BUILDINGS THAT RESHAPE THE FUTURE

ROCKWOOL®

Introduction

How we can build a better tomorrow

Reports from the UN Intergovernmental Panel on Climate Change (IPCC) make it clear: Climate change is a serious and growing challenge to the environment as we know it, and the building sector has a central role to play in limiting its scope and impact.

From our schools and hospitals to our offices, stores and homes, buildings provide critical infrastructure. They are also the source of roughly 30% of global energy use and emissions.

It's a number that will only grow with the population if we don't improve how we build. According to the IPCC, the building sector has no excuse: it is where the world can get the most carbon emission savings for each dollar spent, 70% more than the next most cost-effective sector.

The best part? Most of the savings can be achieved if we do two things: require new buildings to meet the highest energy efficiency requirements like those set by the Nearly Zero-Energy Building standard and renovate existing buildings to meet the same standards.

From the built environment to horticulture and water management, the ROCKWOOL Group works relentlessly to address some of the most serious challenges facing life on Earth.

By 2025, an estimated 1.8 billion people will live in areas plagued by water scarcity (UNDP, 2006). We have horticultural solutions to help growers produce more and better food using much less water.

And where too much water is the problem, caused by more frequent and severe rainfall, we have water management systems that use sustainable stone wool. Our solutions are specially engineered to be both strong and highly absorbent, enabling excess water to be released slowly without harming valuable infrastructure.

In urban spaces, we are making life more comfortable, reducing the effects of noise pollution on residents through the acoustic capabilities of stone wool; while also protecting families and neighbourhoods from the risk of fire.

All of these efforts have one thing in common: ROCKWOOL Group’s commitment to improve people's lives with our products and lower our impact on the environment.

The 7 strengths of stone work relentlessly to shape our tomorrow – reducing emissions, optimising acoustics, improving aesthetics, preventing flooding and growing more food with less water, all through the use of 100% natural, long-lasting and fully recyclable stone wool.

In these 36 case studies, you’ll see the breadth of possibilities and applications of the ROCKWOOL Group’s products and knowledge. We hope you find them inspiring and will join us in creating a better future for everyone.

ROCKWOOL Group at a glance

The ROCKWOOL Group was the first to start the production of stone wool in Denmark, in 1937. Since then our products have contributed to countless landmark projects around the world.

Our world is developing and ROCKWOOL is helping to shape it. We're finding ever more innovative ways to tackle big global challenges and build the cities of tomorrow – better for the environment and for the people who live in them. All this is made possible because we have released the 7 strengths of stone.

ROCKWOOL has five brands, all working together to achieve our common purpose.

ROCKWOOL®

We are the leading supplier of fire resilient stone wool insulation providing solutions for all major application areas, including technical and OEM.

Rockfon®

We provide customers with a complete ceiling system offer, combining panels with suspension grid systems and accessories.

Rockpanel®

We manufacture board material mostly used in ventilated constructions, for façade cladding, roof detailing, soffits and fascias.

Lapinus®

We develop innovative products used in a wide range of applications, including friction and water management, tracks, coatings, gaskets and fences.

Grodan®

We are a global leader in the supply of innovative stone wool substrate solutions for the professional horticultural based on Precision Growing principles.

The 7 strengths of stone

There is something truly remarkable about the natural power of stone.

So far, we have been able to break down this natural power into 7 strengths that are inherent in the versatile properties of stone wool. And over the years we've become experts at applying these strengths to help people around the world create landmark projects and enrich modern living.

Fire-resilience
Withstand temperatures above 1000°C.

Thermal properties
Save energy by maintaining optimum indoor temperature and climate.

Acoustic capabilities
Block, absorb or enhance sounds.

Robustness
Increased performance and greater stability with lower costs.

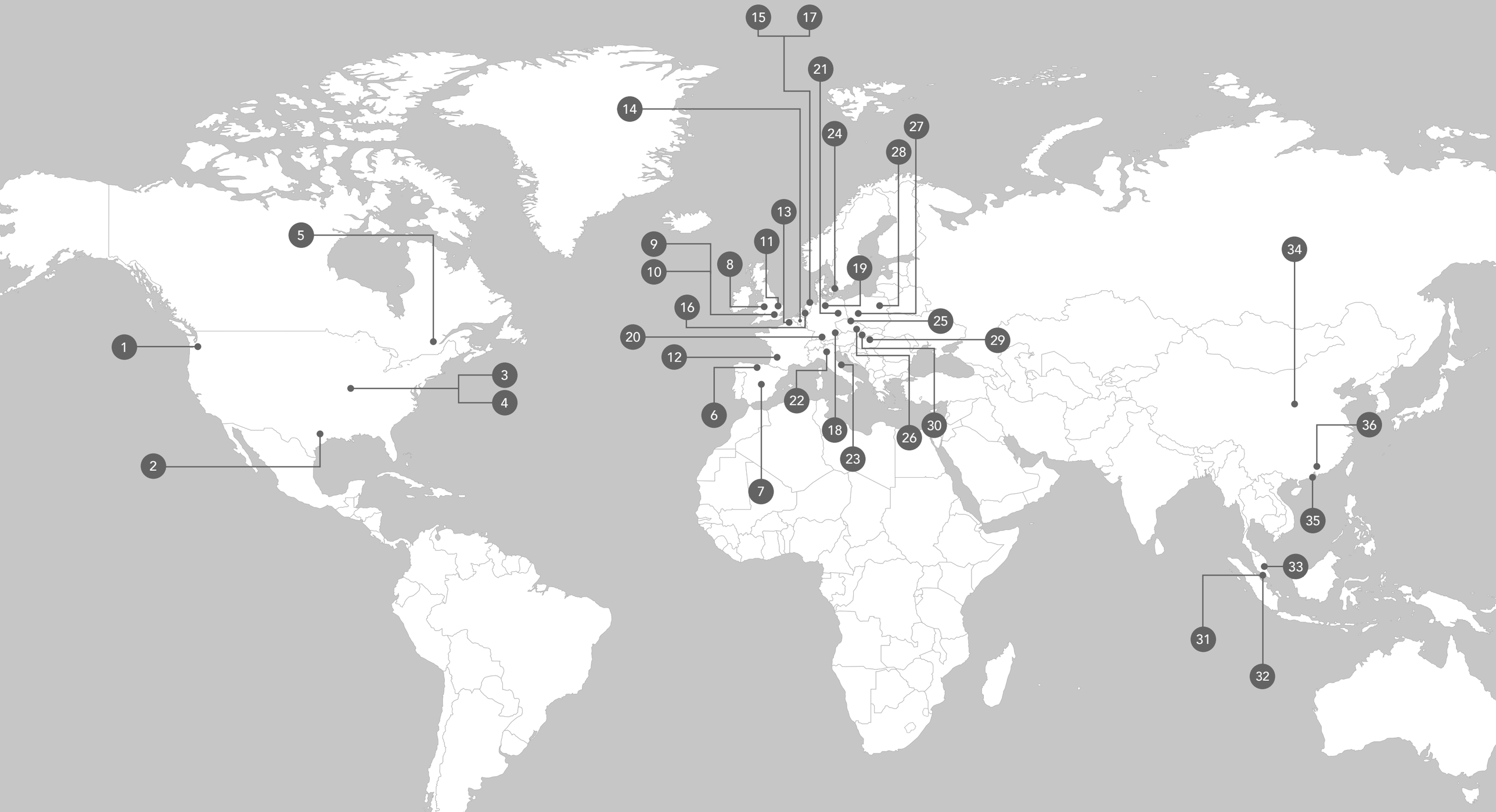
Aesthetics
Match performance with aesthetics.

