



**FOR A
BETTER
WORLD**

Insulation Matters

KNAUFINSULATION

Annual Review 2022



04

20

36

52

60

76

82

FUTURE VISION

- OUR LEADERS**
- 6 A YEAR OF CHALLENGES WHERE WE HAVE RISEN TO THE OCCASION

- JOHOR BAHRU – MALAYSIA**
- 12 CUSTOMER COMMITMENT
- 12 WORLD OF DIVERSITY
- 13 SUSTAINABILITY AND SAFETY SHOWCASE

- TĂRNĂVENI – ROMANIA**
- 14 €135 MILLION INVESTMENT IN ROMANIA
- 15 TĂRNĂVENI'S KEY ROMANIAN ROLE

- MCGREGOR – USA**
- 16 SHOWCASE FOR EXCELLENCE
- 18 SPOTLIGHT ON SUSTAINABILITY
- 19 PUTTING PEOPLE FIRST

- MAJOR INVESTMENTS**
- 19 UK AND GERMAN PLANTS

INNOVATION

- INNOVATION INITIATIVES**
- 22 INNOVATION AT KNAUF INSULATION
- 24 KINETIK®
- 25 SAFETYPRO
- 25 HOME BY KNAUF INSULATION
- 26 COLOUR-MATCHING CREATES THE PERFECT BLEND
- 26 EUREKA MOMENT FOR GREEN ROOFS
- 27 HIGH PERFORMANCE FOR HIGH-RISE BUILDINGS
- 27 'VERY GOOD' NEWS
- 27 HELP FOR HOUSEBUILDERS
- 28 FIVE REASONS TO CHOOSE OUR NEW FIRE PROTECTION SYSTEM
- 28 AWARD-WINNING SOLUTIONS FOR SANDWICH PANELS
- 29 PRODUCT DATA EXCHANGE
- 29 INTERNATIONAL CONFERENCE OF EXPERTISE

- INNOVATION FEATURE**
- 30 BIM FACTORY

- WHOLE LIFE CARBON (WLC)**
- 32 CARBON IN THE SPOTLIGHT

- ECOINDEX AND CARBON CALCULATOR**
- 33 GUIDING THE MARKET ON CARBON

- INNOVATIVE SOLUTIONS IN WESTERN EUROPE**
- 34 KI INNOVATION
- 34 KI IMPACT
- 35 VIRTUAL CITY
- 35 KI LEARNING

CREATE BETTER BUILDINGS

- CAMPAIGNING FOR CHANGE**
- 38 PUT ENERGY EFFICIENCY FIRST
- 42 ADVOCATING FOR A BETTER WORLD

- KNAUF ENERGY SOLUTIONS (KES)**
- 46 RENOVATION OF 166 SOCIAL HOUSES ACHIEVES 37% ENERGY SAVINGS
- 47 HISTORIC RETROFIT
- 47 POWER OF A VIRTUAL ENERGY INFRASTRUCTURE

- BUILDING WELL-BEING**
- 48 HOW INSULATION CREATES HEALTHIER HOMES

- GREEN INFRASTRUCTURE**
- 50 GREEN FUTURE VISION

SUSTAINABILITY

- SUSTAINABILITY PROGRESS**
- 54 YEAR OF CONSOLIDATION
- 56 UN SUSTAINABILITY GOALS

- INTERVIEW**
- 58 VANESSA RAE ON NORTHERN EUROPE

PUT PEOPLE FIRST

- SAFETY**
- 62 IT'S UP TO US TO MANAGE RISK

- ENGAGEMENT**
- 64 ENGAGING TEAMS TO WORK TOWARDS A GREATER GOAL

- DIVERSITY & INCLUSION (D&I)**
- 66 CREATING A CULTURE OF CONNECTION AND BELONGING

- WELL-BEING AND RESILIENCE**
- 70 EMPOWERING EMPLOYEES

- COMMUNITY INITIATIVES**
- 72 PURPOSEFUL COMMUNITY ACTION

ACHIEVE ZERO CARBON

- DECARBONISATION**
- 78 DECARBONISATION REVOLUTION

- TRANSPORTATION & PACKAGING**
- 80 CUTTING CARBON LOADS

DELIVER A CIRCULAR ECONOMY

- RESOLUTION**
- 84 A LANDMARK YEAR FOR RECYCLING

- ZERO WASTE TO LANDFILL**
- 86 ZERO WASTE TO LANDFILL LANDMARK
- 87 INCREASING RECYCLED CONTENT

- BETTER PACKAGING**
- 88 BETTER PACKAGING, LOWER IMPACT
- 89 STEPPING UP PALLET REUSE



FRONT COVER

The installation of Knauf Insulation Glass Mineral Wool with ECOSE Technology® allowed the 80 Ann Street building in Brisbane, Australia, to successfully achieve the required Green Star points while meeting the high acoustic performance and non-combustibility requirements that contribute to deliver a high level of fire safety and hazard mitigation.
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OUR LEADERS

A YEAR OF CHALLENGES WHERE WE HAVE RISEN TO THE OCCASION 6

JOHOR BAHRU – MALAYSIA

CUSTOMER COMMITMENT 12

WORLD OF DIVERSITY 12

SUSTAINABILITY AND SAFETY SHOWCASE 13

TÂRNĂVENI – ROMANIA

€135 MILLION INVESTMENT IN ROMANIA 14

TÂRNĂVENI'S KEY ROMANIAN ROLE 15

McGREGOR – USA

SHOWCASE FOR EXCELLENCE 16

SPOTLIGHT ON SUSTAINABILITY 18

PUTTING PEOPLE FIRST 19

MAJOR INVESTMENTS

UK AND GERMAN PLANTS 19



A YEAR OF CHALLENGES WHERE **WE HAVE RISEN** **TO THE OCCASION**

DOMINIQUE BOSSAN,
MEMBER OF THE KNAUF GROUP
MANAGEMENT COMMITTEE AND
CHIEF EXECUTIVE OFFICER (CEO)
FOR KNAUF INSULATION EUROPE/
MIDDLE EAST/ASIA, DISCUSSES
THE CHALLENGES OF THE PAST
YEAR AND WHY HIS VIEW OF THE
FUTURE REMAINS OPTIMISTIC



What has been the impact of the challenges of 2022 on Knauf Insulation?

"There's no doubt that 2022 has been a challenging year, with economic uncertainty, the war in Ukraine, rising energy costs and an internal cyber attack. While we're in the business of energy efficiency, we've also been hit by rising costs ourselves and real threats surrounding the shortage of gas.

"However, once again, our people have risen to the challenge. What really makes our people unique is their commitment. The pandemic made me realise just how committed we are. Throughout every crisis, we have never stopped communicating with our customers. We do have some turbulent times ahead of us, but I have always said 'there will be rainy days'. People truly are our mitigation; we have weathered many storms and we will continue to do so, together.

"Our people help us get through any crisis; although we invest a lot in equipment and technology, people are our most important assets. They make all the difference. That's why we're investing in leadership, training and development to ensure we have proper workforce and succession plans in place, as well as high levels of employee engagement."

What other steps is Knauf Insulation taking to mitigate these challenges?

"Of course, we're starting by going back to basics; monitoring discretionary costs and identifying areas for efficiency and improvements within the business. We will also continue to make sure we don't have one single source of raw materials and ensure we identify alternative sources to ensure business continuity.

"We also need to remember that COVID isn't yet over – numbers are increasing so we are looking at what safety measures need to be re-activated, to ensure our people are safe.

“

We have weathered many storms and will continue to do so, together.

Dominique Bossan | Chief Executive Officer (CEO) Europe/Middle East/Asia
Member of the Knauf Group Management Committee

”

"Another mitigation is public affairs. We've always been very keen on public affairs around the energy efficiency agenda and sustainability. More than ever, we need to be pushing this. With energy prices dramatically rising, many people have seen a significant reduction in their disposable income, and we are not even yet in the heating season! We have a duty to help."

What will help to differentiate Knauf Insulation in the long-term?

"I think there are a few things that set us apart from our competitors. Firstly, we continue to really invest in our people. The fact that we are a family business is also extremely important. The Knauf family are committed to reinvesting in the business to grow it. We're always thinking long-term, whereas sometimes publicly traded companies can't adopt that mindset because they are short-term driven, with pension funds hungry for quick returns.

"Finally, we're not a large matrix-driven organisation. My view is with large matrix-driven organisations, the areas of responsibility and accountability are not very clear. At Knauf Insulation, people know exactly what they need to do and what is expected from them. Our DNA is our entrepreneurial fibre; people who fight for their business and make it happen. It helps us to be more innovative, which is another major factor in differentiating ourselves from the competition."

How is Knauf Insulation continuing to innovate?

"We are staffing ourselves further in the Innovation Department, and this team will be directly under my responsibility.

"I do find that we're quite good at the 'inside out' type of innovation – we're constantly improving our processes, opening the door for improved performances of our products. I believe we can further improve our 'outside in' innovation approach. We are fortunate to have many people talking to distributors, installers or architects. They're not only talking and listening to the customer, they're observing. The customer can tell us what they need, but does not always know what they are missing: we can help, we have a strong role to play.

"Of course, we're continuing our fundamental research and development; breakthroughs don't happen every day but we're constantly identifying technology improvements. And we're not only innovating in terms of products but services, too. Take the example of our UK business that developed what has become the reference on the market, our award-winning KinetiK® application that has been recognised in 2022 as the Product of the Year at the prestigious Housebuilder Awards in the UK.

"We're also ahead of the game when it comes to Glass Mineral Wool. We have a strong manufacturing footprint and have recently announced a large greenfield investment in Romania, to address one of our white spots."

In your opinion, how is the For A Better World sustainability strategy progressing?

"Oh, I think we're progressing, it's great. Our upcoming targets are quite ambitious but what I like is that we're not shying away from communicating these to the outside world and showing that we are accountable.

"Knauf Insulation started on this sustainability journey quite some time ago and we have been instrumental in shaping the roadmap for the wider Knauf Group. For us, it's not about greenwashing; we need to make sure that we walk the talk, and it's not always easy. Sometimes we would like to show more progress and go faster. But we are moving in the right direction, increasing our resources to meet our new ambitious targets."



Knauf Insulation Executive Committee members: from left – Dominique Bossan, David Ducarme, Kristin Barthel

APPOINTED AS KNAUF INSULATION'S NEW GROUP CHIEF FINANCIAL OFFICER (CFO) IN JUNE 2022, KRISTIN BARTHEL TELLS US ABOUT HER EXPERIENCE IN HER ROLE SO FAR.

How have you found your first months with Knauf Insulation?

"I'm enjoying it very much. It's a nice situation for a CFO because Knauf Insulation is already such a tremendously successful company. I'm personally so excited to work for a company that creates products to help achieve a better future for us all. The **For A Better World** sustainability strategy gives me purpose and makes me feel like I am contributing something to this world. And that makes me feel proud to be part of the team.

"Obviously, most of my time so far has been taken up by the aftermath of the cyber attack, which occurred just three weeks after I started – as you can imagine, this was an unbelievable onboarding experience for me! However, I am used to having to deal with crisis situations and this was an early opportunity for me to show who I am and what I can bring to the table. It was also an amazing opportunity to see how much the team came together to help each other."

What has been the impact of the challenges of 2022 on Knauf Insulation and its customers?

"This year there's been a lot of uncertainty given the volatility of energy prices and the availability of our resources. Fortunately, we were in the lucky position to have a large portion of our gas and electricity prices fixed throughout the year which limited our exposure during this volatility, as they were essential to run our production processes. However, what was quite a substantial impact for us was the increase in coke price. Coke is what we need to heat and melt Rock Mineral Wool. As it's an alternative source of heating if no gas is available, it has multiplied in price. This has been one of our most expensive increases in terms of materials.

"We are in the lucky position though that there is great demand for our product. Although the final quarter of 2022 has slowed down a little, we are convinced that governments will push for investment into energy efficiency, mainly via renovation, over the next couple of years. I am confident that after a couple of months of settlement during the winter, we will find things pick up again in the summer and renovation will have a positive impact on our business."

How is Knauf Insulation incorporating innovation in its working processes?

"We are rather innovative in the way we're working. It is system based and work is structured and organised through our headquarter function in Belgium.

"However, I think there's lots of potential for improvement in the way we do our financial planning and long-term strategic planning. For instance, a big topic after the cyber attack was data protection, including the way we manage our data, data lifecycles and how we report on our employees. We're also introducing databases to help us with succession planning, identifying talent and providing feedback to employees.

"I think we also have improvements to be made in my field of finance and I'm looking forward to collaborating with the Knauf Group to help make these improvements."

What are your thoughts on how safety is progressing across the company?

"The message of safety first is everywhere. At every meeting, we open with safety concerns and discussions about safety. As a leader, I go to the plant and I go through operational safety sessions. I appreciate this because I come from an operational background and I'm very aware of what it means to make sure nobody gets hurt and all employees get to return home safely.

"However, I'm also aware that like with any internal initiative, sometimes things can be compromised because people are pushed for performance and output. And we must pay attention that there cannot be any compromise on safety. I think what we are sometimes lacking is people speaking out – if we observe an unsafe situation, we need to speak up. It's the responsibility of everyone to contribute towards an improvement. Everyone should share the overall improvement journey."

How is Knauf Insulation helping to promote a positive working environment?

"Since joining the company, it's clear how people-oriented it is. What I do like is that our HR Department is now pushing strongly for a couple of new initiatives, namely the diversity and inclusion topic, which has been received positively. And it means a different thing for every country, depending on the national or cultural setting; everywhere it'll mean something a little bit different but it's a topic we can all be united on.

"I also really appreciate that HR is pushing the feedback cycle to make performance measurable. And I see that people are not yet comfortable and at ease with feedback. But it's important and I appreciate that this is going to become more structured. Feedback will only help to grow and develop our people to their fullest potential."

How has employee engagement been improved within Knauf Insulation?

"While it's difficult for me to assess improvement, what I've witnessed is an unbelievable level of engagement over the past few months. And that's specifically contributed to getting things in order quickly after the cyber attack. People were so hands on, they were available day and night, everyone offered to help wherever and whenever it was needed. That showed me that people really care.

"It's been a tiring couple of years for our people. We've experienced COVID, the floods in Belgium, the war in Ukraine and then the cyber attack. It's felt like we're constantly in crisis mode and I'm aware that people might not be getting the rest they need. This is where as leaders, we need to take care. We also need to make sure that we are recognising, praising and valuing our people because across all countries, they have been exceptional."

“ I am personally so excited to work for a company that creates products to help achieve a better future for us all. ”

Kristin Barthel | Chief Financial Officer (CFO)



DAVID DUCARME, KNAUF INSULATION'S GROUP CHIEF OPERATING OFFICER (COO) AND DEPUTY CEO, TALKS ABOUT GROWTH, BETTER BUILDINGS AND OUR ONGOING SUSTAINABILITY MISSION.

What kind of impact have the challenges of 2022 had on Knauf Insulation's customers?

"We've had COVID, a construction boom, a cyber attack and our industry has been sold out. Because of this, our customers have unfortunately seen a shortage of product. They've also seen a very strong inflation in our pricing, that was mainly driven by COVID, supply chain disruption, and then the energy crisis following the war in Ukraine.

"But at the same time, they've seen a very strong demand for our products. So there's some good and bad news. And so far, the industry has been able to continue delivering volumes, which isn't always easy especially when trying to maintain good service levels. But overall, we've managed to continue to deliver a reasonable service to our customers throughout these different crises."



What has Knauf Insulation done in terms of supporting its team over in Ukraine?

"Support has been given in different areas. Some was down to the individual actions from our amazing people, driving to the border and fetching people that want to come across. Some of our employees also welcomed Ukrainians in their homes.

"In terms of structured business, what we've done is make sure that our employees got the support they need, and they are in the safest possible position. Of course, we have limited control in that, but everything we could do, we have done. And we've also made sure to maintain a level of business continuity and support the little economic activity that is happening in Ukraine. And of course, we have kept everybody employed and paid, even if there was no record of economic activity during the period of time."

The Johor Bahru plant came fully online in 2022. Why is this plant important?

"The Johor plant confirms our intention to stay in Asia Pacific for the long term and we have built the most efficient asset in the region. Nobody else has a plant of that scale and that technology level. And that's the way we approach new markets; we want to raise the level in terms of product quality, service and innovation, and certainly Asia Pacific is a great example of that. Having their own plant means that they will be able to serve customers much better with localised supply, and continue to develop their markets with their own local capacity."

Knauf Insulation took over an existing plant in Romania and has ambitious plans to increase its capacity. Why is this important?

"Romania is a project that makes a lot of sense to be able to increase our production capacity and improve our footprint in Europe to respond to growth. It's also a site with an existing team that we will be able to develop and who can contribute to our new state of the art plant. It's going to be good for local customers, for local employment and for energy efficiency overall."

McGregor is Knauf Insulation's newest plant in North America. What does it mean for the market?

"Increasing production capabilities in the US was essential to support customers in the growth they see in the market. Energy efficiency is very important in North America and is becoming even more so with a sustainability agenda that is getting a lot of federal subsidies and budgets over the coming years. We were struggling to deliver the high demand for residential buildings because we had one plant which is in the north of California and the other is close to Atlanta. The Texas plant will allow us to support the growth of our customers and optimise our network of clients."

What are your thoughts on the progress of the For A Better World sustainability strategy?

"It's our main business driver. It's essential that we look at everything we do with this prism of sustainability in mind to make the right decisions.

"We have seen very high level of engagement to support our sustainability strategy. We are probably still now in the process of training, educating and understanding what it really means. There are some very concrete actions, like the electric melting technology, and some other investment projects. We have a glass wool recycling plant that started up in Belgium this year as well. This is another interesting project where we invested €15 million to take waste from job sites and recycle it into our processes.

"But the learning curve is very steep. And there's a lot of things that are uncertain. We need to make sure that everybody in the company is able to look at their business or their job with sustainability in mind. We've agreed to recruit a lot of extra people focusing on sustainability in the coming year, including sustainability engineers in each plant. We also have sustainability managers in each business region. We are getting ready to really accelerate the implementation phase. We've made a good start but the acceleration is about to come!"

Renovation can contribute significantly to energy efficiency - what action is Knauf Insulation continuing to take here?

"We're going to assess our abilities with a whole life carbon approach. It means that there will be a demand for higher performance insulation solutions, and also lighter building structures, less bricks and less concrete, because of the whole life carbon impact. Overall, the Knauf Group, not just Knauf Insulation, is very well placed to play a major role in this new development in construction sustainability. We are in the right industry and we have the right kind of message to really play a major role there.

"When it comes to energy renovation, our view is that the market is today not working well. And the reason is that we don't focus enough on delivering real energy performance in buildings, we are focusing on measures to implement. Something has to change in the market - doing more of what we've been doing simply isn't going to work. So we're working on new business models to help achieve the EU's ambition of increasing renovation rate from 1% to 3% per year."

The company is committed to reduce embodied carbon by 15% by 2025, how is the company doing in your opinion?

"We've had a couple of strange years with COVID, some lockdowns, a high demand for our product, a cyber attack and this energy crisis. With this in mind, we are doing okay, but we are not making drastic improvements as things stand. This is why this acceleration and the results we are now allocating to sustainability are essential if we want to meet our targets.

"I think we have all the right pieces of the puzzle; we just need to focus on recruiting and training the right people in the right locations, then it will be something that we can achieve. But over the last two years, we haven't had 100% of our focus on this because of everything else we have been facing. As such, we are doing okay but there is a lot of room for improvement."

The company has made a series of 2025 commitments to achieve zero waste to landfill, increase the amount of recycled raw material in products and take back scraps from deconstruction sites and from work on construction sites. What are your thoughts on the company's progress?

"That's an area where we certainly walk the talk. This recycling plant we invested in in Belgium is the biggest in the industry. It's a pilot - we need to create the whole system and the value chain around this recycling service is not currently present in many countries. The right parameters are there in the market. But still, we need to continue to develop a network of partners to collect the waste.

"We think that this type of plant that we've built in Visé is the first of many. We are already looking at other locations for the next wave of projects, probably in Europe, because that's where the pressure is the strongest today. Longer term, it makes a lot of sense to be able to recoup the materials that have been used already once and reuse them in making new insulation."



It's essential that we look at everything we do with this prism of sustainability in mind to make the right decisions.

David Ducarme | Chief Operating Officer (COO) | Deputy CEO



CUSTOMER COMMITMENT

OUR NEW GLASS MINERAL WOOL PLANT IN MALAYSIA IS NOW FULLY OPERATIONAL AND CUTTING DELIVERY TIMES TO CUSTOMERS BY UP TO 50%.

Glass Mineral Wool plant at Johor Bahru in Malaysia



WORLD OF DIVERSITY

Our Johor Bahru plant in Malaysia has one of the most diverse workforces in Knauf Insulation.

There are seven nationalities working at the site from Europe and Asia, including Malaysians.

In addition, more than eight languages and four religions are represented under one roof working in harmony.

“Johor Bahru is a celebration of the power of diversity,” says Plant Manager Erkan Üçok, who is from Turkey. “How do we work so well together? Easy. Communication, communication, communication.”

Knauf Insulation’s new plant at Johor Bahru in Malaysia is now offering high-performance Glass Mineral Wool solutions to customers throughout the Asia Pacific (APAC) region.

The 75,000-tonne annual capacity site has faced unprecedented challenges over the past two years due to the pandemic and strict lockdowns in Malaysia from March 2020 and throughout 2021.

Many commissioning activities were carried out online and some colleagues from our plants around the world joined on site to oversee the commissioning process.

International travel was complicated by changes in the opening and closing of Malaysia’s borders, enforced fortnights of quarantine and restrictions that meant local travel in Johor Bahru was on one occasion restricted to a 10 km radius.

Plant Manager Erkan Üçok says: “The plant became fully operational in spring 2021, and this milestone achievement is a tribute to the power of Knauf Insulation’s international cooperation as well as the personal and professional commitment of our teams.

