HBCD because of the important fire safety function it performs.

Sometimes safety concerns can be based on general concerns, rather than specific data concerning our products; all the same, it is the responsibility of manufacturers and regulators to determine whether any threat to health exists. In 1988 concerns surfaced around the safety of mineral fibres, partly arising from unfounded associations with asbestos. Based on the scientific evidence available at the time the World Health Organisation's International Agency for Research on Cancer (IARC) classified mineral wool in Group 2b – 'possibly carcinogenic'. In the following years, mineral fibres became one of the most studied materials in the world and, as a result, a follow up review in 2002, re-classified mineral wool to Group 3 – 'not classifiable as to its carcinogenicity to humans'. The mineral wool industry has taken its responsibility further and in 1997 agreed to an even higher level of precaution by ensuring that fibres are bio-soluble and meet one of the exoneration requirements of Nota Q of Directive 97/69/EC.



# Our company

**Whilst our products contribute significantly towards the sustainability of buildings, their manufacture leads to impacts both positive and negative. It's our duty to manage these responsibly.**

Knauf Insulation is first and foremost a manufacturer of insulation products. The manufacture of all our insulation entails the use of significant amounts of energy, the use of resources, the creation of emissions, the use of transport and having physical presence in many communities. It also leads to local employment, the development of positive relations with communities and the creation of significant value. More than this, it leads to the production of a product that will pay back manufacturing related impacts many times over.

In this chapter, we hope to provide a view of how we manage our company in a responsible manner and an insight into how we intend to go even further in the future.

## **Our approach**

As a company that has grown very quickly, including partly through significant acquisitions, our approach to managing sustainability is still in the process of being fully integrated. We find ourselves in this reporting period in the middle of a number of activities across the company to further integrate our approaches and this fact comes across clearly in this Report.

However, what is also evident is that notwithstanding the lack, until recently, of a common approach to sustainability, different parts of Knauf Insulation have been spearheading many activities that have had significant benefits to our sustainability performance. In addition, all our entities have been managing key health, safety and environment (HSE) issues as well as quality issues for many years.

## **In practical terms**

The Group CEO and Directors of the businesses have overall responsibility for quality, environment, safety, and health as well as human resources and logistics. Technical Directors and Plant Managers have day-to-day responsibility for HSE issues and our local HR managers for people management.

We are establishing a new Integrated Management System across our European manufacturing operations, for completion by the end of 2011.

Stories and data on people, environment, and community are shown in this chapter. See business profile on p4 for information on our stakeholders.

## **Our view of our material impacts:**

- Continual improvement in product quality and HSE performance.
- Responsible management of energy, emissions to air, water and land from our operations.
- Regulatory compliance in the countries of operation.
- Exceeding customer requirements on product and service quality.

We are reviewing our activities, targets, and progress with regard to safety, health, energy and environmental management. This Report is the first step to communicating on our status with a more complete picture of performance on key issues in our second report.

*An important part of leadership is responsibility. Responsibility to deliver on one hand strong economic performance but equally responsibility towards the people who work for and with Knauf Insulation and the planet we all share.*



*We are  
establishing a new  
Integrated Management  
System across our  
European manufacturing  
operations, for completion  
by the end of  
2011.*



## People and community

We are investing in improving how Knauf Insulation delivers commercial performance. Throughout 2009, Central HR was strongly focused on how to better serve the business, which consequently led to a people management overhaul aimed at a better understanding and monitoring of our employees. Like the rest of the market Knauf Insulation faced several challenges in 2009 and despite a tough economic climate, leading to some job losses in 2009, our future is bright.

### People at Knauf Insulation

On 31 December 2009, we employed 4,537 full-time equivalent (FTE) employees worldwide, excluding temporary contractors.

In 2009, 89 new jobs were created in Europe and CIS while unfortunately we had to reduce our headcount by 56 in North America and then by 110 in Austria due to the economic downturn and a divestment in polystyrene.

Equal opportunity principles are unambiguously central to our day-to-day compliance management. Our employees come from a wide variety of backgrounds and origins. The charts show gender and employees around the world at Knauf Insulation. Understanding differences is key to operating with integrity with each other, our customers, our suppliers and our communities.