Water properties
Manage our most precious resource.

Circularity
Reusable and recyclable materials.

A world of possibilities

7 strengths. 36 case studies. 32 locations.



Why New Build?

By 2050, the floor area in buildings worldwide is expected to double to over 415 billion square metres, with associated energy demand likely to increase by up to 50 percent (World Green Building Council). Anything new must be built with energy efficiency in mind. With ROCKWOOL solutions, you can construct buildings with superior energy efficiency, fire protection, acoustics and comfort.

New standards such as Passive House and Nearly Zero-Energy Buildings provide good guidance on how to ensure your building envelope meets the requirements for low energy consumption and therefore the lowest possible CO_2 emissions for the future.

Building to the highest standards will ensure buildings will last the next 100-200 years with continued performance. This also means 'designing for reassembly' and building with fully recyclable, sustainable building materials.

By designing and building sustainable buildings, you'll help to reduce energy costs – for yourself and the planet.

Why Renovation?

Buildings offer a more cost-effective pathway to reducing carbon emissions than any other business or industry. In fact, according to the International Renewable Energy Agency (IRENA), insulation is the most cost-effective way of mitigating climate change, because it can contribute to energy savings of over 80%.

Since more than 50 percent of today's buildings will still be in use in 2050 (75-90% in OECD countries), there are approximately 207 billion square metres of building space which could be renovated, potentially reducing the CO_2 footprint by up to 70 percent. This would play a key role in keeping global temperature rise below the UN target of 1.5°C target, while meeting the EU target of renovating all buildings to nearly zero-energy performance by 2050.

A renovated building can also give you the same benefits as a new building. Renovating with stone wool insulation brings great fire resilience, soundproofing, durability and resistance to damp and mould.

We spend roughly 90% of our lives indoors. Whether it's in the home, at school or the office or in a hospital recovering, people should be able to live in buildings that are comfortable and safe.

[1] The revised Energy Performance of Buildings Directive (2018) requires each Member State to 'establish long term renovation strategies [to transform] existing buildings into nearly zero-energy buildings'.

ACOUSTIC CAPABILITIES

Renovation

Hearing every word at high school

"Creating a good acoustic experience improves learning and understanding. Every student should have the same opportunity to hear and understand what is being said whether they are learning to weld in a noisy shop or reading Latin in the library."

Gary Madaras,
Rockfon acoustic specialist

Better acoustics improve the learning environment

Sammamish High School, Washington, USA
2017

Sammamish High School modernised its campus over four years, adding a new three-storey state-of-the-art educational facility and a new two-storey athletic building.

The goal was to create a high school for the future with spaces for collaboration, informal learning and socialising, as well as ensuring excellent acoustics across all areas including classrooms, the gym, common areas, music rooms and offices.

The school's stakeholders focused on optimising acoustics to improve concentration and comfort for students by using Rockfon stone wool ceiling panels. The natural sound absorbing properties of stone wool give excellent noise reduction capabilities, and reduce reverberation, which again improves speech intelligibility. This makes it easier for students to hear and understand their lessons, without teachers having to shout.

As well as providing the best sound absorption, Rockfon ceilings are non-combustible and resistant to mould, bacteria and humidity. Following installation, they have delivered excellent indoor air quality, comfort and safety for school children at Sammamish. The white surface of Rockfon also reflects up to 86% of available light which means a better distribution of natural light, lowering lighting requirements and increasing energy savings for the school.

Using Rockfon ceiling panels, the designers of Sammamish High School have created beautiful spaces that serve nearly 1,000 students and improve collaboration and learning through better acoustic performance. In addition, the use of stone wool – which is 100% recyclable – has helped the school meet the Washington State Sustainable Schools Protocol.

THERMAL PROPERTIES

Craftsmanship and science keep the house dry

"The exterior insulation will lead to a lifetime of energy savings and better durability for the structure – since we don't have to risk any negative impacts inside the house caused by condensation – and we're providing the added benefit of fire-resistance."

Matt Risinger,
Owner at Risinger & Co

Controlling exterior moisture in a new home build

Risinger & Co, Texas, USA
2015

Risinger & Co is a custom home building company in Austin, Texas with a passion for building science, fine craftsmanship and ensuring that best practices are prevalent throughout. The company's latest home build is a perfect case in point.

The house has been built well beyond the building code requirements, since Risinger & Co's owner, Matt Risinger, believes there are still a lot of locations in the USA using dated code jurisdictions. This has particular impact when it comes to energy efficiency.

Since the new build was largely wood based, there was a need to control moisture on the outside, which is why Matt was keen to use ROCKWOOL Comfortboard, a vapour open exterior insulating solution that uses the natural thermal, acoustic and fire-resistant properties of stone wool. Comfortboard ensures that any fluctuations in temperature – such as a cold snap or changes in humidity – do not affect the structure's moisture control, stability or performance. And because of stone wool's excellent water properties, it is unaffected by water, moisture and will never rot or grow mould.

The completed home now has insulation performance that is well beyond current building codes thanks to stone wool. Using the Home Energy Rating System index (the USA's standard for measuring a home's efficiency), this house achieves a score of 48; roughly 50% more efficient than a standard code built home. This means a lifetime of energy savings for the occupants of the new home.

Self motivated builders like Risinger & Co are always seeking to raise their own standards, and in this case, Matt achieved a spectacular finish as well as protecting against heightened humidity levels in Southern USA. It's an approach that clearly makes good business sense for owner Matt.

New Build

> **"Rockfon offered a clean, modern looking ceiling product with good NRC values at a good value. Budget is always a concern on education projects, and the Rockfon products allowed us to achieve the design aesthetic we wanted."**
>
> **Ian Kilpatrick,**
> **Architect at DLR Group**

Acoustics help teachers be heard

Renovation

Acoustics and aesthetics improve the learning environment

Salina Central High School, Kansas, USA
2018

Originally constructed in 1952, the 55,000m² Salina Central High School required an updated facility to provide more space and modern features for its 1,000 students.

A key design requirement was improved acoustics: the school required better sound reduction so that students could clearly hear and understand their teachers.