“They are outstanding examples of our values to ‘challenge. create.care.’ and I am incredibly proud of what they have achieved in unprecedented circumstances.”

Now customers in South Korea, Singapore, Japan, Australia and New Zealand are benefiting from the plant’s fully operational status and its geographic proximity.

In many cases delivery times of our products have now been reduced by more than 50% compared to before the plant started operations.

Johor Bahru is our first plant in the Asia Pacific region and uses state-of-the-art technology to produce high-quality solutions using our ECOSE Technology® binder with no added formaldehyde.

Stuart Dunbar, Regional Managing Director for APAC, says: “Asia is the fastest growing insulation market in the world and the plant has been built bigger than demand, which gives us great growth opportunities.

“Johor Bahru also ensures that we can help our customers develop their markets and product offering through a diversified range as well as quickly adapt to develop new products in line with market demands.”

Knauf Insulation solutions include Mineral Wool batts, slabs, rolls and Blowing Wool which are tailor-made to meet specific market demands. For example, customised OEM solutions are being sold into Thailand.

Demand for our solutions is also increasing as a result of heightened awareness of energy efficiency and climate change.

In Australia, which is Johor Bahru’s biggest market, a new government came to power in 2022 and committed to reduce carbon emissions by 43% by 2030 compared to 2005 levels, increase renewable capacity to 82% of on-grid generation by 2030 and provide financial support for improving energy efficiency.

Our Knauf Insulation public affairs team is now campaigning to put the energy efficiency of buildings at the heart of this new political agenda.

Meanwhile, in New Zealand new regulations have been introduced to make it mandatory to install high-performing wall, floor and roof insulation in new homes to reduce energy use and improve living conditions.

“Johor Bahru brings high quality Knauf Insulation solutions closer than ever to our customers in Asia Pacific at a time when demand is increasing. The new plant marks an exciting new chapter in our company’s history,” says Stuart.

In the Johor plant diverse teams work in harmony.



SUSTAINABILITY AND SAFETY SHOWCASE

Our new Malaysia plant has marked more than 300 days without a Lost Time Accident as of October 2021 and reduced its Total Recordable Incident rate from 6.4 to 2.7 from 2021 to 2022.

The plant’s HSE Manager Kalai Ramalingam says the outstanding safety record is due to the efforts spent on leading safety activities like Hazard Spotting Tours, Safety Observations and Safety Dialogues.

Johor Bahru is also establishing itself as a showcase for sustainability. The plant is capable of running with high share of post-consumer glass, and has succeeded to negotiate a contract for renewable electricity which will be originating from hydropower sources.

Emissions from shipping are reduced thanks to the plant’s unique compression packaging which allows the delivery of higher volumes of product per shipment.

Additionally, a new piping system that collects rainwater from the roof rather than using potable water is saving around 20,000 m³ of water every year.

Ambitious plans like solar panels on the roof are now underway to accelerate major sustainability initiatives at the plant with exciting announcements scheduled for 2023.

€135 MILLION INVESTMENT IN ROMANIA

UPGRADE OF FACTORY AND NEW PRODUCTION LINE WILL CREATE MORE THAN 100 NEW JOBS.

Knauf Insulation is building a new Glass Mineral Wool manufacturing production line in the heart of Romania.

The investment will provide an annual capacity of over 5 million m³ of Glass Mineral Wool insulation and create more than 100 new jobs.

The company is also investing in an upgrade of an existing factory adjacent to the new line to increase output.

Alexander Knauf, General Partner of the Knauf Group, says: "The new plant supports Knauf Insulation's European growth ambitions and sends an important message to our customers in Romania and Eastern Europe.

"At a time when energy efficiency is more important than ever in the light of the international situation, this development shows we care for our customers and we are bringing our high-quality solutions closer to them than ever before."

Dominique Bossan, Member of the Knauf Group Management Committee and head of Knauf Insulation Europe/Middle East/Asia, says: "The new plant is on track to be completed by 2024. It will create more than 100 new jobs and hundreds of additional jobs for regional suppliers, contractors and vendors."

The new development is located at a brownfield site outside the city of Târnăveni, Mureş County, where it will energise the area with new infrastructure and job opportunities.



Târnăveni will also be a showcase for Knauf Insulation's cutting-edge technologies, high quality manufacturing processes, product excellence and high standards where safety always comes first.

The plant will produce Knauf Insulation's innovative Glass Mineral Wool using up to 80% recycled glass and with ECOSE Technology®.

Adrian Garofeanu, General Manager of Knauf Insulation Romania and Bulgaria, says: "As a family-owned business with Menschlichkeit (humanity) as one of our core values, it is important that we are a good employer and a good neighbour in all the communities where we operate.

"We are proud to be playing such an important role in the community and economy of Târnăveni and we look forward to strengthening our relationship with those that we work with at the plant, the local community and the Romanian authorities."

TÂRNĂVENI'S KEY ROMANIAN ROLE

THE DEVELOPMENT OF TÂRNĂVENI COMES AT A PIVOTAL TIME FOR ROMANIA AS ISSUES OF INTERNATIONAL ENERGY SECURITY AND THE AVAILABILITY OF A STAGGERING €30 BILLION IN POST-COVID FINANCIAL SUPPORT FROM THE EUROPEAN UNION COMBINE TO CREATE A STRONG ENVIRONMENT TO DRIVE THE ENERGY EFFICIENCY OF BUILDINGS.

The plant will play an important role in helping to improve the energy efficiency of buildings and inspire more renovation in Romania and the region by providing extra capacity for Mineral Wool over the coming years.

Knauf Insulation products save building energy and in Romania around 85% of buildings were built before energy performance requirements were put in place. As a result, there is an urgent need to inspire a wave of renovation across the country to help lower energy use and improve the country's energy security.

Romania's share of the European Union's post pandemic Recovery and Resilience Fund – designed to help countries recover from the impact of COVID-19 – is a nation-shaping €30 billion until 2026.

Another factor in the drive towards more energy efficient buildings is the price of gas, which is an important source for heating in buildings. Prices have been rising dramatically due to the international situation with a major impact on those struggling to pay energy bills, particularly those in single-family houses in Romania's rural areas.

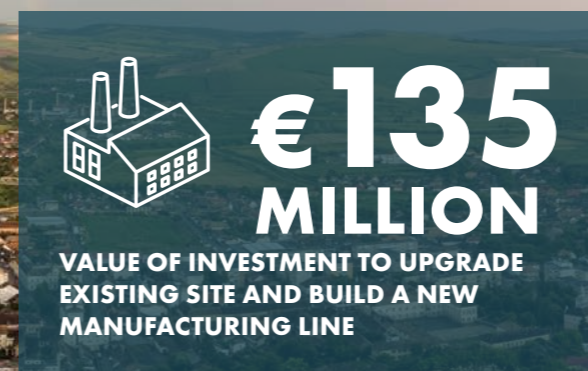
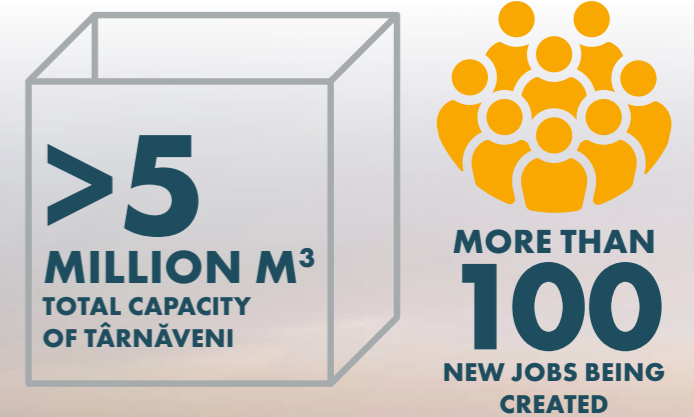
In addition to saving energy, renovation reduces greenhouse

gas emissions and boosts the economy. In Europe buildings are responsible for 36% of CO₂ emissions and renovation contributes to significant climate action while creating the thousands of new jobs needed to transform buildings.

Finally, unprecedented levels of funding are being made available to European countries through the EU Green Deal, Fit For 55 programme, the Renovation Wave and REPowerEU to increase the numbers of energy efficient buildings and drive more renovation, particularly for public buildings such as hospitals and schools as well as single-family homes.

No wonder all these factors have combined to create extremely ambitious renovation scenarios for Romania ranging from the doubling of renovation rates to multiplying them six-fold.

To achieve such ambitious aims will require renovation materials and Târnăveni is perfectly positioned to help.



SHOWCASE FOR EXCELLENCE

KNAUF INSULATION'S McGREGOR SITE IN NORTH AMERICA WILL CREATE 150 NEW JOBS AND PRODUCE 46 MILLION M² OF MINERAL WOOL EVERY YEAR WHEN IT OPENS IN 2024.

The new site in Texas, North America, is scheduled to open in 2024 and will be a company showcase for plant excellence.

The facility is the seventh Knauf Insulation site in the U.S. and when the 56,000 m² plant is complete, it will produce 46 million m² of Mineral Wool every year – enough to insulate 125,000 homes – creating 150 new jobs in the process.

Kevin McHugh, Senior Vice President Strategic Projects of Knauf Insulation North America, who is overseeing the project, says: “We are proud that this project has brought together the finest minds from around the international Knauf Insulation network.

“This means a wealth of best practices and experience is being invested in McGregor based on insight from building our new plants in France and Malaysia as well as major upgrades at our sites across North America and Europe. Maximizing this knowledge will mean McGregor will be a showcase for company excellence.”

The site will also feature the most efficient and innovative manufacturing machinery available globally with the company’s procurement teams having sourced the best performing technology from different countries around the world.

This technology will ensure customers can expect the highest quality solutions when McGregor’s Glass Mineral Wool rolls, batts, slabs, Blowing Wool and OEM products start to hit the production line.



First groundbreaking with Matt Parrish, CEO of Knauf Insulation North America, and Alexander Knauf, General Partner of the Knauf Group, in May 2022



A window display in downtown McGregor

Caring for customers

Breaking ground for the plant in May 2022, **Matt Parrish, CEO of Knauf Insulation North America, said:** “We are thrilled to break ground on Knauf’s new North American manufacturing operations in McGregor, Texas. We believe the timing is right for our growth.”

Alexander Knauf, General Partner of the Knauf Group, said: “Our new site is the centre piece of Knauf Insulation’s growth strategy and an investment that shows we care for our customers.”

Demand for high quality Mineral Wool solutions in the Texas region had been high for many years, as the regional construction market shows prospects.

Virtual Builders Exchange (VBX), which tracks construction projects, estimated that there could be as much as US\$535 billion in potential construction projects in Texas for 2022.

VBX’s research also found the number of residential projects in Texas, such as condos, apartment complexes and housing estates, had almost doubled to 251 for 2022 compared to 2020.

By mid 2023 the main plant building of McGregor is scheduled for completion and ready for the installation of equipment. Plans are underway for the extension of a rail-track and road to the site by McGregor’s municipality.

Economic boost

In addition to the new jobs created at the plant, Knauf Insulation estimates that the economic benefits of the plant to Central Texas will be more than US\$2 billion in the first 10 years.

Meanwhile, the infrastructure investment of US\$20 million will accelerate growth in the region including the creation of more than 300 indirect jobs.

McGregor’s Mayor James Hering described the new plant as “creating significant new employment for skilled trades as well as new opportunities for local businesses and service providers”.

Community partnerships

Alexander Knauf said the new plant was a celebration of trust and the strong relationship that has been forged between Knauf Insulation and the McGregor community.

Recent Knauf Insulation community events have included a festive KindleMarket celebration for more than 900 McGregor residents, sponsorship of chamber of commerce events, support for a new video scoreboard for the McGregor Bulldogs’ football stadium and charity collections for the McGregor Firefighter Auxiliary.

Knauf Insulation has also established a window display in downtown McGregor where residents can catch up on updated information about the plant and new jobs.

Matt Parrish, CEO of Knauf Insulation North America, said: “The warm welcome we have received from McGregor residents and leaders – and the immense interest in job opportunities – has been beyond even our best expectations.”

Mollie Toland, Knauf Insulation’s North America Director of Brand & Culture, said: “We want to be a good neighbor and we are excited to be involved in many aspects of the community from the schools and chamber of commerce to the Mayor’s office and football team.

“We have only just started, and we are looking forward to announcing many more community initiatives in future.”

SPOTLIGHT ON SUSTAINABILITY

OUR NEW McGREGOR PLANT WILL CONTRIBUTE SIGNIFICANTLY TO REDUCING THE ENVIRONMENTAL IMPACT OF BUILDINGS AS WELL AS DEMONSTRATING THE BEST POSSIBLE SUSTAINABILITY CREDENTIALS.

The new plant will produce

@ 46 million m²
of Mineral Wool every year.

Enough to insulate

125,000
homes

saving thousands of tonnes of carbon during the buildings' life cycle.



The plant will have zero process water discharged offsite.

McGregor will feature the world's most energy efficient technology supported by a company-wide commitment to continuously improve on-site energy management.

5,600 km

Once broken down to glass cullet, one beer bottle can be transformed into a staggering 5,600 kilometres of Glass Mineral Wool fibre.

Saving **30 million** used bottles being sent to landfill

The new McGregor plant will help to save more than 30 million used bottles from being sent to landfill (across North America, Knauf Insulation uses 250 million kilogrammes of recycled glass every year to create its products).



70% post-consumer glass

McGregor's Glass Mineral Wool will be produced using up to 70% post-consumer glass which requires less energy-intensive processes - and generates less emissions - to manufacture Knauf Insulation materials.

200 railcars

In North America, we own more than 200 railcars which deliver used glass from major US cities to our plants - reducing our potential truck emission footprint significantly.

At McGregor we will also use rail to transport used glass to our site every day.

The McGregor plant brings our Glass Mineral Wool solutions closer to our customers in Texas saving thousands of kilometres in transportation.



The plant will exceed all regulations in terms of emission and noise abatement.

PUTTING PEOPLE FIRST AT McGREGOR



Kevin McHugh, Senior Vice President Strategic Projects

THREE KEY LEADERSHIP POSITIONS WERE FILLED MORE THAN A YEAR BEFORE OUR McGREGOR PLANT WAS SCHEDULED TO OPEN - THE PLANT MANAGER, HR MANAGER AND HSE MANAGER.

The appointments mark a new direction for Knauf Insulation, says Kevin McHugh, Senior Vice President Strategic Projects of Knauf Insulation North America, who is overseeing the construction of the plant.

"Appointing an HSE (Health, Safety and Environment) executive so far in advance of the launch demonstrates real commitment to the culture of the plant by embedding safety procedures, processes and protocols into every aspect of the plant and its operation before a single brick is laid," he says.

"This has not been done before at our plants and we should be proud of what is an important professional step in the right direction."

Focus on community

The McGregor start-up team has launched a series of innovative initiatives in terms of recruiting local employees.

Knauf Insulation is forging close partnerships with technical colleges, state colleges, local schools and even the Fort Hood military base near McGregor where 35,000 soldiers are billeted.

"Knauf Insulation North America has never implemented such a community drive before a plant launch but we want to find the best colleagues to work at our plant and demonstrate to them the incredible opportunities that are available to them at McGregor," says Kevin.

MAJOR INVESTMENT FOR UK AND GERMAN PLANTS

More than £45 million is being invested in the UK's St Helens and Cwmbran plants to meet demand for Knauf Insulation's Glass Mineral Wool solutions.

The investments at St Helens include a larger furnace, upgraded equipment as well as the purchase of an adjacent site, while at Cwmbran there will be investment in packaging equipment to optimise manufacturing and logistics. Such optimisation in Cwmbran will lead to taking 1.5 million truck miles every year off the road.

A reduction of

1.5 million truck miles every year



Meanwhile, Knauf Insulation is also investing to increase the production capacity of its Glass Mineral Wool plant in Bernburg, Germany.

Demand for Mineral Wool for energy-efficient buildings continues to soar and the investment will increase volume through modernisation and facilities expansion.

INNOVATION INITIATIVES

INNOVATION AT KNAUF INSULATION	22
KINETIK®	24
SAFETYPRO	25
HOME BY KNAUF INSULATION	25
COLOUR-MATCHING CREATES THE PERFECT BLEND	26
EUREKA MOMENT FOR GREEN ROOFS	26
HIGH PERFORMANCE FOR HIGH-RISE BUILDINGS	27
'VERY GOOD' NEWS	27
HELP FOR HOUSEBUILDERS	27
FIVE REASONS TO CHOOSE OUR NEW FIRE PROTECTION SYSTEM	28
AWARD-WINNING SOLUTIONS FOR SANDWICH PANELS	28
PRODUCT DATA EXCHANGE	29
INTERNATIONAL CONFERENCE OF EXPERTISE	29

INNOVATION FEATURE

BIM FACTORY	30
-------------	----

WHOLE LIFE CARBON (WLC)

CARBON IN THE SPOTLIGHT	32
-------------------------	----

ECOINDEX AND CARBON CALCULATOR

GUIDING THE MARKET ON CARBON	33
------------------------------	----

INNOVATIVE SOLUTIONS IN WESTERN EUROPE

KI INNOVATION	34
KI IMPACT	34
VIRTUAL CITY	35
KI LEARNING	35



Innovators from Knauf Insulation and external experts discussed innovation at the dedicated workshop in Brussels



INNOVATION AT KNAUF INSULATION

INNOVATION DRIVES EVERYTHING WE DO. WHY? IT BENEFITS THE PLANET, OUR CUSTOMERS, AND OUR BUSINESS.

Knauf Insulation's Director of Innovation Marc De Roeck says: "We are in the business of sustainability – our solutions save energy, reduce CO₂ and improve lives. But, to minimise the environmental impact of our products and processes, while maximising their potential in line with our **For A Better World** sustainability strategy, we need to constantly innovate."

So, what does this mean in reality? "It means constantly engaging our customers and everyone within Knauf Insulation to find innovative sustainable solutions to old and new challenges," says Marc.

We turn to people outside of the company for inspiration, too. **Abdelmoula El Hadi, Innovation Process Manager, explains:** "We're always researching the market, latest trends, new technologies and materials. We link with start-ups, universities and institutes, getting inputs where we can, to develop breakthroughs in Research and Development for our customers."

Thinking outside the box

We celebrated UN World Creativity and Innovation Day 2022 with a special workshop in Brussels. The event brought together innovators from across the company, as well as external experts. Together we discussed and developed new and creative customer-focused ideas and solutions.

Dominique Bossan, CEO of Knauf Insulation Europe/Middle East/Asia and Member of the Knauf Group Management Committee, said: "Thinking outside the box will help us come up with more sustainable solutions and innovations around products, systems and services. And this is how we will be able to differentiate ourselves from our competitors."



“Innovation is the engine that powers our success, breakthrough ideas and cutting-edge solutions.”

Marc De Roeck | Director of Innovation

DISCOVER OUR LATEST INNOVATIONS

Take a look at the solutions and ideas we developed through the power of innovation in 2022.





NEW APP GIVES SUPAFIL® CUSTOMERS A COMPETITIVE EDGE

OUR KINETIK® APP MAKES IT POSSIBLE FOR SUPAFIL® CUSTOMERS TO RECORD DETAILED INSTALLATION DATA FOR THE FIRST TIME.

We started to develop Kinetik® a few years ago to give customers independent, verifiable data and track the installation process from start to finish.

Kinetik® is an app-based site reporting system, for **Approved Supafil® Installers**, that creates an instant digital record of installations. Installers select the specific development, plot and application from a pre-populated list, then scan the unique QR code printed on each pack of **Supafil®** as it's installed. The app also prompts them to take photos at relevant points throughout the process. The data is collated into a complete record that can then be given to housebuilder customers, and used by installers to manage their own quality control.

Changes to regulations and requirements in the UK made traceability even more critical. After the Grenfell Tower fire, Dame Judith Hackitt recommended that there should be a 'golden thread' of information running through building projects to establish accountability. One example is the requirement for photographic evidence as part of the new Part L of the Building regulations for England.

To help meet these requirements, **Kinetik®** was launched as a pilot in April 2021. A customer helped us to test, learn from and improve the app before it launched officially in November 2021.

All our UK Blowing Mineral Wool customers are given access to the free app as part of our service offering. This provides assurance for housebuilders that the product they specified has been installed.

Our dedicated Housing and Contracting Team can also use this information to support and train housebuilders, to ensure they bring in installers at the right time and in the best way on projects.

Knauf Insulation plans to use **Kinetik®** as a digital platform for further innovation in the future.

| FIND OUT MORE AT [KNAUFINSULATION.CO.UK/KINETIK](https://knaufinsulation.co.uk/kinetik)

Since its launch in 2021, the app was used:

by over **200 technicians**

by **13 installing companies**

on **6,965 jobs**

on **837 sites**

with **97 housebuilders**

SAFETY ISN'T EXPENSIVE, IT'S PRICELESS

KNAUF INSULATION'S SAFETYPRO SYSTEMS ARE HELPING WORKERS STAY SAFE ON ROOFING PROJECTS.

When working at height, it's important to work as safely as possible to prevent any falls. That's why our team has developed our SafetyPro systems, to help protect those working on roof construction projects.

We've developed two SafetyPro systems. The SafetyPro fix is designed for flat roofs that have a concrete, construction wood or trapezoidal sheet cover, whereas the SafetyPro greenSec system is designed for those working on green roofs specifically.



"Both fall protection systems are incredibly easy to install," explains **Franc Rauter, Segment Manager Green Solutions**. "It was important for us to make safety as simple as possible to help us serve more customers with differing requirements."

SafetyPro greenSec

The greenSec system is ballasted, which means there is no requirement to fix it to the roof structure. It's created from high quality materials that are resistant to corrosion and comes with a low number of accessories, making it easy to install.

It can be used on roofs up to a 7 degree incline (5 degrees in Germany).