### People management

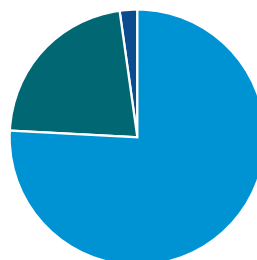
Knauf Insulation has grown rapidly which naturally means our workforce did too. Such rapid growth required a major overhaul of the people management system. In 2009 we completed the data input of the global human resources database which allowed us to set up the new online appraisal system. This 'E-Appraisal', launched late 2009, helps us understand and monitor talent much more effectively.

### Training

Competencies as well as needs can now be measured using E-Appraisals, followed by training plans that are coordinated at group and local levels. The central HR team runs our talent management programme and with this new system it is helping local HR drive forward training initiatives on sales, IT, languages, coaching or product technology and installation. Our employees have already seen the benefit of this new system, although the true benefits of training will be seen in 2010 and beyond.

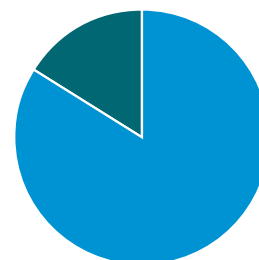
Training varies according to need, but one example of us investing in our employees is The Leadership Trust that started in 2008 and is aimed at potential leaders, with 27 employees participating in 2009 and a total of 52 since the programme started. We also have Campus at Heradesign, which trains employees, suppliers and customers on the best ways to use Wood Wool, as well as Knauf Insulation modules in the Knauf Academy and other local initiatives throughout 2009.

**Knauf Insulation's employees around the world in 2009**



● 76% Europe and CIS  
● 22% North America  
● 2% Rest of world

**Who we were in 2009 by gender**



● 84% Male  
● 16% Female

**19.5** Average hours of training per employees.

\* Currently 91% of Knauf Insulation employees are included in the calculation used.

### Lannemezan, France

A new plant built this year has generated employment during its construction and has brought more than 135 new jobs to the region – Knauf Insulation has received an excellent reception from the local authorities.





### Employee engagement

Our employees are vital to our business. We communicate through face-to-face meetings, news letters, internal bulletins, workshops, employee surveys and questionnaires. More importantly we're committed to consulting with our employees more and more to understand further their key interests and concerns about how Knauf Insulation is run.

### The challenges of growth

Despite our strong belief that the future for our sector is very bright over the coming decade, like many others the recent downturn in the construction sector, particularly in the US, had some impacts on our business during 2009. As our CEO says, it's been hectic in recent years and change affects us all in various ways. Therefore, despite the fact that we out-performed our competitors, it is with regret that we report that in 2009 the economic crisis forced us to reduce our headcount by 56 in North America and 110 in Austria. In 2010 we have had to lay off 100 employees at the Shelbyville (US) plant and nine at our small Gersheim plant. We continue to explore ways to minimise the impact on our employees and the community. At Gersheim (Germany) this year, for example, the closure was announced to employees eight months in advance and redundancy pay was offered. Production, and a fifth of the workforce, moved to a neighbouring Knauf Insulation plant.

But with challenges there are opportunities. The new Lannemezan plant in France is testimony to our latest contribution to the economy in 2010, and Knauf Insulation supports employees in trying new roles in the company.

### Employee survey on sustainability

In January 2010 we carried out a limited survey to gauge employee opinion about sustainability at Knauf Insulation. With a 76% response rate to the survey, these employees told us the following:

Knauf Insulation must...

- Coordinate its approach on sustainability
- Be seen to take positive action
- Be clear on customer expectations on the sustainability credentials of Knauf Insulation
- Ensure our products meet customer expectations of public authority/government procurement
- Within two years, understand life cycle impacts of all products
- Embrace carbon footprinting and environmental labelling where appropriate
- Publish a Sustainability Report and use it to help manage reputation and competitiveness

These findings have been an important driver for this Report and going forwards we expect to address these issues.