The ceiling contributed greatly to this goal. The contractors, DLR Group, chose Rockfon Artic acoustic stone wool ceiling panels for a durable, low maintenance, high quality system. Rockfon was used throughout new expansion areas, for renovating existing spaces and provided a good Noise Reduction Coefficient (NRC).

Another key requirement was a 21st century, modern design. Rockfon was chosen because of its aesthetic properties, which gave a modern, smooth white finish.

For a busy school environment, durability and low maintenance adds to the appeal of Rockfon, while safety is ensured since ROCKWOOL stone wool ceiling products meet Class A fire standards and withstand temperatures above 1000°C.

Students at Salina Central High School now concentrate on their studies in a pleasant indoor environment which benefits from excellent air quality thanks to the use of stone wool. And every word the teacher says is heard.

ACOUSTIC CAPABILITIES

“As we opened up the space, we were also taking away everything that absorbs sound and showcasing all the reflective surfaces. We needed something more than a carpet to manage the acoustics. We knew of various standard acoustic ceiling clouds, but weren’t satisfied in what we were finding. Then, we came across Rockfon. From our research, Rockfon acoustic islands were the best thing available to meet the acoustic design and aesthetic needs, and they included recycled content.”

James Evrard,
Associate and Project Architect at Hoefer Wysocki Architecture

Pitch-perfect office acoustics

Renovation

Fine-tuning the acoustics of an exposed office ceiling

Solar Spectrum, Kansas City, USA
2015

Solar Spectrum, a distributor of solar panel systems in the US, chose new offices in a 38-year-old concrete tower in downtown Kansas City. Working with Hoefer Wysocki Architecture, the company decided to open up the space to create a modern office design with exposed steel pipes, ductwork and concrete.

This created a dual challenge for acoustic performance in the office. Firstly, Solar Spectrum wanted to reduce noise in the office without making the environment too quiet for their young salespeople, who feed off an energetic atmosphere. Secondly, the acoustic insulation had to work in an exposed and complex ceiling space.

The company harnessed the natural sound-absorbing qualities of stone wool, using Rockfon ceiling systems and acoustic islands which were supplied with short lead times. Rockfon was chosen for its smooth appearance and positioned strategically throughout the workspace to give precise control of acoustics. The installation integrated with all existing components in the ceiling, and the lightweight, modular sizes of Rockfon panels – which are 50-75% lighter than other ceiling panels – made fitting quick and easy.

Rockfon panels and islands now reflect 86% of the light from the exterior windows into Solar Spectrum’s office interior. This maximises natural daylight and minimises the need for electric lighting – helping to reduce energy costs. The boards are also non-combustible, and resist mould and bacteria to ensure cleaner, healthier indoor air.

Today, Solar Spectrum’s modern offices reflect their culture of openness, interaction and energy. The sound absorption property of Rockfon has been optimised precisely to the company’s needs and contributes to the distinctive design of the offices.

Open and airy, yet quiet

Acoustics experts showcase noise reduction in their new office

Aercoustics Engineering, Ontario, Canada
2017

Aercoustics Engineering chose to transform a 9,000 square feet former warehouse space into a modern, comfortable and attractive office environment. As an acoustical engineering firm, they wanted to improve the office acoustics while making a design statement to demonstrate their expertise in noise and vibration control.

Since the new office is part of a larger multi-tenant building, the challenge was to create a collaborative office space while ensuring sound privacy and acoustic comfort in meeting rooms and other areas.

Aercoustics Engineering specified Rockfon panels, which optimise acoustics by absorbing sound and have a premium appearance, which suited the office design perfectly. Rockfon panels provide a wide range of options, so different products could be chosen to achieve different goals in different areas of the office.

The panels now help to block and absorb sounds while the lightly textured, white surfaces reflect up to 85% of the available light and distribute natural light, which was perfect for the ceiling system. It means lower electric lighting requirements, and will save energy in the years to come.

Since the Rockfon panel range is made entirely from stone wool, it also delivers high thermal performance, excellent fire safety, and does not encourage mould or bacterial growth – thereby improving indoor air quality in the office and ensuring a healthier working environment.

The creation of a highly efficient, sound absorbing space has been achieved without compromising on aesthetics. Aercoustics Engineering now has a dynamic office environment that matches its culture and demonstrates its technical expertise to clients and visitors.

“We love our space. Rockfon products were one important part of the whole in achieving the overall performance and premium appearance. We’re excited that our office not only serves all who work here, but also works as a showcase for our clients to experience the power of acoustically optimised and well-designed spaces.”

Steve Titus,
President and CEO at Aercoustics Engineering

New heights in energy saving

Highest possible energy savings for the world's tallest passive house building

Bolueta Tower, Bilbao, Spain
2018

The 28-storey Bolueta Tower is the tallest 'passivhaus' building in the world at 88 metres, containing apartments and homes for social housing. It received the prestigious Passivhaus Certified award in 2018 and is the first Vivienda de Protección Oficial (VPO) building in Spain for people on low incomes or with particular social needs.

During its design phase, the concept evolved to create a building to the Passive House standard, which meant excellence in terms of energy efficiency was required.

The architect, German Velázquez, chose Ventirock Duo to optimise the insulation of the building and create a structure with no thermal bridges. This minimised energy consumption and ensured that residents would enjoy lower energy bills for decades to come. In fact, with an A1 energy rating the reduction in heating demand will be around 80%.

The use of stone wool insulation in Ventirock Duo has many additional advantages. Residents will benefit from excellent winter and summer living comfort since the walls 'breathe' and contribute to high quality indoor air, with no dust or pollen. The insulation also reduces noise thanks to its acoustic performance, and is weather-resistant and robust.

This project is a fine example of combining energy efficiency and sustainability for the good of society, and it will be a testament to its designers for years to come. For now, it sets the standard as the tallest and most highly certified passivhaus building in the world.

"We chose Ventirock Duo because it's a dual density, rigid slab designed for ventilated façades. At the same time it provided the highest possible insulation performance for our passivhaus design. It was easy to install and most importantly it delivers high energy efficiency that will benefit residents, and continue to reduce their energy bills."

German Velázquez,
Architect at Varquitectos

ACOUSTIC CAPABILITIES

Renovation

Hard Rock Heals

Reducing noise for a hospital music room

La Paz University Hospital, Madrid, Spain
2018

La Paz University Hospital is the largest hospital in Madrid, with more than 1,300 beds and 7,000 employees working in four hospitals. A special addition has been made to the children's hospital – a music space complete with instruments, a recording and rehearsal area, and a small stage where young patients can play music and recover.

Called The Hard Rock Café Music Room, the project was funded by the Hard Rock Heals Foundation, the ROCKWOOL Group and others to support music therapy for paediatric patients.

Rockfon acoustic ceiling tiles were donated to create an authentic music studio appearance and function. Using the natural sound absorbing properties of stone wool gives the new music room excellent noise reduction capabilities, as well as reducing reverberation. This was key to the project's success since the facility is within the hospital itself and is now equipped with several guitars, a keyboard and drums.