SafetyPro fix

The fix system is made of corrosion resistant stainless steel, providing a long-term approach to safety. With minimal fixing screws for each anchor device, it offers fuss-free installation.

It can be used on roofs up to a 10 degree incline.

"They say, 'don't learn safety rules by accident'. Our SafetyPro systems will help workers stay safe on roofing projects for years to come. You really can't put a price on safety," says Franc.

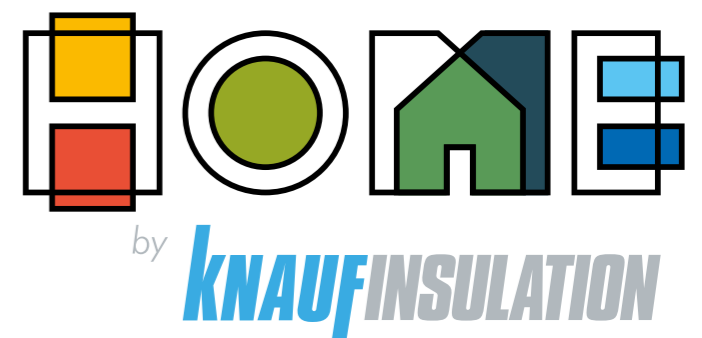
| FIND OUT MORE AT [URBANSCAPE-ARCHITECTURE.COM/SOLUTIONS/SAFETYPRO-SYSTEMS](https://urbanscape-architecture.com/solutions/safetypro-systems)

GUIDING CUSTOMERS THROUGH THE PROCESS

Our online platform, Home by Knauf Insulation, is guiding customers in Slovakia through every phase of their home insulation project, whether it is a new construction or a renovation.

Customers can use the website to find out about our products and choose the right insulation for different parts of their building. They can work out the volumes they need, get a cost quote and enjoy a free consultation with one of our experts. Insulating your home couldn't be easier!

| FIND OUT MORE AT [HOMEBYKNAUF.SK](https://homebyknauf.sk)



COLOUR-MATCHING CREATES THE PERFECT BLEND

To enhance the aesthetic appeal of Rocksilk® Soffit Linerboard, Knauf Insulation Northern Europe has launched the first range of colour-matched tube washers.

“We know architects and contractors choose Rocksilk® Soffit Linerboard for use in car parks, stadiums and commercial units because it is a high-performing, non-combustible insulation solution that is also aesthetically pleasing, while installers like it because no additional finishing is required,” said **Luke Davies, Rock Mineral Wool Product Manager for Knauf Insulation Northern Europe.**



Soffit renders

“To reduce thermal bridging, we developed a fixing method using tube washers in the corners of each slab instead of traditional all-steel fixings. But until now, the washers have only been available in purple, so they really stood out.”

To ensure the fixings blend in with the facing, the new range is colour-matched to off-white for Rocksilk® Soffit Linerboard Extra and black for Rocksilk® Soffit Linerboard Standard.

| FIND FURTHER INFORMATION AT [KNAUFINSULATION.CO.UK/SOFFITS](https://www.knaufinsulation.co.uk/soffits)

EUREKA MOMENT FOR GREEN ROOFS

Knauf Insulation Green Solutions was awarded with EU funds from the EUREKA 2019 initiative for their project “Green Roofs for storm water management with online model application”.

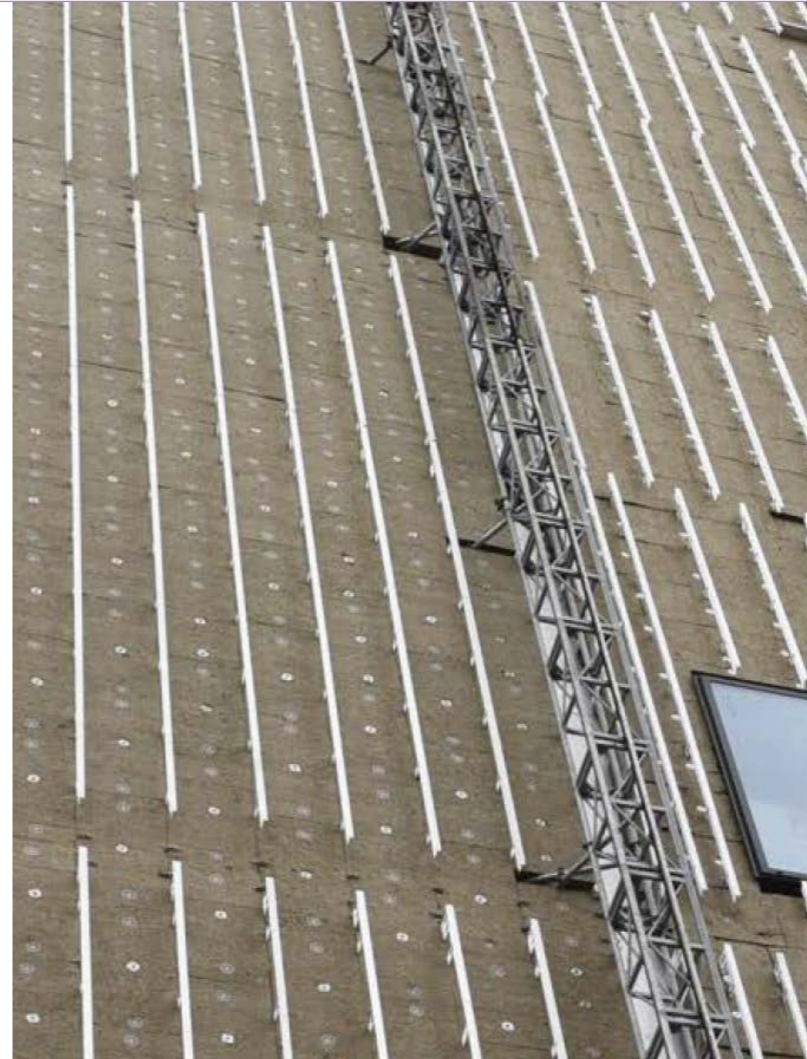
Green roofs bring numerous benefits. Apart from saving energy, green rooftops also increase well-being, promote biodiversity and provide successful storm water management.

Storm water management in dense urban areas is vital, due to more extreme weather. Well-engineered green roofs capture and retain rainwater, which gradually evaporates into the

atmosphere and is slowly released to the sewage system. This is a particularly important and recognised factor in climate change adaptation.

The goal of the project is to develop a new green roof system, which will be adaptable to specific locations, buildings and local climate conditions. Prototypes have already been installed in the Netherlands and Slovenia. These are helping us to measure storm water detention and the prevention of floods, especially during big storms and heavy rainfalls. Watch this space for further developments!

| FIND FURTHER INFORMATION AT [URBANSCAPE-ARCHITECTURE.COM/SOLUTIONS](https://www.urbanscape-architecture.com/solutions)



‘VERY GOOD’ NEWS

Knauf Insulation Northern Europe’s BES 6001 re-certification has been successful. The rating has increased from Good to Very Good.

The BES 6001 certification is an independent, third-party assessment and certification for construction product manufacturers. It enables them to prove that their products have been made with constituent materials that have been responsibly sourced.

The scheme is recognised by the BREEAM family of certification schemes and the Code for Sustainable Homes.



HELP FOR HOUSEBUILDERS

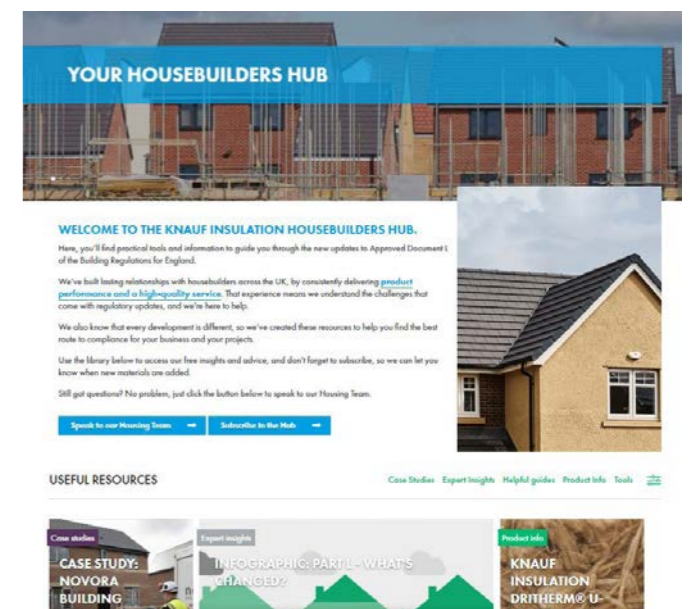
To help housebuilders comply with the updated Approved Document L (ADL) building regulation changes in England, Knauf Insulation Northern Europe has launched a new Housebuilders Hub online.

The updated ADL requires new homes to produce 31% less carbon emissions compared to previous regulations.

The updates are causing big changes for the industry. Developers face unprecedented demand for quality homes built to precise standards. This is against an increasingly challenging backdrop of compliance, cost pressures and rising customer expectations.

To support customers during the transition, we’ve developed practical resources on the Housebuilder Hub including Part L guides, house recipes options and online U-value and Psi-value calculators to find the optimal route to compliance with minimal disruption.

| FIND THE HUB AT [KNAUFINSULATION.CO.UK/HOUSEBUILDERS-HUB](https://www.knaufinsulation.co.uk/housebuilders-hub)



HIGH PERFORMANCE FOR HIGH-RISE BUILDINGS

In response to developments in fire safety and specifying products that are manufactured to the highest standards and are fit for purpose, Knauf Insulation Northern Europe has further improved its Rocksilk® RainScreen Slab range.

Third-party certification body, the BBA, has certified the product as suitable for use in partially filled masonry cavities. This additional certification means Rocksilk® RainScreen Slab is:

- BBA certified for an even broader range of build-ups
- now available in 455mm x 1200mm (in addition to the existing 600mm x 1200mm product) to suit standard centres for installation between wall ties or brick restraint systems.

The improved Rocksilk® RainScreen Slab range ensures compliance, delivers real-world performance and provides a robust solution for all common rainscreen build-ups.

| FIND OUT MORE AT [KNAUFINSULATION.CO.UK/RAINSCREEN-SOLUTIONS](https://www.knaufinsulation.co.uk/rainscreen-solutions)

FIVE REASONS TO CHOOSE OUR NEW FIRE PROTECTION SYSTEM



Knauf Insulation Technical Solutions launched a new mineral wool based system from their Fire-teK® range, made with ECOSE Technology®, for use on rectangular ventilation ducts. This innovative system for fire protection class EI 30 is called the Fire-teK® DuctProtect SYSTEM.

Five reasons to choose the Fire-teK® DuctProtect SYSTEM:

- 1** No penetration in the duct (stiffeners, screws) means that ducts are guaranteed to remain tight, making them efficient to clean and more hygienic
- 2** No sound transfers to walls as no wall-mounting is needed
- 3** It's quick and easy to cut and assemble without additional tools
- 4** It's safe to install in the workplace as no metal has to be cut, so there are no flying sparks
- 5** It's easy to maintain thanks to fire-protection-tested inspection openings

FIND OUT MORE AT [KNAUFINSULATION-TS.COM/SOLUTIONS/INSULATION-SOLUTIONS-FOR-FIRE-PROTECTION-FIRE-TEKR](https://www.knaufinsulation-ts.com/solutions/insulation-solutions-for-fire-protection-fire-tekr)

AWARD-WINNING SOLUTIONS FOR SANDWICH PANELS

One of the current trends in the sandwich panel market is light-weight solutions for less demanding applications, such as lower wind loads and fire resistance requirements. In response, Knauf Insulation OEM has developed an award-winning low-density Rock Mineral Wool for sandwich panel production called PBE Board LITE.

It's economical to use, offers good mechanical and insulation performance and it's a more sustainable solution for sandwich panels. PBE Board LITE received the Gold Innovation Award of the Chamber of Commerce and Industry of Slovenia.

We also introduced the first Knauf Insulation Glass Mineral Wool product for sandwich panels, Knauf Insulation PBE G Board AIR, which is a lightweight solution and made with ECOSE Technology®. It is cut into lamellas during the sandwich panel production process, offering excellent thermal insulation properties and good mechanical strength. PBE G Board AIR is produced using up to 80% recycled glass and holds the Indoor Air Quality Gold certificate by Eurofins, making it perfect for creating sustainable sandwich panels.



AUTOMATING THE EXCHANGE OF PRODUCT INFORMATION FOR A DIGITAL FUTURE

KNAUF INSULATION IS AUTOMATING THE WAY THAT PRODUCT DATA IS EXCHANGED FOR USE IN CONSTRUCTION.

The exciting initiative, Digital Supply Chain in Built Environment (DSCiBE), is being rolled out between construction sector stakeholders, including contractors and architects, and manufacturers. It involves the development of innovative new tools and processes to code information in a way that is useful to each stakeholder.

The processes and tools being developed by the DSCiBE working group and coordinated, among others, by Knauf Insulation bring together knowledge from around the world to digitalise activities and help construction projects operate more efficiently. Different types of standards are being tested to exchange this data.

"Our objective is to digitalise these processes," explains **Magdalena Pyszkowski, our Global Head of Market Management.** "We want to help the economy of the processes themselves, avoid duplicating the processing of data and provide all the information that's needed to help create better buildings."



"To serve customers better, you need to provide high quality data directly to the customers."

By using the right information, we build the applications which help architects and specifiers to propose a solution that truly fits the market and will be helpful to end users.

Future development of tools is ongoing, with further research being performed by the working group on a continuous basis.

"We presented our findings at the BIM World exhibition in Munich," says Magdalena. "By the end of the year, we would like to have a clear roadmap for the next stage of development."

INTERNATIONAL CONFERENCE OF EXPERTISE



Jean-Pierre Pigeolet, Decarbonization & LCA Sustainability Manager

Knauf Insulation hosted experts from around the world for a special conference to highlight the importance of harmonised processes and automation when it comes to examining the environmental impact of products.

The International EPD System conference was held at our Experience Center in Slovenia and featured presentations by Knauf Insulation's sustainable building team.

Environmental Product Declarations (EPDs) are used to forensically examine the impact products have on the environment across their lifecycle – from the sourcing of materials and manufacture to ultimate disposal or reuse.

Conference themes included EPD standardisation and harmonisation, the digitalisation of EPDs and how EPDs can be used to decrease building carbon footprint and comply to new construction regulation.

A ONE-STOP SHOP FOR ROOF SYSTEM SPECIFICATION

KNAUF INSULATION'S NEW BIM FACTORY IS HELPING TO REDUCE THE RISKS ASSOCIATED WITH FLAT-ROOF SPECIFICATION.

Specifiers can face major headaches putting together the products they need to create flat-roof building systems with just one simple mistake potentially causing a major project risk.

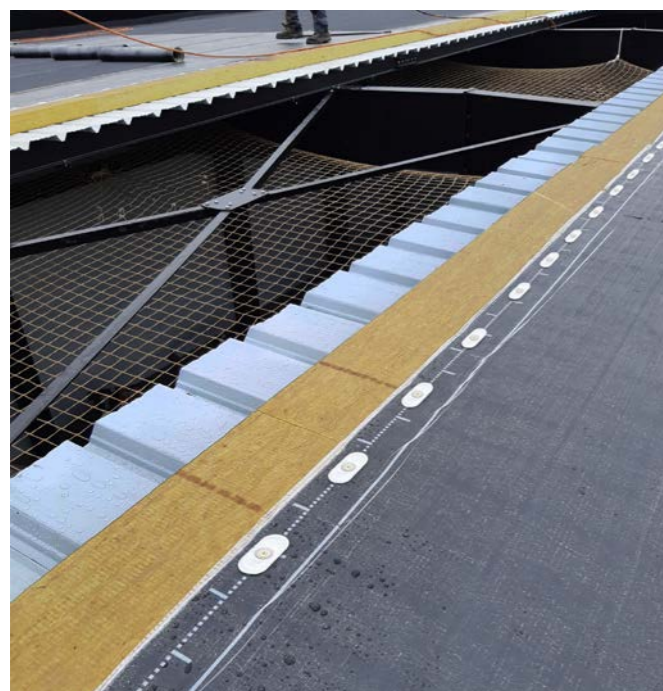
And there is a lot of room for error.

To create these systems, specifiers have to compare the thermal, acoustic and fire performance of different products, assess their environmental impact and understand how all these elements fit together in the most effective way.

They need to compare different brands, work out the best possible combinations and check FM Approvals criteria for how the system needs to perform in case of fire or high winds.

To achieve this involves the time-consuming process of downloading and comparing dozens of files and documents to assess a component's functionality, performance and environmental impact.

Fortunately, there is now a one-stop shortcut solution to avoid all these issues — Knauf Insulation's BIM Factory.



Benefits of the BIM Factory

The web-based application enables specifiers to anticipate any potential project risks and avoid costly miscalculations by providing all the data they need to create flat-roof building systems in simple, data rich Building Information Modelling (BIM) formats.

Knauf Insulation's Global Head of Market Management Magdalena Pyszkowski says:

"At the swipe of a screen or the click of a mouse our BIM Factory allows specifiers to compare the performance of different products from different manufacturers – a unique feature of the digital platform – and access all the information they require to combine these products to create the flat-roof system they need.

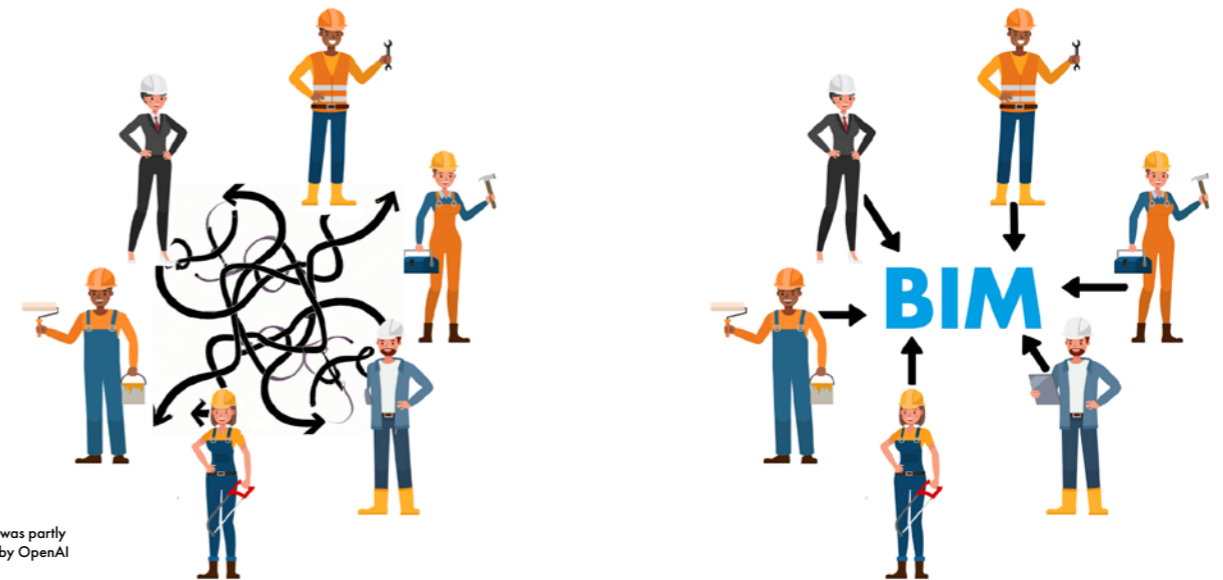
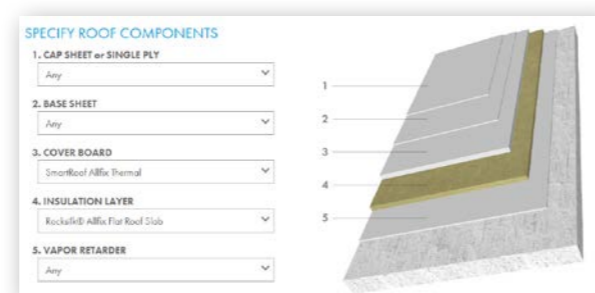
"This system specification is then sent to their in-box in one easy-to-understand document featuring the information in the three most common BIM formats — Revit, ArchiCAD and IFC."

So, how does the process work?

On the web site, simple drop-down menus enable specifiers to input the type of deck they require, the country where the project is based and compare different layers of roof component.

They can then assess the fire, thermal and acoustic performance of different systems created from different products, from different manufacturers.

The application enables endless customisation and once a specifier is satisfied with his or her combination, the results in the three common BIM formats can be sent to their email.



This image was partly generated by OpenAI

Solving problems before they occur

"BIM is revolutionising the construction industry by enabling specifiers and architects to digitally envisage their projects before a single brick is laid," says Magdalena.

"More importantly, BIM allows specifiers and other people in a team to work collaboratively on a project together in the same online space to understand the performance of individual building aspects and iron out potential problems in the digital world rather than the real world."

Magdalena says that the construction industry is facing major problems in terms of coordination between different participants on medium-sized and large building projects which is leading to challenges of time, cost and quality.

At the heart of these problems, she says, is a lack of common, inter-operable, global standards for classification, identification and property definitions which adds up to poor quality data for products and materials leading to construction challenges.

Digitalisation sharpens competitive advantage

"For the construction industry to increase its level of efficiency it has to improve its processes and supply chains," says Magdalena. "Moving towards the digitalisation of these activities and processes

is the first important step towards creating the inter-operability and mutual level of transparency required by new BIM standards and upcoming regulations for public procurement."

Magdalena also highlights the importance of digitalisation to sharpen companies' competitive edge.

"Construction trends clearly demonstrate that organisations with a strategic focus on modern technologies such as BIM are making better and faster decisions than their competitors, which is delivering to their revenues and profits.

"It is essential that everyone in the building supply chain takes a systematic and data-driven approach to product specification to accelerate this process.

"At Knauf Insulation we're working to increase awareness of the advantages of digitalisation as well as introduce the tools and accessibility that specifiers need to maximise its potential.