### Unifying the Knauf Insulation culture

Through the acquisition of various companies we needed to unite a mix of cultures. The launch of 'ONE Knauf Insulation' united the company through dialogue and interaction amongst our diverse employees. We fostered a 'feel good' work ethic and strengthened trust in the new teams. Key areas of focus were delivering our values and strategies, and communication between regions via the ONE Knauf Insulation Ambassadors that were charged with the responsibility of spreading the culture amongst the company.

Image on left:  
ONE Knauf Insulation 'Ambassadors'  
at the launch event, 2009

**Don't forget...**

The HSE & Systems homescreen leads employees to HSE work instructions, IT and HR guidelines and a user-friendly Incident/Accident reporting tool. Its formal launch takes place in late 2010.

**Health and safety**

Our safety culture focuses on openness, effective reporting and appropriate behaviour, founded on policies, practices and procedures.

Sites are responsible for implementing our Global Health, Safety and Environment Policy, via our integrated management system for our manufacturing operations. Our system satisfies the international safety management standard OHSAS18001. In addition, a majority of our plants have Safety Committees, whether it is a legal requirement or not, as we believe they can be an effective tool in this area as they foster dialogue between Knauf Insulation and employees to eliminate unsafe conditions, identify improvements, review accidents and communicate effectively.

We regret that in 2009 we suffered one fatality; that of a contractor working at one of our sites. It is critical that we learn from this experience so we ensured that, within 24 hours, all plant managers and those working in similar roles were made aware of the cause of the accident. What we learnt from our internal investigations into this accident has also been integrated into our management systems so as to further improve our ability to prevent this from happening again.

Our safety reporting system is developing year on year and now includes new revised definitions of accidents from certain operations. As expected, more accidents are now recorded, so pushing up LTA frequency by 24%. However, severity (how serious the accidents are) decreased by 33%. The message is a positive one and the data collection processes and performance results will help us establish appropriate targets towards an accident-free workplace. Accidents are normally recorded as accidents per million hours worked.

**Welfare**

We are working hard to update our management approach on working conditions, employee welfare, and occupational illnesses, in line with OHSAS18001 international standard. As well as human resources policies, many plants across Knauf Insulation provide a variety of welfare initiatives which range from medical checks, including breast and cervical cancer health checks, to risk prevention services and manual handling guidance. We try to ensure that the wellbeing and treatment of our employees is put first. Where possible we also offer our employees smoking cessation support, reward for high-risk conditions, first aid update, modifications for disabilities, fitness facilities and dietary advice amongst others. Employee absences across sites in different countries where we operate ranged from 0% to 7.6% in 2009.

We will be taking further action on global employee welfare initiatives in the next reporting period that will align with our global commitment but be locally relevant.

**Labour relations**

There are varying forms of employee-union representation, such as Works Councils, in decision making at Knauf Insulation.

Employees are informed of cases relating to occupational health and safety, rights of participation in personnel matters, recruitment, transfer of personnel, information about dismissals, legal compliance audit, changes in the company, and employer/works council agreements. We strive to be clear, open and timely in communicating major operational changes coming up in the company. For example, our small Gersheim plant closed in 2010 and employees were alerted to the plant closure eight months in advance.

**Long service awards**

As a family company, we value commitment from our employees. Not only do we invest in our staff through training, but we reward those who have stayed with the company. Long service awards operate at most plants.

**Employee turnover**

Our turnover rate, defined as number of employees who leave the organisation voluntarily or due to dismissal, retirement, or death in service, was 2.94%. In 2009 there were no fines or non-monetary sanctions resulting from a breach of laws or regulations governing labour or human rights responsibilities. In 2009, the average employee age across the company was 42 years.

**33%**

Our accident reporting is expanding. The severity of accidents decreased by 33% from 2008.

**128**

lost time accidents in 2009 (up from 94 in 2008).

*"If I consider their environmental compliance, I think that Knauf is one of the best companies for compliance in our region and I think the company behaves responsibly towards the environment."*

**Jaroslav Hájek**

Head of Czech Environmental Inspectorate



# 2.94%

Employee turnover  
across the company  
in 2009.