The white surface of Rockfon reflects up to 86% of available light which means young patients enjoy a room full of natural light, and the hospital benefits from reduced lighting and energy costs. Rockfon panels are also non-combustible and resist mould and bacteria to ensure cleaner, healthier indoor air – another valuable benefit for a hospital environment.

The Music Room will help La Paz to continue its research into the therapeutic benefits of music, and promote more varied emotional interaction between children, their families and staff. The ROCKWOOL Group is very proud to have helped Hard Rock Heals in this ground-breaking acoustic project that will treat hundreds of patients per year with music therapy.

"We always look for opportunities to help the communities where we operate and this is an ideal project. Rockfon's products are used widely in healthcare facilities for their sound absorption, hygienic and light reflecting qualities, so the music room is a perfect fit."

Mirella Vitale,
Senior Vice President at ROCKWOOL Group

Warm and safe for years

Poor insulation and high energy costs were hitting the pockets of residents before refurbishment

Lion Farm Estate, Oldbury, UK
2018 – 2019

Originally built in the 1960's, Lion Farm Estate comprises over 200 homes in three 13-storey residential towers. In high-rise buildings like these, safety is of prime importance. Since their construction, however, all three towers have deteriorated visually and structurally through wear and tear to the building fabric, windows and doors.

In addition, the absence of efficient wall insulation and cladding mean that residents have been fighting a losing battle to keep warm in the face of increasing energy bills – especially those living in fuel poverty.

The renovation project therefore needed to focus on providing increased energy efficiency for occupants, as well as bringing the high-rise towers into the 21st century in general.

To achieve these goals, the contractor, Lovell, chose the thermal properties of RAINSCREEN DUO SLAB which is designed for use in severe weather conditions and has thermal properties which can dramatically reduce heating, cooling and ventilation costs. The solution will more than meet energy efficiency and fire safety requirements, while at the same time creating a more comfortable living environment.

For the residents at Lion Farm, one of the greatest benefits of the refurbishment will be the alleviation of fuel poverty over time. They will live in far more comfortable and affordable homes, with excellent long-term energy efficiency and fire safety.

Since Lovell chose products that are long-lasting and protective, Lion Farm will need no additional refurbishment, leaving residents comfortable and safe for years to come.

"This is a major programme of renovation work that will deliver important physical improvements for peoples' homes as well as lasting community benefits in the area. The use of ROCKWOOL insulation and Rockpanel boards will mean low maintenance and an end to fuel poverty for the estate's residents."

Carl Yale,
Regional Refurbishment Director at Lovell

On the right track to safety and noise reduction

"With a vast number of trains and people due to travel through this station, noise reduction was a major factor for this scheme. ROCKWOOL stone wool products were able to deliver a solution that not only helps in mitigating noise, but also provides optimum fire safety performance. This project has been built to comply with exceptionally strict fire and acoustic LUL standards that will serve the needs of Farringdon for many years."

Simon Webber,
Section Manager at BFK
(BAM, Ferrovial and Kier joint constructors)

Reducing noise pollution while protecting against fire are key priorities for this busy train station

Farringdon Station, London, UK
2018

Around 140 trains per hour and an estimated 90,000 passengers pass through Farringdon Station every day. It is also part of a massive new Crossrail infrastructure project, which will bring 1.5 million more people within a 45-minute commute of central London.

Crossrail's priority was to design a safe and comfortable space for commuters to pass through. Specifically, the company needed to minimise sound propagation alongside new platforms and through train tunnels to improve the commuting experience. For Farringdon Station, ROCKWOOL Rw3 insulation face slabs were chosen to meet the exceptionally strict acoustic standards of London Underground Limited (LUL).

In addition, Rw3 achieves an A1 fire classification in accordance with BS EN 13501 for non-combustibility.

Being a semi-rigid product, Rw3 also made life easier for the contractors since it was easy to cut and friction-fit alongside platforms and in tunnels.

Modern life can be stressful and busy, especially for commuters using public transport. With the support of ROCKWOOL stone wool, Crossrail has created a more comfortable environment with reduced noise pollution from trains and pedestrian traffic.

Farringdon Station has been future-proofed in terms of fire safety, which is paramount in such a busy and confined public space. In addition, the chosen solution will serve the needs of the station and improve the daily commuting experience for many thousands of passengers, for years to come.

“I am happy to be a part of an organisation, who after all these years, is a world leader in stone wool solutions – continuously focusing on sustainability and helping our customers address many of the big issues of modern living.”

Vanja Boyer

ROCKWOOL: The power of stone wool & the passion of our people

“ROCKWOOL allows me the opportunity to be in contact with people from different countries and to collaborate with colleagues across the globe. I'm thankful to work with such a wonderful team of people who are passionate about offering solutions that will help contribute to ROCKWOOL’s future growth. I am happy to be a part of an organisation, who after all these years, is a world leader in stone wool solutions – continuously focusing on sustainability and helping our customers address many of the big issues of modern living.”

Vanja Boyer
IT People Manager and BRM
ROCKWOOL North America

Throughout our history, ROCKWOOL employees have been doing something that looks like magic. Regardless of job title, tenure or location, they make sure that ROCKWOOL excels in transforming an abundant, renewable natural resource into materials that bring comfort, safety and sustainability to millions of people worldwide. In every department in 39 countries, and with differing skills, backgrounds and experience, the dedication of ROCKWOOL’s personnel – 11,000 strong – has shaped how the company thinks and acts.

Vanja Boyer has been happily part of the ROCKWOOL family for a long time as she reflects on how the company has grown and delivers results from around the world. She started her career with ROCKWOOL in January 2009 as part of Global IT – Digital. Vanja has been involved with the company’s technological innovations, enhanced digital services, new projects and organisational changes. Most recently, her division participated in an update to create a stronger interface for delivering digital project ideas, projects and services to OPCOs and Group functions.

Energy performance gets a facelift

Improvements to energy efficiency put an end to fuel poverty for residents

Avebury Estate, Tower Hamlets, London, UK
2016

Dating back to the 1960's, the Avebury Estate in Tower Hamlets fell short of modern standards for insulation and safety.

Energy costs were putting a financial strain on occupants of the development, which consists of nineteen four-storey blocks (around 300 homes). The required renovation work included the improvement of thermal performance to meet modern building regulation requirements, as well as achieving fire safety values – both essential for a high-rise building.

The challenge was to renovate in a sympathetic style to surrounding buildings, while at the same time, improving the aesthetics of the estate.

Breyer Group, the specifiers working on behalf of Tower Hamlet Homes, chose ROCKWOOL REDArt for its insulation, climate protection and beautiful finish; plus BrickShield, the wall cladding system with a real brick finish. Together they give each building an energy efficient external envelope and A1 fire safety: future-proofing the building and providing high levels of safety for the occupants.

The finish of the rendering system also delivered the promised uplift in aesthetics for Breyer, and created a building residents are proud of.