"Our BIM Factory one-stop application for roof systems, and in the future for other applications (such as ventilated facades and prefabricated components), is an important step forward in this process and I hope specifiers make the most of the advantages it gives them."

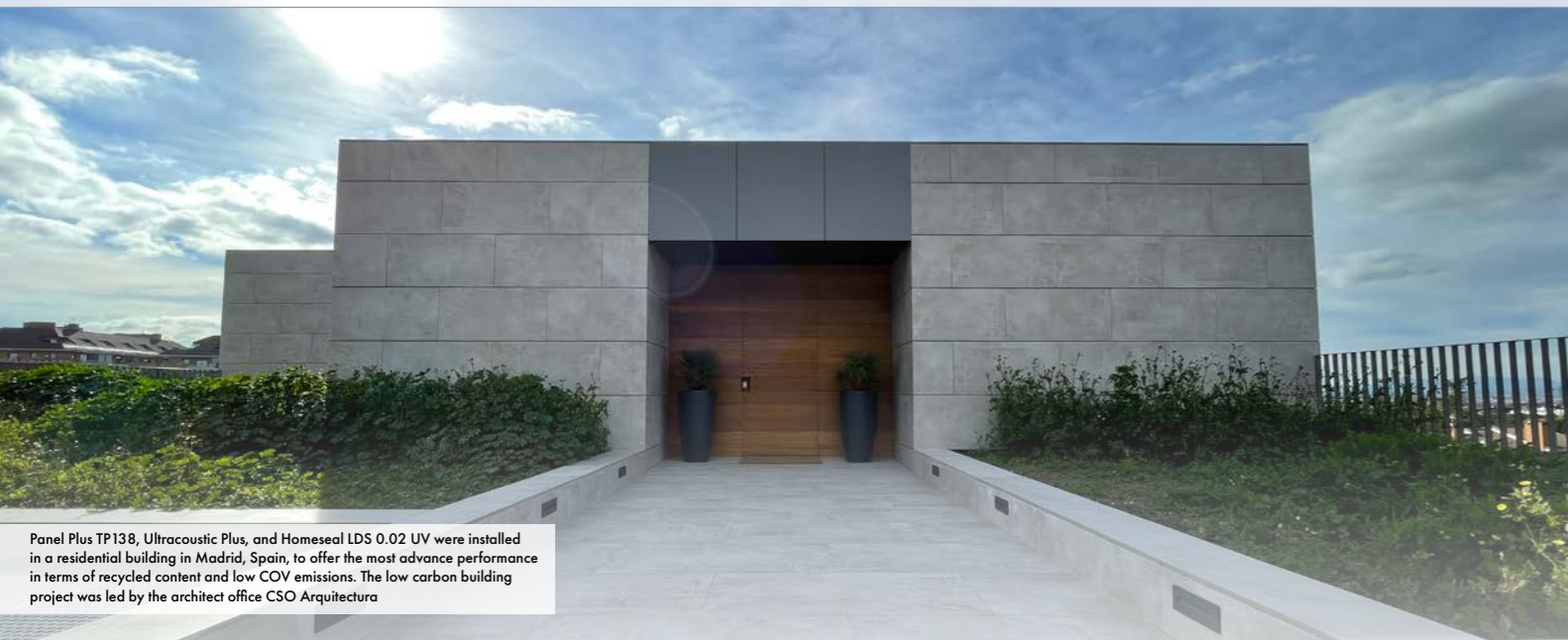
FIND OUT MORE AT [KNAUFINSULATION.COM/WHAT-WE-DO/EXPERTISE/BIM-FACTORY](https://www.knaufinsulation.com/what-we-do/expertise/bim-factory)



BIM is revolutionising the construction industry by enabling specifiers and architects to digitally envisage their projects before a single brick is laid.

Magdalena Pyszkowski | Global Head of Market Management





Panel Plus TP138, Ultracoustic Plus, and Homeseal LDS 0.02 UV were installed in a residential building in Madrid, Spain, to offer the most advance performance in terms of recycled content and low COV emissions. The low carbon building project was led by the architect office CSO Arquitectura

CARBON IN THE SPOTLIGHT

New focus on Whole Life Carbon

Customers are demanding more and more low-carbon products and regulation is becoming more stringent with a focus on Whole Life Carbon (WLC) in buildings.

What is WLC?

WLC includes both the carbon emitted from the energy used to heat and cool a building (operational carbon) and the carbon generated throughout the life cycle of building materials from the cradle to the grave (embodied carbon).

Buildings are changing

In old existing buildings operational carbon accounts for around 80% and now it is only 55% or less in new buildings. However, in France where regulation is strict and low carbon electricity is more widely used for operational energy, 85% of the whole life carbon of a building is embodied. This is changing the lens completely towards a focus on embodied carbon.

Regulation is changing

In France from 2022, it is now mandatory to provide information about embodied carbon for all new buildings and there are new building carbon regulations in the pipeline in Germany, Belgium, the Netherlands, Denmark, and Finland. Meanwhile, the European Commission is proposing that the carbon footprint of buildings is calculated and disclosed through the Energy Performance of Buildings Directive for all new buildings from 2030.

Customers are changing

These regulatory developments plus a focus on the European Union's 2050 carbon neutrality target mean a major shift for architects and specifiers who will be choosing products that offer a lower embodied carbon footprint for equivalent performance at the stage when they start designing their buildings.

Knauf Insulation is driving this change

As manufacturers we are working to reduce the carbon footprint of our products at every stage – from the raw materials used and the way they are manufactured to the way they are transported and packaged and their ultimate recycling or end of life. The company is committed to reducing the embodied carbon of its products by 15% by 2025 against its 2019 baseline.

Harmonised standards are essential

Knauf Insulation supports the harmonisation of standards when it comes to measuring embodied carbon in products and that is why we use Environmental Product Declarations (EPDs). In line with European Union standard EN 15804, our EPDs are independently audited and based on a Life Cycle Assessment methodology that forensically examines the impact of every stage of our products' life cycle.

Not all countries are following the same standards

Some countries are choosing a different calculation methodology. This is reflecting different interpretations of the science and/or the promotion of specific solutions. Knauf Insulation continues to engage in the debate around legislative changes to carbon metrics to secure a level playing field for all manufacturers and to make it easier for specifiers to understand the embodied carbon in the products they choose.

GUIDING THE MARKET ON CARBON

THE KNAUF INSULATION ECOINDEX AND CARBON CALCULATOR WILL ENABLE OUR TEAMS AND CUSTOMERS TO HAVE A BETTER UNDERSTANDING OF THE ENVIRONMENTAL IMPACT OF DIFFERENT SOLUTIONS, AND THROUGH A SIMPLIFIED INTERPRETATION OF ENVIRONMENTAL PRODUCT DECLARATIONS, SUPPORT THE SELECTION OF THE BEST ONE.

Operational carbon is straightforward to calculate using building energy performance data. However, for embodied carbon, or embodied environmental impact in general, we need completely new, innovative measurement tools.

Vincent Briard, our Sustainable Buildings & Partnerships Director, says: "At Knauf Insulation we believe the challenge is so big we need to guide and support the market.

"That is why we launched the Knauf Insulation EcoIndex and Carbon calculator to allow our teams to compare the environmental impact of products and to inform specifiers of the best solution."

The EcoIndex and Carbon calculator distills a massive amount of data from Environmental Product Declarations (EPDs) into one easy-to-understand unique index.

Critically, the tool can also compare entire systems which feature several product components.

The EcoIndex and Carbon calculator is a complementary supporting information system which informs Knauf Insulation development teams about the environmental impact of different solutions such as ventilated façades, ETICS (External Thermal Insulation Composite System) or cavity wall insulation.

A number of Knauf Insulation colleagues have now been trained in the EcoIndex and Carbon calculator and are starting to initiate discussions with architects and specifiers. We are testing the benefit of using it on a range of projects throughout 2022.

In addition, Knauf Insulation is assessing how the EcoIndex and Carbon calculator could help to provide a correct interpretation of the environmental impact results of products that have been assessed based on the two different versions (+A1 & +A2) of the European Union standard EN 15804, which informs product EPDs.



The Aleja, a modern shopping center in Ljubljana, Slovenia, is highly energy efficient and fire protected thanks to Heraklith® Tektalan A2 037/2, Akustik Roll, and Smart Roof

© Zora Medlic

BRINGING NEW IDEAS TO LIFE



HAVE YOU EVER HAD A BRAINWAVE ABOUT SOMETHING THAT WOULD MAKE LIFE SO MUCH BETTER FOR YOU, YOUR COLLEAGUES OR CUSTOMERS?

Maybe you've thought of a new product or a different way of doing things? That's where KI Innovation comes in.

Colleagues and customers can access KI Innovation online. Simply enter some details about the problem you've identified and the solution you're proposing. Our Innovation Commission will review, evaluate and score your proposal. The ideas with the highest scores will then be developed by our teams.

This year we launched KI Innovation in Italy, France, Spain and all our plants in Western Europe.

CALCULATING CARBON IN FRANCE JUST GOT EASIER



KI IMPACT IS A NEW CARBON CALCULATOR DESIGNED TO HELP SPECIFIERS SUCH AS ARCHITECTS AND ENGINEERS.

Simply enter the details of your project to calculate the carbon footprint if you work with Knauf Insulation products.

You can also see the environmental performance of each product, including the water consumption, waste production and recycled content used to create it. You can save the information for each project and adjust it at any time.

KI Impact is particularly useful when it comes to public and government building projects. That's because contractors are required to show the environmental footprint of their proposals.

KI Impact launched in the autumn and is currently available in France.



WELCOME TO OUR VIRTUAL CITY

COME WITH US TO A BUSY LITTLE CITY WE KNOW WHERE THE SUN SHINES EVERY DAY, THE TREES ARE ALWAYS GREEN, AND THE BUILDINGS ARE BEAUTIFULLY INSULATED

Welcome to our virtual city! We've designed it with a hospital, school, warehouse and a range of homes. These buildings are part of our city app, which works on a mobile, tablet and desktop. Sales teams can use the app to show customers how our products work in different ways in an urban setting. Users can click on any of the buildings to take a tour inside and see our products at work.

The app gives details of all our products, including specifications and certifications. This shows specifiers everything they need to consider when commissioning a project. The Netherlands, Italy, Spain, Portugal and France each have their own version of the app designed to suit their country's requirements.

The city app has been well received by sales teams, who say it's a powerful tool to use with customers. The app is also proving to be a fantastic training tool for new staff joining the Knauf Insulation family, as it offers an easy and engaging way to become familiar with many of our products and how they can be used.



BRINGING ONLINE LEARNING TO OUR CUSTOMERS

THE LAUNCH OF OUR INTERNAL ONLINE TRAINING TOOL WAS SO SUCCESSFUL THAT IT'S NOW AVAILABLE TO ALL CUSTOMERS IN FRANCE

COVID-19 forced many businesses to think differently and creatively. If working face-to-face wasn't an option, how could businesses continue to strengthen and support staff? We decided to create an online learning platform. The KI Learning tool was originally trialled with our sales representatives in France, and the feedback was overwhelmingly positive. So, we thought, why not make this available to a wider audience?

KI Learning launched to our customers in 2022 and provides e-learning on a range of topics. These include new regulations, products and applications. Learners can pay for a licence for different periods between one and 12 months, depending on their needs.

We're looking forward to supporting wider audience with their training requirements in 2023.



KNAUF INSULATION
KI LEARNING



CAMPAGNING FOR CHANGE	PUT ENERGY EFFICIENCY FIRST	38
	ADVOCATING FOR A BETTER WORLD	42
KNAUF ENERGY SOLUTIONS (KES)	RENOVATION OF 166 SOCIAL HOUSES ACHIEVES 37% ENERGY SAVINGS	46
	HISTORIC RETROFIT	47
	POWER OF A VIRTUAL ENERGY INFRASTRUCTURE	47
BUILDING WELL-BEING	HOW INSULATION CREATES HEALTHIER HOMES	48
GREEN INFRASTRUCTURE	GREEN FUTURE VISION	50



PUT ENERGY EFFICIENCY FIRST

EUROPEAN LEADERS MUST MAKE ENERGY EFFICIENCY THE FOUNDATION STONE OF A FUTURE-PROOF ENERGY-SECURE EUROPE.

Soaring inflation, devastating energy prices and Russia’s invasion of Ukraine – 2022 became the year that Europe was forced to recalibrate its approach to energy security.

Quentin Galland, Knauf Insulation’s Group Public & Regulatory Affairs Director, says: “The European Union cannot be dependent on countries that threaten its security, and it is essential that the EU’s reliance on fossil fuels ends.

“Energy efficiency must be the bedrock of a long-term strategy that reinforces Europe’s energy security, and this has to start with making buildings energy efficient. Europe’s buildings account for 36% of emissions and 40% of energy use.”

Climate change

Climate change also dominated headlines around the world with extreme summer temperatures and wildfires in Europe in 2022 while in 2021 more than 400 weather stations globally exceeded heat records.

The last eight years have been the hottest ever recorded by NASA with a 2022 Intergovernmental Panel on Climate Change (IPCC) report calling for the halving of emissions by 2030 to avoid an environmental catastrophe.

IPCC’s Working Group Co-Chair Jim Skea says: “We see examples of zero-energy or zero-carbon buildings in almost all climates. Action in this decade is critical to capture the mitigation potential of buildings.”

Source: <https://www.ipcc.ch/2022/04/04/ipcc-ar6-wgiii-pressrelease>

Risk of increasing energy poverty

In 2020, about 36 million Europeans were unable to keep their homes adequately warm.

Since then, prices have soared, winter energy supply concerns are constant and extreme heat and cold weather have highlighted the inadequacies of poorly maintained properties.

As a result, energy poverty levels are at high risk of sharp increases across Europe and beyond.

Knauf Insulation’s public affairs team has always campaigned for energy efficient buildings – now the urgency is greater than ever.

Our Mineral Wool insulation solutions FKD-S Thermal, NaturBoard Venti, Smart Roof, and Akustik Roll were installed in a kindergarten in Ljubljana, Slovenia, to ensure high standards of energy efficiency, acoustic protection and fire safety.

© Zare Modlic



There has to be a focus on these key areas:

DELIVERING MAJOR ENERGY REDUCTIONS

In 2021, the EU imported 155 billion cubic metres of fossil gas from Russia – 45% of the EU’s total gas imports. In the light of the war in Ukraine, the European Commission’s REPowerEU plan was launched to end the EU’s dependence on Russian fossil fuels.

With support from Knauf Insulation, research by the Building Performance Institute Europe (BPIE) was commissioned to demonstrate how building energy efficiency must be put at the heart of Europe’s energy security.

Focusing on nine European countries the research found space heating accounted for between 15.5% and 20.3% of energy demand with an EU average of 16.8%.

Katarzyna Wardal-Szmit, Knauf Insulation’s EU Public Affairs Manager, says: “The report found that simply by insulating the roofs and walls of buildings in each country significant energy savings could be achieved.

“The research showed that renovations would deliver a reduction of 44% of natural gas use with Italy, Slovakia and Romania seeing the highest savings of 49%, 53% and 56% respectively. Clearly, this is a straightforward actionable step forward to improve Europe’s energy security.”

SCALING UP MASS RENOVATION

The Energy Performance of Buildings Directive (EPBD) proposes minimum energy performance (MEPS) for the worst performing buildings in Europe – an estimated 40 million of which are rated ‘G’ or ‘F’ – and mandates the renovation of public and commercial buildings to ‘E’ standard by 2030 and the renovation of apartments and houses to ‘E’ by 2033.

However, transforming around 40 million buildings in a decade is a massive task that demands a focus on quality work that really delivers the energy saving and decarbonisation benefits of renovation.

Europe’s annual renovation rate is just 1% and, even worse, research by Renovate Europe has revealed that Recovery Fund renovation investments are expected to deliver just 30% energy savings.

Renovation is time-consuming, complex, often a once-in-a-lifetime process, and homeowners need a range of specialist support ranging from contractors and installers to specific products and quality assurance that the work has been carried out properly.

The solution? Public and commercial one-stop-shops that can provide all the technical assistance and support required to achieve quality deep renovation in one place. One-stop-shops have proved to be successful in Hungary, Ireland, Latvia and Poland with our own Knauf Energy Solutions carrying out one-stop mass renovations in Belgium and the UK.

CALLING FOR REGULATION CLARITY

Proposals designed to harmonise standards for construction products are being discussed at European Union level.

Under the European Commission's Construction Products Regulation (CPR) proposals, manufacturers will have to provide information about the sustainability of their products – such as designing products in a way that reuse or recycling is facilitated, respecting minimum recycled content obligations or giving preference to recyclable materials.

Quentin Galland, Knauf Insulation's Group Public & Regulatory Affairs Director, says: "The new CPR is a major step forward to guide construction product manufacturers in the design and placement of sustainable products on the market. So, it is essential that clear rules are agreed upon to ensure a level playing field throughout Europe between operators."

TACKLING THE CHALLENGE OF GRID CAPACITY

A mass transition to renewables from fossil fuels is a challenge in terms of providing enough electricity in a decarbonised grid during peak demand.

For example, REPowerEU aims to roll-out 30 million heat pumps across the EU to save 35 billion cubic metres in gas consumed by heaters in buildings.

However, analysis by Knauf Energy Solutions (KES) revealed how peak demand periods will create huge electricity grid challenges.

Using figures from Germany, KES concluded that while electricity demand for electric heating would increase by 356 Terawatt-hour/year, the additional generation capacity to deliver this demand due to winter peaks would be almost five times more.

Barry Lynham, Managing Director of Knauf Energy Solutions, says: "As we decarbonise heating and electricity generation, energy efficiency in homes is no longer just about energy savings for residents, it is about reducing the overall energy system costs for peak generation capacity."

"The deployment of heat pumps is key, but Europe needs to ensure that its building stock is heat pump ready and that starts with proper insulation and effective renovation."

"Energy efficiency is not any longer just about saving energy – it now plays an essential role in saving grid capacity."

DELIVERING REAL PERFORMANCE

The challenge of any energy efficient renovation project is whether it delivers the energy savings that have been promised.

New digital technology, pioneering renovation processes and quality solutions created by KES can now demonstrate energy savings delivered in real time – before and after a renovation has taken place.

This technology allows the metering of real energy performance and the benchmarking of improvements as a result of the renovation, which in turn delivers trust by showing proven metered savings.

To maximise the deployment of this technology to improve all renovations, our public affairs teams are campaigning to develop pay-for-performance schemes – to reward renovation savings – and the promotion of independently certified digital energy efficiency meters in the revision of the Electricity Market Design and Energy Performance of Buildings Directives (EPBD).

Rather than only relying on the theoretical assessments of Energy Performance Certificates (EPC), KES and our public affairs teams are campaigning to offer Member States the option to use digital energy efficiency meters to assess the energy performance of buildings within EPCs or as an alternative to an EPC.

In addition, our teams are examining mechanisms to reward energy efficiency for saving grid capacity.

GREENING URBAN AREAS

Green roofs and walls absorb emissions, help buildings save energy and encourage biodiversity, that is why our public affairs teams are continuing to campaign for widespread green infrastructure at European Commission and national level.

Jure Šumi, Knauf Insulation's Green Solutions' Advocacy Lead as well as Europe's World Green Infrastructure Network spokesman, says: "The revision of the EPBD should mandate the installation of green roofs on building renovation projects, while the Urban Waste Water Treatment Directive should be revised to include the widespread installation of green roofs to retain storm water and prevent sewage system floods."

Furthermore, the proposed Nature Restoration Law (NRL) announced by the European Commission in June 2022, calls for "developing urban green spaces and installing green roofs and walls" among other measures to ensure no net loss of green urban spaces by 2030 and a 5% increase by 2050.

"We want to see clear guidance on how to implement these areas," says Jure.

In addition to campaigning for more green roofs, Jure has also been contributing expertise to the Commission's New European Bauhaus (NEB) initiative which is designed to reimagine future urban environments with a focus on enhancing communities.

In 2022 he was a guest speaker at the European Commission's NEB festival where he highlighted the importance of green walls and roofs. "They may increase building investment by between 1% and 3%, in a good size development, but the benefit they bring to the environment and residents is priceless."



This single family house in Slovenia served as one of the pilot cases for DRIVE 0 project, which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 841850. Knauf Insulation provided expertise on the deep retrofit using its various Mineral Wool solutions for facade and ceilings insulation (FKD N Thermal, CLT C1 Thermal and Supafil Timber Frame).

FIND OUT MORE ABOUT DRIVE 0 PROJECT AT [DRIVE0.EU](https://drive0.eu)

ADVOCATING FOR A BETTER WORLD

FRANCE

Since 2020, France has strengthened its ambition in terms of energy efficient building renovation. The latest climate law plans to eradicate all buildings classified F and G. A major public financial aid scheme called MaPrimeRénov has been set up to finance specific renovation work. Despite a promising start, the over-funding of heating systems has raised questions about the real performance of these renovations. Furthermore, the government's decision to eliminate specific financial aid for loft insulation has put a stop to the Blowing Wool market in France. As the only renovation item not to be financed by public aid schemes, our public affairs strategy is to stabilise private aid schemes (energy certificates) and to include loft insulation in MaPrimeRénov. The debate around the French finance law should allow us to underline the importance of insulation and redirect future financial funds towards loft insulation.

POLAND

Knauf Insulation is backing a call by 26 members and supporters of Fala Renowacji — the Polish Renovation Wave Association — urging Poland's Prime Minister to put energy efficiency in buildings at the centre of the country's energy policy programme.

As part of an expert roundtable on the implementation of REPowerEU plan, Knauf Insulation presented results of a study by the Building Performance Institute Europe (BPIE) highlighting how insulating buildings could save nearly 40% of the energy needed to heat homes in Poland.

Knauf Insulation has also initiated and supported a study by the Reform Institute analysing a current 'Clean Air' subsidy programme and contributed to a report by Fala Renowacji on recommendations for renovation schemes.



