



INSULATION MATTERS 2017

KNAUFINSULATION

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INTRODUCTION

CHALLENGE. CREATE. CARE.

I'm delighted to introduce my first edition of Knauf Insulation's annual publication *Insulation Matters*.

When I became CEO of the company in early 2017, I spent the first few weeks visiting every key plant in our worldwide network, talking to customers and meeting our colleagues.

What I discovered was a company that is not afraid to take on challenges – at every level.

Through research and development, we are creating new solutions that are reshaping the industry such as our Urbanscape® Green Roof Solution, SUPAFIL MAX Frame Blowing Wool for modular buildings, digital Building Information Modelling innovations and the service expertise that allows specifiers to unlock the points potential of Green Building Rating Systems.

We are also rising to the global challenge of climate change by ensuring energy efficiency in buildings is at the heart of every public debate while carrying out real performance renovation research that will ultimately shape political agendas.

And, as the world continues to face tragedy as the result of building fires, we remain resolute in our call to design fire risk out of buildings from the start.

Throughout our company, we have also challenged ourselves to do our jobs better. Through investment

in more efficient technology, a commitment from our colleagues at every level and a never-ending process of continuous improvement we have created an environment that cares.

This is not an abstract term. Caring is measurable. We care for our colleagues and the environment. Lost Time Accidents are down by a third from 2015 to 2016 and we have reduced CO₂ emissions by over 25% and cut energy use by 20% since 2010 – achieving our 2020 targets four years ahead of schedule.

We also care for our customers introducing new standards of excellence for logistics and product quality while providing the industry expertise that helps customers navigate a constantly shifting landscape with confidence.

However, some things never change. We remain proud of a history of excellence that extends back – in the case of Heraklith Wood Wool – 110 years. And we remain proud to be dynamic family-owned company that continues to invest in opportunities that strengthen our position as a leading player in the global insulation market.

JEAN-CLAUDE CARLIN
CEO, KNAUF INSULATION GROUP

ABOUT KNAUF INSULATION

Knauf Insulation has more than 40 years of experience in the insulation industry. Today the company employs over 5,000 people across 35 countries and has 37 manufacturing sites in 15 countries.

Knauf Insulation is part of the Knauf Group which has more than 26,000 employees worldwide with 220 factories in over 80 countries. The Knauf Group was founded in 1932 and remains an independent family-owned company driven by the values of partnership, commitment, entrepreneurship and menschlichkeit (humanity).

For more information visit www.knaufinsulation.com

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.

challenge.

create.

care.



ROADMAP FOR CHANGE



INNOVATION HONOUR



SOLAR POWER



DISCUSSION ON ENERGY EFFICIENCY



ACADEMY SUCCESS

THE YEAR AT A



TWO TIMES FAVOURITE



CLOSING THE LOOP



CHILD'S PLAY



QUALITY AWARD

ROADMAP FOR CHANGE IN SLOVAKIA

Vice-President of the European Commission's Energy Union, Maroš Šefčovič, was presented with an ambitious public policy roadmap designed to transform Slovakian buildings into energy efficient powerhouses that can help tackle climate change, provide sustainable healthier living environments and drive economic growth. The programme, presented by our colleague Peter Robl, Public Affairs Manager in Slovakia, was developed by Buildings for the Future (B4F) alliance which represents more than 140 companies with aggregated net sales comprising almost a third of the total construction output in the country.

BOOST EUROPE'S AMBITION FOR GREEN BUILDINGS

Knauf Insulation has called on European Energy Ministers to increase ambition on energy efficiency and green buildings. Speaking at the European Union Informal Energy Council in Malta in 2017, Jure Šumi, our Business Development Director for Green Solutions, told European Ministers: "There is a potentially enormous market for our Urbanscape® Green Solutions range, but this is not enough. Businesses look to the regulatory context as the main driver for future market development — and this is why having ambitious European targets is important."

WASHINGTON DC DISCUSSION ON ENERGY EFFICIENCY

The Save Act, designed to allow 'above code' energy efficiency investments to be considered in mortgage appraisals, was top of the agenda during Congress meetings in Washington DC attended by Knauf Insulation CEO North America, Christopher Griffin, and key executives. Senators Capito and Manchin also accepted invitations to attend the inauguration of the new production line at our Inwood plant.

NEW FIRE SAFE EUROPE PRESIDENT

Mark Leverton, Knauf Insulation's Managing Director for Western Europe, is the new President of Fire Safe Europe. "It is vital that the European Union champions policies that lead to fire-resistant buildings across Europe," said Mark.

ACADEMY SUCCESS IN SERBIA

More than 200 architects, construction engineers and specifiers from Serbia, Macedonia, Croatia, Montenegro, Bulgaria, Bosnia and Herzegovina attended the fifth Serbian Knauf Academy to discuss new trends in architecture and construction. Subjects included fire protection, soundproofing, new software tools and energy efficiency. The event was organised by Knauf Insulation, Knauf and Knauf AMF.

COMPANY NEWS

NEWS FROM OUR FACTORIES

AWARDS

SUSTAINABILITY

COMMUNITY

GLANCE

DOUBLE CELEBRATION IN UKRAINE

Knauf Insulation is celebrating two major awards in Ukraine after being chosen as the country's Best Thermal Insulation and Importer of the Year. The best insulation honour was presented during the independent Peoples Awards which recognises the country's best products and services in October 2016. The Importer of the Year 2016 was awarded in April 2017 by the independent National Business Rating which ranks companies according to their business levels of foreign trade.

FRENCH INNOVATION HONOUR FOR RT PLUS SYSTEM

Our RT PLUS System has won the 2017 Prix de l'Ingénierie (Engineering Award) which recognises outstanding contributions to innovation, engineering and sustainability. The award was voted for by contractors, journalists, engineers and building professionals.

GREENTAG BOOST

Our Earthwool range has again received GreenTag GreenRate Level A certification in April 2017 — maintaining its position as the only Glass Mineral Wool insulation in Australia and New Zealand to have a Level A rating. GreenTag is an independent sustainable product rating programme and its GreenRate certification is recognised by the Green Building Councils of Australia and New Zealand.

KNAUF INSULATION UK TWO TIMES FAVOURITE

Last November 2016, Knauf Insulation UK won the Supplier of the Year Award in the roofing and insulation category of the National Buying Group Awards for the fourth year running, while John Gaunt was named Account Manager of the Year for the second consecutive time: "At Knauf Insulation we believe in doing things differently, by investing heavily in training and engaging with our customers," John said.

CLOSING THE LOOP AT ST HELENS

Knauf Insulation has entered into a contract with resource management company Veolia to support the building of a glass cullet processing facility next to our St Helens plant in the United Kingdom.

Built and operated by Veolia on Knauf Insulation land, the facility will create 18 new jobs and be used to provide the plant with a stable supply of tens of thousands of tonnes of high quality recycled glass from packaging.

SOLAR POWER ENERGISES VISÉ

A total of 920 solar panels have been installed on our warehouse building at Visé in Belgium. With a total capacity of +/-250 kW peak power, the panels should produce enough capacity to power the multi-packaging system zone.

COMMUNITY ACTION IS CHILD'S PLAY

A kindergarden play area has been transformed thanks to our colleagues at Krupka in Czech Republic. Old trees and faulty play equipment were removed from Zvoneček school in Krupka and replaced. New trees were purchased and planted thanks to money and time volunteered by the plant and support for the new equipment and its installation was raised in partnership with plant suppliers. In 2011, Krupka transformed another local kindergarden play area after raising €65,000.

QUALITY AWARD FOR LANNEMEZAN PLANT

Our Lannemezan plant in France has received the Association Française Qualité Performance Award (AFQP) for its Continuous Improvement training programme. The programme was based on the European Foundation for Quality Management and the new version of the ISO9001 standard. AFQP recognises industrial excellence by encouraging the sharing of best methodologies and experiences.

VISION OF AMBITION

KNAUF INSULATION'S CEO JEAN-CLAUDE CARLIN JOINED THE GROUP IN FEBRUARY 2017. WE SPOKE TO HIM AT KNAUF INSULATION'S NEW GLOBAL HEADQUARTERS IN VISÉ, BELGIUM, ABOUT HIS UNCOMPROMISING APPROACH TO HEALTH AND SAFETY, AMBITIOUS PLANS FOR FRESH MARKETS, DEVELOPING NEW INNOVATIVE SOLUTIONS AND INCREASING CAPACITY TO MAXIMISE AN EXCITING NEW ERA OF OPPORTUNITY.



From left to right:

DAVID DUCARME
Group Chief Operating Officer and Deputy CEO

JEAN-CLAUDE CARLIN
CEO Knauf Insulation Group

FRÉDÉRIC DESLYPERE
Group Chief Financial Officer

SAŠA BAVEC
Group Marketing Director & Managing Director OEM

CHRISTOPHER GRIFFIN
CEO North America

WHAT ARE YOUR KEY PRIORITIES?

My first task when I became CEO in February 2017 was to understand our markets and by this I mean understanding what more we can do for our customers and how we can provide greater value. This is a global company but each market is different so it is vital that our regions have the autonomy and entrepreneurial spirit they need to move quickly.

AND WHAT ARE CUSTOMERS IN THESE DIFFERENT MARKETS SAYING?

I have met with customers at all our key locations around the world. There are different national needs and there are gaps we have to explore if want to be better in future in terms of service, product application and the range of what we do. There are a lot of opportunities where we want to go at speed.

SUCH AS?

We are preparing ourselves for expansion. We are examining our product range, developing new solutions and building up a strong footprint.

HOW IS THIS BEING DONE?

At the end of 2017 we will have restarted a mothballed line in Visé in Belgium and upgraded our line at St Egidien in Germany. This is not just a capacity game, we are rebuilding the performance of the lines and introducing new improvements so that processes and quality are superior and we are more efficient. We want to increase our pace of growth but want to do so in a way that is profitable for our shareholders and reinforces the quality of our solutions.

AND KNAUF INSULATION IS EXPLORING NEW MARKETS?

Of course. Asia offers very exciting opportunities for geographical expansion. There are also some very exciting opportunities in Europe. Regions with strong regulatory frameworks are always interesting for us as they provide long-term certainty for our markets – something all businesses appreciate. This is why we have a specialist team in Europe working on this for us.

HOW QUICKLY CAN KNAUF INSULATION MAKE THE MOST OF THESE OPPORTUNITIES?

We are a family-run business and family-run businesses traditionally have a speed of reaction that is faster than anyone else. We also have an unwavering entrepreneurial spirit and this has helped the company grow to a multi-billion-euro global business in just a decade. Knauf Insulation has always taken the opportunity to propose something different to our customers and because we have a robust basis and are family owned we are able to finance innovation and rapidly enable capabilities.

ARE THERE ANY NEW PLANTS PLANNED?

Yes. We have announced our intention to invest in a new Rock Mineral Wool plant in the border region of Luxembourg and France. The new plant, which is set to start operating in mid-2019, will have a production capacity exceeding 110,000 tonnes and will create close to 120 new local jobs.

WHAT ARE THE CHALLENGES FACING THE COMPANY?

We cannot just observe the market, we must drive it. We need to build up a strong footprint and continue to identify new market segments. We also need to bring something different to customers. And we need to challenge ourselves to provide innovation and new services as well as demonstrate the performance that our solutions deliver.

WHAT ABOUT NEW INNOVATIONS?

Internally we have seen good ideas from colleagues become fantastic new innovations, this is a culture we have always nurtured. In fact, these ideas have led to some of our most exciting innovations such as our award-winning ECOSE Technology, Mineral Plus and Urbanscape® Green Roof Solutions. We will continue this approach and continue to bring great new ideas to the market because our customers expect it and we enjoy it.

HOW DO YOU SEE THE FUTURE OF THE INSULATION INDUSTRY?

Our future is about systems. Our job is to provide superior insulation solutions and prove that these solutions are high performing. We are moving from being a manufacturer that 'just' sells rolls or slabs of insulation towards selling and guaranteeing performance.

HOW IMPORTANT IS SUSTAINABILITY TO THE COMPANY?

A commitment to sustainability is the only way forward for Knauf Insulation. It is critical that we help provide solid solutions that reduce the impact of the built environment on the environment and the world's natural resources. In parallel we are pushing ourselves to do better with less and constantly improving our processes and our use of resources. It is fantastic to be working toward such an objective and we have some incredibly committed colleagues. I must admit this is one of the things that most attracted me to this job.

HEALTH AND SAFETY IS A PARTICULAR PRIORITY FOR YOU.

Absolutely. When it comes to safety even our best is not good enough. You can't create a culture of care if you don't have a safe environment. Accidents still happen and that is devastating. Safety is an attitude and management has to encourage this attitude and people have to be responsible for their safety. We cannot allow things to go wrong with our processes or standards. This is an issue where I intend to be uncompromising. I think this is clear to everyone.

WHAT EXPERIENCES HAVE PREPARED YOU FOR YOUR ROLE AS CEO OF KNAUF INSULATION?

Before I joined Knauf Insulation I was in the steel business working for an American company. For more than half my career I worked in many different positions in many countries – China, India, UK, US. I learned to adapt as I started up different businesses in different environments and these experiences helped develop an entrepreneurial style.

WHEN YOU JOINED THE KNAUF GROUP WHAT DID YOU LEARN?

I joined Knauf Industries in 2009 as Group CEO of the packaging plastic division which required a lot of adaptation and good know-how because the business was smaller. This was a great education that I could also apply to a bigger role. Today all these experiences have come together and it's fantastic to have the possibility once in a lifetime to 'finish up the house and now put on the roof'.



BUILDING BETTER REGULATION

Knauf Insulation has always campaigned to improve energy efficiency policies for buildings. Why? Because regulation drives positive change.

King Hammurabi didn't have time for dangerous buildings, so he wrote the first building code. And it got to the point quickly.

"If a builder has built a house for a man and his work is not strong, and that house falls and kills the householder, that builder shall be slain."

Harsh but fair? Perhaps. But this was Babylon in 1758 BC. And such a Directive would have certainly 'incentivised' the industry to seriously consider best practice, real performance, safeguarding customers and making life better for everyone who uses buildings.

Almost 4,000 years later, incentivising building improvement through new policies is more important than ever. That is why at Knauf Insulation we campaign to upgrade and improve building laws at every level across the world — although with a more liberal approach than King Hammurabi.

"Our focus has always been on driving regulation that improves the energy efficiency of buildings because — simply — this makes everything better, for everyone," says Siân Hughes, our Director of External Affairs.

"Naturally, regulation also inspires and drives change. If tackling issues of energy efficiency were left to the market, well, not enough would be done, at least at the rate needed. Regulation puts a rocket behind the concept."

The impact of relentless campaigning with our industry partners and other energy efficiency stakeholders combined with greater public and political awareness has been particularly successful in Europe.

A few decades ago, energy efficiency was barely a footnote in European energy policies. Today it is at the

core of the 'Clean Energy for All Europeans' package of measures designed to reduce energy use by 30% by 2030.

The concept of 'Energy Efficiency First' plays a critical role in Europe's Energy Union strategy and energy efficiency is regarded as a key way in which Europe can safeguard its commitment to the Paris Agreement to keep global warming 'well below' 2°C by 2050.

Europe has come a long way and at Knauf Insulation we want to drive the energy efficiency agenda even further. King Hammurabi would certainly approve.