## Knauf Insulation in the community

Our sites are often in close proximity to local housing and so they manage their community engagement in a responsible way at a local level.

We operate a range of local community involvement projects responding to community needs. Initiatives include local campaigns to get householders to sign up for free insulation. We also sponsor the Great British Refurb Campaign to demonstrate energy efficiency, an initiative supported by leading Government figures and thousands of homeowners.

## Charitable giving

We do not track all donations across Knauf Insulation, although the sum of all the local donations is substantial. Direct sponsorships are made across Knauf Insulation: for example, in Germany for local sports and schools, in the USA for the fire department, in the UK for children's charities, in Slovenia and the Czech Republic to primary schools.



## A leading example – Knauf Insulation in Krupka, Czech Republic

Our plant in Krupka, Czech Republic, is one example of the spirit of community engagement that we wish to foster here at Knauf Insulation. From community projects to public hearings, we proactively support programmes that help the needs of the community. Activities include a combination of support programmes, long-term collaborations with NGOs and ad hoc projects like refurbishment of Krupka Castle walls.



## Responding to communities

We aim to be a good neighbour and mostly we get it right, but not always. Our video on neighbour relations shows an honest and balanced account of the experiences of local stakeholders, including complaints, but more importantly Knauf Insulation's responses to issues of the local communities around our plants. See [www.knaufinsulation.com/en/corporate\\_responsibility](http://www.knaufinsulation.com/en/corporate_responsibility)

*“The support Knauf Insulation offers to the town is enormous. Sports, culture, financial support to save historical monuments, children's playgrounds, the kindergarten in Sobečleby, the stadium and so on.”*

**Ferdinand Fignedy**  
local resident, Czech Republic

## What matters to you? *Employee health benefits in the US*

Due to the specific nature of the US health system, in particular its focus on private health coverage, Knauf Insulation has developed a health care system in the US that provides screening and support.

### Q. What do I get as an employee?

Plans, programmes and guidance for dentistry, medical care, family care, retirement, employee assistance, fitness, smoking cessation support, weight loss as well as health screening and an employee clinic.

### Q. How do I find out about this?

Employees refer to their local HR department or the internal information bulletins for policies and details on options.

### Q. Does it work?

Our smoking cessation programme, for example, has higher success rates for individuals than other programmes. About 70%–80% quit: it's a one-on-one approach and financial support is offered.

## Environmental

Core parts of the new Knauf Insulation Integrated Management System are in place in all key plants in the Europe and CIS region. This, along with other environmental management, has helped us better monitor our energy use, greenhouse gas emissions, materials, waste, water, transport and office environment. In this section we cover performance for 2008 and 2009.

### Energy use and carbon emissions

It's always been time to save energy for us! We have a strong history – halving energy use in some glass wool plants for instance – but we also know that there is still work to be done. Alongside existing energy savings we also commit to identifying more opportunities for renewable energy at our plants. Our photovoltaic array at our new plant at Lannemezan, France contributes 420 MWh/year towards the energy requirements of the plant, showing the way for other plants.

#### How much do we use and how efficient are we?

Our energy and CO<sub>2</sub> data cover Glass Mineral Wool and Rock Mineral Wool. Owing to a slight production decrease from 2008 to 2009 our total energy use decreased by 5%. Overall our use of energy per tonne of output improved slightly (0.8%). Our energy efficiency measures begun nearly a decade ago continue to provide returns. We have maintained our efficiencies despite the additional exceptional process testing and adaptation relating to ECOSE® Technology.

#### What level of carbon emissions do we produce?

Our total carbon (greenhouse gas) emissions reduced by 14.4% from 2008 to 2009. Our overall carbon intensity (CO<sub>2</sub> emissions per production output) reduced by 11%.

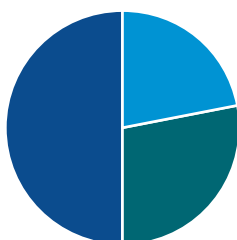
Note: Around a quarter of a plant's energy is required to sustain melting and curing temperatures even if no production occurs – this 'base load' may affect how intensity indicators are interpreted (eg energy use per tonne). Energy and CO<sub>2</sub> data are not available for Wood Wool and foams plants because together they represent less than 5% of production.