Since proper insulation can reduce household energy needs by 70%, the occupants of Tower Hamlets now live in a more energy efficient, comfortable, safe and attractive environment. This will alleviate issues of fuel poverty over the long term and result in more affordable living for all residents. And the long-lasting technical insulation and cladding will ensure the building remains that way for many years.

"Choosing the ROCKWOOL system for this project was a quick and easy decision. It more than fulfilled Tower Hamlet Home's requirement to improve thermal efficiency on the estate. Not only is ROCKWOOL a reputable brand, but having installed their products in the past, we were confident that installation would be easy to achieve."

Spencer Marshall,
Contracts Manager at Breyer Construction

Safety first for students

"More than 50 percent of fire fatalities and injuries are due to toxic smoke. Stone wool will not feed or spread a fire and therefore will not contribute any significant toxic smoke."

Source: Report: Energy and Buildings (2011), Assessment of the fire toxicity of building insulation materials, Anna A Stec and T Richard Hull

Fire safety was at the heart of this development, with a pioneering use of mineral wool

The Quad, Norwich, UK
2018

Demand for student housing in Norwich led to The Quad development in a prominent city centre location. The regeneration has transformed an old Mecca bingo hall into the highest habitable building in Norwich with a height of 13 floors.

Not only were the logistics of this project a talking point, but the contractors Alumno Developments were especially keen to make sure that the building met strict fire safety standards. The project came at a time when there were many changes in the industry relating to fire safety and Alumno wanted to implement and future-proof a completely new design.

Due to the importance of fire safety, the contractor, HG Construction, pushed for A1 non-combustible products. RAINSCREEN DUO SLAB was chosen for its natural, non-combustible stone wool composition, which differentiates ROCKWOOL stone wool from its competitors.

This became HG Construction's first project to use stone wool insulation with a masonry façade, and the company was delighted to be able to incorporate the added value of stone wool. It is extremely resilient to fire and withstands temperatures above 1000°C.

Safety was always key to The Quad, which consists of 244 student rooms. Students now have a building which is both aesthetically pleasing, and safe to live in.

Tackling tramway vibrations

Protecting historic buildings from vibration damages in a busy city

Tramway Line D, Bordeaux, France
2018 – 2019

The development of a modern cable-free tramway network has improved transportation in the Bordeaux metropolitan area considerably. The third phase of the construction work continues, including Line D which will run for 9.8 kilometres and call at 15 stations.

As Line D plays a significant part in supporting Bordeaux's development, great importance was given to protecting the city's historic infrastructure from vibration damage, as well as ensuring comfortable living conditions for residents near the tramway.

The joint constructors, Ingérop and Systra, chose a vibration isolation system from railway technology specialists Rockdelta, part of the ROCKWOOL Group.

Rockdelta RX anti-vibration mats reduce ground-borne vibrations and noise from floating slab track systems. And being stone wool based, not only do they protect from unwanted noise but they are exceptionally robust and have a long, maintenance-free life which will reduce costs.

Because traffic had to be stopped to allow for construction, fast installation was imperative for this project. Fortunately, Rockdelta mats are easy to handle and very quick to cut into different sizes and shapes, which helped keep this busy city moving.

Using Rockdelta mats has protected the city's rail-side buildings from vibration damages for the long-term, and has given residents complete peace of mind. It's an example of how the use of stone wool can overcome complex transportation challenges and contribute to a quieter and more sustainable future.

"Noise during nighttime disturbs sleep and spoils the recovery phases of the human body."

Source: Report: Noise and Health,
World Health Organization (WHO) 2004,
Dr Hildegard Niemann / Dr Christian Maschke

AESTHETICS

Renovation

Just like wood. Only better

Transforming social housing using attractive façades that look like wood, yet have the power of stone

Square Pasteur, La Madeleine, France
2017

Square Pasteur was a refurbishment in northern France of 150 social housing units within four buildings. The aim of the project was to bring a new, more contemporary and serene identity to the buildings and inspire their residents.

The architect, Hélène Richet, believed façades with a wooden appearance would be perfect for a green urban environment. However, by its nature, wood is flammable, needs regular maintenance and has a limited life before it requires costly renewal.

The discovery of Rockpanel Woods became the inspiration for Hélène, and overcame concerns about combustibility and longevity. These boards are almost perfect replicas of wood, yet with all the long-lasting benefits inherent in a stone façade. Since they are manufactured from natural basalt, the Rockpanel Woods boards provide high fire-resistance properties, as well as being extremely durable, weather resistant and sustainable.

Square Pasteur now meets the highest fire safety requirements available, thanks to the pleasing appearance of natural wood. Residents also live in greater comfort due to the inherent insulation properties of Rockpanel Woods which will reduce energy bills into the future. The aesthetic appeal of the buildings has been achieved with no compromise at all on performance.

Finally, the improved environment has increased the quality of life and living conditions for hundreds of residents, who now see the benefits of combining the strengths of stone with the natural warmth of wood. Simply put, it is the best of both worlds.

"From an architectural point of view, the aim of the project was to offer the occupants a new identity. It was necessary to infuse a new, more contemporary and serene spirit to the inhabitants as well as give the additional comfort of insulation. For these reasons, the facades have been completely rethought, as well as the development of green spaces. Now the inhabitants have a residential site with greater comfort and optimised thermal performance."

Hélène Richet,
Associate Architect at Atlante Architectes

THERMAL PROPERTIES

New Build

Changing sustainable thinking

A new ultra-low energy school building will literally reflect the seasons

Les Trèfles school, Anderlecht, Belgium 2016

Les Trèfles (The Clovers) is a brand new primary school in Anderlecht, Belgium, featuring award-winning design by architectural firm Árter of Brussels. The new school features an inventive layout of four partially overlapping circles.

Thermal performance was a priority, so the school was designed to be highly sustainable with low energy use[1], using construction materials with low lifecycle environmental impacts. This enabled energy to be saved by maintaining optimum indoor temperature and climate.

For the architect, the choice of Rockpanel Chameleon and Rockpanel Natural for the façade cladding was easy, since they are produced from compressed natural basalt which offers not only great thermal performance and high energy efficiency, but also robustness and long-term sustainability. Rockpanel Chameleon also worked perfectly with the architect's design concept of seasonal change. The colour of the boards varies slightly depending on natural or spot lighting, the board's angle and the viewing point.

The constructors praised the easy fitting of Rockpanel boards and their invisible fixing which creates a clean and aesthetic look. The boards were also engraved to provide signage around the school building.

The thermal performance of the school has not only improved but also now has a highly original design with an important BRE Green Guide A+ rating for sustainability, and a very high fire safety classification– crucial for a large school of 750 pupils.

Les Trèfles seamlessly blends educational innovation, sustainability and attractive architecture, and the design has made both its pupils and stakeholders proud. This impressive long lifetime, low maintenance structure will be enjoyed for generations to come.