THE RISE AND RISE OF BUILDING ENERGY EFFICIENCY IN EUROPEAN POLICY

1993

The Directive to Limit Carbon Dioxide Emissions by Improving Energy Efficiency (known as SAVE) called on Member States to limit emissions by implementing programmes that focused on the energy certification of buildings, the billing of heating and cooling costs based on consumption, the thermal insulation of new buildings and energy audits of high industrial energy consumption.

2002

The first Energy Performance of Buildings Directive (EPBD) is inspired by the need to manage building energy use in line with the Kyoto Protocol to curb emissions. The word 'efficiency' is mentioned nine times in the Directive and topics focus on air-conditioning, boilers and heat pumps, rather than the building envelope.

2010

The revised EPBD sets — for the first time — a target that new buildings must be nearly zero-energy by 2020. The word 'efficiency' now appears 43 times. Unfortunately, renovation of the existing building stock is only marginally tackled in the Directive. As a result, the building industry launches the Renovate Europe Campaign in 2011.

REGULATION DRIVES IMPROVEMENT

"Now, thanks mainly to regulation or policy, when the moment comes to do a renovation or to buy a new television, the new version uses less energy than the one it replaces. Through the Energy Performance Building Directive, for example, policy makers have the tools to ensure that when buildings are renovated they are renovated to a good level."

Paul Hodson, Head of the European Commission's Energy Efficiency Unit.

2012

The first Energy Efficiency Directive (EED) sets an energy efficiency target of 20% by 2020 for all Member States — to improve energy security, reduce emissions, create jobs and boost innovation. The bad news is that it's not legally binding. The good news is that for the first time, renovation is mentioned with countries having to create tri-annual 'roadmaps' to show how they will make their building stock more energy efficient.

2014

The European Council agrees on the 2030 climate and energy policy framework for the European Union setting a target of at least 40% in greenhouse gas emission reduction for 2030 and European Commission proposals state Member States must improve their energy efficiency by 27% by the same year.

2015

The European Commission presents the Strategy Framework for the Energy Union. At its heart is the principle of 'Energy Efficiency First' ensuring energy efficiency comes before the exploration of new energy sources.

— The world commits to the Paris Climate Change Agreement to keep warming well-below 2°C.

WHERE NEXT?

OUR TARGETS

The 'Clean Energy for Europeans' package was launched by the European Commission in the Autumn of 2016 and is an impressive set of proposals that could commit the European Union to a 30% binding efficiency target by 2030 and launch an ambitious rate of building renovation backed by significant 'smart' financial support.

OUR WORK

We have been supporting politicians and policy-makers with practical expertise and experience to ensure the Clean Energy Package delivers the best possible deal for energy efficiency in buildings. We are also working to make the package's revisions of the EPBD and EED focus on requirements that double Europe's renovation rate.

TESTIMONY

"It is great to work with Knauf Insulation. Along with other members of the European Alliance to Save Energy they have been at the forefront of our campaign for energy efficiency in Europe since the creation of the Alliance back in 2010. They are an excellent example of why green business is good for Europe, for European citizens but most importantly for the future of our planet."

Monica Frassoni, President of the European Alliance to Save Energy

KEEPING ENERGY EFFICIENCY AT THE HEART OF THE DEBATE

THE WORLD'S POLITICAL POWER PLATES MAY BE CONSTANTLY SHIFTING, BUT THE OBJECTIVE OF OUR PUBLIC AFFAIRS TEAMS HAS ALWAYS REMAINED THE SAME — ENERGY EFFICIENCY SHOULD BE THE FOUNDATION OF ANY ENERGY POLICY.

"May you live in interesting times," goes the well-worn quote. And during 2016 and 2017, it has felt that 'interesting times' could be interpreted as either a blessing or a curse — depending on your view.

The fall out from the UK's decision to leave the European Union and the impact of nail-biting elections in the US and across Europe reverberated around the globe as populist movements and political earthquakes became the hallmarks of current times.

But, of course, politicians and their policies come and go. At Knauf Insulation we have always maintained that consistency is the key to real progress. Especially when it comes to those policies that matter most.

Our focus on energy efficiency has never been stronger. Energy efficiency improves living conditions, cuts emissions, creates jobs, boosts economies and ends fuel poverty.

NO MATTER HOW THE POLITICAL POWER PLATES SHIFT, OUR VISION FOR THE FUTURE HAS ALWAYS FOCUSED ON MAKING BUILDINGS ENERGY EFFICIENT. THAT IS WHY OUR PUBLIC AFFAIRS CAMPAIGNERS ARE WORKING RELENTLESSLY TO PUT ENERGY EFFICIENT BUILDINGS AT THE HEART OF EVERY POLICY DISCUSSION.

USA

STRENGTHENING ENERGY CODES

The US Department of Energy states that energy codes for residential and commercial buildings over a 30-year period from 2010 to 2040 should save the USA \$126 billion in energy cost savings and the annual emissions equivalent of 177 million passenger vehicles. Our aim in the US is to ensure these codes significantly enhance energy efficiency and are practical to implement when applied to residential and commercial construction.

We also want to increase International Energy Conservation Code (IECC) compliance across the entire country. According to data from the Building Codes Assistance Project, nine states do not have a state-wide code; one is less energy efficient than 2009; 16 have a code equivalent to 2009 and 23 states are between 2102/5 codes and just one is more energy efficient than the 2012/5 code.

OUR WORK

We have consistently — and successfully — campaigned for higher R-values during revisions of the IECC. Under the latest code update for 2018 we along with our trade allies successfully established minimum envelope levels which were 15% more efficient than proposed changes. Critically, we also ensured these values were the basic minimum even if a builder installed solar panels.

UK

TAKING ON THE PERFORMANCE CHALLENGE

We are building on the evidence base around the importance of more efficient building stock and providing government with solutions that will drive building efficiency. In 2017 we analysed data collected from 70 homes — both insulated and uninsulated — in the Energy Performance Challenge project over two heating seasons.

OUR WORK

It is vital that renovation is carried out to a high standard and that means incentivising good 'whole house' solutions where walls, roofs and floors are insulated where appropriate. Knauf Insulation also piloted a project training a multi-skilled team outside of the traditional supply chain to deliver its core domestic home renovation products along with complimentary ventilation solutions. Thanks to our data from both this project and the Energy Performance Challenge the government has the opportunity to revisit the benefits it would receive from a new building energy efficiency initiative.

GERMANY

AIMING HIGHER FOR HOUSING

Germany's housing market is under increasing pressure as a result of soaring prices, a lack of affordable property and the unique challenge of finding homes for hundreds of thousands of refugees. Estimations of the German government suggest that 350,000 to 400,000 new homes need to be built every year until 2025 to meet demand. The country is falling short of that annual target by 130,000.

OUR WORK

The Knauf Group and Knauf Insulation are committed to finding innovative inner-city solutions to the crisis particularly the possibilities of creating new homes through vertical extensions to existing buildings.

A study by Technische Universität Darmstadt and Pestel-Institut in Hanover found that across Germany's major cities an additional 1.1 million new lightweight apartments could be added to the top of 580,000 existing buildings built between 1950 and 1990. The initiative would not require expensive new building plots and would provide affordable, low-energy homes that could be easily integrated into residential blocks, providing new jobs for thousands. Our public affairs teams are working to encourage policy makers to find the financial incentives to make this roof-top initiative a future reality.

CZECH REPUBLIC

UNLOCKING FINANCE FOR BUILDINGS

We are campaigning to increase renovation rates across the Czech Republic and supporting the government's introduction of subsidies that pave the way for more energy efficient buildings.

OUR WORK

We are working hard to ensure that a multi-million-euro government programme for the renovation of single-family homes is a success. And progress is promising. Already the scheme is recognised as an exemplary programme for the entire Central and Eastern European region. Now we are setting our sights on unlocking renovation finance for other building types as well.

We have also helped find new sources of finance for the installation of green roofs. A campaign by Chance for Buildings, which we supported, resulted in the government introducing a new subsidy which cuts green roof costs by half.

Additionally, we have been working with the Mineral Insulation Manufacturers Association (AVMI) to showcase the acoustic and financial benefits of using lightweight partitions with Mineral Wool.

SLOVAKIA

REMOVING BARRIERS TO RENOVATION

In 2016 we set out to overturn a 2015 law that effectively added a 'development' tax of up to €35 per square floor-metre on renovation work and new buildings; improve building fire safety; help drive subsidy schemes for the renovation of single-family buildings and support new norms that will allow fire-safe timber buildings of up to five storeys.

OUR WORK

After six months of campaigning parliament, we were able to demonstrate how the tax would add 30% to the cost of energy efficient improvement work as well as act as a disincentive to renovation. The law was overturned.

Intense campaigning also resulted in the introduction of compulsory 20 cm fire barriers in insulation of all existing buildings under 22.5 metres.

Another renovation breakthrough has been new guidance by the European Commission which now unlocks the renovation of public buildings using private funding via Energy Performance Contracting. The new rules have removed the negative impact of such funding on public deficit for Europe's local authorities. The breakthrough follows an initiative by several governments heavily supported by a campaign led by our Slovak and EU public affairs team.

TESTIMONY

"Knauf Insulation is among the leading promoters and supporters of sustainable buildings in Slovakia. Our Council benefits from their active participation in our Board and from the advocacy work of the Buildings for the Future platform initiated by Knauf Insulation. I appreciate their approach based on building alliances and promoting constant development."

Pavol Kukura, Chairman of the Board, Slovak Green Building Council.

FATAL FLAW OF REGULATION

When it comes to building safety, how fire reacts in the real world is all that matters.

The Grenfell Tower tragedy in London has once again put fire safety in the spotlight.

For years Knauf Insulation has supported organisations such as Fire Safe Europe as well as many national campaigns to fight for better building fire safety regulation.

But building fires continue to devastate lives across the world with the Grenfell disaster in the UK in June 2017, the latest in a terrible legacy of tragedy.

In 2012, 19 people including 13 children were killed in a fire that swept through a Qatar shopping mall. A year later, 242 were killed in a nightclub fire in Brazil. In 2014, 32 pensioners died in a blaze in a Canadian care home.

In the United Arab Emirates (UAE), there have been five fires in towers over a height of 34 storeys since New Year's Eve 2015 when a blaze engulfed a 63-storey hotel.

Incredibly, in August 2017, fire swept up one of the world's largest residential buildings, the Torch Tower in the UAE emirate of Dubai, for the second time in two years.

"These terrible incidents and the shocking tragedy of the London Grenfell disaster reinforces our conviction at Knauf Insulation that the right solution for the right application is vital to create a safe and sustainable built environment," says Siân Hughes, Knauf Insulation's Director of External Affairs.

"However, to make such an environment a reality it is essential that the entire building chain is driven by robust regulation. And that means designing the risk of fire out of buildings from the start."

This approach, encouraged by Knauf Insulation and its building fire safety network, is gathering momentum.

In the UAE, a new building code introduced in 2017 means that any insulation in a façade must be non-combustible on any building higher than 15 metres as well as in other public buildings such as malls, theme parks, schools and hospitals. In the Czech Republic and Slovakia, only non-combustible — or materials with limited combustibility — can be used on facades in high-rise buildings. Serbia now requires the installation of non-combustible materials in the facades of all public buildings regardless of height.

Such regulation is highly prescriptive defined by a specific approach to achieve a very specific aim. But what about countries such as the UK where fire regulations are based on lab performance and where extensive testing on products, kits and systems establish how a combination of materials are expected to perform in a fire?

We put real performance at the heart of everything we do because it is the reality by which all buildings will be judged in the future. That is why we invest heavily in research and development, both in testing facilities and ground-breaking 'real world' projects, to understand how our solutions will perform when it comes to thermal and acoustic performance.

But the question has to be asked: has real performance testing reached its limit when it comes to using it as a basis for building fire safety regulation?

"No matter how sophisticated the technology and no matter how extensive the scale or range of modelling research, it is impossible for a test facility to assess the endless factors that could impact how a high risk large building will react in the event of a fire in the real world," says Siân.

It is an opinion shared by Phil Barry, Managing Director of CWB Fire Safety Consultants in the UK and a member of the Institution of Fire Engineers.

"We must design this risk out of these buildings and that means only permitting non-combustible materials in these buildings from the start."

He says: *"Fire tests that are recommended in the UK do not ensure that all aspects of modern building construction are scrutinised and the test methods are not appropriate for modern high-rise building situations."*

Issues such as poor installation workmanship, unexpected environmental factors, unpredictable occupant behaviour or simply the impact of ageing that chips away at buildings through constant modification could all further increase fire risk.

"Another major issue that appears to be often over-looked is the fact that building codes around the world permit the use of unprotected areas — i.e. windows — in external walls, with the size and number permitted dependant on the proximity of neighbouring buildings to reduce the risk of fire spread between buildings by radiated heat," Phil says.

"So we have many situations around the world where buildings have combustible outer walls with unprotected areas which may result in rapidly spreading fire across buildings and into them from the outside."

But at the heart of the debate is the emphasis placed on fire tests. *"For high-rise buildings or for any other building where evacuation is slow or difficult in the event of a fire — such as schools, hospitals or care homes — building fire safety cannot be left to regulation based on results from test facilities because the real-life risks are too high,"* says Siân.

"We must design this risk out of buildings and that means only permitting non-combustible materials in them from the start."

Because when it comes to building safety, how fire reacts in the real world is all that matters.

FIRE REACTION VS FIRE RESISTANCE

What is the difference between fire reaction and fire resistance?

Reaction to fire describes the combustibility of a material – whether it will burn or not – and fire resistance describes how building elements are expected to behave in the event of a fire.

How is fire reaction defined?

There is a clear definition of a product's reaction to fire and it comes from seven levels of combustibility based on tests for the EN13501-1 European Standard. These 'Euroclasses' start at A1 (non-combustible and doesn't burn) and A2 (limited combustibility) and go down to B, C, D, E and F.

Does that mean the protection offered by non-combustible materials varies?

Yes. Tests for A1 and A2 products are designed to show a product is non-combustible, while for the other classes the tests are all about degrees of combustibility. You will know what the Euroclass reaction rating is because it is included on a product's CE Mark. This is a marking demonstrating compliance with the European Construction Product Regulation (CPR) and testing according to the European Standards.

Knauf Insulation products are A1 and A2?

We offer a wide range of A1 and A2 fire-safe insulation solutions for all building applications from Rock Mineral Wool slabs, Glass Mineral Wool rolls and slabs, to Heraklith boards. These products have exceptional fire reaction and fire resistance.

What about fire resistance?

Fire protection classifications are normally reported in terms of a period of fire resistance, for example 30, 60 or 90 minutes. These classifications relate to what is known as the integrity, thermal insulation and load-bearing capacity of building elements. Simply, this means how elements – either in combination or individually – stop a fire spreading, how they restrict temperature rise and how the elements' loadbearing capacity is maintained. The ideal approach would be to have excellent fire reaction materials combined through intelligent system design to give excellent fire resistance in a building element.



NEW FAÇADE REGULATION IN SERBIA

New regulation has been introduced in Serbia that requires the installation of non-combustible materials in the façades of all public buildings regardless of height.

Since 2012, Knauf Insulation and the National Association for Fire Protection (NUZOP) have been campaigning to generate greater awareness of how easily fire can spread through building façades featuring combustible materials as well as highlighting the dangers of toxic gases.

The campaign was given added momentum by nation-wide renovation programmes designed to make public buildings – particularly schools and hospitals – more energy efficient. At the heart of these works it was vital that fire safety was made a priority.