We use a mix of energy sources and this will affect the carbon intensity.

**-11%**

Reduction in total carbon intensity from 2008.

Energy sources



- 22% Coke
- 28% Electricity
- 50% Gas



## A quick word from the European Energy Manager, *Allan Morgans*

### What's your focus?

Improving Knauf Insulation's energy efficiency, and sending the savings straight to the bottom line.

### What's your Knauf Insulation history?

Since I joined Knauf Insulation eight years ago I have seen our legacy of energy management yield significant savings. Over the years finding new ways of saving energy is a challenge, but we're up to it and our energy programme at St Helens is a great example.

### How?

Our compressed air, variable speed drives, remote controlled management, monitoring by specific shift or operator, intelligent lighting as well as the Carbon Trust partnership allow us to find greater efficiency.

### What's the result for Knauf Insulation?

All this hard work has reduced our direct carbon dioxide emissions by 26% across our Glass Mineral Wool manufacturing sites and by 14.5% across our Rock Mineral Wool plants between 2005 and 2009. As we continue to roll out best practice across the company we plan to continue to achieve such reductions.

*"Alongside existing energy savings we have also committed to identifying more opportunities for renewable energy at our plants."*

**David Ducarme**  
Group Technical Director

# 85%

In 2010 we have had up to 85% recycled content in our Glass Mineral Wool.

## Materials

We look at the impacts of our products from raw materials extraction, to production, through the use phase to disposal and recycling. We use life cycle analysis techniques to understand recycled content, toxicity, climate change and waste disposal impacts. We have a diverse range of insulation solutions and we use various materials. Not only this, where possible we add recycled content in production and we recycle waste product from production processes and waste packaging from our transport operations.

To make our products unambiguously safe to use we are working hard to find alternatives to ingredients such as HBCD and phenol formaldehyde. We are developing a commitment on replacement and will report on this next year. See also the Products chapter (p14).

## Recycled content

Across Knauf Insulation the amount of material we put into our manufacturing process that is recycled has increased. The percentage of recycled content in our glass wool can be as much as 85% and recycled content is set to increase. In our XPS manufacturing we use small amounts of recycled content, all without compromising product quality. Included in the feedstock are household items such as plastic CD cases.

## Examples of improved energy performance through efficiency initiatives in our plants

# -17%

Reduction in energy costs at our Chivasso XPS plant since 2008.

# -34.7%

Reduction in energy use in our Oosterhout EPS and Wood Wool plant since 2008.

## Zero net waste

All our products contribute to 'zero net waste' in construction. This is where the amount of waste produced equates to the amount of recycled material used in the construction.

## Waste

We work hard at reducing the amount of waste we produce and also at helping reduce the waste from the packaging of our products.

## Cutting waste

We have a strong legacy of waste minimisation at Knauf Insulation and we are working to set a global waste target which we intend to publish in the next report. All of our plants locally monitor their recycling and set targets for improvement. In the USA, percentages of hazardous and non-hazardous wastes recycled are 80.4% and 2.9% respectively. At our foam plants in Europe, we typically recycle 99% of our polystyrene and paperboard waste.

Furthermore, our products are recyclable: by reusing manufacturing waste or for use in secondary products such as decoration boards or building materials. We also operate 'takeback' initiatives in Slovenia and the UK, which we are looking to increase across our operations in the future.

## Non-hazardous and hazardous waste disposal

We send relatively small amounts of waste to landfill. We recorded increases in non-hazardous and hazardous wastes to landfill of 10.2% and 16.4% respectively. For each tonne of product manufactured the increases recorded are 6.3% and 12.4% respectively. Waste increases are unusual for us. As we adapted our manufacturing processes in 2009 to use ECOSE® Technology, additional tests and trials created waste. Waste figures and those for 2010 will help us to establish an appropriate baseline from which to set targets for performance improvements. Also, as we consolidate our operations following acquisitions in recent years we are refining our data collection every year.