"I was pleasantly surprised that I could specify a product which enhances the 'cyclic' aspect of the school, and at the same time achieve a BRE Green Guide A+ rating. Materials must be carefully chosen in ultra-low energy buildings, so it is important that we are able to rely on the ROCKWOOL Group to provide the necessary testing and performance certification and on-site support."

Patrick Vonck,
Architect at Árter

[1](Only 12kWh/m2 per year versus 15 kWh/m2 Passive, 50 kWh/m2 Low, 100 kWh/m2 New, 150 kWh/m2 Modern, 200 kWh/m2 Old and 300 kWh/m2 Leaky)

AESTHETICS

From nursing home to impressive apartment complex

Façade cladding combines beautiful aesthetics and economy for a refurbishment

't Bakenshof, Horst, Netherlands
2018

The 't Bakenshof project was the renovation of a former 1970's nursing home into an impressive apartment complex in the Netherlands.

The contractor wanted economical façade cladding while the architect's design called for a rust-coloured appearance for the building. Rockpanel offers a wide range of designs and colours making Rockpanel Stones Mineral Rust the perfect choice. The deciding factor was the very quick installation achieved by the contractor using semi-invisible nails to create a smooth aesthetic finish. This reduced both installation time and cost. In addition, Rockpanel was specified with a self-cleaning finish to lower the need for exterior maintenance.

Since 't Bakenshof was a large apartment block with many residents including elderly people, a fire safe solution was essential. With European fire Class B as standard, Rockpanel met current Dutch regulations for a high fire classification (B-s2,d0 standard).

Renovating and uplifting the old building into a modern complex has given 't Bakenshof new purpose and life, and tenants greatly enjoy their apartments and the beauty of the building.

These aesthetics are matched by long-term performance: by choosing robust low maintenance boards with a BRE-acknowledged lifetime of 60 years, this cost-effective renovation project will look fresh and beautiful for many years to come.

"The boards had to meet certain fire specifications. Rockpanel is already highly fire-resilient thanks to its core material of compressed mineral wool made from the volcanic rock basalt. Therefore, we advised the architect to use Rockpanel."

Patrick Bours,
Contractor at Van Wijnen

Renovation

Water management made easier with stone wool

“By 2050, 66 percent of the world’s population is projected to be urban. Innovative ROCKWOOL solutions will help to prevent a severe increase in energy consumption from buildings as well as improve water management in urban spaces.”

Source: Report: World Urbanization Prospects, United Nations, 2014

Reducing local flooding with an innovative stone wool solution

Maasbracht village, Limburg, Netherlands
2018 – 2019

In Maasbracht village, an outdated 60-year old sewer system required modernising to protect the neighbourhood against flooding, during heavy rainfall, and give greater infrastructure capacity. The project involved updating sewers in six residential streets, including their parking and green spaces.

At first, the engineers proposed an infiltration sewer; however this kind of system has a tendency to clog and requires high maintenance. Fortunately, the municipality to which Maasbracht belongs had experience of using stone wool solutions for water management in other projects, and suggested its use again.

Rockflow was chosen for its natural stone wool properties. It can absorb 95% of its volume in rainwater and then slowly discharge it through the ground or into a sewer system. Stone wool also keeps its shape and its texture does not allow small sludge particles to clog the system, which means it’s entirely maintenance-free. In Maasbracht, the Rockflow water management system was laid beneath the village’s streets, resulting in no loss of urban space. Since Rockflow is made of stone it also has a high load-bearing capability, and will easily support the weight of vehicles above ground.

The Rockflow solution now buffers large volumes of rainwater quickly and effectively in Maasbracht. The robustness and natural longevity of this sustainable system will ensure that residents can enjoy village life without concerns over flooding in the future. And for the municipality, the decision to use such an innovative water management solution has been a story of success.

Keeping steam at 300°C

Insulating a bio steam pipe to create sustainable energy

Groningen Seaports, Farmsum, The Netherlands
2018

Groningen Seaports, a port owner in the Netherlands, wants to create a local network of steam pipelines to help connect businesses. The goal is to capture heat, which is generated as a by-product in nearby production plants. As a first step, a bio steam pipe in an industrial park in Farmsum has been designed to transport steam to nearby end-user Nouryon (formerly an AkzoNobel chemical specialities plant).

The steam flows through an above-the-ground pipeline with a length of 2.7 kilometres, so keeping the heat inside the pipe with minimal heat loss is essential to deliver on energy efficiency and sustainability.

For the latest extension to the pipeline, Groningen Seaports chose Prorox, a ROCKWOOL insulation system, which consists of a double layer of stone wool pipe sections, with 250mm thick insulation.

ROCKWOOL stone wool works as a highly efficient insulation material to continually limit heat loss and guarantee the efficient operation of the process. By using stone wool, steam which enters the pipeline at a temperature of around 300°C arrives at the purchaser Nouryon with a temperature loss of only a few degrees. Stone wool is sound absorbent, so noise arising from the speed of the steam is inaudible. Since the pipe sections are insulated with stone wool, they also have great water repellent properties that mitigate the risk of deterioration.

This project is a testament to using sustainable solutions to transform waste heat into a sustainable and safe supply of energy. And it's all made possible due to the excellent thermal, acoustic and robust properties of natural stone wool.

"Due to the pipe's layered structure, heat radiation through seams between the pipe sections is kept to a minimum. And the main advantage of pipe sections is that there is no need for a support structure to keep the outer jacket at a distance and take on the loads of the insulation. The use of such support structures (spacers) also leads to extra heat loss and the risk of damage to the pipeline's protective coating."

Elbert Reijtenbagh,
Technical Insulation Sales Consultant at ROCKWOOL RTI

The school of colour

A colourful, playful façade improves aesthetics and brightens the day for students

Betty-Greif School, Pfarrkirchen, Bavaria
2017

By 2017, the Betty-Greif school building in Bavaria had reached its maximum capacity of 150 pupils. The complex needed to be entirely renovated and extended by 450m².

Since the school caters for students who have special educational needs, its principals decided that a vibrant, child-friendly façade would be appropriate and appealing to students, and help to create an enjoyable learning environment. The school also wanted a solution that would not require costly long-term maintenance.

COPLAN AG, an engineering firm from Eggenfelden, chose Rockpanel boards for their wide range of colours to meet the design concept. Additional Rockpanel product benefits were board-lightness, easiness of installation and sustainability – being made from recyclable stone wool. The façade now consists of three different shades of green – fitted irregularly to create a varied, vivid and creative façade.

To meet the need for low maintenance costs, the boards were given a special protective finish which increases the 'self-cleaning' power of the boards. Even graffiti, an issue in some schools, can be easily removed with a special detergent. Safety is paramount in schools, especially protecting against the risk of fire, so Rockpanel boards were the perfect choice since they have a high fire classification. Because they are made of stone wool, they can withstand temperatures above 1000°C, and in the event of a fire, the boards do not cause the fire to spread because no combustible parts can peel or drop off.