The new law marks a major step forward for Serbia and covers public renovation projects as well as new public buildings and a range of other building types. The previous regulation on facade material use dated back to 1984 and was only for buildings above 22 metres.



UAE CODE PUTS SAFETY FIRST

New building codes in the United Arab Emirates (UAE) have placed strong emphasis on fire safety following dramatic blazes in high profile buildings in Dubai, Abu Dhabi, Sharjah and Ajman.

Knauf Insulation has consistently campaigned for non-combustible façades in UAE buildings and in 2016 new regulations were introduced in a 780-page Building Code.

Now any insulation in a building façade must be non-combustible on any building higher than 15 metres as well as in public buildings such as malls, theme parks, school and hospitals.

Secondly, everyone in the supply chain – from manufacturers and contractors to specifiers and clients – is responsible for ensuring all cladding system elements have been tested and certified in line with the new fire safety regulations.

Finally, any HVAC elements that contain combustible elements must be encased in non-combustible material.

“The building ambition of the UAE has been extraordinary. In just 40 years the country has created iconic skylines out of desert sand,” said David Adams, Managing Director Knauf Exeed. *“Now the authorities have created a serious and comprehensive code that reflects the scale of this ambition.”*

LEADING THE CHARGE FOR BETTER FIRE SAFETY

Knauf Insulation is a founding member of, and presides over, Fire Safe Europe (FSEU), an organisation dedicated to improving fire safety in European buildings. FSEU aims to create awareness among policy makers about building fire safety; publicly share expertise from fire-fighters, fire experts, associations and product manufacturers; create a platform for the sharing of ideas about fire safety; advocate for regulation that reflects real performance in a fire and build a network that can make Europe fire safe.

TIMBER-FRAME SUCCESS IN SLOVAKIA

In Slovakia our public affairs team supported national partners to help drive through a technical norm that allows timber-frame buildings to be constructed to a height of up to five storeys. The new regulation replaces codes that previously only allowed timber frame construction up to a height of two storeys. A key condition of the new regulation is that these buildings must be fire-safe – our Mineral Wool offers the ideal solution for the frame to be filled with incombustible material.



FIGHTING FIRE IN HVAC SYSTEMS

Fire safety is the greatest challenge facing any public building and that is why our Technical Solutions division offers fire resistant HVAC solutions that are customised to meet the strictest regulation.

Preventing fire spreading room to room through a building via HVAC systems is a key consideration of specifiers and it is vital that these systems not only block fire but also offer the highest fire resistance.

Our specialists are expert in the wide range of HVAC fire regulations that differ considerably from country to country and – whether an HVAC system uses circular, rectangular or pipe connections – we have effective fire-resistant solutions that can be tailored to fit and meet all standard requirements.

Building on this success we continue to work to develop new HVAC insulation solutions. For example, we recently launched our HVAC Fire-teK system in Switzerland and Finland following certification that met the country's highest fire standards. We are also developing specialist solutions for ships that, unsurprisingly, have to meet some of the toughest fire resistant classifications in the world.

At Technical Solutions, we are also committed to environmental care. All HVAC systems feature our revolutionary ECOSE Technology, which is a binder mainly derived from rapidly renewable materials and with no added formaldehyde. It is also certified Indoor Air Comfort Gold by Eurofins in line with demanding Indoor Air Quality emissions regulation.

“The EU Framework of Core Indicators, Level(s), has just been published. Level(s) is the result of more than two years of combined effort by many construction stakeholders, including valuable input from Knauf Insulation. The next step is to fully implement a test phase and we call on the whole chain to show passion and commitment to create an ambitious long-term vision for a better sustainable built environment in Europe.”

Josefina Lindblom, Unit of Sustainable Production, Products and Consumption, European Commission for DG Environment

A new vision for green building

How Knauf Insulation can help specifiers make the most of the European Commission's new sustainable building framework.

2017 is set to be a landmark year for sustainable building with the launch of a European Commission framework, Level(s), that could pave the way for new environmental performance laws for Europe's buildings.

The framework Level(s) will “develop indicators to assess environmental performance throughout the lifecycle of a building and promote their use for building projects”.

The good news is that at Knauf Insulation we are familiar with every element of this framework which focuses on the environmental impact of building components — from cradle to grave — on energy performance, climate change impact, resource efficiency, water use, indoor air quality and lifecycle costing.

We have always championed a lifecycle assessment approach to our products, because it provides the most accurate available insight into issues of sustainability.

We have third party validated Environmental Product Declarations (EPDs) for the majority of our products and when verified EPDs are not available, dedicated Life Cycle Assessment documents for specific products can be delivered in a few days.

Vincent Briard, Sustainability and Product Regulatory Affairs Director at Knauf Insulation, said: “We welcome the Commission's Framework as a major step forward for improved construction practices and we hope that in the long-term it will form the initial foundations for an ambitious Environmental Performance of Buildings Directive in the future.”

“At Knauf Insulation we have long campaigned for a lifecycle assessment approach to sustainability and we believe such a directive would be good for the industry and innovation, good for people and ultimately good for the environment.”

And, of course, for specifiers who want to navigate this new framework we can help. Most of our products can make a significant contribution to all its key criteria. We also have an experienced in-house team of sustainability experts to support our customers as well as tools, such as KnaufTerm software, to dive deep into energy use and environmental impact across the lifecycle of products.

“We look forward to working with specifiers to provide the best possible solutions whatever the scope and scale of their projects,” said Vincent.

How we are helping specifiers prepare for Level(s)

ENERGY PERFORMANCE

Energy use is the cornerstone of sustainability and the cornerstone of the Commission's framework. Our products are designed to save energy and money. Even better, our calculations reveal that one unit of energy used to manufacture one unit of our typical Glass Mineral Wool saves 570 energy units over its assumed 50-year use phase.

CLIMATE CHANGE IMPACT

The framework is inspired by the European Union's legal commitment to the Paris COP21 agreement to make on-going emission reduction commitments. As buildings are the biggest consumers of energy accounting for 40% of Europe's energy use and 36% of its emissions, our products can reduce emissions significantly over the lifetime of a building. Based on this assumption, our Glass Mineral Wool installed in 2016 reduced energy consumption in Europe's buildings by approximately 1.5 billion kWh. Lifecycle Assessment calculations show that the emissions generated during the manufacture of these solutions were offset within months of installation.

RESOURCE EFFICIENCY

Products such as our Glass Mineral Wool with ECOSE Technology are made from up to 80% recycled glass. Environmental Product Declarations (EPDs) also examine in minute detail every stage of our products' lifecycle from material sourcing to disposal or recycling and enable us to examine new ways to do more with less.

WATER USE

Vegetated roofing has long been recognised as an effective stormwater management tool in cities to help with storm water management. Our Green Roof Solution Urbanscape® can reduce storm water run-off, which reduces the burden on sewer systems by 70-95% in summer. Through natural bio-filtration, green roofs can also prevent contaminants and toxicants from reaching streams and waterways.

INDOOR AIR QUALITY

The framework's emphasis on improved air quality is a reflection of a wider focus on the health and well-being of buildings as an important indicator of good sustainable practice. Knauf Insulation with ECOSE Technology is certified Indoor Air Comfort Gold from Eurofins which meets Europe's most demanding indoor environmental standards such as Blue Angel and A+ labelling in France.

ACOUSTICS

We are delighted to see that acoustics found place in the first version of the framework. At this stage it is just indicative, but we are confident that it will become more important with the growing realisation of its impact on the well-being of building users. The majority of our products provide exceptional sound absorption performance and dramatically reduce the unhealthy impact of noise pollution.

LIFECYCLE COSTING

Lifecycle Costing evaluates the economic impact of an asset from the cradle to the grave. Our sustainability team understands the importance of integrating LLC into project management and also the critical role our products can play. Our solutions are affordable and designed to cut operational energy costs over their lifecycle.

FIVE REASONS WHY THE NEW EUROPEAN FRAMEWORK LEVEL(S) MATTERS

The impact of buildings is unacceptable

1 During their lifecycle European buildings pump out 36% of Europe's CO₂ emissions, consume half of all extracted materials, use 40% of Europe's energy, consume a third of its water and generate a third of all waste.

There is a need to drive improvement

2 The Commission describes the initiative as “a voluntary reporting framework that has a broad potential for use by building sector professionals across the EU” and is rigorous enough to drive improvement in performance and allow comparison between buildings.

Buildings need to be more sustainable

3 Buildings have long lifetimes and it is vital that innovations are encouraged that will help reduce the environmental impact of building components as well as increase their durability and recyclability.

Paris commitments are binding

4 The European Union is among the 197 parties that signed the Paris Agreement to keep global temperature rise this century well below 2°C. The Framework contributes.

Other countries are not waiting

5 Many countries are already putting the environmental impact of buildings at the heart of legislation such as in France where Fiches de Déclarations Environnementales et Sanitaires (FDES) — are mandatory on construction products. The declarations also insist on building indoor air quality and introduce a new French label system E+C- for new buildings which stands for positive energy and carbon reduction. In Finland the government is looking at implementing mandatory LCA of buildings by 2025, while in Austria subsidies are allowed if an LCA is conducted for a building and a reference target achieved.

For more details about the European Commission framework visit ec.europa.eu

OUR GREEN TEAM

At Knauf Insulation our technical specialists offer a wide range of Green Building Rating System expertise from LEED and BREEAM to DGNB, HQE and WELL. For specifiers who need support to navigate the growing complexities of these systems we are here to help.

As the popularity of Green Building Rating Systems (GBRS) continues to grow, their scope is becoming increasingly more sophisticated.

This is good for everyone, because it sets more demanding green building standards for specifiers, encourages manufacturers to create more sustainable products and means better buildings for everyone.

There are more than two billion square metres now certified in the world by the 'big five' GBRS worldwide, and as their influence has grown these schemes have continuously evolved and upgraded their criteria with the aim of exceeding current and future building regulations and including more responsible practices.

According to new research by the European Insulation Manufacturers Association (Eurima), the scope of GBRS now extends far beyond narrower 'green' concepts of 15 years ago into issues such as acoustic performance, indoor air quality, sustainable sourcing, building life-cycle impacts, life-cycle costing, construction and demolition waste management without minimising energy efficiency and thermal comfort aspects.

In other words, as GBRS continue to shape the construction landscape they are also becoming more "well-being focused", more "performance-oriented" and more "life-cycle centred".

Specific trends highlighted by the Eurima research included issues such as real performance compared to design performance; encompassing broader corporate responsibility issues such as sustainable sourcing and ethics as well as zero impact or positive impact on the environment particularly when it comes to carbon, energy and water.

"Step by step, we have seen the rise of GBRS which have a more holistic approach at building level – and even neighbourhood level – by the inclusion of, for example, indoor air quality or acoustic issues," says Jean-Pierre Pigeolet, Knauf Insulation's Products & Buildings Sustainability Manager, who is also a licensed BREEAM assessor and DGNB Consultant.

"Our focus on Lifecycle Assessments at Knauf Insulation has also paid dividends as GBRS are now pushing to reach the upper level of a global building LCA through the development of new criteria such as in the case of LEEDv4."

Naturally, these evolutionary changes create a challenge for specifiers because they have to ensure they have the expertise available to maximise their points potential.

SO, HOW CAN KNAUF INSULATION HELP?

We have upgraded our expertise to help specifiers maximise their GBRS points potential at every level. We have a team of trained GBRS Assessors who speak the language of BREEAM, LEED, DGNB, WELL and HQE fluently.

"A LEED project sees the key to its success in sharing knowledge and skills, teamwork and effective collaboration. A vital role is given to manufacturers who, in addition to providing products that meet the technical and aesthetic features of the project, have to face many requests from contractors such as tests, declarations and certificates attesting the sustainability criteria of their products in relation to the LEED credits of the project. Our experience with Knauf Insulation was great, not only due to the quality of their products, but also for the support that their technical experts provided to designers and contractors."

Paola Moschini, Architect and LEED Accredited Professional (AP), Macro Design Studio srl, Italy

ITALY

Francesco Cavicchioli, Knauf Insulation's Product Manager Walls & Facades in Italy, LEED expert

GREEN BUILDING DEMAND IS GROWING IN ITALY

In Italy we are getting more and more requests for LEED and BREEAM. These requests are mainly from foreign investors in Italy and there is an increase in demand. In February 2017 the government introduced a new mandatory version of the Minimum Environmental Criteria (CAM) for new public buildings or their renovation which, for example, insists on minimum energy performance and that recycled materials must make up to 15% of the weight of all materials used.

SUPPORT FOR SPECIFIERS' NEEDS

The conversations I have with specifiers vary according to their requirements, but my ability to understand how the green systems work and how we can contribute means I communicate on a specialist level. Specifiers are always interested in Knauf Insulation's LEED and BREEAM factsheets that show how we contribute points.



NEW LEED SHOPPING CENTRE PROJECT

The new 4,500 m² three-level Coop of Formigine shopping centre has been designed, built and inaugurated in line with the parameters of the 'LEED for Retail' protocol and certification is in progress. The high-performance envelope has been insulated with Knauf Insulation Rock Mineral Wool.



THE NETHERLANDS

Mariëtte Willems, Technical Product Manager and BREEAM-NL expert

SUBSIDIES BOOST GREEN BUILDING RATE

Since 2009, the number of BREEAM NL projects registered with the Dutch Green Building Council has increased every year. One of the reasons is that investors get subsidies for green building. We are also seeing campaigns focused on wider aspects of green building such as air quality in schools.

TEAM WORK TO SUPPORT PROJECTS

As an expert in BREEAM-NL, I get questions all the time about certification and how to collect credits. Also, we work with Knauf Gypsum to provide what is known as KnaufZeker which guarantees system performance. This means we can support customers at the important early stages of projects and for aspects such as noise reduction or materials – mentioned in BREEAM.

FIRST BREEAM EXCELLENCE HOSPITAL

Haga Hospital, which has more than 3,700 employees, is the first hospital in The Netherlands to achieve BREEAM Excellent certification. Achieving optimal sound insulation was critical and this is why our Acoustifit system with ECOSE Technology was chosen. It contributes to good indoor air quality, consists of 80% recycled glass, provides 30 minutes of fire resistance and reduces noise by 52 dB. A total of 11,000 m² of insulation was provided by Knauf Insulation including single wall and double gypsum-board from Knauf.



SLOVENIA

Domen Ivanšek Technical Customer Support Representative in Slovenia, DGNB registered professional

ALL THE DOCUMENTS CUSTOMERS NEED

Knauf Insulation has a good Environmental Product Declaration database, easily downloadable GBRS documents and technically advanced systems. Having green building expertise helps me comprehensively explain the technical advantages of our solutions.

FIRST DGNB BUILDING IN SLOVENIA

Our new Knauf Insulation Training Center building should be one of the first DGNB certified buildings in Slovenia and feature a range of our products including our Green Roof Solution Urbanscape®. Work was scheduled to start in 2017 and finish in 2018.



Visit our website to see how our solutions contribute to points. Simply click on the 'Sustainable Buildings and Green Building Rating Systems' section of knaufinsulation.com

UNITED KINGDOM

Iain Macmillan, Knauf Insulation's Technical Development Manager in the UK, ex-passive house certifier and designer, who previously worked for the Building Research Establishment

BUILDABILITY AND FABRIC-FIRST APPROACH

A lot of my work is based around buildability and takes a fabric-first approach. In the UK, when it comes to buildings we have a big problem of building design compared to the reality of performance.