### Packaging and transport

We have a proven track record for innovation in environmentally responsible packaging which presents numerous benefits for our customers. Distributors ordering a 'full load' receive an additional 60 rolls using SupaKube™ compression technology in comparison to conventionally packaged Glass Mineral Wool products.

We track the costs, impacts and performance of our transport operations. Our operations managers report monthly on transport, production planning and customer service. Good logistics management not only allows for lower emissions, less congestion, and lower noise but also reduced transport distances, strategic planning for fast expansion in new markets, increased flexibility to meet customer demand, and improved competitiveness in the face of fuel price rises. Also, the way we purchase haulage services can lead to environmental benefits. We prefer technologies that reduce CO<sub>2</sub> and other emissions, e.g. selective catalytic reduction. We will survey our more environmentally responsible hauliers and promote responsible transport through our procurement practices.

### Water use and efficiency

Efficient water use goes hand in hand with efficient energy use. Typically, it takes around 2.77 cubic metres (2,771 litres) of water to manufacture the amount of insulation in a typical Eastern US home and power companies use approximately 2.3 litres of water to generate one kWh of electricity. So, the water consumed to manufacture the insulation is recovered after 1200kWh of energy saved, that's about 120 litres of heating oil!

It is normal to consume more resources during an increase in production. Our overall production increased by 4% from 2008 to 2009. We used less water per tonne produced (down 18.3%), a slightly greater fall than the absolute decrease in consumption (down 15.8%). We continue to see water efficiency measures taking effect and this is despite the higher than usual water use during the rebuild at St Helens. The data do not include recycled water usage at our plants. At the US plants, water use per tonne produced has dropped 36% while our plants in Europe and CIS saw a small increase of 6.4% in water use per tonne of product manufactured.

These figures and those for 2010 will help us to establish an appropriate baseline from which to set targets for performance improvements.

### Where does our water come from?

At our US, European and CIS plants our use of water taken from sources other than municipal supplies has decreased slightly by 14.3%.

None of our plants are located in or adjacent to a protected area or area of high biodiversity. In 1998 Knauf Insulation purchased seven acres of wetlands mitigation credits at the California Department of Fish and Game's Cottonwood Creek Mitigation Bank. Three and a half acres of wetlands and riparian habitat were affected and mitigated.

### Wastewater

In 2009 we discharged 33% more water than in 2008, yielding an equivalent increase per tonne of product manufactured of 30%.

The urgent issues of water scarcity and quality around the world present physical, financial, regulatory and reputational risks. Wastewater is filtered and reused in many of our processes, which are 'closed loop' systems in most plants, so the only water leaving the plant is steam. This reduces our water demand by more than 80% in some plants. Whilst we are well on the way to managing water we know it is a journey that we haven't completed yet. The issue is amplified where industry and supply chains operate in water-stressed regions.

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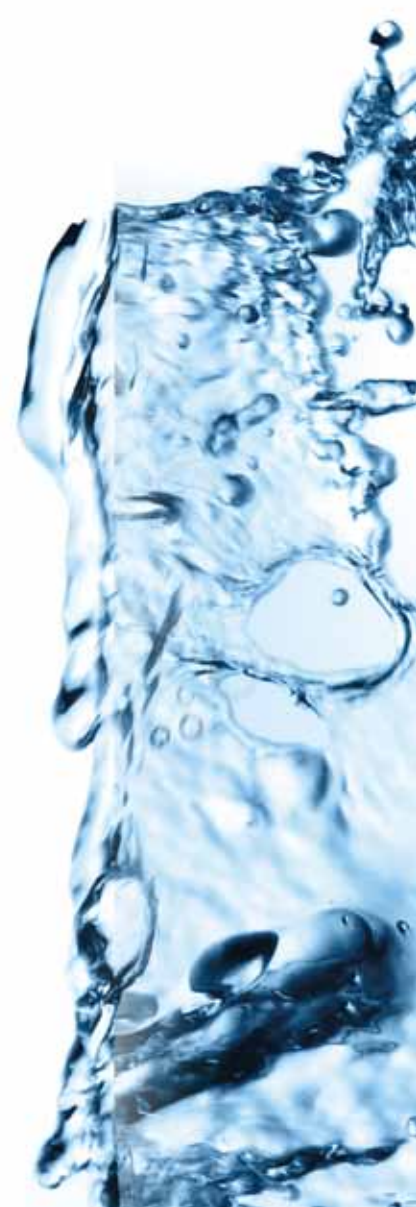
**-18.3%**