The project has dramatically uplifted the aesthetic appearance of the building, and students are now even prouder to learn there. Since the boards are acknowledged to have a lifetime of 60 years by the Building Research Establishment (BRE), the project is not only cost effective but will look fresh and beautiful for years to come.

"As the Rockpanel façade boards are available in virtually every RAL colour and are very easy to work with, the façades could be installed exactly as we planned."

Dietmar Wöhler,
Architect at COPLAN AG, Eggenfelden

“Many friends have been made over the years and I can attribute those friendships to a long and interesting journey with ROCKWOOL”

Ann Publicover

ROCKWOOL: The power of stone wool & the passion of our people

“ROCKWOOL would not be here today without the dedication of its employees and a firm commitment to growth and quality products that customers receive every day.”

Ann Publicover
Quality Control Lead Hand
ROCKWOOL North America

While the worldwide expansion of the ROCKWOOL Group continues, the company has flourished for 80 years for two essential reasons: we are committed to unlocking the strengths of stone to enrich modern living, and we recognize that the passion of our people makes this goal possible.

Ann Publicover began her “wonderful journey” with ROCKWOOL in 1990. She says “I can still clearly remember my first day on the line…and oh what a day it was! Since that day, I have never looked back, and ROCKWOOL North America became not only my employer, but also like a family in the extended sense.”

Ann acknowledges “It’s hard to believe that once a small factory starting up in the mid 80’s has turned into a profitable company that employs over 200 people and is known North America-wide!

When the company turned 80, I found some old pictures. Most employees are still a part of ROCKWOOL North America today. Some from the pictures have left this earth, but their standards and work ethics still live on today.”

Innovative vertical and horizonal fire protection for three high-rise buildings

Intelligent Quarters, Hamburg, Germany
2017 – 2018

Intelligent Quarters is in the middle of Hamburg's HafenCity on the banks of the river Elbe. It is comprised of a 70-metre office tower and two adjoining buildings of 46 apartments, all with restaurants, cafes and shops on ground floors.

Architects Störmer Murphy and Partners decided that the connecting element for the three structures should be an identical contemporary façade using non-combustible stone wool, as fire safety was the key requirement for a busy, mixed-use high-rise building.

Due to the height of the buildings, approximately 1,000 metres of fire barriers had to be installed horizontally on the façade and vertically around the staircase cores to meet fire regulations. Since the façade was ventilated, the architect chose Fixrock: the innovative ROCKWOOL stone wool fire barrier system which retains air flow while giving maximum fire protection as it withstands temperatures above 1000°C.

Compared to traditional steel sheets, this solution was much easier and faster to fix: the insulation was lightweight, simple to cut and could be used to meet different fire wall thickness requirements.

Thanks to the use of A1 fire rated stone wool, the construction of the office and residential buildings of Intelligent Quarters now provides maximum safety and fire protection for workers and residents, for the lifetime of the building. Intelligent Quarters now also meets the requirements for a German Sustainable Building Council (DGNB) certificate.

"The ROCKWOOL product solution is much easier to handle and assemble than the usual steel fire barrier constructions. It is also more economical than steel, since the cutting of many hundreds of metres of fire bars could be achieved more quickly."

Klaus,
Installer at Degen + Rogowski GmbH

High protection for high-rises

Stone wool reaches new heights

The challenge of improving fire safety at 2,950 metres called for stone wool's unique properties

Bergstation, Zugspitze, Germany
2017

Since 1963, the Eibsee Cable Car has taken up to 500,000 annual visitors to the summit of Germany's highest mountain, Zugspitze. However, after many years of plans to replace it, in 2017 extensive renovation and extension work for the 2,950-metre-high cable car station finally took place.

The conversion included a fire protection upgrade to existing steel construction components, and the challenge of delivering and installing materials on a mountain top made the choice of insulation crucial for Hasenauer Architekten – the architects for the project.

It quickly became clear that insulation boards made from stone wool were the natural choice since they are non-flammable, can withstand temperatures above 1000°C and work to contain fire and its spread. What's more, they are very light to transport and can be cut easily and precisely on-site. This was an important requirement since the steel components in need of fire protection were not always consistent in size and shape.

An area of around 1,200m² has now been given excellent fire protection using Conlit Steel Protect Alu boards, which were brought in by cable car to the mountain and unloaded by cranes. The work of fixing the boards took place amongst hundreds of visitors per day, so the high speed of installation was a huge advantage. The low weight advantage made fitting boards overhead easier too.

Stone wool is often used to protect combustible elements and steel structures against fires. ROCKWOOL stone wool is a natural fire barrier.

Overcoming aircraft noise

Sound insulation is a must when you’re on a flight path

Berlin-Blankenfelde homeowners, Berlin, Germany
2017 – 2018

With around 33.3 million passengers in 2017, Berlin is Germany’s third-largest airport location. To cater for future capacity, a new international airport called Berlin Brandenburg Airport (BER) is under construction.

Since the flight paths of the still unfinished airport are certain to affect local residents, many are making preparations to lower the effects of the increased noise pollution.

Four families from Berlin-Blankenfelde, which is only a few kilometres away from the runways of BER, approached a master roofer in the region, Hartmut Quappe, to explore ways to improve the sound insulation of their homes.

Soundproofing of their pitched roofs was top of the agenda. The master roofer proposed high density insulation boards made from ROCKWOOL stone wool. These provide confirmed on-site sound insulation of up to 52 dB, and in most cases, even higher values.

With their newly insulated roofs in place, residents are now benefiting from much improved acoustic protection, which will lower aircraft noise from flights crossing just a few hundred metres overhead. In addition, the energy efficient rafter insulation system has provided excellent thermal insulation and has cut heating costs by up to 30%.

In the long term, these families have made a future-proof investment that will not only block out unwanted noise but add better energy performance, a pleasant year-round indoor climate and sustainability to their homes. And not least, they will sleep better despite living close to an airport.

“From the airport Schönefeld, or passing cars, you hear almost nothing. And I’m also very confident for the upcoming BER air traffic. In the summer, a pleasant indoor climate prevails in our bedroom even at high outside temperatures. And last winter, the interior temperature was around 16°C without heating – just right for me to sleep.”

Annelies and Joachim,
Residents at Berlin-Blankenfelde

THERMAL PROPERTIES

New Build

Energy efficiency that respects aesthetics

"We chose ROCKWOOL stone wool because it protects from fire, it is non-combustible and endures above 1000°C. Moreover, in the case of fire it does not fan the flames and does not emit toxic gases."

Enzo Cattarina,
Designer at Re_load

Replacing a marble façade to improve energy efficiency

Fondazione Iniziative Zooprofilattiche e Zootecniche, Brescia, Italy
2018

A ten-storey building complex for residential and administrative use in central Brescia was in a serious state of deterioration. Built in the 1950s, the building's façade of marble tiles was damaged by the passing of time and the effect of successive freeze-thaw cycles. An energy audit of this historical architectural building showed that the façade had very poor insulation, with repeated and huge thermal bridges, resulting in low energy efficiency.