My work is not just about understanding the building but also how we can achieve performance that has been promised. For example, Knauf Insulation in the UK is carrying out a number of large scale projects to examine areas such as how we can control issues of installation to ensure energy efficient performance; the improvement of building health and comfort levels or better understanding the impact of occupant behaviour.

By researching data such as this we can provide the evidence base to campaign for government support for better buildings.



ROMANIA

Radu Mosteanu, Knauf Insulation's Technical Representative in Romania, trained in BREEAM

INCENTIVES FOR GREEN BUILDINGS

The number of certified green buildings has grown from just two in 2009 to 200 in 2014 in Romania, so there is a lot of interest. There is also a lot of competition between companies, if one wants to achieve LEED Gold, for example, another will aim to get Platinum. Additionally there are city hall incentives for green building through tax deductions.

EPD TRAINING

I take part in a lot of trainings and it is good to develop connections with assessors and other stakeholders as well as share information about, for example, our Environmental Product Declarations (EPDs) which gives us an advantage.

NEW LIDL HEADQUARTERS

Skanska is building a 12,500 m² headquarters for LIDL which is scheduled to be certified BREEAM Excellent. Knauf Insulation provided Rock Mineral Wool boards which use more than 50% recycled content from our nearby Nova Bana plant, Slovakia, in line with the green system's criteria. The product was used in the ventilated façade system and offers exceptional thermal, acoustic and fire protection performance.



"At Skanska we care about the sustainability of our projects and are continuing our endeavours to build green cities by maintaining a high level of investment in development projects and environment-based activities. In this respect, Skanska paired up with Knauf Insulation in Romania, a company that shares the same values and environmental vision. Knauf Insulation met all the requirements for eco-friendly materials and took clear responsibility for what they sold, providing us with declarations that guaranteed 50% recycled materials in the composition of their Rock Mineral Wool boards."

Richard Burleigh, President Skanska Construction, Romania

PHOTO © HÉCTOR SANTOS-DÍEZ

SPAIN

Josep Bové, GBRS expert in Knauf Insulation's Technical and Sustainability department in Spain and Portugal

GROWING TREND FOR GREEN RESIDENTIAL BUILDINGS

In Spain we have seen a large increase in the number of LEED buildings to about 540 registered and around 180 certified while there are 301 buildings certified with BREEAM. It tends to be companies that invest in certification for big office buildings or major retail projects but during the last half year we have seen a big increase by residential developers like Neinor or Avintia. We have also seen growth in the number of residential buildings aiming to achieve Passivhaus or NZEB standards. In fact, some regions are adopting Passivhaus criteria as a requirement for new buildings as interest in the environmental and economic benefits of green buildings grows.

OUR GREEN BUILDING EXPERTISE OFFERS UNIQUE INSIGHT

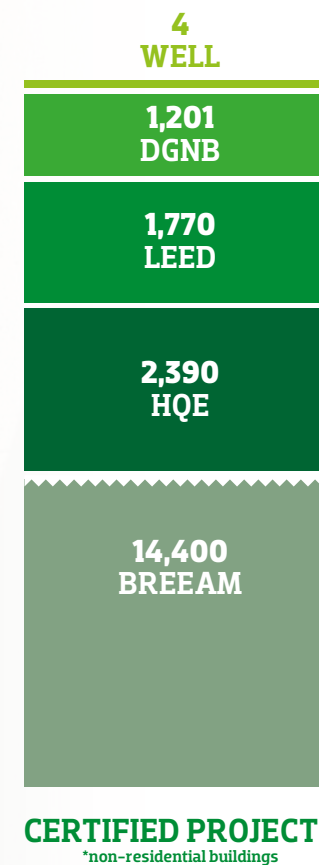
My post-degree studies have focused deeply on GBRS. Now as an active stakeholder I can advise specifiers and other professionals in how to maximise the opportunities that are being offered by these rating systems. Even better, my expertise allows greater insight into how Knauf Insulation contributes to the creation of better buildings.

TALLEST PASSIVHAUS IN THE WORLD

At the moment we are collaborating on three great projects in Spain. The first aims to be certified LEED Gold and will have the country's biggest green roof and feature 6,800 m² of our Urbanscape® Green Roof Solution. The second is the tallest Passivhaus building in the world — the 88-metre Bolueta Tower in Bilbao — and Soto de Lezkairu, the first Passivhaus multi-family building in Spain. Both these projects feature our internal partition insulation with ultracoustic that meets the highest air quality standards.



THE RISE OF GREEN BUILDING RATING SYSTEMS IN EUROPE



SERBIA

Edin Dalifi, Application Development Manager, Serbia, Macedonia, Albania and Kosovo, LEED expert

WE ARE HERE TO HELP

Sustainability is a very specific niche and the fact that specifiers — architects — can communicate with a material producer such as Knauf Insulation who understands green building needs, puts us in a small group of companies they want to work with.

FIRST BREEAM IKEA STORE IN SERBIA

The first IKEA store in Serbia will be certified with BREEAM. We received a request for the BREEAM factsheet for our products and specified Rock Mineral Wool (SmartRoof Thermal2) 24 cm for the flat roof (20,500 m²) and Decibel Glass Mineral Wool in partition walls.

'SUSTAINABLE CONSTRUCTION WILL BE THE NEW NORMAL'

Germany's DGNB Green Building Rating System's CEO Johannes Kreissig discusses independent certification, the importance of lifecycle assessment and why non-sustainable buildings will be price penalised.

TO WHAT EXTENT IS INTEREST IN DGNB GROWING IN GERMANY AND EXPANDING ACROSS EUROPE?

We are convinced that the DGNB system can make a positive contribution all over Europe. We have already partnered with Green Building Councils (GBCs) in Denmark, Switzerland and Austria to make the application easier by adaption to local boundary conditions. Further partnerships are on the way.

Since the application of the DGNB system enhances the sustainability performance of buildings, it is in the interest of DGNB to expand 'DGNB thinking' across Europe and globally.

WHY DO YOU BELIEVE GREEN BUILDING COUNCILS SUCH AS DGNB ARE INCREASINGLY IMPORTANT IN THE CONSTRUCTION INDUSTRY?

To achieve the vision of better buildings, instruments like certification are essential. In this context, the role of an independent third party is indispensable. GBCs are typically non-for-profit organisations with a high intrinsic motivation to improve the world.

HOW IS DGNB IMPROVING GREEN BUILDING STANDARDS?

Like the European Commission, DGNB is in favour of a holistic approach that considers, beside the environmental, economic and socio-cultural aspects, the complete lifecycle. DGNB is the first system compliant with EU macro indicators and therefore a blueprint for other systems.

But I think the term 'green building' is too narrow, we have to talk about sustainable buildings. Only buildings with benefits for people and society will be used long-term in a sustainable way. The DGNB system helps provide such a balance.

HOW ARE COMPANIES LIKE KNAUF INSULATION PROVIDING EXPERTISE THAT IS USEFUL IN THE EVOLUTION OF GBRS?

Energy efficiency is a basic requirement for sustainable buildings and expertise about products is indispensable. With its Environmental Product Declaration strategy, Knauf insulation supports an integral design and planning process in an excellent way.

TO WHAT EXTENT DO YOU SEE INSULATION AS A WAY TO ACHIEVE POINTS WITH DGNB?

To achieve points I think it will be in relation to the performance of the entire building rather than in the context of single products. But there are requirements on products regarding release and substances of concern. Knauf Insulation products should be compliant to these criteria anyway.

WHAT DO YOU HOPE THE WORLD OF GREEN BUILDING WILL LOOK LIKE IN 20 YEARS?

In 20 years, sustainable construction will be the new-normal with non-sustainable buildings seen as 'poor quality' reflected by a markdown in market price. The importance of certification as proof of high-quality – verified by an independent third party – will remain unchanged and the finance industry will provide green mortgages related to certification. Today, first market segments understand the business case behind sustainable buildings, in 20 years it will be mainstream.

GREENING EUROPE'S BUILDINGS

'CAN OWNERS AFFORD NOT TO CERTIFY?'

Kay Killmann, President of the German Green Building Association GGBA and Managing Director of GBCI Europe (Green Business Certification, Inc), discusses the popularity of Green Building Rating Systems (GBRS) across Europe.

WHAT IS THE GERMAN GREEN BUILDING ASSOCIATION AND GREEN BUSINESS CERTIFICATION, INC?

GGBA is the official partner of the USGBC for Germany, Austria and Switzerland. It advocates the LEED benchmark and represents German speaking nations at the LEED International Roundtable. At GBCI all green projects and professional credentials are certified within LEED and other green systems such as SITES, Parksmart, WELL, EDGE, TRUE and ICP.

TO WHAT EXTENT IS INTEREST IN GBRS GROWING IN EUROPE?

Green building is no longer seen as the 'treehugger' thing it was 15 years ago. Today it is part of CSR/ESG strategies and investors' risk management. The tables have turned and if still in doubt, owners have to ask themselves, "Can we actually afford not to certify?" This is reflected in certification trends. For example, in 2002, Gold LEED accounted for under 30% of certifications. Today Gold accounts for over 50%. Interest continues to grow. Currently there are more than 5,269 LEED registered and certified projects in Europe, comprising more than 147 million gross square metres of space. A total of 164 countries and territories around the world have LEED projects and in Germany alone there are 704.

HOW IS THE IMPLEMENTATION OF LEEDV4 PROGRESSING?

It can be very challenging for some clients because it is very performance based. The market has to shift and manufacturers have to adapt. For example, if you don't address materials and lifecycle – through Environmental Production Declarations (EPD) – it will be very challenging to achieve platinum certification.

TO WHAT EXTENT ARE COMPANIES LIKE KNAUF INSULATION PROVIDING EXPERTISE THAT IS USEFUL TO GBRS?

LEEDv4 sets new standards especially within the Material & Resource category. This section in version four was structured around a lifecycle thinking approach and we have shifted from a single to multiple attribute evaluation. This is pushing us towards performance because it considers products and materials holistically. We need manufacturers to provide us with their specialist market feedback and reveal the gaps. They also have expertise that can be shared as systems evolve.

TO WHAT EXTENT DO YOU SEE INSULATION AS A WAY TO ACHIEVE POINTS IN LEED?

It contributes significantly to the overall envelope and to reducing energy consumption within the Energy & Atmosphere category. As already described there are credits that address lifecycle and EPDs which include data for recycled content, indoor air quality and so on. Insulation is common sense.

CITIES, HEALTH AND WELL-BEING

Our innovative solutions contribute to air quality, reduce urban heat island effect, help tackle climate change and make cities greener.

GREEN CITY CHALLENGE

Air pollutants — known as particle matter — could be cut by up to 9% and sulphur dioxide reduced by as much as 6.3% in Europe's cities if building insulation installation rates were to be increased. Building insulation can also reduce the use of energy used in domestic heating and cooling and as a consequence the related outdoor air pollution. The result? Significant public health benefits and reduced related societal costs.

The findings, included in research by the European Insulation Manufacturers Association (Eurima) were based on a model that mapped an annual retrofit rate of 2% across 25 countries from 2005 to 2020 — compared to a business-as-usual scenario.

As urban planners draw up strategies for greener cities it is vital that improved rates of insulation installation are considered as well as the increased use of green roofs such as our Urbanscape® Solution to absorb air pollutants.

Air pollution is a major problem with a staggering 80% of people who live in urban areas being exposed to air quality levels that exceed limits set by the World Health Organisation (WHO). Air pollutants can increase the risk of heart attacks, lung cancer and chronic respiratory diseases.

Other problems facing cities include growing numbers of residents — 54% of the world's population now live in urban areas — which in turn means a rise in CO₂ emissions and the creation of Urban Heat Islands (UHI).

UHI is defined as a rise in temperature in any man-made area compared to rural surroundings. It not only has a negative 'over-heating' impact on residents but has also been linked to climate change through its contribution to the greenhouse effect.

THE URBANSCAPE SOLUTION

Green Roof Systems such as our Urbanscape Solution can dramatically change the temperature of a building — and reduce the number of Urban Heat Islands by converting old 'radiator roofs' into cool green areas.

Furthermore, they can absorb CO₂ and airborne particles. The bigger the plants and the bigger a city's green roof network — the bigger the level of urban particle absorption.

According to research carried out by Arizona State University and the head of Green Roof for Healthy Cities Steven Peck with Monica Kuhn, green roofs can remove 0.2 kg of particle matter per square metre of vegetated roof every year.

Scale this up a hundred times and the weight of the pollution removed would be the equivalent of the particles emitted by 15 typical passenger cars driven for a year. Now imagine the impact of the 1.45 million square metres of green roofs in Shanghai or the 500 buildings in Singapore that have been greened as part of the city Skyrise Greenery Incentive Scheme.

It is vital that action is taken to tackle air pollution because its impact on health is increasingly dominating headlines around the world. In 2017, the European Union revealed that Europe's air quality laws were being flouted in more than 130 cities across 23 EU countries.

SUBSIDY BOOST FOR URBANSCAPE

Customers who install our Urbanscape Green Roof Solution in the Czech Republic can cut costs in half thanks to a government subsidy.

Builders of all new-build passive level multi- and single-family homes as well as single-family houses that are undergoing deep renovation could already claim subsidies from the programme Nova Zelena Usporám — a scheme unique to the Central and Eastern European region — which attracted 8,000 applications and distributed €70 million in government funds in 2016.

Following campaigning by Chance for Buildings supported by Knauf Insulation, the government introduced a new subsidy add-on to the programme designed to increase the number of green roofs across the country to tackle CO₂ levels and air pollution as well as improve urban storm water management and reduce urban heat island effect.

Urbanscape meets all the quality criteria required for the subsidy.



HOSPITAL UNVEILS 20,000 m² URBANSCAPE ROOF

More than 20,000 m² of Urbanscape Green Roof System Air Solution has been installed on Sweden's Karolinska University Hospital. The facility, close to Stockholm, is one of the biggest hospitals in Europe with 15,880 employees, 1,600 beds and over 4,400 visits by patients every day.

The Green Roof was a joint collaboration between Knauf Insulation's Green Solution central team in Slovenia, Swedish Urbanscape partner Sempergreen/Eurotema AB and installer LW Sverige AB. The Green Roof System was specially designed for the Scandinavian market to ensure advanced storm-water control and energy efficiency performance.



SEVEN WAYS INSULATION IMPROVES HEALTH AND COMFORT IN HOMES

Insulation is a great way to save energy and help tackle climate change, but it also makes a major contribution to indoor health. Here's how:

1



Noise pollution

In Europe noise pollution has been linked to 43,000 annual hospital admissions, 900,000 hypertension cases and 10,000 causes of premature death. Mineral and Wood Wool insulation fibres absorb noise and provide a powerful sound barrier.

2



Cold comfort

When a building is well-insulated the indoor environment is immediately improved. This means no more unpleasant cold wall surfaces. Twice as many Europeans report poor health when they cannot keep their homes warm in winter.

3



Living better

Insulation keeps buildings pleasantly cool in summer and comfortably warm in winter. It creates comfort zones that allow everyone to flourish in a healthy environment. One in six Europeans report living in an unhealthy building.

4



Community care

For vulnerable sections of society – such as the elderly or very young – having a well-insulated comfortable home means better health and lower stress levels. Excess winter deaths among the elderly have been linked to cold housing.