Renovation works at the school Antonio Brancati, Italy, where our Rock Mineral Wool solution, SmartRoof Thermal, was installed

SLOVAKIA

In Slovakia, Knauf Insulation was one of 22 signatories supporting a call by the association Buildings For The Future to include renovation in an action plan to reduce dependence on Russian gas.

As a result of the call and additional advocacy activities, the Prime Minister's Office issued Energy Saving Recommendations for Public Building Managers with a strong emphasis on insulation. In addition, the Recovery Plan unit is now drafting a public policy heavily focused on energy efficiency of buildings.

UK

Knauf Insulation Northern Europe has made progress with its public affairs efforts to embed real performance measurement in UK Government policy.

Government efforts to validate new technologies continued throughout 2022 with Knauf Energy Solutions sitting on a UK Government technical group to understand how pay for performance' approaches in subsidy programmes can work in practice.

The company's key target remains ensuring a regulatory role for real performance in time for the 2025 Future Home Standard. Making sure that the real-world benefits of Mineral Wool are valued is crucial as regulations push key markets toward ever tighter elemental U-values.

Knauf Insulation's latest field study on an estate of new homes, built to theoretically high energy efficiency standards but performing poorly in reality, has further demonstrated the need to verify home buyers get the performance expected.

The absence of measurement at scale is not delivering genuinely efficient homes that can help resolve the cost of living, energy security and net zero crises that the country is facing. Well installed mineral wool supported by real performance measurement can resolve this performance gap.

ITALY

Knauf Insulation's public affairs team is campaigning for the stabilisation and harmonisation of incentive schemes for the energy efficient renovation of Italian building stock and for building fire safety.

It is also working on building circular economy related issues such as the publication of the new CAM – Minimum Environmental Criteria – decree.

In 2022 two important regulations were published that for the first time introduced obligations for the prevention of fire risk in façades and roofs of civil buildings.

In addition, Knauf Insulation played an important role in driving the success of the Superbonus scheme that finances 110% of building renovation and has seen more than 240,000 interventions totalling almost €40 billion in investment.



The Italian secondary school Antonio Brancati is one of the best in Europe due to its low environmental impact. It received the prestigious certificate LEED v4 BD+C.

ADVOCATING FOR A BETTER WORLD *(Continued)*



GREECE

Greece has been working on a public consultation for the Regulation for Fire Protection of Buildings in or near forests following campaigning by the Hellenic Institute for Fire Protection in Structures (ELIPYKA).

Knauf Insulation, as an active member of ELIPYKA, has been campaigning for this regulation and has sent its opinion to the public consultation. The regulation was expected to come into force in Greece within 2022.



AUSTRALIA

In line with the country's ambition to reduce carbon emissions by 42% by 2030 compared to 2005 levels, tough new national energy efficiency requirements for new homes and new regulation for existing homes in New South Wales have been introduced following years of campaigning by Knauf Insulation and its industry partners. The requirements for new homes are the first in 10 years and, coupled with the benefits of on-site renewables, are expected to reduce national CO₂ emissions by 14.1 million tonnes. Meanwhile, the renovation regulation is expected to see annual savings of up to A\$970 per household in regional New South Wales. Knauf Insulation's public affairs efforts will be aiming to accelerate stricter energy efficiency regulation for homes well in advance of their next planned update in 2028, as well as introducing the New South Wales requirements to other Australian states.



NEW ZEALAND

Campaigning by Knauf Insulation and its industry groups has played a key role in the introduction of new energy efficient building code requirements for new buildings in New Zealand. From 2023, new homes will need to be 40% more energy efficient than homes built under the previous code and new non-residential buildings will be 23% more efficient. Our public affairs efforts are now directed to working with the government to introduce new requirements to reduce the embodied carbon content of buildings.



SLOVENIA

In June 2022 the Slovenian government launched a new implementation of the Energy Performance of Buildings Directive at local level. The move followed two years of active content contribution to the directive by our public affairs team. The final version provides important opportunities for building energy efficiency improvements such as better U-value requirements for facades, pitched roofs, lofts and flat roofs. New legislation will also provide comprehensive changes to building physics software which Knauf Insulation has been using to support architects for several years. The team is now in the middle of updating it and new Knauf Insulation building physics software will be available in 2023.



GERMANY

In Germany, our public affairs team has been working to ensure national funding of over €14 billion for building renovation and energy efficient new buildings.

In future, funding is expected to stabilise at around €13 billion to €14 billion annually and our teams are campaigning to put high performance Mineral Wool insulation in every building to ensure energy security and climate resilience.

Putting energy efficiency first by improving the envelope of buildings ensures that the buildings are 'heat pump ready' paving the way for the scaling up of clean renewable energy.



CZECHIA

The government is already discussing an upgrade to the existing renovation programme New Green Savings to support quick and easy partial renovation measures that can be carried out before the next heating season.

The installation of Knauf Insulation Glass Mineral Wool with ECOSE Technology[®] allowed the 80 Ann Street building in Brisbane, Australia, to successfully achieve the required Green Star points while meeting the high acoustic performance and non-combustibility requirements that contribute to deliver a high level of fire safety and hazard mitigation.



© Woods Bagot, woodsbagot.com



Photo credit: Dan Briski

FKD-S Thermal, Smart Roof, Akustik Roll and Natur Board Venti were installed in the NOX hotel in Ljubljana, Slovenia, to improve the quality of internal air and contribute to the building's energy efficiency and fire safety.

RENOVATION OF 166 SOCIAL HOUSES ACHIEVES 37% ENERGY SAVINGS



Halle homes during renovation.

KNAUF ENERGY SOLUTIONS' MASS RETROFIT IMPROVES THE LIVING CONDITIONS FOR HUNDREDS OF RESIDENTS AND RECORDS ANNUAL ENERGY SAVINGS OF CLOSE TO €100,000.

ENERGY SAVING
37%
PER ANNUM

Saving for Gijmelbergwijk


 +/- 800,000 kWh gas
 +/- 100,000€

Saving per house


 +/- 4,761 kWh gas
 +/- 600€

A renovation of 166 social houses by Knauf Energy Solutions (KES) in the Gijmelbergwijk district of the town of Aarschot in Belgium has recorded energy efficiency improvements of 37% – a total of almost €100,000 in annual energy savings.

Guy Dumst, chairman of the social housing company Cnuz which manages the homes, says: "As a housing company, we are faced with a major challenge to renovate our building stock with energy saving in mind.

"This project is a great example of how we can efficiently improve living conditions for those who live in these homes and also demonstrate real energy performance savings not theoretical estimates."

Prior to the work, KES monitored the homes using its own online cloud technology to enable it to measure the pre-renovation energy performance of the buildings and develop an effective programme of work.

Following the renovation, the monitoring continued and revealed the 37% improvement which added up to around €600 in annual energy savings per house or €99,600 for all 166 homes.

In addition, the renovation resulted in a reduction in CO2 emissions and improvement of interior comfort and humidity level in the homes.

Residents also reported better living conditions and a feeling of being less cold than before.

Renilda van Vlierberghe, a Gijmelbergwijk resident, says: "The entire renovation process was smooth and efficient, supported by constant communication and a dedicated project coordinator to manage queries.

"It's important for me that my heating works well. I've noticed since the renovation that heat inside my home is retained better than before."

Barry Lynham, Managing Director of Knauf Energy Solutions, says: "By partnering with KES, Cnuz was able to significantly reduce its risk, because the energy refurbishment was evaluated on real outcomes not theoretical aspiration."

As KES offers a one-stop shop service, managing the entire process from start to finish, the renovation was seamless – from optimising the design, tackling challenges in advance and carrying out the work to liaising with the residents, ensuring quality control and excellent results.

KES also maintained constant communication with the association and residents to ensure any queries were effectively handled immediately.

"Using our monitoring technology KES could also demonstrate in real terms the savings achieved as a result of the work," says Barry. "For social housing associations and the residents they serve, this is a significant real performance milestone in the world of renovation."

HISTORIC RETROFIT

Knauf Energy Solutions (KES) completed the biggest ever real performance deep retrofit in history in 2020 when it renovated 184 homes for the social housing company Woonpunt Zennevallei in the Belgian town of Halle.

Energy saving improvements of 26% were recorded by KES following the installation of Knauf Insulation loft insulation alone.

POWER OF A VIRTUAL ENERGY INFRASTRUCTURE

We need to take a revolutionary new approach to energy.

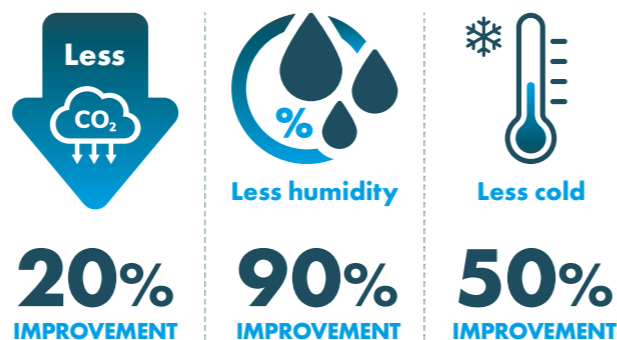
At Knauf Energy Solutions (KES) we believe that renovating 400,000 homes would save the same amount of energy as would be generated by a one-gigawatt power station at a fraction of the cost.

Using KES technology, energy efficiency can be measured in the same way as energy generation. This means a kilowatt of energy saved – 'a negawatt' – is now equivalent to a kilowatt hour of energy supplied.

KES reverses the traditional energy infrastructure model by focusing on mass infrastructure projects that save vast reserves of energy rather than building power plants.

Gijmelbergwijk district of the town of Aarschot, Belgium.

REAL COMFORT PARAMETERS



HOW INSULATION CREATES HEALTHIER HOMES

OUR LIVING CONDITIONS CAN BE ADVERSELY IMPACTED BY FREEZING WINTERS, EXTREME SUMMERS, NOISE POLLUTION AND POOR URBAN AIR QUALITY. THAT IS WHY KNAUF INSULATION SOLUTIONS SHOULD BE AT THE HEART OF ANY HEALTHY HOME.



Knauf Insulation's business model is based on creating better buildings for people.

That means buildings that keep people warm when it is cold and cool when it is hot. That means creating healthy interior environments in which people can thrive.

In the words of Domen Ivanšek, Knauf Insulation's Head of Building Science: "We spend up to 90% of our time indoors, so if we are forced to endure an interior building environment that is cold, noisy, damp or has poor air quality it will impact our well-being and health. The cornerstone of any healthy home is good insulation."

So, how does Knauf Insulation help? Here are four ways:

COMFORT IN THE COLD

The war in Ukraine, energy price spikes, inflation and concerns over winter energy supplies have again put fuel poverty in the spotlight, particularly in Europe.

According to European research organisation Eurostat, 7.4% of people in the European Union were unable to keep their home adequately warm due to the condition of their building, external temperatures and the cost of energy.

The impact on health is considerable. For example, the British charity Age UK says that a third of deaths during the winter of 2017-18 were as a result of respiratory diseases such as pneumonia and, at the "root of this problem are poorly insulated homes".

Knauf Insulation has consistently campaigned for better buildings for those who struggle to keep warm in winter and our Mineral Wool solutions are designed to meet all building requirements.

In an uninsulated house up to 60% of heat can be lost through external walls, doors and windows and up to 30% through roofs.

To achieve the most stable indoor temperatures, a combination of sufficiently thick external thermal insulation with heavy-weight building materials on the inside will ensure high thermal comfort for occupants during all seasons.

HEALTH AND HEATWAVES

More than 400 weather stations around the world exceeded heat records in 2021 – marking the eighth hottest year on record – while during June and July 2022 a total of 188 all-time heat records were broken.

As mentioned by Dr Hans Henri P Kluge, World Health Organisation Regional Director for Europe, in their statement "Over the past decades, hundreds of thousands of people have died as a result of extreme heat during extended heatwaves... This year, we have already witnessed more than 1,700 needless deaths in the present heatwave in Spain and Portugal alone."

Source: <https://www.who.int/europe/news/item/22-07-2022-heatwave-in-europe--local-resilience-saves-lives---global-collaboration-will-save-humanity>

During high-temperature summers, buildings with comfortable interiors are essential if the occupants are suffering from respiratory or cardiac diseases or are very young or elderly.

Insulation can help. Mineral Wool is highly effective at blocking the path of heat which means in summer it acts as a barrier to external heat, keeping interiors cooler.

"This passive measure, together with appropriate active sun-shading of windows and night cross-ventilation of rooms ensures the comfort of building users when the external heat is excessive," says Domen.

Installing vegetation on buildings' external envelope, such as Knauf Insulation's Urbanscape Green Roof and Green Wall systems, can also help to keep external building surfaces cooler.



Urbanscape® and thin soil layer with a variety of native and exotic shrubs were installed in Park Sydney Village, Sydney, Australia.

CONTRIBUTION TO AIR QUALITY

"Insulation combined with good ventilation contributes to air quality by creating dry, warm homes with no cold spots where mould can grow," says Domen.

"In buildings where there may be vulnerable occupants, such as kindergartens, care homes for the elderly or hospitals, the installation of Knauf Insulation solutions combined with good air ventilation can really help."

Knauf Insulation solutions with ECOSE Technology® are certified to the highest Eurofins Indoor Air Comfort Gold standard which is regarded as Europe's most comprehensive label for verifying low product emissions of Volatile Organic Compounds (VOCs).

In addition, Knauf Insulation's Urbanscape Green Roofs and Green Walls can help absorb air pollutants, which are particularly prevalent in urban areas with high levels of traffic or smog.

The World Health Organisation has reported that in a survey of air quality in 1,600 cities in 91 countries, half of the monitored residents were exposed to air pollution that was 2.5 times higher than recommended levels.

Research has found that 0.2g of airborne particles can be captured by one square metre of green roof every year while researchers in Singapore found that the level of particles above a 4,000 m² green roof were reduced by 6%.

SOUND SOLUTIONS

Noise pollution disrupts sleep, disturbs concentration and causes irritation with at least one in five people in Europe exposed to external noise levels that are harmful to health, says the European Environment Agency.

Traffic is the top source of noise pollution followed by rail, aircraft and industry. The result? The EEA found that 22 million Europeans suffered chronic 'high annoyance' ranging from irritation to distress, with 6.5 million enduring significant sleep disturbance which triggers stress or cardiovascular issues.

Internal noise can be equally challenging whether it is the sound of (Do-It-Yourself) works next door and high-volume entertainment systems or noisy neighbours and clanking air-conditioning.

Maro Puljizević, our Acoustic Project Manager at the company's Core Research and Development Department, says: "The solution to noise pollution is the installation of Mineral Wool insulation.

"Our Rock Mineral Wool and our Glass Mineral Wool both significantly contribute to the dampening of sound thanks to their high-level, noise-blocking fibre structure.

"At Knauf Insulation we can enhance the acoustic performance of this Mineral Wool by combining it with Knauf plasterboards or our Heraklith® Wood Wool. By customising systems, it is possible to significantly minimise noise pollution which could be transformational for schools, offices, homes, hospitals or any public building."

GREEN FUTURE

JURE ŠUMI, KNAUF INSULATION'S GREEN SOLUTIONS' ADVOCACY LEAD, ENVISAGES AN URBAN FUTURE WHERE GREY CONCRETE IS REPLACED BY VIBRANT PARKS, GARDENS, GREEN ROOFS AND WALLS.

The two stunning Bosco Verticale towers have become international landmarks for Milan in Italy. Featuring 800 trees and 20,000 plants, they are a celebration of green infrastructure and natural inspiration.

In the Kolkata region of India, Piali Ashar Alo primary school now features a 600 m² green roof and garden that keeps the children cool during the soaring summer heat, helps absorb water during the rainy season and is the perfect place to have lessons in biodiversity.

In the UAE, the 3,000 m² Dubai Opera Garden provides a welcome place to relax in the Middle Eastern heat, while at the French business park of Zac des Montagnes in Ouest à Champniers an 8,300 m² green roof installed on a retail building is capable of absorbing the equivalent of almost two 2,500 m³ Olympic swimming pools of rainwater every year.

Different types of buildings in different countries, but with one common factor; each project features Knauf Insulation solutions whether it is our Urbanscape Green Roofs (for the school, retail park and Dubai Opera) or our Rock Mineral Wool in the case of Bosco Verticale.

More importantly, all the projects demonstrate an exciting green infrastructure vision of the future of buildings.



VISION

Natural inspiration

Jure, who is also the spokesman for the World Green Infrastructure Network (WGIN), says: "At Knauf Insulation we envisage an urban future where grey concrete is replaced by parks, gardens, green roofs and green walls.

"Places that are climate resilient, energy efficient and carbon neutral. Places where communities and biodiversity can thrive in naturally beautiful surroundings. In other words, urban centres inspired by green infrastructure."

Jure has been deeply involved in the European Commission's New European Bauhaus initiative which is designed to "re-imagine living space" and sustainable communities.

Life-changing gift

"Let me give you a great example of how the greening of a building can be a life-changing gift to the community," he says.

"Legislation in Ljubljana, Slovenia, mandates green roofs for buildings bigger than 400 m². When a new shopping mall was built in the centre of Ljubljana a green roof was installed featuring a basketball court, running track and play area. It became a place where people could feel part of a community together.



"Previously the neighbourhood was far from any major park and surrounded by concrete. Now it has the gift of its own green space."

Local municipalities must engage with their communities and ask what they need, says Jure. Schoolchildren want places to grow vegetables and flowers, communities want parks, people want more greenery in their lives. And all this green infrastructure adds up in terms of improving carbon capture and biodiversity.

In Europe, there are European Commission proposals that provide unique international opportunities to allow green infrastructure to flourish, says Jure.

Positive impact

Among these is the European Commission's Energy Performance of Buildings Directive, the 2030 Biodiversity Strategy, and the European Urban Waste Water Treatment Directive.

Jure says: "Green infrastructure such as our Urbanscape solutions are great for biodiversity, absorbing carbon, excess rainwater and air pollution as well as cooling buildings and saving energy, but they also provide sustainable centres of the community that transform lives.

"For every revision and every consultation in these European Commission's proposals, Urbanscape and Knauf Insulation will be campaigning for the incorporation of more green roofs."



For underground parking in Augsberg, Germany, the architects chose Wood Wool multi-layer boards with Rock Mineral Wool insulation core from Knauf Insulation's Tektalan® product family.

Urbanscape® Green Roof was installed to striking effect on Jumeirah Gate, a hotel in Dubai, United Arab Emirates.

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SUSTAINABILITY PROGRESS

YEAR OF CONSOLIDATION 54

UN SUSTAINABILITY GOALS 56

INTERVIEW

VANESSA RAE ON NORTHERN EUROPE 58



YEAR OF CONSOLIDATION

IN 2021 KNAUF INSULATION RECORDED A YEAR-ON-YEAR SAFETY RECORD IMPROVEMENT OF 12%, WHILE PROGRESS REMAINED STABLE IN TERMS OF SENDING LESS ROCK AND GLASS MINERAL WOOL WASTE TO LANDFILL AND REDUCING THE EMBODIED CARBON OF THE COMPANY'S SOLUTIONS. THIS CONSOLIDATION IS EXPECTED TO PROVIDE SOLID FOUNDATIONS FOR MAJOR BREAKTHROUGHS IN THE COMING YEARS.

Knauf Insulation has marked a year of consolidation in terms of its zero carbon and circular economy goals.

In 2020 the company launched its **For A Better World** sustainability strategy with long-term commitments to deliver net zero embodied carbon products, delivering a circular economy and committing to zero harm.

To ensure these commitments were kept on track, the company set ambitious goals for 2025 including reducing product CO₂ by 15%, sending zero waste to landfill and cutting the company's accident rate by 55%.

So, what progress has been recorded in 2021?

Zero waste challenges

Sending zero production waste to landfill from Knauf Insulation's Glass Mineral Wool, Rock Mineral Wool and Wood Wool plants by 2025 is a pillar of the company's **For A Better World** sustainability strategy.

Since that announcement, the company has faced challenges in the management of Glass and Rock Mineral Wool scrap but achieved outstanding success with Wood Wool, starting to send zero scrap to landfill from the end of 2022 three years ahead of schedule.

Knauf Insulation's Wood Wool plants have over the years developed new ways to recover scrap that is produced within their facilities. They have also pioneered innovations

to transform residues into products that can be used by external companies such as soil for landscaping or compacted pellets for heating products (see page 86).

However, the overall volume of Knauf Insulation production waste to landfill in 2021 remained at the same level as in 2020.

So, what happened? Knauf Insulation's new plant at Johor Bahru in Malaysia contributed to higher-than-normal scrap volumes as they came on-line and production processes were refined. Meanwhile, at Eskişehir in Turkey new processes led to high scrap volumes and plans are now in the pipeline to develop innovative ways to recycle these scraps.

An additional challenge is that in some countries there are not the facilities or the companies available to recycle waste. For example, in Europe, Glass Mineral Wool scraps are taken by recycling companies and transformed into new products such as ceiling tiles. Unfortunately, in Turkey, the United Arab Emirates and Malaysia where Knauf Insulation has sites there is not the infrastructure or third-party recycling facilities available to repurpose production scrap.

At the same time, several plants in the company have recorded zero scrap to landfill success such as the Rock Mineral Wool sites in Škofja Loka in Slovenia and Novi Marof in Croatia. At these plants, Rock Mineral Wool scraps are fed back into the manufacturing process, either via briquetting or directly depending on the melting technology.

Glass Mineral Wool sites such as St Helens in the UK, Lannemezan in France and Bernburg in Germany, have also logged significant achievements.

Now plans are underway to increase the volume of scraps which are recycled from plants, with Knauf Insulation investing in the construction of a €15 million RESULATION Glass Mineral Wool recycling facility at its Visé site in Belgium.

The plant will convert the scrap into secondary raw material glass cullet needed to make new Glass Mineral Wool.