**Water use intensity**  
We used less water  
per tonne produced

---

**+30%**

**Wastewater discharge intensity**  
We have increased our  
wastewater discharge  
per tonne of product







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#### **A sweet pallet**

In 2009 we reused over 126,000 pallets in the UK! This is thanks to our membership of a reverse logistics initiative using empty lorry space. This saves carbon and waste disposal costs for our customers. We will review pallet take-back across Knauf Insulation to seek opportunities in other countries.

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#### **Around the office**

We also encourage new ways of working such as audio and video conferencing, and responsible procurement of IT hardware. As part of the launch of ECOSE® Technology mineral wool in Ukraine, our local organization launched a Green Office Programme. Targeting different areas for improvement such as energy use and waste in the work place, the programme also encouraged local staff to take action at home. One of our commitments for 2011 is to roll out a green office initiative across the entire company.

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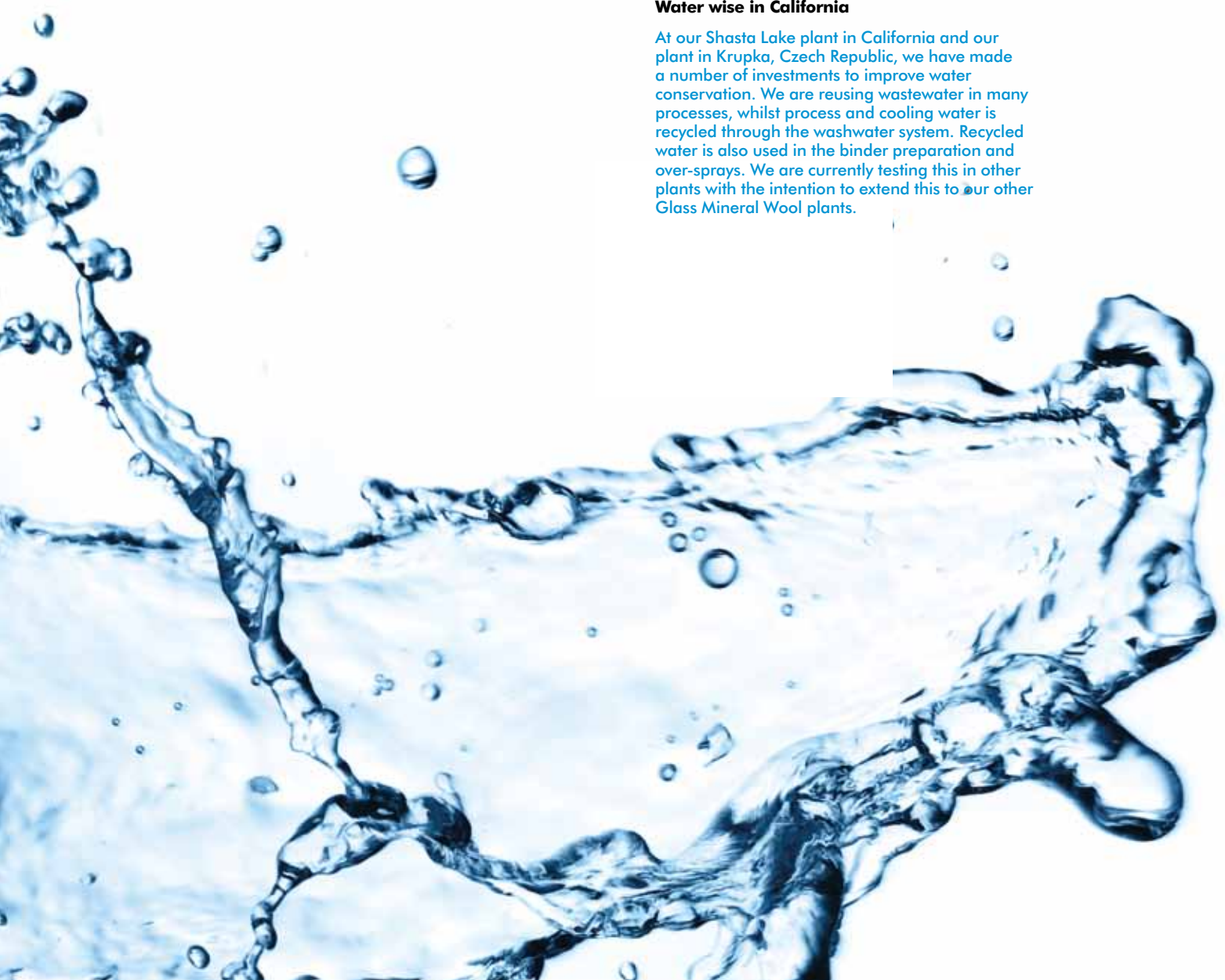
#### **I just called to say...**