5



Poverty trap

Nineteen percent of Europeans live in homes that are not comfortably cool in summer. Eleven percent live in homes not comfortably hot in winter – that's 50 million Europeans who face a choice between heating or eating on a cold day. Insulation is the solution.

6



Healthier air

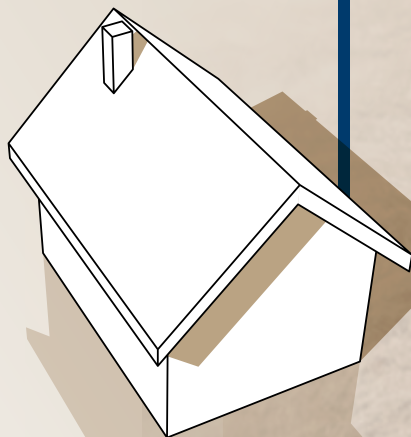
Insulation can reduce concentrations of external air pollutants by up to 9%. In Europe that means saving 78,678 life years every year and avoiding 7,173 annual cases of bronchitis. People are 40% more likely to have asthma when living in a damp or mouldy home.

7



Healthy savings

One study found that the annual healthcare cost of Europeans living in 'unimproved' housing was €194 billion. And, in the case of asthma and chronic pulmonary disease, the total cost for Europe was €40 billion.



WHAT DO EXPERTS SAY?

“Well insulated, comfortable homes have a major impact on the health and wellbeing of the population.

At the most basic level, the prevention of nearly 25,000 excess winter deaths through the improved performance of homes in the UK has been highlighted as a priority area by the National Institute for Health and Care Excellence in the UK.”

Professor Will Swan,

Professor of Building Energy Performance, University of Salford in the UK

“Emissions from products are called Volatile Organic Compounds or VOC.

Synthetic VOC can pose a serious health risk, especially to children. Eurofins Indoor Air Comfort Gold certification guarantees that a product has low emissions. Knauf Insulation was the first company to have its Mineral Wool with ECOSE Technology certified Indoor Air Comfort Gold.”

Thomas Neuhaus,

Head of Certification Body Eurofins

HOME COMFORTS

There are two forces of nature that will sabotage the real performance of any building. Our Homeseal LDS System is the ideal solution to address these challenges.

Even small gaps and cracks in the building envelope can allow air to circulate and pass through or over insulation. This can significantly reduce the insulation's energy-saving potential.

Further complications can occur if humidity is allowed to migrate through or around the insulation. This can in some cases even lead to condensation and mould.

That is why the building envelope should be air-tight and should be protected from any risk of water damage.

In other words, it is critical to consider those two aspects in the insulation of your roof if you want to guarantee its efficiency.

An airtight building envelope not only safeguards the performance of insulation, but also contributes to internal comfort by locking out cold air caused by leaks.

Furthermore, by preventing uncontrolled condensation and possible mould spores, mildew or microbial organic compounds, an airtight envelope can contribute to the health of a building – particularly if combined with efficient installation of the solutions and a controlled ventilation system.

Our Homeseal Solutions

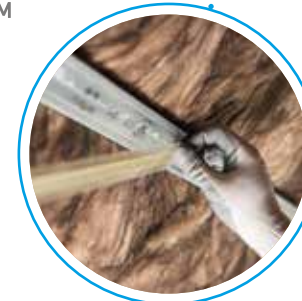
At Knauf Insulation we have created the Homeseal LDS range of insulation accessories that are designed to tackle the challenges of airtightness and humidity.

Our weather-proof Homeseal LDS breather membranes are installed above rafters to protect insulation from wind and rain while our Vapour control Homeseal LDS membranes are installed inside the building envelope to plug air gaps and protect the insulation against humidity coming from the inside of the building.

We have also selected products for the Homeseal range that are ideal for every application from purpose-designed gaskets and elastic sealants to a range of powerful and reliable tapes that have been designed to last.



HOMESEAL SYSTEM



Plugging gaps in air-tightness regulation

In the past when it came to building energy efficiency it was seen as sufficient to just install insulation. It is not.

In recent years, our knowledge of building physics has grown enormously and we understand that controlling air-tightness and humidity is critical to protecting building envelope performance in a long-term perspective.

And we are not alone. Many national regulations are also becoming increasingly demanding when it comes to issues of air-tightness and humidity. This regulation may vary from country to country, but we can help.

For example, in France, RT2012 enforces performance-related air-tightness as part of French regulation designed to reduce energy use in new buildings.

Our RT Plus System is highly popular in France and offers a built-in air-tightness and vapour control functionality and complements our Homeseal LDS Solutions. It has consistently proved to be ideal for installers keen to save time while ensuring the real performance of the building envelope. The RT Plus System meets construction and regulatory demands while ensuring comfort. In 2017 the system won the Engineering Prize in Toulouse and received a Trade trophy in July.

SOUND SOLUTIONS

TO IMPROVE ACOUSTIC HEALTH

We are dedicated to improving the acoustic health of buildings through pioneering solutions and exciting new research.

Aircraft landing, construction work, impatient traffic jams or simply noisy neighbours, loud colleagues or a barking pet-exposure to excessive levels of noise can be painful.

It also impacts health. The World Health Organisation (WHO) says uncontrolled noise can disturb sleep, cause cardiovascular and psychophysiological effects, reduce performance, provoke 'annoyance responses' and changes in social behaviour.

“In Europe one in five people are regularly exposed to sound levels at night that could significantly damage health,”

says WHO.

Research commissioned by the European Environmental Agency found that noise pollution causes 10,000 cases of premature death in Europe and more than 43,000 hospital admissions every year.

The challenge is that we spend 90% of our time in buildings and noise will always find a way in. And this is bad news for the human ear because it is particularly sensitive. For example, a sound that increases by 10 decibels (dB) would be perceived as twice as loud as the original sound – just compare a normal conversation, which is about 60 dB, to being next to a vacuum cleaner at 70 dB.

Now imagine the impact of a 10 dB noise increase on those living in multi-home buildings, working in partitioned office spaces, or children in schools...

The solution is reliable acoustic insulation. Acoustic insulation is relevant not only in partitions but also in pitched roofs to protect homes from noise or rain impact noise and in ceilings and walls to absorb noise and avoid reverberation effect. There are Mineral Wool or Heraklith Solutions for all these applications.

“Customers are understandably demanding better living comfort standards in buildings and we are seeing stricter national regulations particularly in public buildings such as schools.”

“As a result, the average level of sound insulation has been increasingly steadily over the years.”

Dominik Herfurth, Head of Research Area Drywall Systems & Application Testing, at Knauf Group, specialist Acoustic Laboratory in Germany.

PHOTO © BY TRIMO GROUP, SLOVENIA



Here is how Knauf Insulation improves acoustic health:

SPECIALIST SUPPORT

We have acoustics specialists to help our customers understand good acoustic performance and how our solutions can help. Our Mineral Wool and Wood Wool materials absorb sound and slow the flow of noise. Combine these elements in a variety of thicknesses and distances from the noise – ensuring correct treatment of potentially sound transferring elements such as studs and no reverberating surfaces – and exceptional acoustic performance can be achieved.

ABSORBING IDEAS

We have numerous acoustic insulation solutions that can be combined or customised to ensure effective noise management. For example, Mineral Plus has a tight fibre structure that offers exceptional acoustic performance and it can be easily cut to fit any gaps that may allow noise transfer; our Heraklith Wood Wool offers ideal acoustic solutions for garages or ceilings as a result of its uneven sound absorbing surface and our Urbanscape® Green Roof Solution offers excellent climate-friendly insulation as well as outstanding acoustic performance.

CUSTOMISED CARE

Our Original Equipment Manufacturing division (OEM) is world-renown for its production of tailor-made acoustic solutions. Recent projects include installing 2,500 doors featuring our DRS Supreme Board at the Kempinski Muscat Hotel in Oman and Bulgari Hotel in Dubai as well as 100mm PBE Board sound insulation cores for 15,000m² of sandwich panels for IKEA in Qatar. We have also used our Sound Supreme Board System to reduce noise at one of our busiest production lines in our Škofja Loka production plant and reduced sound levels dramatically along Munich's 2.8 km traffic tunnel that runs beneath Luise-Kiesselbach-Platz and Heckenstallerstrasse.

SOUND POINTS

All our key insulation solutions, such as Urbanscape, Mineral Plus and other Mineral Wool solutions, contribute points for acoustic performance in Green Building Rating Systems such as LEED, BREEAM and DGNB.

PIONEERING RESEARCH

Our Iphofen laboratory in Germany has been researching new ways to tackle noise pollution and improve the acoustic health of buildings since the 1970s. See page 31 for the full story.

SOUND INVESTMENT

There is nothing a building developer likes more than optimising the costs of a construction project – particularly if it results in a double bonus to the bottom-line.

Research by the Mineral Insulation Manufacturers Association (AVMI) in the Czech Republic recently compared the acoustic performance of lightweight partitions featuring Mineral Wool with partitions made from brick or aerated concrete.

The research – supported by Knauf Insulation – found that a 205 mm lightweight partition delivered an acoustic performance of 58 db compared to 395 mm concrete which delivered 54 db.

Equally striking was the space saving as a result of the thinner material. In a typical four-storey apartment building of 634m² this could add up to a total space saving of 27 m² or around 4%.

In a country where a square metre of apartment space can sell for up to 4,000 euros, the financial advantage of the lightweight partition is clearly highly attractive to developers.

The double bonus is that in addition to the profit potential of the extra space – the thinner material is considerably cheaper than brick or concrete partitions.



CASE STORY

ATLAS THEATRE, EMMEN, THE NETHERLANDS

THE PROJECT

The 15,000m² Atlas Theatre officially opened in 2016. It includes two theatres – one with 820 seats, the other with 300 – a café, two restaurants, seven conference rooms, offices, shop, two foyers and a grand foyer hall that has 20m high ceilings. The building also acts as the entrance to Emmen's new zoo.

THE CLIENTS

Gemeente Emmen, Van den Berg Group, Dura Vermeer.

THE CHALLENGE

The developers aimed to create what has been described as the greenest theatre in the country with perfect acoustics. The building had a lot of areas and corridors with parallel smooth walls. Without any acoustic modification the natural resonance would have been major nuisance.

THE SOLUTION

To avoid the high foyer becoming a sound box, Tektalan panels were installed on the outer walls of the stage halls. To further improve acoustic performance, Tektalan A2 and Heraklith A2 were also installed in the technical room, at the stage room entrance, along the corridors behind the dressing rooms and in the basement with the orchestra pit. As a further benefit, the panels have white, grey and black decorative finishes which were designed to match the theatre's interior design perfectly.

WHAT WAS SUPPLIED

Knauf Insulation provided a total of 648 m² of Heraklith A2 and 6,851 m² of Tektalan A2. Tektalan is a multilayer board with alternating lap-joints made of a top Wood Wool layer and a Rock Mineral Wool core to better absorb sound as well as to offer exceptional fire performance. The products were chosen on the recommendation of contractor Dura Vermeer.

Head of theatre technology Koos Maris said: *"It was vital that the new theatre had state-of-the-art light and sound. At Atlas Theatre the challenge was to keep the natural resonance time of the big halls as short as possible to ensure each activity sounded as it was meant to sound. The final result is a beautiful building with perfect acoustics."*

SOUNDS OF SUCCESS

Finding innovative new ways to improve the acoustic performance of buildings has been the focus of our Iphofen laboratory for more than 30 years.

At Knauf Insulation and throughout the Knauf Group tackling noise pollution is a major focus.

A dedicated laboratory in our Global Headquarters in Iphofen, Germany, has been offering acoustic testing facilities since the 1970s and is continuously upgraded to unique world-class levels with the latest technology. In 2017 a new testing room was added.

Now the facility includes three direct transmission test rooms for partitions, two for ceilings, two flanking transmission test rooms for partitions and ceilings, a reverberation chamber, critical frequency test room and an enviable range of equipment.

And acoustics is just a small part of what we do. At the laboratory we work with a wide range of regional research and development teams and test laboratories from across the globe to study all aspects of product and solution performance from fire resistance to load capacities to resistance to earthquakes.

Here are 10 reasons why our laboratory with its physicist, audiologist and technician – along with three skilled installers – is making a difference for customers.



1 ENJOY THE DRAMA, NOT THE ACTION MOVIE

Our state-of-the-art technical capabilities allow exceptional levels of acoustic measurement and system testing that are rare in other laboratories. The team at our Iphofen laboratory has achieved remarkable results of cutting sound by 83 dB (the sound of a pneumatic drill measures 100 dB at 10 metres) for cinema partitions. This was achieved through 'hybrid' system solutions – combinations of different boards, types and thicknesses along with large cavity substructures and Mineral Wool – to achieve outstanding performance. These solutions will allow cinema audiences to enjoy their romantic comedy without being disturbed by the high-octane action movie next door.

2 SAVOUR THE SOUND OF SILENCE

Our ability to test a variety of different solutions and systems from across the entire product range of the Knauf Group and Knauf Insulation allows our laboratory to pick and choose as well as test and research a huge range of system solutions in a variety of combinations to achieve exactly what our customers need. Access to such a product range and such personalised expertise is a huge advantage for customers looking for highly specific acoustic solutions.

3 OUR EXPERTISE GROWS WITH EACH TEST

By keeping our research in-house we grow our expertise, maintain its confidentiality and develop a range of acoustic specialisations that is not lost to external testing laboratories. In other words, we keep control of the process. This allows the entire Knauf Group to benefit from this expertise as well as our customers and partners.

4 BIGGER IS BETTER

Unlike a lot of other laboratories, we can carry out large tests over a long period of time. If we are not happy with a result, we can adjust the setups and try again. And again. This gives us unparalleled flexibility as we do not have to rely on external laboratories for a range of ever-changing tests which would be unacceptably expensive.

5 BEYOND CERTIFICATION

Having our own laboratory allows us to control the quality of our products in-house. We can ensure they exceed regulation requirements before they are produced and make certain we control that quality, for instance, by constantly testing products until they fulfil requirements.

6 WE CAN SHARE OUR KNOWLEDGE

At the laboratory we can form our own strategic partnerships and benefit from the research. As our facilities are in-house we can customise testing to meet requirements from other industries. For example, we recently carried out work with a brick producer that was keen to examine the acoustic potential of its materials in combination with drywall systems. We were happy to help.

7 UNPARALLELED DEPTH OF RESEARCH

As research on a project develops we can adjust and customise test programmes to meet intermediate results or change according to new priorities. Plus, of course, we can draw on many years of laboratory research across the entire Knauf Group product range if we are looking for specific solutions.

8 A FULL 360 VISION

Creating high-performance systems is an important aspect of the laboratory's work, but combining them is a unique selling point. Developing partitions, facades, suspended ceilings and floors and then testing each element and in a variety of combinations to build up the big picture is a speciality of our researchers.

9 SMALL THINGS MAKE A BIG DIFFERENCE

Breaking down a system to its component parts to understand how they perform – from the boards and screws to the Mineral Wool – is vital to understanding how all the components in a system perform. We are working on that data daily and have a wide range of knowledge.

10 WE HELP CUSTOMERS AT EVERY LEVEL

Our laboratory specialists can help customers better install our systems and products to maximise performance and we also carry out trainings with the Knauf Academy. Additionally, we have a huge volume of technical test certificate documents that are popular with specifiers such as engineers and architects. After 40-plus years of working with customers we have a good idea of what they need and when.