In addition, the company is constantly in contact with potential recycling partners to find new solutions to reuse scraps of our products and is examining new ways to collate its production waste data.

Safety improvements

2020 was a record year for safety with the company's Total Recordable Incident Rate (TRIR) reduced from 8.2 in 2019 to 6.4.

As a result, Knauf Insulation recalibrated its 2025 goal and committed to bring the target date forward by two years and achieve a maximum TRIR rate of 5.0 by 2023.

2021 saw more major steps forward. Safety improved across the group to TRIR of 5.5 supported by a doubling of hazard spotting tours, safety observations and safety dialogues.

In addition, the company's Health, Safety and Environment (HSE) team initiated a new safety campaign 'It's Up To Us' in 2022 that focused on greater awareness of risk, because as **Group HSE Lead EMEA & APAC Philippe Coune** pointed out: "We can never afford to be complacent."

Emissions remain stable

Embodied carbon is the CO₂ generated at every stage of a product's life cycle from the sourcing of materials to ultimate disposal.

And, in line with Knauf Insulation's **For A Better World** sustainability strategy, the company has committed to reducing embodied carbon by 15% by 2025.

In 2021 embodied carbon figures remained stable and at the same level as 2020.

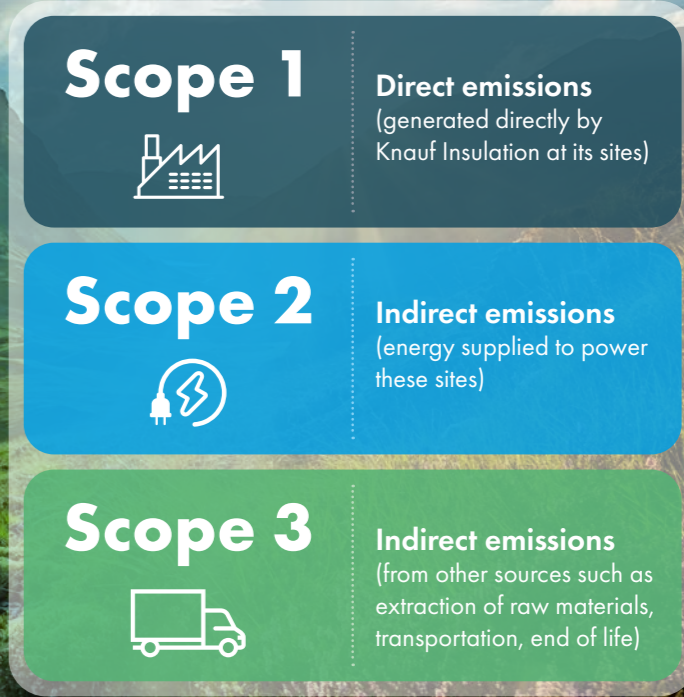
However, the impact of major initiatives has still to be felt. The company has been investing in finding more renewable energy sources for electricity.

For example, the carbon intensity of electricity in 2022 will decrease following the purchase of Renewable Energy Certificates for electricity for plants with the biggest carbon impact and increased installation of solar panels across the company.

Knauf Insulation is constantly reviewing low carbon possibilities including renewable energy and alternative fuels and assessing their business viability and compatibility.

Furthermore, the company now has a forensic view of the areas where it can cut carbon using internationally recognised Greenhouse Gas Protocol standards.

The company's new dashboard allows for the analysis of the carbon impact of individual plants and the identification of specific carbon hotspots to enable targeted action to tackle scope 1, 2 and 3 emissions.



FOR A BETTER WORLD



These figures relate to Knauf Insulation, part of the Knauf Group, and are based on the data for Europe, Middle East and Asia (EMEA & APAC) from 2021 and activities from 2021 and 2022. For accuracy we may amend previous figures.

UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

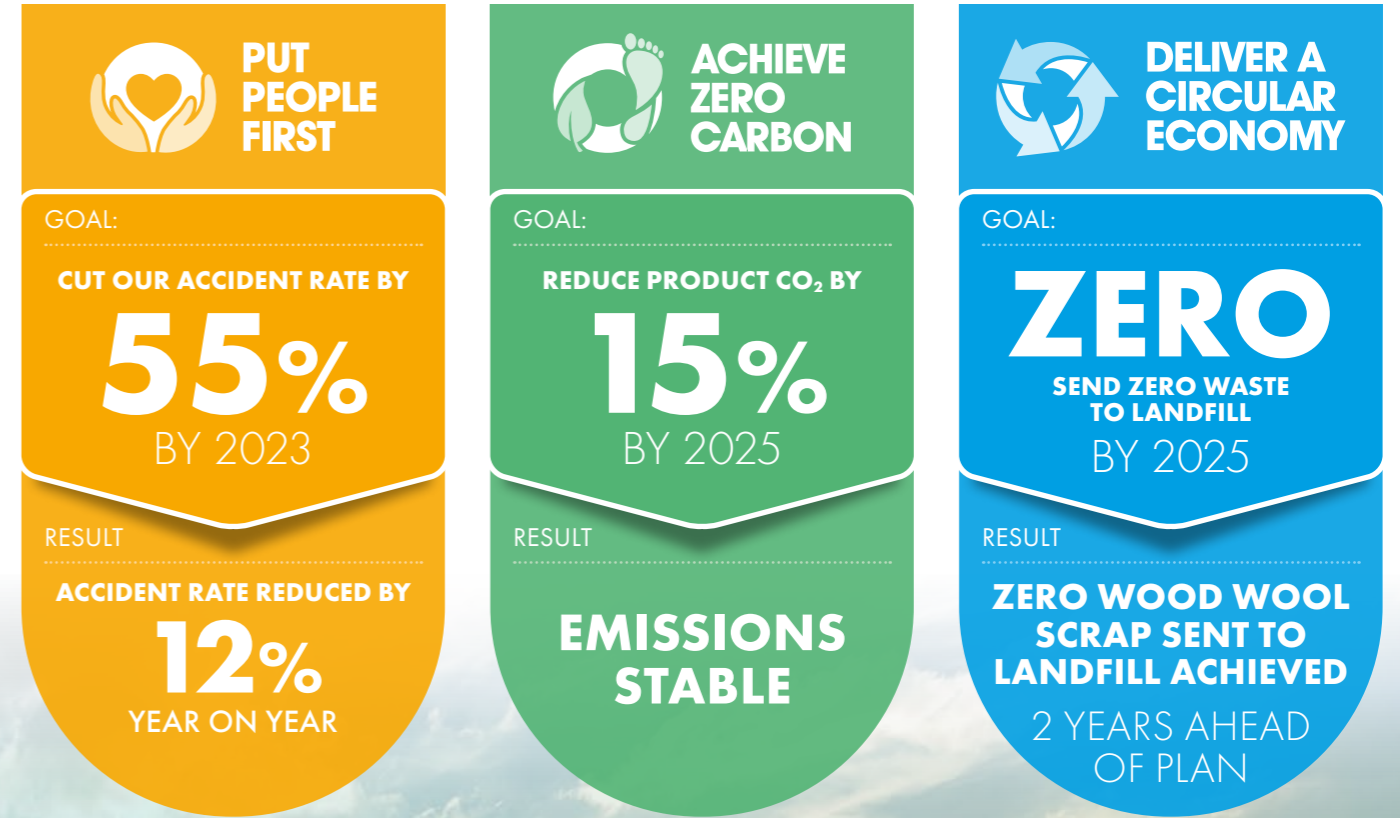


NOW USING THIS TARGETED DATA, THE COMPANY HAS ROADMAPS TO REDUCE EMISSIONS IN EACH SCOPE

Knauf Insulation's **For A Better World** sustainability strategy is in line with the Sustainable Development Goals (SDGs) of the United Nations with a specific focus on the 10 highlighted above. The SDGs are described by the UN as the "world's best plan to build a better world for people and the planet by 2030". Knauf Insulation is also a signatory of the United Nations Global Compact, the world's largest corporate sustainability initiative. The company commits to align its strategies and operations with universal principles on human rights, labour, the environment and anti-corruption.

KNAUF INSULATION'S FOR A BETTER WORLD

KEY TARGETS AND PROGRESS



These figures relate to Knauf Insulation, part of the Knauf Group, and are based on the data for Europe, Middle East and Asia (EMEA & APAC) from 2021 and activities from 2021 and 2022. For accuracy we may amend previous figures.

DRIVING SUSTAINABILITY WITHIN NORTHERN EUROPE



MEET VANESSA RAE, OUR MARKETING & SUSTAINABILITY DIRECTOR FOR KNAUF INSULATION NORTHERN EUROPE. VANESSA HAS TAKEN OVER THE SUSTAINABILITY RESPONSIBILITY IN HER REGION, REINFORCING NORTHERN EUROPE'S COMMITMENT TO THE TOPIC.

What motivated you to add sustainability to your scope of Marketing Director for Northern Europe?

"Back in 2020, I was inspired by the launch of our **For A Better World** sustainability strategy and I wanted to have an active role in driving its delivery in our region. "As a leading manufacturer of sustainable solutions, we need to become a true sustainability leader"; this is very much part of our brand and value proposition, so it nicely complements my marketing responsibility."

Why is sustainability important to you?

"Sustainability is important to me personally as a citizen of the world; there is no denying the detrimental effects of human activity on the planet and the consequences are truly scary. We must urgently act to reduce carbon emissions and take care of our fragile planet, and our business has a big role to play in this."

What do you feel are your key achievements since commencing your role as Marketing & Sustainability Director?

"As I started in the role, I completed the 'Business Sustainability Management' course at Cambridge University to give myself a knowledge base, and a clear structure for tackling my new challenge.

"I've spent significant time on raising awareness of Knauf Insulation's sustainability credentials both internally and externally, creating an inspiring story which can be used not just by me, but also by the rest of the business.

"I've engaged directly with our customers, which has been invaluable, not only in understanding what they expect from us, but also it has made me realise that, while there is a lot more for us to do, we are already in a very good position when it comes to our sustainability journey.

"I've also made good progress on developing our regional roadmap for 2023."

How do you see the future of your role / team and what would you like to achieve?

"I am delighted that we have been given the green light to increase resource in the regions, so we are now building a sustainability team in Northern Europe. This means we will have the skills and resources to accelerate the progress we are making under the four pillars of our **For A Better World** sustainability strategy. With the support of **Diana Dzhambazova, the new Regional Sustainability Manager**, I would like to finalise the roadmap for our region and launch it in the new year, and work with the rest of the regional and central teams on projects that will take Knauf Insulation to the next level in our journey, including green energy and the circular economy, for example."

Do you have any exciting projects planned for 2023?

"There is a lot going on in every part of the business, whether in the People area, Circular Economy, Zero Carbon or Better Buildings.

"There are also some upcoming improvements in product performance. With the rebuild of the St Helens furnace and major investments in new equipment, we will be able to launch lower lambda solutions as well as reduce further the embodied carbon of our products, which is a very exciting step change. Keep your ears open!"

What are the current sustainability focus areas and challenges within your region?

"The key focus is on ensuring our products are relevant both now and in the future – with building regulations tightening we must ensure that not only we have the right solutions for the market, but also that we support the regulators on their journey towards net zero. Accordingly, we are working with government and influencers to ensure the right policies are being put in place to close the energy efficiency performance gap so buildings perform as designed in real world conditions.

"The biggest challenge I see, mid/long term, is likely to be the transition to green energy for our manufacturing process. This will require a company step-change in technology and can only be achieved together with our central technology team – however, think how amazing it would be if Knauf Insulation was one of the earliest adopters of green energy for our industry!"



We must urgently act to reduce carbon emissions and take care of our fragile planet, and our business has a big role to play in this.

Vanessa Rae | Marketing and Sustainability Director | Northern Europe





PUT PEOPLE FIRST

SAFETY	IT'S UP TO US TO MANAGE RISK	62
ENGAGEMENT	ENGAGING TEAMS TO WORK TOWARDS A GREATER GOAL	64
DIVERSITY & INCLUSION (D&I)	CREATING A CULTURE OF CONNECTION AND BELONGING	66
WELL-BEING AND RESILIENCE	EMPOWERING EMPLOYEES	70
COMMUNITY INITIATIVES	PURPOSEFUL COMMUNITY ACTION	72



IT'S UP TO US TO MANAGE RISK

"KNAUF INSULATION'S SAFETY NUMBERS MAY HAVE IMPROVED IN 2021, BUT THERE IS STILL NO ROOM FOR COMPLACENCY," SAYS GROUP HEALTH, SAFETY AND ENVIRONMENT (HSE) LEAD PHILIPPE COUNE.



Risk awareness was the key subject of safety across Knauf Insulation in 2022.

Safety improved across the group with the company's Total Recorded Incident Rate (TRIR)* reduced from 6.4 in 2020 to 5.5 in 2021 in Europe, Middle East and Asia.

In addition, the company doubled the number of hazard spotting tours, safety observations and safety dialogues to 38,000 safety actions in 2021 compared to 2020 – a year that saw the company record 100 days without a Lost Time Accident.

Group HSE Lead EMEA & APAC Philippe Coune says: "During 2021 we saw periods of time when accidents were decreasing and then suddenly increased again. We have seen an improvement in some aspects of safety, but not in all aspects. That is why we can never afford to be complacent."

To underline this message, HSE team launched a company-wide safety campaign – **It's Up To Us** – to highlight greater awareness of risk, supported by internal communications with posters, videos and workshops throughout the year.

Risks are everywhere

The It's Up To Us campaign involved 4,500 Knauf Insulation employees across all manufacturing sites in EMEA and APAC.

"We have enough rules in place to keep everyone safe, but risks are everywhere," says Philippe. "We all need to manage these risks, all the time."

So, what does risk management mean in reality? Simply, it means every individual must take responsibility for their safety and the safety of their colleagues.

"We ALL must make the decision to keep our colleagues safe. We cannot wait for a manager, supervisor or HSE colleague to make a safety call. Whatever we do and wherever we are, **It's Up To Us** to immediately act if we see an unsafe situation or unsafe behaviour."

At Knauf Insulation there is a major commitment to safety from the minute a blueprint for a new plant is created to the first time Mineral Wool rolls off the production line.

High level of safety

All the company's plants are certified in line with ISO 45001 safety management systems. Every plant is subject to regulation, compliance, directives, continuous safety meetings, constant risk assessment, training, life-saving rules, safety principles and every possible protective equipment available.

"All these things are great in theory, but the reality is that risk is everywhere 24/7 due to constant change. That is why It's Up To Us to manage risk all the time," says Philippe.

"We ALL need to continuously assess machinery risks. We ALL need to constantly improve safety instructions. And we ALL need to continuously review safety equipment. And where there is any doubt whatsoever – we ALL need to do a Last Minute Risk Assessment."

**TRIR is the industry benchmark that involves dividing the number of injuries at a company by the total number of hours worked by all employees and then multiplying by a million*

ZERO HARM COMMITMENT

Knauf Insulation is committed to zero harm and building a culture of health, safety and well-being.

The company's For A Better World sustainability strategy had established a target of reducing TRIR from 8.2 in 2019 to a maximum of 5.0 by 2025.

Following a reduction to 6.4 in 2020, HSE team decided to be more ambitious and aim to achieve 5.0 by 2023.



Rescue practise in the Zalaegerszeg plant, Hungary



Rescue practise in Bernburg plant, Germany

These figures relate to Knauf Insulation, part of the Knauf Group, and are based on the data for Europe, Middle East and Asia (EMEA & APAC) from 2021 and activities from 2021 and 2022. For accuracy we may amend previous figures.

ENGAGING TEAMS

TO WORK TOWARDS A GREATER GOAL



THE LATEST EMPLOYEE ENGAGEMENT SURVEY RESULTS ARE IN. HOW IS KNAUF INSULATION MEASURING UP?

Following the launch of the first Gallup employee engagement survey in 2020, Knauf Insulation circulated its second survey in June this year.

Despite the challenges of the company-wide cyber attack, the questionnaire managed to achieve a 75% response rate across the business.

Katrien Wakana, Group HR Talent & Development Manager for EMEA & APAC, says: "It's not about the organisation taking the lead and finding solutions that won't help employees. The survey makes sure that everyone is listened to and the solutions are built within the team so they are a pertinent answer to the problems that arise. We will take comments and recommendations directly from the survey and transform these into practical solutions."



I want employees to feel that their purpose, values and identity can find a place within the organisation. Employees don't want to come to the working space with a mask on. Their own passion and enthusiasm can contribute to the greater goal.

Katrien Wakana | Group HR Talent & Development Manager | EMEA & APAC



"The overall results from the survey this year were encouraging. It is great that people feel that they know what is expected from them, on a job level and as a general view to what they bring to the company and how they will perform. This is something we've worked on, encouraging continuous conversations between workers and managers so everyone knows what is expected of them."

"The survey also highlights the areas that we need to improve. Two areas that we noticed from the survey results were employee recognition and career development. These will be areas of focus moving forwards."

From the survey results, a positive picture is painted for the number of engaged employees within the company. 39% of employees are classed as engaged (rising from 29% in the 2020 survey), 27% of employees are classed as not engaged (decreasing from 55% in 2020) and 14% of employees are classed as actively disengaged (decreasing from 16%).

Katrien Wakana says: "We weren't expecting a huge improvement from the last survey as it has been a challenging couple of years but we are making good progress. It's all about making sure that we walk the talk."

"For me, engaging employees is about forming a connection between us as an employer and each individual employee. The theory is that behind an engaged person is someone who's happy in their job or position. Of course, it's about being happy but also getting the feeling that I, as a person, can personally contribute to the success of my company. It's about purpose. People should feel empowered to contribute towards something greater. The main engagement goal is to create a connection between team members and their leaders and then the company."

The next Gallup survey will be launched in 2023 to assess the results and make sure that the initiative stays on track.



GALLUP SURVEY RESULTS

Overall engagement score:



Other highlights:



KNOW WHAT'S EXPECTED OF THEM



ARE HAPPY WITH MATERIALS AND EQUIPMENT

Areas for improvement:



CREATING A CULTURE OF CONNECTION AND BELONGING



OVER THE PAST YEAR, KNAUF INSULATION HAS UNDERTAKEN A NUMBER OF INITIATIVES TO INCREASE AWARENESS OF DIVERSITY AND INCLUSION IN THE WORKPLACE.

Raising awareness of diversity and inclusion is an important first step to help encourage positive change.

For Knauf Insulation, this started with working with the Senior Leadership team to provide training and education via an awareness course.

Lisa Flaherty, HR Director for Northern Europe says: "At the end of last year, we designed a diversity and inclusion (D&I) awareness course. We accepted that we were right at the beginning of this journey so the starting point needed to be about building awareness of D&I across the business. We wanted people to come on the journey with us in an authentic way."



Diversity and inclusion is not an overnight process. It's a culture change and an ongoing journey.

Lisa Flaherty | HR Director | Northern Europe



"Over the past year we've been focusing on defining the content of the leadership programme. We started the pilot sessions with our UK team at the end of 2021 and we've started rolling them out to other regions and technical teams this year. As we've been rolling them out, we've also been refining the training sessions to make sure the content is as impactful as possible."

"Generating awareness and getting leadership buy-in for diversity and inclusion projects is key to success. It's a long-term cultural change and this needs to come from the top down."

How has the content of the course been received so far? Lisa explains that for some people, changing their use of language, in particular, can be a source of nerves.

"The course has been received really positively," she says. "But for some people within the business, it's a new way of speaking and approaching situations. Employees want to get things right so have been a bit nervous about what language they should be using, questioning 'Is this the right terminology?' But we will all make mistakes and we will all learn from them. That's why the course content also focuses on how to approach a situation if you do mis-step. I think accepting mistakes and encouraging open conversations are crucial skills that will allow us to act as modern leaders."

Measuring results

When setting goals, progress must be monitored. This is no different for diversity and inclusion, where data is being collated from across the employee lifecycle, including information on appraisals, promotions and more.

Lisa says: "This data will be a starting point for us to use to monitor our future progress. We'd like to report on statistics, such as the number of women being promoted versus the number of men or the diversity of our leaders. We are right at the beginning of our journey still but once we have this data in place, we can build on it. Right now, our priority is awareness and this can be difficult to measure."

Katrien Wakana, Group HR Talent & Development Manager for EMEA & APAC, says: "For the first time in our Gallup survey, we have added questions on cultural inclusion and the results are positive. People are happy with how inclusive Knauf Insulation is. We're currently scoring 4.02 out of 5. There is still work to be done but this is a nice place to start. We will use this data to measure our progress, year after year."

"However, while data is helpful, the aim of the work we're doing isn't meeting quotas or ticking boxes. It's about creating a real sense of inclusion and belonging, helping our teams feel connected."



HOW WE MEASURE UP

For the first time, we have measured our cultural inclusion score through our Gallup survey.

OUR CURRENT SCORE IS: **4.02** OUT OF 5

CREATING A CULTURE OF CONNECTION AND BELONGING (CONTINUED)

Opening up the conversation

Key to the success of diversity and inclusion initiatives is creating a continuous conversation between employees, empowering them to share their experiences and information so it can be used in a positive way.

Katrien says: "What I love about Knauf Insulation is that all these conversations about diversity and inclusion are possible. It's a safe environment to create a dialogue and talk about our experiences. As a woman of colour, I feel very secure talking about my views. It's possible to do this every day within the company without any issues."

Looking to the future

What's coming up next for diversity and inclusion within Knauf Insulation?

Lisa says: "The next stage of our plan will be to roll out the awareness programme on a wider level. Our working group keeps growing every time we send a new communication to the business which is really positive.

"We're looking to roll out individual interest groups, such as Women in Business, Disabled People in Business and all kinds of other groups. All of these groups can then operate as networking teams."

Putting people first

The diversity and inclusion work within our company falls in line with our sustainability strategy, **For A Better World**.

By 2025, we have committed to ensuring that all leaders, managers and new employees within the company undergo diversity and inclusion training to equip them with the skills, language and behaviours to encourage inclusion.