Our employees are increasingly using audio-video conferencing facilities at Knauf Insulation. We are committed to making this service available to all our employees and we are currently rolling this out across all Knauf Insulation offices and plants.

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#### **Water wise in California**

At our Shasta Lake plant in California and our plant in Krupka, Czech Republic, we have made a number of investments to improve water conservation. We are reusing wastewater in many processes, whilst process and cooling water is recycled through the washwater system. Recycled water is also used in the binder preparation and over-sprays. We are currently testing this in other plants with the intention to extend this to our other Glass Mineral Wool plants.



# Commitments and next steps

## Commitments

- › Management approach: Completing HSE integrated management system across Europe and CIS
- › Management approach: ISO14001 in place in plants across Europe and CIS by end 2011
- › Employee welfare: New commitments on global welfare schemes in the next reporting period, 2011
- › Product ingredients: Continue to work to phase out phenol formaldehyde and to find alternatives to HBCD
- › Product ingredients: Across our product range continue to find ways to increase use of recycled materials both from post-consumer and post-industrial sources
- › Recycling in manufacturing: Report recycling rates and set targets for improvement in Europe and CIS
- › Recycling in logistics: Review of pallet take-back across Knauf Insulation in Europe and CIS
- › Energy in operations: Identify more opportunities for renewable energy sources
- › Transport: Report global transport-related energy and carbon performance in 2011
- › Building energy use: Carry out an audit of our entire building stock with the aim of developing and implementing an energy efficiency refurbishment programme
- › LCA of our products: To have undertaken LCA from all our plants by the end of 2011.

## What next?

Now that you have seen our Report on achievements, challenges and performance we close with a word on the next stages in our contribution to sustainability.

Our growth through the last decade kept us extremely busy and focused on more internal aspects of growth, such as commercial transactions and cultural change. We are now set for the next period of growth. We will incorporate sustainability more deeply across the business, making it a part of our DNA, a part of everything we do.

Specifically I would like to draw your attention to how we want to go about this task, which we have divided into three steps:

- Getting our house in order: As evidenced by this report, we still have work to do to develop an overall and consistent global approach to understanding our sustainability impacts as well as to fill gaps; by the next report, we will have significantly closed these gaps.
- Benchmarking against international targets: As part of a wider effort to improve sustainability in society, it makes sense that we should benchmark how we are doing in key material areas against international objectives, such as medium and long-term climate objectives. By the next Report we will have agreed all the material areas where this should take place, the international objectives that should be used and benchmarked ourselves against these objectives.
- Putting in place programmes and initiatives to achieve our ambitions and beyond: Once we know where we stand, we will agree or adapt current programmes to align ourselves with these objectives and work with stakeholders to see how we can first achieve them and then surpass them.

Ours is an important product, we are a major player in our markets, and we will be a leader in our sector. We know that with ambition and scale comes responsibility. So I encourage you to tell Knauf Insulation's senior management and sustainability team your ideas, praise and concerns relating to sustainability and how we run our business.

**Tony Robson**  
November 2010

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