School renovation that makes the grade

From fire safety and good acoustic performance to comfortable classrooms and great thermal comfort, we help specifiers get top marks for educational renovation projects.

Anyone attending a school or college deserves a safe and effective environment in which to learn. And from new build school projects to major renovation schemes, Knauf Insulation can provide solutions that are designed to improve the learning environment for everyone.

Sound measures

THE CHALLENGE Uncontrolled noise can easily disrupt teaching. Without insulation that offers reliable acoustic performance, heavy rain on a flat roof can make a classroom reverberate like a tin drum and music lessons next to a language class can ruin comprehension.

CASE IN POINT In the UK, the Department of Education's Building Bulletin 93 sets national standards for school noise levels, reverberation times and sound insulation because "poor acoustic design has a detrimental effect on pupils' academic performance". The standards define minimal noise levels for new build schools and schools under renovation and cover every educational aspect from primary school rooms, music areas and lecture halls to rooms for students with special needs, libraries, swimming pools and dining areas.

WAYS WE CAN HELP The excellent sound insulation and absorbing properties of our Mineral Wool solutions easily exceeds the standards set by Building Bulletin 93, while Knauf plasterboards, Heraklith Wood Wool and Urbanscape® Green Roof Solutions can all be customised to provide a huge variety of systems that meet any noise absorbing requirements.



Fire safety

THE CHALLENGE Fire safety is obviously a priority for any educational establishment.

CASE IN POINT Knauf Insulation has consistently supported national policy makers, fire safety associations and fire fighters in the creation of fire safe buildings. In 2016, we welcomed in Serbia a new regulation that prevents the installation of combustible material in facades in all new build or under renovation public buildings – particularly schools.

WAYS WE CAN HELP Many of our Mineral Wool solutions are non-combustible with the highest A1 reaction to fire as defined by the EN13501-1 European Standard.

Reliable performance

THE CHALLENGE In order to learn effectively it is vital that students are not cold in winter or hot in summer.

CASE IN POINT Any school in any climate needs to offer an environment in which students and teachers can thrive without distractions caused by extreme temperatures.

WAYS WE CAN HELP Our entire business is built on the creation of high-performing solutions that keep the interior temperature of buildings at comfortable levels. From Blowing Wool and Wood Wool to Mineral Wool and even Green Roof Systems, we have solutions that can be customised to any requirement.

Return on investment

THE CHALLENGE All schools face budgetary pressures and school managers are always looking for ways in which to get a good return on investment.

CASE IN POINT Many countries are initiating renovation programmes rather than building new schools. For example, in Serbia a major renovation programme is underway to make schools more energy efficient.

WAYS WE CAN HELP Insulation saves energy. Saving energy saves money. Rather than pouring money into leaky school buildings, our solutions plug wasteful gaps and generate savings over a long-term future period.

"There are many types and methods of insulation... but as a guide, non-combustible insulation should be used... in respect of these materials Mineral fibre products are inherently non-combustible. They do not contribute to fire growth and will be acceptable for many applications. Mineral fibre products will need to be selected by proven fire performance for the particular application."

A Guide to the Design and Protection of School and Academy buildings by the Zurich Insurance Group.



Clean air

THE CHALLENGE Good air quality is vital to a healthy school environment.

CASE IN POINT Air quality in public buildings, particularly schools, is a major priority in many countries. For example, in the US, there is a specific Children & Schools Certification by Greenguard to establish air quality and emissions requirements.

WAYS WE CAN HELP Our Mineral Wool solutions with ECOSE Technology are certified by Eurofins Indoor Air Quality Gold label according to Volatile Organic Compounds Indoor Air Quality emissions criteria. These products also pass the criteria of Blau Engel in Germany, the Finnish M1 label while Knauf EcoBatt in North America is certified to Greenguard Children & Schools standards.

Knauf Insulation and the Knauf Group are also part of a new organisation that is committed to improving the interior building health of schools in France. The Consortium Qualité Environnement Intérieur aims to generate greater awareness of how indoor air quality, thermal, acoustic and visual comfort can all be upgraded in nurseries, kindergartens and elementary schools. Healthy minds learn more effectively in a healthy environment, says the group which includes the companies Aldes, Gerflor and Tollens. As of the first of January 2018, indoor air quality monitoring will also be mandatory in schools and nurseries in France.



RENOVATION

INNOVATIVE
RENOVATION OF 190
HOMES BY EX-ARMY
ENGINEERS IS A MAJOR
REAL PERFORMANCE
SUCCESS FOR
KNAUF INSULATION.

FORCE

190 RENOVATIONS, ZERO COMPLAINTS

A pioneering Knauf Insulation project involving a unique approach to the renovation of 190 homes could pave the way for a vastly improved nation-wide energy efficiency strategy in the UK.

Already building renovation and energy efficiency schemes have cut energy use dramatically in the UK with a 30% drop in domestic gas consumption recorded between 2005 and 2015.

"Unfortunately, many homes did not necessarily receive the renovation they deserved," says Steven Heath, Knauf Insulation's Technical & Strategy Director (Northern Europe).

"The programme tended to incentivise measures — work on walls or lofts — rather than considering the best approach to individual homes while the 'stop-start' nature of the schemes meant many installers were often on the edge of financial viability."

In 2016 Knauf Insulation began to explore an innovative new approach to this renovation challenge.

The initiative was vital because a decade of research by Knauf Insulation had revealed important gaps in the energy performance of buildings. Issues such as air tightness and thermal bridges as well as a need for a sharper

focus on managing every detail of a renovation have been shown to be essential.

The project asked the question: can we create a team of highly motivated individuals and rapidly up-skill them on thermal renovation outside of the traditional supply chain?

The chosen route was to recruit ex-British Army servicemen from the Royal Engineer Corps — all with a construction background but not in energy efficient renovation.

The men were first given a classroom course on the theory and practical skills of high quality renovation with a focus on best practice and the consequences of bad workmanship.

The theory was then followed with practical training on all our Blowing Wool and Loft solutions at our St Helens training rigs and then in a live test house.

Once training was complete they started work on a month-long project in February 2017 to renovate 190 housing association homes in the city of Manchester.

"They delivered above and beyond expectations providing a consistently high level of performance. They also impressed visiting government officials who toured the site," says Steven.

The project has contributed significantly to Knauf Insulation's real performance campaigns.

"It may take a few years, but sometime soon building codes and renovation programmes will transition away from a 'one size fits all' software estimate of building efficiency and instead rely on technology to offer a better, more building specific, picture of home performance," says Steven.

The next steps for us are to drive forward our real performance agenda while also campaigning for the Government to revisit the way it evaluates and incentivises energy efficiency in both new build and renovated buildings. Thanks to our project in the UK, that work has already begun.

NEW POLICY INSIGHT?

The 190-home renovation project generated major interest from UK policymakers. The initiative was visited by policy advisors from the Department for Business, Energy & Industrial Strategy as well as officials from the Government's Office of Gas and Electricity Markets (Ofgem).

The renovation project was vital because a decade of research by Knauf Insulation had revealed important gaps in the energy performance of buildings.

On a customer service level, the project received the highest praise of all — zero complaints from the hundreds of people living in the 190 renovated homes.

"It was evident early in the project that the installers were comfortable engaging with tenants and private homeowners alike," said Ian Booth of Bridgewater Surveyors, which oversaw the work. "Significantly, neither we nor the housing association have received a complaint to date."



BIM: THE BUILDING BLOCKS OF THE FUTURE

The future of the construction industry is already online, that is why Knauf Insulation is contributing to a new digital landscape reimagined by Building Information Modelling.

WHAT IS BIM?

Building Information Modelling (BIM) is a new exciting process that brings transparency, collaboration and efficiency to construction by combining 3D design, visualisation and data management. This data is important because it can be used to model a building's functionality as it is built, carry out energy simulations, access its impact on the environment and offer insight into areas such as thermal or acoustic performance.

WHO USES BIM?

Specifiers, engineers, architects and construction companies all use BIM to generate models that allow clients to create an overview of a building and make changes before work begins. Tackling issues at the design stage also helps avoid costly mistakes during construction. In the future BIM will allow everyone in a project team to work on all stages of a building's development to ensure it is kept on course. BIM information can also be used after a building has been completed to assess areas such as maintenance.

HOW IS KNAUF INSULATION HELPING SPECIFIERS TACKLE BIM CHALLENGES?

We have carried out BIM training across our company and created an expert team to help specifiers with any BIM requests. We also host feedback sessions with BIM users around the world to ensure our support meets any challenges.

HOW IS KNAUF INSULATION VISUALISING A BIM FUTURE?

Innovative solutions such as our Green Roof System Urbanscape®, Mineral Plus and SUPAFIL Blowing Wool are now available in the most common BIM formats on our country-specific websites. We have also published product and system BIM libraries from North America to Australia and are constantly reviewing our content to ensure it is useful and relevant. Sustainability also being important, we include environmental data in our BIM files.

WHY IS KNAUF INSULATION PIONEERING BIM SOLUTIONS?

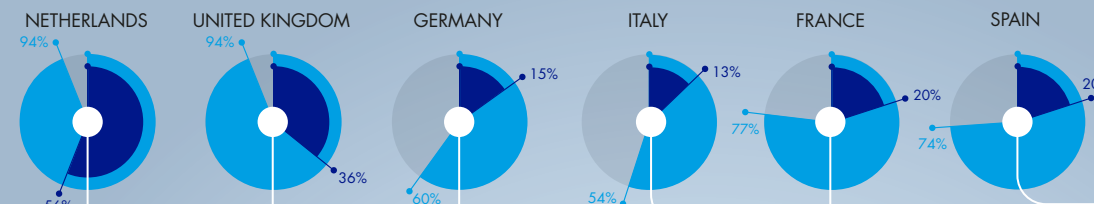
We believe BIM is the start of a digital revolution that will transform the construction industry and soon allow building data — such as R or U-values — to be managed and shared at the touch of a smartphone. Easy access to shared data is becoming increasingly important because building construction is now more complex, Green Building Rating Systems are demanding more digital information and real performance needs to be reliably audited.

HOW WILL BIM IMPACT GREEN BUILDING RATINGS SYSTEMS?

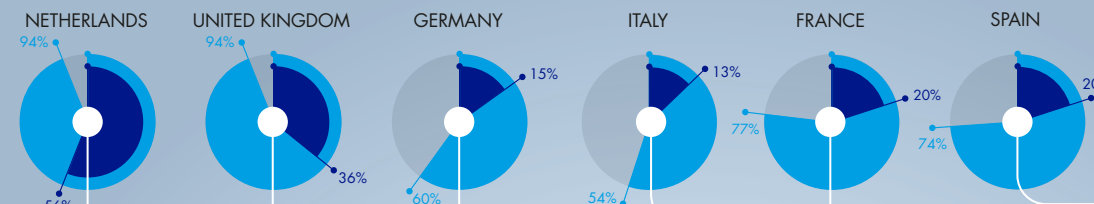
BIM could become influential in GBRS as it could be used to assess the entire sustainable performance of a building. It's not part of any GBRS criteria yet, but DGNB is working on how the "interlinking of BIM solutions and sustainability certification for buildings can work". Perhaps in a few years' time the data collected from Lifecycle Assessments and Environmental Product Declarations could be fed into BIM formats. How appealing would it be to know how to achieve your LEED or BREEAM rating simply by checking your phone?



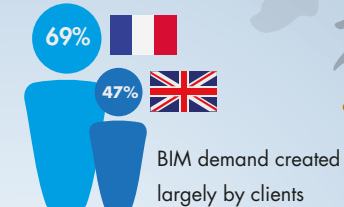
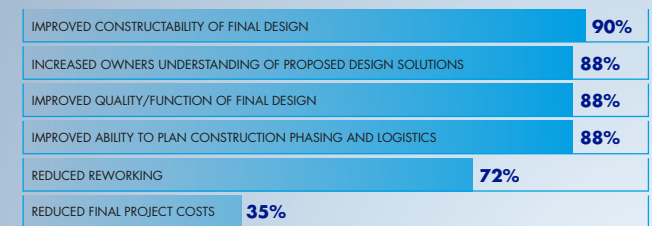
2015 AWARENESS OF BIM



2015 USAGE OF BIM



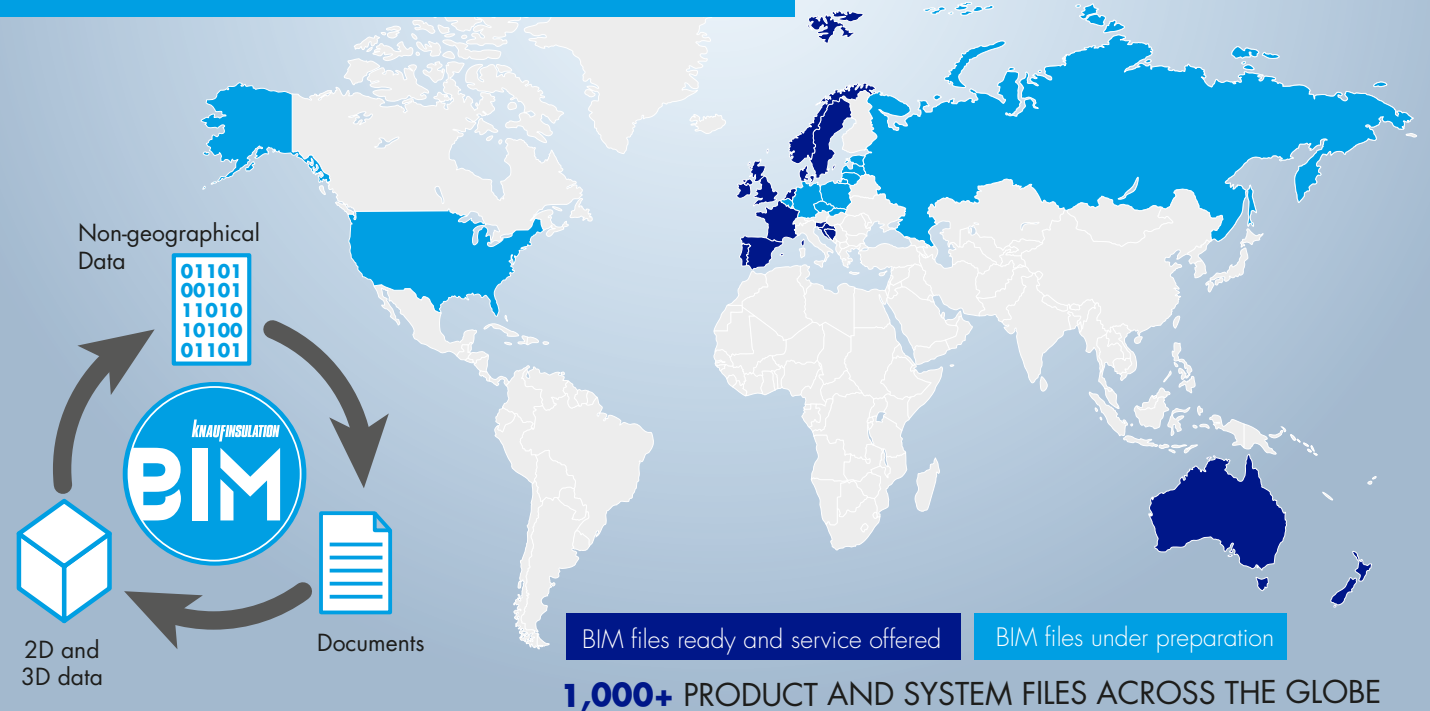
IMPACTS OF BIM ON COMPLEX PROJECT OUTCOMES



French government wants x100,000 houses developed using BIM in 2017

*Source: Arch-Vision report, January 2016

KNAUF INSULATION GLOBAL BIM LIBRARY



EPD & LCA documents included according to



Formats available:





SUPAFIL® MAX FRAME OFFERS A FAST, EFFICIENT, LABOUR-SAVING INSULATION SOLUTION FOR TIMBER FRAME MANUFACTURERS WHO WANT TO BOOST THEIR PREFABRICATION PROCESSES AND FUTURE-PROOF THEIR BUSINESS.