We will also continue to develop diversity and inclusion training for employees as part of ongoing education and training.

Embedding D&I within our culture

However, the ultimate aim for diversity and inclusion at Knauf Insulation goes beyond 2025.

Lisa says: "D&I needs to be engrained within our business; it wouldn't be a major project, it would simply be the way that we operate. We can change as many policies and procedures as we like but if when people walk through the door they don't feel included then they will leave anyway.

"We want people to feel a real sense of belonging but it shouldn't have to be something that we actively think about. This will be a challenging process but I know we will get there."



Employees of different cultures work together in the Johor plant, Malaysia



Kristin Barthel, Knauf Insulation's Chief Financial Officer (CFO), during the Diversity and Inclusion workshop in Visé, Belgium

OUR VISION FOR DIVERSITY AND INCLUSION

“ We embrace diversity and inclusion to welcome, support, grow and inspire our people equally.

Connecting to our Knauf values of Entrepreneurship, Commitment, Partnership and Menschlichkeit, we strive to create an enriching experience for all employees For A Better World.

Together we achieve more.

Kristin Barthel | Chief Financial Officer (CFO)



EMPOWERING EMPLOYEES

OVER THE PAST YEAR, KNAUF INSULATION HAS BEEN INVESTING IN THE WELL-BEING OF ITS TEAM BY HELPING THEM DISCOVER A GREATER PURPOSE TO THEIR WORK.

Well-being has once again been at the centre of Knauf Insulation’s activities during 2022. One area of focus in particular has been helping employees to feel empowered and driven by their own unique purpose.

Katja Pruša, HR Director for Systems Division, explains: “We want our employees to be activated, empowered people who strive to make a difference, not just in our company but society too.”

A number of initiatives have been undertaken during the past year to help employees uncover their purpose, including workshops via the **Living with a Green Heart** initiative, which was started this year in Slovenia.



The **Living with a Green Heart** initiative launched by Knauf Insulation Systems Division in Slovenia promotes a comprehensive approach to sustainable development, with particular emphasis on societal and social sustainable development. It places an informed individual at the forefront of the sustainable transformation of society.

Katja says: “In the **Living with a Green Heart** social sustainability workshops, we held ‘Green Warrior’ circles, initially for our teams involved in customer relations, where we explored the most important elements of people’s well-being according to PERMA theoretical research from Martin Seligman.

“Martin Seligman’s **PERMA** theory of well-being involves five building blocks – **P**ositive Emotion, **E**ngagement, **R**elationships, **M**eaning, and **A**ccomplishment (PERMA). The workshops allowed space for open, honest discussion where we talked about each of these elements.

“The aim of these discussions was to raise awareness of how important it is to have activated and empowered people in regards to their well-being, and enable them to think what they can do to work towards a greater goal. We want to provide individuals with the tools and knowledge of things we can all do to live full lives and flourish.”

Alongside the workshops, Knauf Insulation’s teams have been rolling out other initiatives, such as employee questionnaires, developing external standards and encouraging open, honest conversations.

Katja says: “There are also smaller steps to staying positive and promoting well-being in the workplace. Keeping a gratitude journal and regularly reflecting are little things we can all do. We’re also rolling out an employee assistance programme, which will be launched during our Mental Health Week.

“However, as an employer when it comes to well-being, we don’t want to just focus on vanity benefits, such as gym memberships or fitness programmes to promote positive well-being. We want to create an environment where people can make real, positive social change. We want individuals to feel like they can use this approach to influence those around them and have a great impact on the communities they are in.

“We’re all striving towards a greater good and this way of thinking is so powerful when trying to create change, both in our business and the wider world.”

When it comes to Knauf Insulation’s ultimate goal for well-being, Katja explains that it’s to build an environment that empowers people. To do this, there are three distinct areas of focus:

1. LEADERSHIP

“To create change, we need to start from the top down. Our leaders must drive this change and act as role models. This is why we are investing in leadership upskilling, with workshops and individual and team coaching processes.

“We are looking at people related processes in every aspect of the employee lifecycle, from recruitment, onboarding, development, performance management and more, and asking: What is the experience of our employees in this process? How can we strengthen it? Are we creating those two-way conversations between individuals and their managers? Are we empowering people to take ownership of their goals and well-being?”

2. RECOGNITION

“Recognition is huge. Our teams deserve to be acknowledged for what they have done and this is why feedback is essential. It’s important for us to take the time to pause and reflect on what we’ve achieved rather than constantly striving forward. Implementing diverse recognition systems, like we have done, is important, but at the end of the day it’s on every one of us to use them and to recognise others. And what we often value most are sincere words of appreciation.”

3. BELONGING

“Creating this sense of belonging is key to well-being. We all want to feel part of something bigger in the workplace but we also want to feel like we can be our true selves at work. This is why our Diversity & Inclusion activities are so important.”

Belonging isn’t also just good for employee well-being – it’s also good for business. Studies show that workplace belonging leads to increased job performance and 50% reduction in employee turnover.

Source: BetterUp: The Value of Belonging at Work: Investing in Workplace Inclusion report
<https://grow.betterup.com/resources/the-value-of-belonging-at-work-the-business-case-for-investing-in-workplace-inclusion-event>

Katja concludes: “Our people have overcome so much and have shown their resilience. Coming out of the initial COVID lockdowns really allowed people to shine, showing their true colours in a time of need. We really have amazing people working for us and I feel proud of the work that we do. This is why it’s vital we continue to care for them, look after their well-being and help them be empowered workers and citizens.”



The ultimate goal is to build an environment that empowers people. Change must start from the top first.

Katja Pruša
HR Director for Systems Division



78%
OF EMPLOYEES CITE THAT PERSONAL EMPOWERMENT IS A STRONG EXPECTATION OR DEAL BREAKER WHEN CONSIDERING A JOB*

* Source: 2022 Edelman Trust Barometer Special Report: Trust in the Workplace

PURPOSEFUL COMMUNITY ACTION

IN A CHALLENGING YEAR, THE KNAUF INSULATION TEAM HAS CONTINUED TO PUT PEOPLE FIRST, NOT JUST IN OUR BUSINESS BUT ALSO THE WIDER COMMUNITY.

No longer is a job just a job; an increasing number of employees are looking to contribute towards achieving a greater goal.

In fact, **69% of employees want their job to bring societal impact**, according to a 2022 Edelman Trust Barometer Special Report: Trust in the Workplace.

This is why Knauf Insulation's employees are encouraged to contribute to meaningful work that shapes society and addresses social and environmental problems.

Not only does this help to give employees a sense of purpose, it also helps them to feel that they belong to a group who are taking action to create a better planet. This falls in line with our sustainability strategy, **For A Better World**.

CREATING A COMFORTABLE, GREENER LEARNING ENVIRONMENT FOR INDIAN CHILDREN

Knauf Insulation has created, financed and delivered the materials for a new green roof for a primary school for girls in Kolkata, India.

Lessons at the Piali Ashar Alo primary school used to be challenging, especially in the hot, humid summer months, where learning conditions would often borderline on unbearable. The rainy season also presented challenges, as the building was often battered by heavy rain and dropped to a low of nine degrees in the winter.

Our team designed and installed a new 600 m² Urbanscape® Green Roof for the school, which limited the entry of heat and absorbed water. It also created a rooftop environment where the children could learn about gardening and botanic science.

Domen Ivanšek, Head of Building Science, says: "Our Urbanscape® roof enables passive cooling on the building by evapotranspiration, limiting the entry of heat and ensuring the temperature for the children and teachers in the school is much more comfortable than before."



Urbanscape® Green Roof cools down the school and provides an outdoor classroom.



TREE PLANTING IN ST. EGIDIEN

Colleagues at Knauf Insulation's St. Egidien plant in Germany have planted **more than 200 trees** as part of their latest reforestation initiative.

Volunteering alongside their families and friends, they have planted more than 200 hornbeam birch trees in a forest close to the plant.

Tree planting is a great way for us all to take individual action to help the environment and personally contribute to our **For A Better World** sustainability pledge, to Achieve Zero Carbon. This is because trees absorb carbon dioxide and clean the air, as well as protecting soil against erosion and offering habitats for native animal species.

UK TEAMS RAISE MONEY FOR LOCAL CHARITIES

From donating their own time to fundraising for causes they believe in, approximately £20,000 has been raised across Knauf Insulation Northern Europe's manufacturing plants and Head Office within the past year, which is a fantastic achievement from everyone involved!

Take a look at Knauf Insulation Northern Europe's charity work round-up:

Cwmbran

The Cwmbran plant raised money for local charities Ty Hafan, Ollie Young Foundation and Endometriosis UK, as well as sponsored the Pride of Gwent Charity Champion award, a category very close to their hearts!

Queensferry

Just under £5,000 was raised by the Queensferry plant for their chosen three local charities: Claire House Children's Hospice, Nightingale House Hospice and Hospice of the Good Shepherd.

St Helens

The newly created St Helens plant Community Team have worked closely with local charities including the HoneyRose Foundation, Violet Grace, Teardrops, Hope Centre/Foodbank, and The Lilac Centre. Activities involved foodbank collections, DIY such as painting and maintenance, bonus donations, and a charity golf day!

The teams have also carried out several litter picking exercises in the local community surrounding the plant.



REPUBLIKA SLOVENIJA
 SLUŽBA VLADE REPUBLIKE SLOVENIJE ZA RAZVOJ
 IN EVROPSKO KOHEZIJSKO POLITIKO

Iceland
 Liechtenstein Norway
 Norway grants grants

A GREENER MODE OF TRAVEL IN SLOVENIA



To promote sustainable mobility and reduce emissions within the industrial area of Trata, our colleagues in Slovenia are swapping their cars for electric bikes (e-bikes).

Launched in partnership with the Municipality of Škofja Loka, as well as Sibo and LTH Castings, the project will aim to raise awareness of sustainable mobility via a number of key initiatives. These include the construction of a bike storage facility, with a charging station and 20 e-bikes available for Knauf Insulation employees to use and embrace green travel.

The project, that started in September 2022 and will finish in spring 2024, will also see the creation of a new cycling road in Trata to help reduce the number of cars visiting the area on a daily basis. Not only will this benefit the local community, it will also encourage our employees to embrace green travel as part of our sustainability strategy, **For A Better World**.

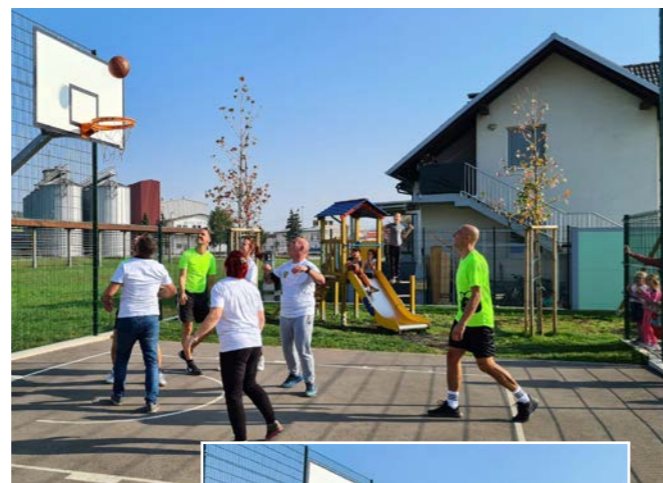
This project has been financed by grants from Iceland, Liechtenstein and Norway.

UNITING THE TRATA COMMUNITY IN SLOVENIA

Our team in Škofja Loka, Slovenia brought together the community by hosting a picnic to celebrate the launch of a new children's playground.

While our factory has been operating in the Trata industrial zone for over 50 years, the team has always prioritised coexistence with the local community in the surrounding village, ensuring there is a continuous dialogue.

This pleasant event united members of the community with Knauf Insulation employees to share food and drink, as well as playing a few games of basketball within the new playground!



HIKING TO SUPPORT CHILDREN WITH CANCER IN AUSTRIA

Last year, our colleagues at Knauf Insulation Austria embarked on a series of walks to raise money for Austrian Children's Cancer Aid.

For every kilometer walked, one Euro was donated to the charity. Together with business partners, customers and friends, the team got the chance to explore some stunning destinations around Austria, getting the benefits of nature while collecting donations for this worthy cause.

Udo Klamminger, Managing Director of Knauf Insulation Austria, says, "We want to put the focus back on being together in these challenging times and achieve something positive at the same time."

CLEANING BEACHES IN IBERIA

As part of our commitment to the environment, our colleagues from Knauf Insulation Iberia have organised local beach cleans, where they remove plastic waste from the shore.

This has become an annual initiative and is a great way to highlight the importance of taking care of nature and contributing to a healthier environment, **For A Better World**.



A WEEK OF SERVICE FOR NORTH AMERICA

With an estimated 1 in 6 families not having reliable, steady access to food, Knauf Insulation North America has taken action to help fight hunger in its local communities.

In its first ever 'Week of Service' that took place in November 2022, Knauf Insulation North America organised food drives at each of its locations, as well as making donations to local food banks. Donations will help to feed local families as we head into the colder winter months.

Our North American colleagues had the opportunity to get involved by donating food and volunteering their time at the food banks.

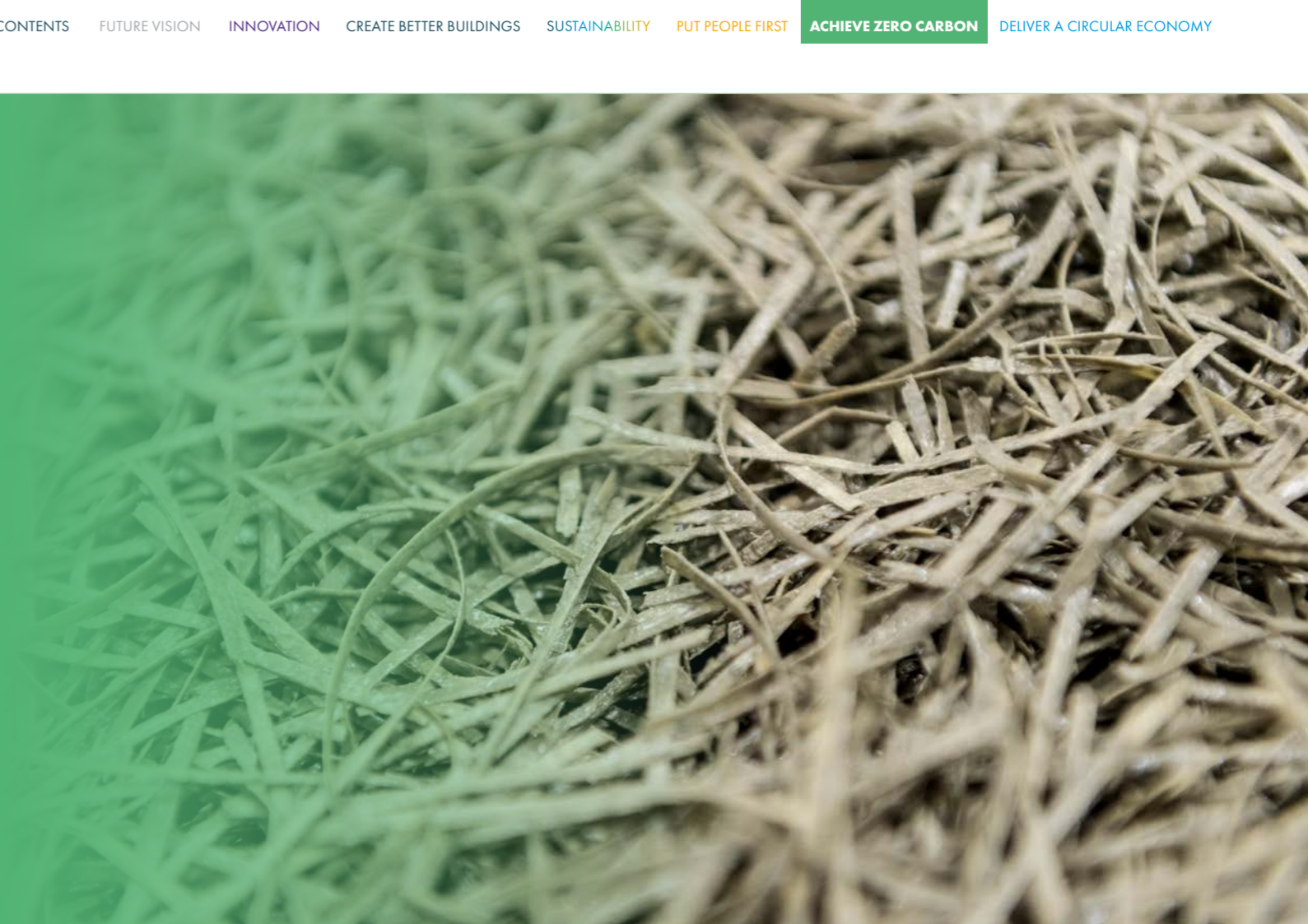


Knauf Insulation North America is also making financial contributions to the following food banks:

- ALBION South Michigan Food Bank
- INWOOD Berkeley County CCAP / Loaves & Fishes
- LANETT Montgomery Area Food Bank
- MCGREGOR McGregor Food Bank
- SHASTA LAKE Dignity Health
- SHELBYVILLE Gleaners Food Banks & Mobile Pantries



DECARBONISATION	DECARBONISATION REVOLUTION	78
TRANSPORTATION & PACKAGING	CUTTING CARBON LOADS	80



DECARBONISATION REVOLUTION

KNAUF INSULATION IS STEPPING UP INITIATIVES TO MEET THE COMPANY'S AMBITIOUS 2025 TARGET TO CUT EMBODIED CARBON BY 15%.

BALANCING OPERATIONS WITH RESPONSIBILITY

Switching to 'cleaner' sources of energy cannot happen overnight – commercial realities and operational imperatives need to be balanced with environmental responsibility.

David Ducarme, Knauf Insulation's Group Chief Operating Officer, says: "The time at which we can invest depends on external factors. A good example is our plant in Czechia. If we were to implement new technologies today, we would not only significantly increase the emissions of carbon because Czech electricity has high levels of carbon, but we also increase our costs. It makes no sense to change technology today.

"However, if we project to 2050, not changing the technology would result in a small decrease in carbon and a big increase in cost, but if we implemented new technologies, we would decrease carbon and cost. Finding the right time is crucial and will take a full investment cycle of 30 years."

By 2025 Knauf Insulation's plant at Visé in Belgium will have reduced its carbon embodied emissions from electricity by 95%.

It will be an incredible achievement that will have seen a complete transformation in the way in which the plant is powered. The number of photovoltaic panels will have increased from 6,000 in 2020 to 10,000 with thousands still expected to be added.

A new windmill will be rotating above the plant generating more than 10% of the electricity needed and the remaining power will be sourced by power companies that provide 'cleaner' energy from wind, solar or hydro sources and certified by credible Guarantees of Origin (GOs) rather than the carbon-heavy grid mix.

Jean-Pierre Pigeolet, Knauf Insulation's Decarbonisation and Life Cycle Sustainability Manager, says: "This is not so much an energy transition but an energy revolution for Knauf Insulation.

"Visé is just the first of many Knauf Insulation plants to be decarbonised and we are stepping up the pace for others around Europe, the Middle East and Asia."

There is a lot of pressure to achieve. In line with the company's **For A Better World** sustainability strategy, Knauf Insulation has committed to reduce the embodied carbon of its solutions by 15% per tonne of product by 2025.

That means cutting the carbon generated at every stage of a product's life cycle; from the extraction of materials and insulation product's manufacture to transportation, installation and end of life.



The biggest gains in terms of decarbonisation are to be made at the manufacturing stage where 65% of product carbon is generated. Jean-Pierre says the annual amount of electricity consumed by the plants generates the equivalent in indirect emissions of powering 200,000 homes.

Since 2019, when the company introduced a new system to provide forensic insight into its carbon footprint, a wide range of initiatives have been introduced or trialled.

Like Visé, plants now have projects to install photovoltaic panels to generate 'cleaner' energy while plans are underway to replace the carbon-heavy coke that is used to fuel the manufacture of Rock Mineral Wool with electric systems that can use renewable sources.

"These changes cannot happen overnight because they are costly, disruptive and often local electricity grids might not have access to greener energy," says Jean-Pierre.

"However, we are working on long-term contracts and agreements with companies that are investing in renewable energy, such as wind farms and carrying out research and development projects at plants involving hydrogen and bio-gas."

In addition, there are initiatives to source more materials that can be recycled, such as more used bottle glass to avoid using more carbon intensive processes to manufacture products from virgin raw materials.

Programmes of continuous improvement across Knauf Insulation are also producing positive results. For example, any heat escaping in the manufacturing process will be used to create steam and electricity or pre-heat raw material.

MANAGEMENT BY MEASUREMENT

Knauf Insulation measures the 'Global Warming Potential' of CO₂ across the entire life cycle of its products – from the sourcing of materials and manufacture to end of life – and reports the results in Environmental Product Declarations.