READY FOR THE PREFABRICATION REVOLUTION?

Prefabricated buildings are shaping the future of the construction industry and it's easy to see why. They can be constructed quickly, cheaply and without a huge amount of onsite labour. Quality building standards can be regulated in a controlled factory setting and manufacturing processes can be increasingly automated to speed up production.

And business is booming. According to a European Architectural Report survey, over 65% of architects in The Netherlands, UK, Spain and France say they expect demand for prefabrication buildings to increase in the next three years.

But what does this mean for manufacturers who are at the cutting edge of prefabrication? It means they are upgrading their processes to dramatically increase capacity and speed up throughput. They are investigating ways to save costs, reduce labour, remove manufacturing bottlenecks and find every possible way to make the entire process as efficient as possible.

At Knauf Insulation, we have created the future-proof solution that can be customised to meet all these challenges and more — our SUPAFIL® MAX Frame.

So, why is it so special?

Manufacturers need a fast and easy system to install insulation into prefabricated frames that boosts capacity and speeds up factory throughput.

Our Blowing Wool SUPAFIL MAX Frame can be effortlessly integrated into any production process and is modular which means it can be combined with existing machinery if necessary. The labour-saving system is perfect for timber frames and can be used for prefabricated walls, roofs and floors. Depending on the level of system automation required, up to 1,200 kg of insulation can be injection-installed every hour. As you only need 35 kg/m³ to achieve a lambda of 0.034 W/mK, this means up to 34 m³ of insulated frames every hour.

Manufacturers need insulation that boosts factory efficiency.

Fuss-free SUPAFIL MAX Frame Blowing Wool installs cleanly, is non-abrasive and is easy to handle. Our massive 174 kg compressed packing bales minimise refill times, maximise truck loads and storage area usage and are a giant step forward in terms of time, space and manufacturing efficiency. More importantly, compared to many other insulation products, SUPAFIL MAX Frame distributes smoothly, quickly and evenly into even the most complicated frame space without unnecessary waste.

Additionally, although SUPAFIL MAX Frame is high-performing, it is light which adds no significant extra weight to prefabricated frames.

Manufacturers need a high-performance insulation solution that really delivers.

As SUPAFIL MAX Frame does not settle and fills frame cavities completely there are no thermal bridges just exceptional thermal performance (0.034 W/mK at 35 kg/m³ in closed cavities) as well as good acoustic performance. Target density levels and the quality of density distribution are easily confirmed via a control panel.

Manufacturers and their customers demand an insulation solution that is environmentally responsible and non-combustible.

SUPAFIL MAX Frame has Blue Angel certification and is certified to Eurofins Gold Standard for Indoor Air Quality. Up to 80% of the wool is made from recycled glass, SUPAFIL MAX Frame is non-hazardous and it is low on dust — which is important in factory environments. SUPAFIL MAX Frame's reaction to fire is A1 incombustible according to EN13501-1 standards and the material is hydrophobic which means it does not absorb moisture.



FASTER, CHEAPER BUILDINGS

How big is the demand for prefabricated buildings?

Fifty-five percent of architects in The Netherlands already see prefab elements being used in buildings; 41% of Spanish architects say they are already using prefab followed by 38% in Belgium and 35% both in Germany and the UK. In France, the percentage is 18%, Poland, 26% and Italy 24%. These figures are according to a survey of architects by the European Architectural Report.

What form does prefabrication take?

There are two types: those that consist of single products such as preassembled insulated door frames (2D prefab) or prefabricated modular buildings which are preassembled units (3D).

How is this impacting on the future of the business chain?

Rather than a contractor relying on numerous suppliers and subcontractors, a role will be allocated to a manufacturing 'system' partner who will have responsibility for the entire building ensuring all their suppliers and subcontractors work to established standards.

MINERAL WOOL ADVANTAGE

Our Mineral Wool with ECOSE Technology continues to be a long-standing success with many of our customers who manufacture timber frame prefabricated buildings.

And no wonder. Our Mineral Wool offers exceptional thermal and acoustic performance as well as an A1 reaction to fire. There is no added formaldehyde, artificial dyes or acrylics and our Glass Mineral Wool is made from up to 80% recycled glass. It was also awarded the first Indoor Air Comfort Gold certificate by Eurofins.

"Every building we produce is customised to requirements depending on the architectural project. We chose Knauf Insulation Mineral Wool for its outstanding mechanical properties. The workers installing the Mineral Wool appreciate that it doesn't crumble at the edges or break and that the packages are lighter. The workers also like the fact that the insulation contains no added formaldehyde and that there is a wide range of products in different formats from wool in rolls to slabs."

Antanas Norvaišas, Director of JSC Liskandas which produces timber frame houses for Scandinavia and Lithuania

Škofja Loka

Powering innovation

Our Škofja Loka plant in Slovenia has been at the cutting edge of technology since it started operations in 1959.

Our Škofja Loka plant in Slovenia has always enjoyed a reputation for innovation since it became the first plant in the country to manufacture Rock Mineral Wool almost 60 years ago.

Today, as our biggest manufacturing based in Eastern Europe, that tradition continues thanks to the plant's highly respected research and development laboratories, cutting-edge customised solution division, original equipment manufacturing (OEM) section and, of course, the Green Solutions Unit which is in charge of our revolutionary Green Roof Solution Urbanscape®.

"The reputation of Škofja Loka has always been driven by ongoing development, innovation, team work, testing and the constant search for new solutions. We have consistently challenged ourselves to look for new ways of creating better performing solutions for our customers and fresh ways of offering something better to the market."

Tomaž Lanišek, our General Manager OEM Europe & CIS

Customer inspiration

We have a lot of scientists and a lot of sophisticated equipment at our state-of-the-art laboratory at Škofja Loka in Slovenia — but the biggest source of innovation and inspiration comes from our customers.

The domestic appliance laboratory of our Original Equipment Manufacturing (OEM) division started operations in 2010 and now carries out around 200 tests every year for appliance companies — such as oven manufacturers.

Due to more demanding energy standards, these manufacturers are increasingly turning to our laboratory specialists for fresh insight and advice into ways to make their products more energy efficient.

"Over the years we have developed so many different solutions and principles that we now play an advisory role for our customers and this has given us a very important competitive edge," says Uroš Cotelj, Business Development Director of Domestic Appliances.

"How our customers drive innovation was recently demonstrated by our relationship with Electrolux Italy. They required a new insulation solution for a range of ovens. In June 2016 they had approved our solution that has been designed to improve energy efficiency of the oven platform and three months later we were asked to supply 600,000 pieces a year. In October that year we won an innovation reward from Electrolux."

The key to the laboratory's success over such a short period, says Uroš is understanding the real needs of final customers and driving new research that is mutually beneficial to both Knauf Insulation and manufacturers.

Enhancing performance

At the Central Product & Systems Development Laboratory the focus is on testing and evaluating the performance of a variety of insulation systems. This starts with benchmarking of existing products, moves on to the improvement of existing systems and goes further to the development of new products and systems (e.g. new roof insulation or fire protection systems). As well as the development of new applications we are also focusing on plant support by analysing products and various unknown material, which could accrue in the industrial production process.

Our Central Product & Systems Development Laboratory is also in close contact with all local quality departments in the plants, as one additional key aspect is the verification, optimisation and the development of new quality procedures and measurement methods to meet internal and international standards.

With all our dedication and passion we try to fulfill our customers' needs as close as possible.



How a fresh start-up mentality energised Urbanscape

Starting a successful small business today is easier than ever and can simply require a great idea, endless enthusiasm and a convincing online presence.

So, what would happen if the youthful energy of a start-up were channelled into Knauf Insulation — a company that was founded in 1932?

This was the question asked by Saša Bavec, Knauf Insulation's Group Marketing Director and Managing Director of OEM, who decided to create a separate 'start-up concept' to drive sales, marketing and business development for our Urbanscape portfolio.

"One of the Knauf values is entrepreneurship and start-up companies epitomise this," he says. *"They are usually small which means they can move quickly, learn from mistakes fast and have the energy to find creative solutions to traditional challenges. I wanted to see what would happen if this start-up energy were applied to Knauf Insulation."*

Following a call for online digital specialists, three graduates — Katja Berčič, Andreja Molan and Žiga Pregelj from Ljubljana University — expert in agronomy, horticulture and landscaping architecture — were selected for the new online mini-business unit based at Škofja Loka, Slovenia, in February 2017. For all three it was their first real job.

The unit was given as much freedom as possible to develop new ideas for the business' digital channels and kept 'at a distance' from the rest of the company. A mentor (in the form of Barbara Šubic) offered day-to-day guidance and a focus for regular brain-storming.

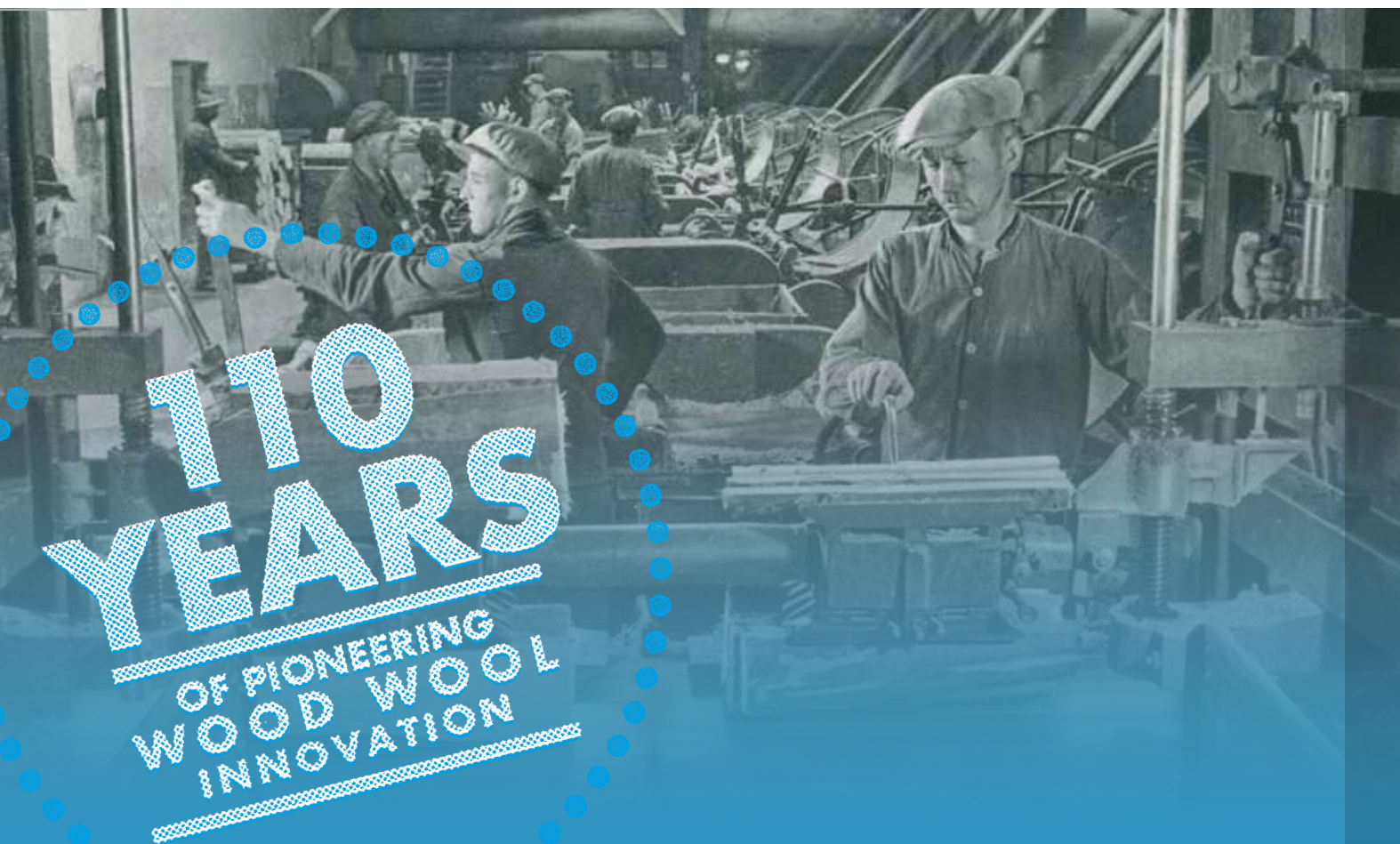
So, what have been the results? It is early days, but the unit has already underlined that unlike traditional sales and delivery methods for many of our products, multi-level digital channels are vital to customers looking for Urbanscape Solutions.

Within three months the graduates had set up an online store for Slovenia, created social network communication channels and developed the software tools that customers need.

As a result, sales have increased by 300% year on year and plans are now in the pipeline to roll out an international online Urbanscape store as well as country-specific channels.

"From initial contact online to discussing requirements to the packaging of a product for customers, the new unit can handle everything from small scale orders for gardeners to major building projects for developers anywhere in the world," says Saša.





Lightweight, easy to install and offering exceptional thermal and acoustic performance, our legendary Heraklith Wood Wool boards continue to transform the construction industry – 110 years after they were first patented. Much of that achievement is down to our Simbach plant in Germany which in 2017 celebrated 90 years of pioneering innovation.

When engineer Robert Scherer filed a patent for his new fire-proof, lightweight, porous material in 1908 he had no idea that his invention would transform the building industry.

The patenting of this revolutionary new material not only created a completely new market for Wood Wool but also paved the way for a legacy of pioneering innovation that continues to impress 110 years later.

Today Heraklith is the brand customers turn to when they need a versatile, durable and lightweight Wood Wool product with exceptional thermal and acoustic performance, impeccable sustainability credentials and outstanding fire safety.

Ensuring that this easy-to-install product remains at the forefront of Wood Wool innovation is our Simbach plant in Germany which celebrated its 90th anniversary in 2017.

Our colleagues in Simbach have been building on Heraklith's historic legacy backed by generations of customer-focused experience to find new ways to improve Heraklith products and manufacturing processes. The aim has always been to enable clients to meet their increasingly complex challenges whether at a theme park in the Middle East or in a new football stadium in Hungary.

However, it is vital that we push the boundaries of the market we created by constantly meeting customers' needs and exploring the potential of Wood Wool in every possible building scenario. Whether in offices, commercial sites, residential homes or public buildings, Heraklith is an endless journey of innovation.

For instance, we recently introduced a new range of accessories that make it easier than ever to install Heraklith quickly and efficiently as a 'whole solution'. Our list of test performance certification also continues to grow increasingly comprehensive. We have launched a versatile colour range that maintains its colourful good looks even if chipped or dented. We have also developed special plates for room acoustics, multi-layer products for enhanced heat insulation and dozens of new Heraklith applications are being researched.

Unsurprisingly, with such a future focus, we're looking forward to celebrating another 110 years of Heraklith innovation.

HOW SIMBACH MADE HISTORY

Millions of square metres of Heraklith boards are installed every year – and that is a testimony to the industrial innovation of our Simbach plant that has been producing the boards for 90 years.

The first buildings to use these boards for walls and ceilings were constructed in 1914 and the application became such a success that the manufacturers outgrew their original factory at Ferndorf in Austria. When a new state-of-the-art facility was opened at Simbach, Germany, in 1927, it was a triumph.

Thanks to Heraklith, building times were slashed because it was easy and fast to install; wall thicknesses could be reduced; its insulation and fire-proof properties were universally praised and it provided a highly durable plaster substrate – attributes that still resonate with customers today.

Heraklith proved so popular that by 1939 annual production had risen tenfold to 10 million square metres.

It was a success story that would continue to grow throughout the 20th century. Europe underwent a significant construction boom in the years following the war and by the 1960s Heraklith was selling 17 million square metres in Germany alone.

A decade later came expansion into north-west Europe, a growing export market to the Americas followed by the newly emerging markets of Eastern Europe which inspired the creation of a new base at Zalaegerszeg, Hungary, in 1989. A plant at Oosterhout in The Netherlands also came on line to cope with demand.

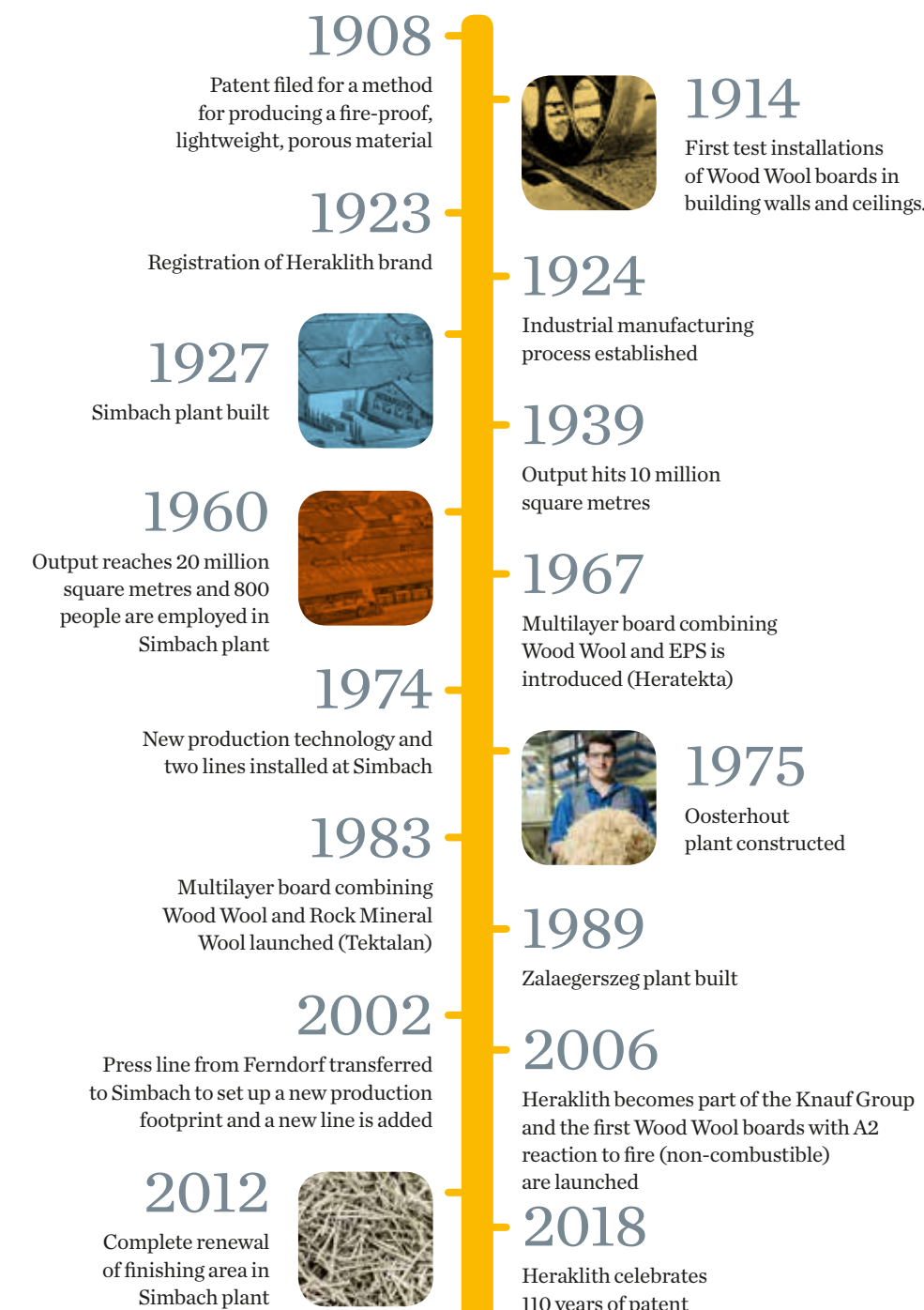
At the heart of such global success our Simbach plant continues to drive innovation, new products and pioneering manufacturing processes.

Wood Wool by Heraklith

Improving wood since 1908

Today Heraklith's influence continues to grow. The brand is becoming increasingly well known in the Middle East, particularly in Dubai and Qatar, thanks to our new dedicated team in the region. Meanwhile, in Nordic countries, Heraklith is boosting its presence through Knauf A/S in Denmark.

In 2017 at Simbach, work started on building a new state-of-the-art administrative centre and, at Oosterhout, the plant has launched the Heraklith Experience Centre. The centre is designed to showcase the potential of our products to project stakeholders and show opportunities to installers and new employees new ways to install Heraklith quickly and effectively.



Naturally inspired

At Heraklith we are committed to pushing the boundaries of sustainability at every level.

RESPONSIBLE SOURCING

We use wood certified by the Forest Stewardship Council (FSC) which is an internationally renowned labelling scheme recognised by the LEEDv4 Green Building Rating System. We also use wood that has been responsibly cultivated and harvested in line with the European Programme for the Endorsement of Forest Stewardship (PEFC). At Simbach we process 10,000m³ of spruce wood every year.

ENVIRONMENTAL PRODUCT DECLARATIONS

Environmental Product Declarations (EPDs) are available for all our Heraklith products showing their environmental impact based on independently produced Life Cycle Assessments (LCAs). Through this process, every environmental aspect of our products' lives is covered from the sourcing of raw materials, manufacture, transportation and use to ultimate disposal. Our commitment to sustainability is underlined by Blue Angel certification, the world's oldest eco-label.

NOISE ABSORBERS

Heraklith products can contribute considerably to the reduction of noise pollution. They are used extensively in car park and basement ceilings, technical rooms, farming facilities and public buildings. They have excellent acoustic properties, A2 non-combustibility and outstanding fire resistance as a single board or when combined with Mineral Wool.

REUSING RESOURCES

The wood from Simbach multi-layer boards that can no longer be used is removed and used internally — often as protective packaging for transportation. Insulation core elements such as EPS are either returned to the original supply companies for reuse or in the case of Rock Mineral Wool cores, removed and fed back into the production process at our Rock Mineral Wool plants.

Heraklith

WHAT'S IN A NAME?

A great deal for Heraklith. In many countries such as Germany or Austria it's almost the default word for Wood Wool. Heraklith comes from combining two words — Herakles (Hercules in German) and lithos (Greek for stone). During his 12 legendary tasks, Hercules built a giant wall from boulders to divert powerful rivers and clean the king's stables, so his name proved to be the ideal inspiration for architectural innovation and stone-strength reliability. Today, Heraklith's brand recognition is stronger than ever.

CASE STORY

FERENCVÁROS FOOTBALL CLUB (FTC), BUDAPEST, HUNGARY

"We were looking for a material that provides good sound absorption, is long-lasting and aesthetically pleasing for the FTC Stadium. Based on our past experience and good feelings about the product we chose Heraklith."

Burics Oktávian, designer for SAMO, architects of the stadium who worked with contractor Market Építő Zrt

Challenge: The club needed good sound absorption and an aesthetically pleasing solution for its conference areas, technical rooms, leisure spaces and garages. The garage insulation had to be capable of eliminating vehicle noise and offer excellent fire protection.

Solution: For garages a combination of Heraklith Wood Wool and Knauf Insulation Mineral Wool — now available from our plant in Zalaegerszeg as a single product known as Tektalan 037/2 — was the ideal solution offering certified non-combustibility, high fire resistance and the ability to withstand vehicle impact. For the conference areas and other rooms, Heraklith boards fitted easily into tight ceiling applications to offer exceptional acoustic performance and optimal product durability.



PHOTO © CGARITAN

WHY DO CUSTOMERS CHOOSE HERAKLITH?

FAST, EASY AND EFFECTIVE INSTALLATION

"If you require a product that can be quickly installed across large surface areas — such as car park, walls and ceilings or public buildings such as student housing — Heraklith really delivers. It is thin, lightweight and available in pre-finished surfaces, and this means a small team can insulate vast areas quickly and easily with minimal effort. We have used Heraklith in many developments, the latest being Stebru a transformation project next to Hollands Spoor rail station in The Hague for 303 student units and 153 starter homes — around 1,400 m² of commercial space and garage. Heraklith never fails."

Dick van Eck, Raab Karcher Waddinxveen, The Netherlands

OUTSTANDING FIRE RESISTANCE

"Heraklith offers excellent EN1365-2 A2 class fire resistance when combined with Knauf Insulation's Mineral Wool. It provides a protective fire shield that does not melt or produce burning droplets during a fire and that makes it ideal for projects such as car parks or public buildings."

Dipl.-Ing. Mario Lichy, BIENERGY Energy Management Company mbH, Germany

ALL-ROUND SOLUTION

"Tektalan boards provided an exact fit to obtain highly efficient acoustic performance. Also the fact that Tektalan panels provide thermal insulation and have an A2 fire classification made them the perfect all-round solution for our project."

Robert Frieden, Kaefer Isoliertechnik, Austria

BUILDING RESPONSIBLE SUPPLY CHAIN EXCELLENCE

THE NEWLY PUBLISHED ISO 20400 STANDARD ON SUSTAINABLE PROCUREMENT OFFERS KNAUF INSULATION A UNIQUE OPPORTUNITY TO WORK TOWARDS SUPPLY CHAIN MANAGEMENT EXCELLENCE.



CENTRALISED PROCUREMENT

We are building a new Central Procurement structure to simplify processes and be an 'umbrella' for different markets. For example, we have implemented new standardised supplier qualification at the specification tendering phase. The suppliers have to meet specific criteria for quality, health, safety and the environment (QHSE). Once they are selected, regular audits are carried out.



CONTRACT CLARIFICATION

We are developing a new supplier contract process and code of conduct that clarifies what Knauf Insulation expects from suppliers and what they can expect from us. This ensures long-term sustainable relationships through clear agreements. We are also putting in place a master contract agreement for all suppliers and for all key materials.



ISO 14001 SUPPORT

We are supporting suppliers that need help to achieve ISO 14001 standards of sustainability and keep a database of suppliers that informs us if their ISO has expired. We want to develop good relationships with our suppliers and provide the best quality of materials from sustainable sources. ISO 14001 certification is now becoming a supplier pre-requisite for extracted raw materials that we input into our batch. It also contributes to points in BREEAM certification.



CULLET IMPROVEMENT

Our Glass Mineral Wool is made up of 80% recycled glass – mainly used bottle and window glass. But we want to improve the quality and ease of access to recycled glass used across the company. That is why we are exploring new initiatives such as the development of a new facility next to our St Helens plant in the UK which will provide a constant supply of recycled 'furnace ready cullet'. The cullet – made from high quality recycled glass – can be easily used by the plant reducing waste to landfill while saving raw materials and energy.



SECONDARY MATERIALS IN ROCK MINERAL WOOL

At our Rock Mineral Wool plants we are also aiming to increase the amount of secondary materials that are fed back into our manufacturing process. For example, at our Nova Bana plant in Slovakia, a quarter of the used raw materials is constituted of recycled steel slag. New sources of slag are investigated for all plants. Another example is our Skofja Loka (Slovenia) plant which reincorporates up to 7% of Rock Mineral Wool trim coming back from customers' manufacturing sites. Rock Mineral Wool off-cuts from our Simbach Heraklith plant in Germany are also valorised as secondary material at our St Egidien plant in Germany.



INTERNATIONAL REGULATION

Our contract section works closely with our regulatory and sustainability department to ensure every element of every solution has been independently audited to guarantee its compliance with relevant regulations. These include, for example, REACH which covers the safe use of chemicals in the European Union; CLP regulation which rules on classification, labelling and packaging and RoHS which covers the restriction of hazardous substances for electrical and electronic equipments. The CE logo on our products shows they are in compliance with the Construction Products Regulation (CPR) which lays down specific rules for the marketing of products such as ensuring they are in line with sustainable natural resource use.



TIMBER SUPPLIES

Materials for our Heraklith Wood Wool are sourced from PEFC (Programme for the Endorsement of Forest Certification) or Forest Stewardship Council (FSC) woods. Those schemes ensure forests are responsibly managed in respect to issues such as environmental impact, community relations, workers' rights, conservation and indigenous peoples' rights. FSC is an independent international scheme recognised by LEEDv4.



ESSENTIAL ROLE OF LCA

We examine the environmental impact of our products using Life Cycle Assessments (LCA). This provides us with unique insight and allows us to identify any potential elements or processes that could have a particularly negative environmental impact. For example, this could mean the use of a raw material that is very scarce or offers a regulatory risk. We call this process hot spots detection. Information from our suppliers with impact data also helps us improve our LCA results.



LOCAL SOLUTIONS

Reducing transportation distances is another way we aim to decrease the environmental impact of our supply chain. For example, at our Tyumen plant in Russia, we sourced local supplies of sand – just 30km away from the plant – which reduced transport distances. We also increased our storage capacity with a new area of 1,320 m² to reduce the number of deliveries. In Northern Europe, our sites in St Helens, Cwmbran and Queensferry recently achieved BES 6001 standard for their responsible sourcing practices.

What does this mean for Knauf Insulation?

It means we want to ensure raw materials are extracted in a responsible manner, respecting neighbourhood communities in the process.

We want to see this process carried out by workers who have fair salaries and we want strong anti-pollution and waste management measures in place to protect the environment in every respect.

We want to guarantee fair and transparent business with our suppliers and we want to ensure that our customers receive high performing, high quality solutions that respect the most demanding consumer regulation.

So, how are we doing?

It's a process of continuous improvement. Here are our key developments:

A CIRCULAR ECONOMY SUCCESS STORY

What? A new wall system known as ECO-SANDWICH has been developed by Zagreb's Faculty of Civil Engineering and Faculty of Architecture in Croatia.

How? The pre-fabricated wall panel uses recycled construction and demolition waste as well as Knauf Insulation's Mineral Wool with ECOSE Technology which is composed of up to 80% recycled glass. Our responsible supply chain plays a key role by ensuring the high quality level of the recycled content.

Where? The first of 12 passive-energy standard multi-family social homes featuring the new material has been built in the Croatian city of Koprivnica.