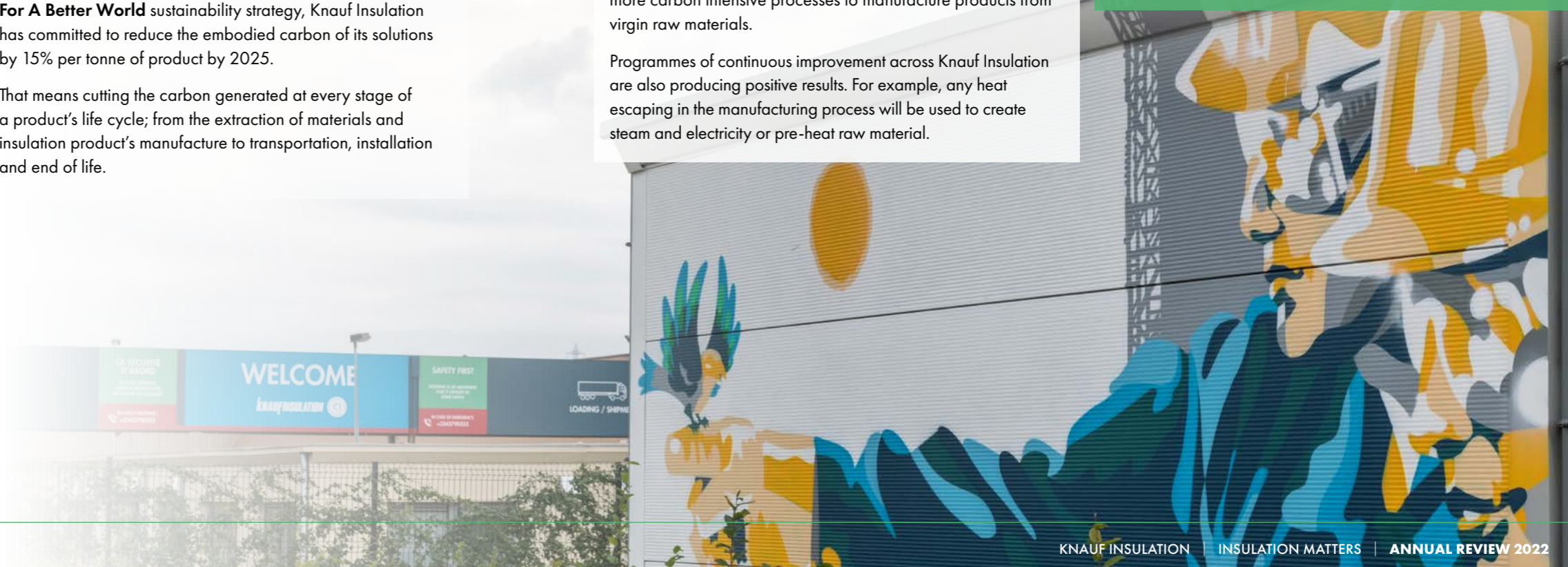
And to understand where these numbers can be lowered to achieve the company's 2025 embodied carbon reduction of 15% from a baseline year of 2019 – Knauf Insulation needs to have trustworthy data produced using universally accepted methodology.

Using internationally recognised Greenhouse Gas Protocol standards, Knauf Insulation has partnered with a company called CO₂ Logic to understand how each 'scope' area impacts the company in terms of carbon and have the results available at the click of a computer mouse.

Scope 1 covers direct emissions from the company's facilities and scope 2 deals with the indirect energy bought to power these facilities. Scope 3 covers everything else from raw material extraction and processes, their transport to plant; products' transportation to construction sites and their end of life after use in buildings; and other aspects, such as people commuting to plants and business travel.

For Knauf Insulation, scope 1 accounts today for 46% of emissions, scope 2 for 12%, and scope 3, 42%.

The company's new dashboard allows for the analysis of individual plant's carbon impacts. It also enables the detection of specific carbon hotspots in order to set up action plans and support to reach company carbon reduction objectives.



CUTTING CARBON LOADS

TRANSPORTATION AND PACKAGING ADD UP TO 15% OF KNAUF INSULATION'S CARBON, SAYS JEAN-PAUL DEFRANCE, COMPANY SUPPLY CHAIN DIRECTOR FOR EMEA & APAC.



Transportation and packaging are inextricably linked and contribute around 50% each of that 15%.

"We are now working on new solutions to increase our load per truck and decrease the kilometres (km) needed to deliver those loads," says Jean-Paul.

This has meant optimising our network across Europe, linking Knauf Insulation plants with distribution centres and rail-links to cut delivery distances, while sourcing raw material suppliers that are closer to the sites that need them.

Such changes can make a difference. Simply reducing a distance from 1,000 km to 500 km can cut the embodied carbon of a product by up to 3%.

"By opening our new plant in Malaysia, we have cut tens of thousands of carbon kilometres off our deliveries to customers across APAC," says Jean-Paul. In addition, energy efficient trucks are being employed with a view to using the biofuel or electric vehicles of the future.

In Belgium, 25.5 metre ECO-COMBI trucks are being used to deliver up to 30 pallets of Glass Mineral Wool which enables the company to deliver the same volume of product but using 30% fewer standard trailers cutting emissions by 20%.

Knauf Insulation is also partnering with its Transportation Management System provider to develop CO₂ emissions calculations based on primary data.

Using this information, Knauf Insulation can carry out complex calculations to assess truck routes, engine types and weight loads to establish the most carbon-effective way to transport goods, says Julian Fassin, Central Supply Chain Project Management Officer.

We are also strengthening our collaboration with organisations such as Smart Freight Center – an international non-profit organisation which focuses on reducing greenhouse gas emissions from freight transportation – to gain the insight we need for our future transportation strategy.

Meanwhile, we have also introduced more recycled material to our packaging (see page 88) and we are experimenting with package compression and the optimal thickness of the plastic required to keep transportation loads stable during delivery, ensuring they are dry and weather-proof.

"We have reduced the thickness of our packaging, but it is a fine balance between the carbon saved from using less virgin plastic and strengthening the packaging to accommodate higher compression levels that could be used to load even more products on a truck," says Jean-Paul.

"It is balance that we are constantly reassessing to create the optimal carbon reduction overall."

ON THE ROAD TO GREENER LOADS

Knauf Insulation Northern Europe has been working with its haulier Farrall's Group and CNG Fuels to trial a Scania UK CNG to see how a greener fuel alternative can reduce the company's carbon footprint.

The results of a trial throughout January and February 2022 revealed a 90% reduction in CO₂ produced per truck per annum.

As a result of the trial and as part of Knauf Insulation's joint Continuous Improvement programme within the supply chain, Farrall's Group plans to order a group of CNG vehicles to be fully operational in 2023.



RESULATION	A LANDMARK YEAR FOR RECYCLING	84
ZERO WASTE TO LANDFILL	ZERO WASTE TO LANDFILL LANDMARK	86
	INCREASING RECYCLED CONTENT	87
BETTER PACKAGING	BETTER PACKAGING, LOWER IMPACT	88
	STEPPING UP PALLET REUSE	89



LANDMARK YEAR FOR RECYCLING

NEW FACILITY DRIVES KNAUF INSULATION'S PIONEERING APPROACH TO THE CIRCULAR ECONOMY BY RECYCLING CONSTRUCTION AND DECONSTRUCTION WASTE.

2022 was a milestone year for Knauf Insulation with the opening of its new €15 million Glass Mineral Wool facility designed to take the company's RESULATION recycling service to the next level.

The RESULATION service takes back off-cuts and waste Mineral Wool from demolition and construction sites to be recycled at Knauf Insulation plants.

The opening of the new facility at Visé in Belgium is a major step forward to meet Knauf Insulation's **For A Better World** sustainability commitments to **take back 25% of customer waste from job sites** wherever possible, have programmes in place in five countries to recycle insulation from deconstruction sites and send zero production waste to landfill.

Already in Germany and Austria, RESULATION is enjoying major success with bags of scrap Mineral Wool being taken back at scale from construction job sites (see *box-out story right*).

But the new Visé RESULATION plant is a significant step forward because it is designed to recycle scrap Glass Mineral Wool into glass cullet required to manufacture new Knauf Insulation products.

Marc Bosmans, Knauf Insulation's Group Sustainability Director, says: "The new facility enables old insulation that has been saving energy and emissions for many years to be recycled into new Mineral Wool for a second energy-saving life cycle."

Already, production off-cuts of Glass Mineral Wool from Knauf Insulation's plants are being processed by the new facility, as well as bags of scrap from job sites. However, its major benefit is the ability to process deconstruction waste and experiment with new ways of making this more effective.

Waste from demolition sites is a major environmental issue with the construction industry responsible for more than 35% of total waste in Europe.

In Germany, Belgium, France, Luxembourg and the Netherlands, Knauf Insulation estimates that more than 220,000 tonnes of Glass Mineral Wool waste are generated every year with around 85% of that total coming from demolition sites and 15% from construction.

Most of this waste is sent to landfill by deconstruction companies, construction contractors and waste collectors who need to find effective waste management solutions.

Thomas Baguette, Glass Mineral Wool Recycling Business Development Manager, says: "We are partnering with waste management companies because there are strong business advantages to using the RESULATION service. Landfill is becoming increasingly expensive and, in some countries, will be banned. For example, Austria plans to end landfill from 2027.

"In addition, new regulation is being proposed and implemented across Europe. In France, for example, Extended Producer Responsibility programmes are ensuring that building material manufacturers take financial responsibility to manage products at the end of their life in an environmentally responsible way.

"For example, in France, Knauf Insulation is a founding member of the non-profit eco-organisation Valobat which is designed to help companies achieve their new circular economy obligations that make manufacturers of building materials financially responsible for the end-of-life of their products."

RESULATION, which as its name suggests celebrates a new approach to RECYCLING in the INSULATION industry, now provides customers with an efficient, effective, one-stop alternative to landfill or incineration.

"This is good for business, good for customers and great for the planet," Thomas says. "We now want to significantly increase the volume of deconstruction material that we use as raw material at Visé.

"That is why we are campaigning to mandate better separation of this waste at its source across Europe. By joining forces with new waste partners, we can ensure better quality and higher volumes of material for our process."

[| CLICK HERE TO FIND OUT MORE ABOUT RESULATION](#)

To understand how Mineral Wool can be effectively removed during deconstruction search for the European Insulation Manufacturers' video, 'Mineral Wool Insulation – Deconstruction in Practice' on YouTube which was supported by Knauf Insulation.

[| WATCH VIDEO AT YOUTUBE.COM/WATCH?V=H4AMG-F69MA](https://www.youtube.com/watch?v=H4AMG-F69MA)

RESULATION'S JOB SITE SUCCESS

KNAUF INSULATION'S RESULATION SERVICE IN GERMANY AND AUSTRIA HAS BEEN ACTIVELY COLLECTING ROCK MINERAL WOOL SCRAP FROM JOB SITES SINCE 2020.

The service involves delivering RESULATION bags to customers' construction sites and using them to fill with scrap Mineral Wool.

These off-cuts are then collected by Knauf Insulation partners, brought back to the company's production plants, and fed back into the manufacturing process to be transformed into new Rock Mineral Wool.

The aim is to now step up the volume of scrap material from construction sites.

This ambition is supported by a partnership with the Knauf Group's residual materials and recycling expert GFR which is providing large press containers to allow the collection of larger quantities of Mineral Wool residue.

RESULATION[®]
mineral wool made circular

HELPING CUSTOMERS INTO THE CIRCULAR ECONOMY

Circular Economy initiatives are also taking place in Slovenia where the company takes back left-overs from panel OEM customers and integrates the material at its Škofja Loka plant.

Meanwhile, in the Netherlands and Italy, Knauf Insulation collects and recycles Glass Mineral Wool residues from modular building customers.

ZERO WASTE TO LANDFILL LANDMARK

OUR HERAKLITH WOOD WOOL DIVISION IS NOW SENDING ZERO SCRAP TO LANDFILL.

It is an extraordinary milestone achieved two years ahead of Knauf Insulation's **For A Better World** commitment to send zero waste to landfill by 2025.

So, how was it achieved?

Joachim Wieltschnig, our Wood Wool Technical Director, says: "We worked waste stream by waste stream and clarified the routes of the material and, as we made progress, our waste disposal companies opened up new possibilities to recycle these materials."

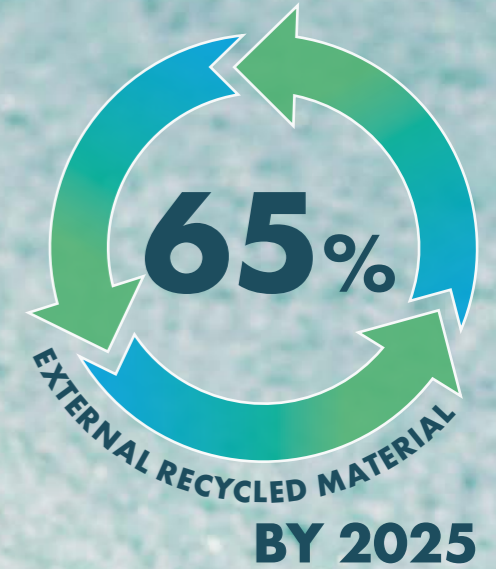
A major landmark was reached when our plants at Simbach and St. Egidien in Germany found an effective way to recycle more than 1,700 tonnes of scrap generated from the manufacture of Heraklith Wood Wool multilayer panels in 2019.

The Rock Mineral Wool sawdust from these panels is now sent from Simbach in Bavaria to St. Egidien in Saxony to create new products.

To treat the last major waste stream in 2022, our technical team with the Simbach plant then developed new equipment to compact scrap Wood Wool and EPS dust into pellets – such as those used for heating. This will enable additional companies to take this material from Simbach for use in other recycling processes such as substitute fuel.

For our plant in Zalaegerszeg in Hungary, the final challenge was to find a new way to avoid landfilling Wood Wool residue dust. Following extensive testing to ensure the material could be composted, it is now used as soil for use in applications, such as landscaping. Two companies have now offered contracts to take this waste away for treatment.

"These were the last major waste streams that we needed to tackle," says Joachim. "Now we do not need to rely on the goodwill of companies to treat our scrap but have more options for it to be reused or recycled. It took a lot of small steps over a long period of time, but we have finally achieved the exceptional result of sending zero waste to landfill."



60,000 TONNES
OF USED BOTTLES AND JARS
REFINED INTO THE CULLET NEEDED FOR GLASS MINERAL WOOL

INCREASING RECYCLED CONTENT

Knauf Insulation is committed to using more than 65% external recycled material – from used bottles and other glass – for our Glass Mineral Wool and more than 25% external recycled material for our Rock Mineral Wool by 2025 as part of our **For A Better World** sustainability strategy.

Initiatives, such as the building of a facility with recycling company Veolia in the UK to refine 60,000 tonnes of used bottles and jars into the cullet needed for Glass Mineral Wool, are making a difference, as is the creation of the new Visé recycling facility for demolition waste Glass Mineral Wool.

In 2021, we managed to increase the amount of recycled content in our Glass Mineral Wool by 3%, compared to 2020, bringing the total amount of recycled material used to 60.8%.

We are also continuously exploring new external waste sources for our Rock Mineral Wool. For example, we want to increase our use of 'slag' – waste from the steel industry – that can be recycled.

BETTER PACKAGING, LOWER IMPACT

It takes up to 6 kg of virgin plastic to wrap up a pallet of 300 kg of Knauf Insulation's Glass Mineral Wool.

Such high volumes of plastic use are unacceptable. That is why the **For A Better World** sustainability strategy commits the company to reducing its virgin plastic film packaging usage by more than 25% by 2025 and where possible to taking back between 25% and 50% of plastic film from customers for recycling.

Knauf Insulation is continuing to work to improve packaging solutions with plastics suppliers to ensure that there is an even balance between reducing weight and maintaining packet strength when packets are compressed.

Reducing virgin plastic use is a commitment of Knauf Insulation's circular economy journey: using 30% of recycled plastic material in our packaging can help us to decrease by 25% the carbon footprint of the plastic packaging.



25% MORE PACK PER PALLET

15% MORE PRODUCT PER ROLL

In the UK, the company has introduced packaging that uses a minimum of 30% of recycled content in line with **For A Better World**, as well as industry-leading compression technology. The packaging of Glass Mineral Wool also further improved as it uses considerably less ink than before, making it easier to recycle.

In addition in the UK, customers can now enjoy 15% more product per roll and 25% more packs per pallet for slabs, on certain product lines, following the introduction of the new packaging. This means fewer trucks on the road, less CO₂ emissions and less packaging used per m² of insulation.

LEADING THE WAY IN RECYCLABLE PACKAGING



Knauf Insulation's product packaging will soon change in the EU area*. Our 'More think. Less ink.' initiative is aimed not just at meeting our sustainability commitments, but also at helping our customers and industry partners achieve theirs.

Our new overwraps feature a maximum of two colours on a white base film and up to 70% less ink** (15-18% coverage). The new designs are consistent, easily distinguishable and will simplify the storage and handling of our products. Above all, this packaging is easier to recycle with less energy consumption.

* UK and Asia Pacific are not included
** Compared to our current packaging

STEPPING UP PALLET REUSE

AROUND 25 MILLION CUBIC METRES OF WOOD ARE USED FOR DISTRIBUTION PACKAGING AND PALLETS IN EUROPE, ACCORDING TO THE PACKAGING FROM NATURE ORGANISATION.

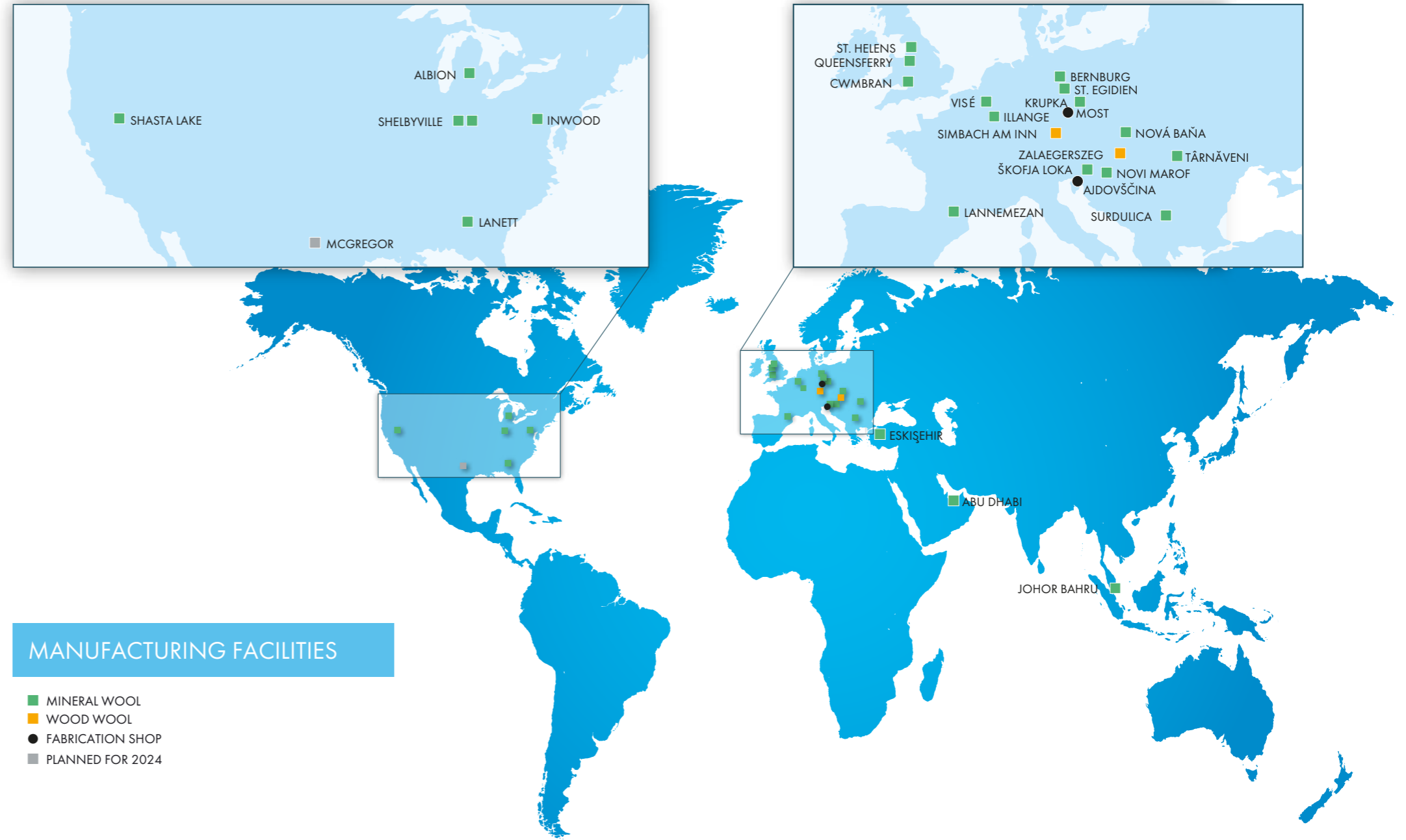
With 90% of pallets manufactured from timber, it is important to optimise the use of this natural resource.

That is why Knauf Insulation has committed to reuse 35% of wooden pallets used for its Mineral Wool products through collecting, sorting and repairing them.

The company is having the initiatives in place in the UK, Belgium, France, Netherlands and Germany to collect these pallets and reuse them, and is looking for the ways to further increase the coverage of such schemes.

In addition in Turkey success stories include the company's Eskişehir plant, which reused internally 6,270 pallets in 2020, saving around 87 tonnes of timber.





MANUFACTURING FACILITIES

- MINERAL WOOL
- WOOD WOOL
- FABRICATION SHOP
- PLANNED FOR 2024

Join the conversation: [#ForABetterWorld](https://twitter.com/ForABetterWorld)

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RUE DE MAESTRICHT 95, 4600 VISÉ, BELGIUM

CONTACT@KNAUFINSULATION.COM

WWW.KNAUFINSULATION.COM

ABOUT KNAUF INSULATION

With more than 40 years of experience in the insulation industry, Knauf Insulation represents one of the fastest growing and most respected names in insulation worldwide.

Knauf Insulation is committed to helping its customers to meet the increasing demand for energy efficiency and sustainability in new and existing homes, non-residential buildings and industrial applications. The company shows a strong and steady financial performance with turnover exceeding €2 billion. Knauf Insulation currently has nearly 6,000 employees in more than 40 countries and 28 manufacturing sites in 15 countries.

OUR MISSION

Our mission is to challenge conventional thinking and create innovative insulation solutions that shape the way we live and build in the future, with care for the people who make them, the people who use them and the world we all depend on.

OUR VISION

We lead the change in smarter insulation solutions
For A Better World.