The building's owners, Fondazione Iniziative Zooprofilattiche e Zootecniche, expanded the works to improve the building's insulation and energy performance as well as future proofing the safety of its façade.

Designers Re_load in Brescia were tasked with preserving the original aesthetic look of the property, which required a multidisciplinary team including the technical support from the ROCKWOOL Group.

The use of ROCKWOOL stone wool for exterior insulation contributed enormously to improving the building's energy class. In terms of energy savings, the owners estimate a reduction of 59% in consumption, with an annual saving of around €26,000. Stone wool also provides exceptional safety and fire-resistance since it withstands temperatures above 1000°C. The ROCKWOOL Group even supplied cladding with a close match to the original marble.

Those living and working in the building have immediately benefited from lower energy bills and now live in a safer and more comfortable indoor climate, since natural stone wool 'breathes'. It also provides excellent sound insulation for the building, which is located in a noisy, high-traffic area.

The building has gained a certificate of sustainability (Italy's GBC protocol); the first in the region. It is an impressive example of sustainable redevelopment and is now used as a case study for students interested in knowing more about innovative ways to conserve energy, in this case, by 345,000 kWh per year.

THERMAL PROPERTIES

Tomorrow's school built today

"We have invested not only for the future but for the present of our children too. To give them a safe place to study, play and live is a matter of pride for us. The school has an excellent level of thermal and acoustic comfort. We also have to recognise that we completed the project in less than 100 days."

Francesco Subissati,
Legal Representative at Subissati Srl

New Build

Wood and stone wool reduce school's energy consumption

F. Socciarelli School, Ancona, Italy
2016

F. Socciarelli required an extension to its school which combined efficiency with attractive looks and built-in safety. Despite rapid construction using laminated wood and a 'post and beam' frame system, the new multi-storey school guarantees efficient thermal performance for the building's envelope.

To achieve this, the contractors, Subissati Srl, specified Rockpanel: a façade solution from ROCKWOOL which reduces heat loss, decreases energy consumption and delivers significant advantages in terms of 'breathability' of the façade and optimal living comfort both in winter and summer.

Rockpanel also offered the right combination of aesthetics and sustainability for the school's requirements. It is made from stone wool which is long-lasting, durable and fully recyclable, and Rockpanel colours and woods (which are a replica of wood), perfectly complemented the school's design.

Subissati Srl found that Rockpanel was fast and easy to install, which helped the school to reduce construction time and meet a tight completion deadline.

F. Socciarelli School now benefits from A4 energy performance which makes the school nearly zero-energy efficient – a standard given to buildings with very low energy consumption. This is backed by excellent safety, since stone wool withstands temperatures above 1000°C and prevents the spread of fire. Both the thermal performance and acoustics of the school have been improved – which in combination help to create a better indoor environment and enable students to concentrate better.

F. Socciarelli School is a great example of 'building tomorrow today'. The harmony of natural wood and ROCKWOOL products give the children a safe and sustainable school with an attractive design that will perform well into the future.

Discrete fire protection

Fire protection was paramount for a large apartment building – but could it blend in?

Sluseholmen Karré K, Copenhagen, Denmark
2017 – 2019

Sluseholmen Karré K is an iconic apartment project with a unique location in the South Harbour of Copenhagen. The project comprises 168 apartments with associated balconies, gardens and roof terraces.

Due to the number of residents and the need for a high level of safety in every home, architect Gröning Arkitekter required technical insulation with high fire protection for the building's ventilation ducts. Of secondary importance was the ability for the technical insulation to blend in with the aesthetics of the building.

ROCKWOOL Conlit Fire Boards were chosen for fire protection since they are made of non-flammable stone wool. This provides excellent fire protection so that families can feel safe inside the high building. The additional advantage of thermal and acoustic insulation means that residents benefit from a building that is energy efficient and quiet.

Gröning Arkitekter were impressed that the ROCKWOOL Group offered Conlit Black Alu tape, a groundbreaking black (rather than silver) technical insulation tape which finished the installation perfectly, camouflaging joints between the black insulation boards and creating a smooth, homogenous look.

With Conlit products throughout the ventilation ducts in Karré K, the challenges of both fire safety and design aesthetics were met, contributing to an efficient construction process, long-term safety and energy-saving benefits for the residents.

"The black colour of the new Conlit solution is an aesthetic advantage for the construction, as the fire insulation is camouflaged and does not attract the eye as much as traditional aluminum-coloured tape. Fire insulation is an important part of the safety and security of a building, and now the insulation can protect future residents in a discrete way."

Allan Kasper,
Owner at contractors PM Teknisk Isolering

New Build

Smart savings for a paint shop

Insulation reduces operating costs for a car manufacturer

Škoda Auto™, Mladá Boleslav, Czech Republic 2018

Škoda Auto, based in Mladá Boleslav in the Czech Republic, is one of the world's longest-standing automobile manufacturers. The tradition of the company dates back to 1895, when Václav Laurin and Václav Klement laid the foundation for over 100 years of Czech expertise in automotive engineering.

Škoda Auto is now investing in excess of €214 million in a new paint shop in Mladá Boleslav, which will see its car painting capacity increase from 600 to 2,700 bodyworks per day.

A key requirement for the new paint shop was an insulated building that would reduce energy consumption, since large paint shops can be the largest energy user in a vehicle manufacturing plant. Škoda Auto also wanted to use materials that were non-combustible to mitigate the risk of fire hazards associated with paints and solvents.

Rockfall stone wool insulation was chosen due to its good thermal insulation properties, its ability to reduce energy bills, and the fact that it 'breathes' to create a comfortable interior environment which is acoustically efficient. Rockfall was also specified for the flat roof due to its durability and A1 non-combustible performance – it resists temperatures above 1000°C and prevents the spread of fire.

The new paint shop will start operations in 2019, and provide a safe, quiet and comfortable working environment for hundreds of workers. Škoda Auto will see energy savings for many decades to come and have the certainty of an energy efficient, fire-safe and acoustically-sound building, which has achieved **BREEAM certification** for sustainability and performance.

"Recent studies have shown that if we compare the thermal property (lambda value) of our products after more than 55 years of service we can see the value is still the same. ROCKWOOL products have no aging effect and deliver a constant performance without suffering any degradation."

Source: Report: Durability Project Mineral Wool, FIW Munchen, 2016

THERMAL PROPERTIES

First nearly zero-energy clinic in the Czech Republic

An innovative clinic built to nearly zero-energy levels

New Build

Pavilion II Clinic, University Hospital Olomouc, Czech Republic
2017 – 2018

A new five-storey building, Pavilion II, is being created alongside the University Hospital in Olomouc. With a 100-bed capacity, the clinic will feature an intensive care unit, a department of geriatrics and specially designed rooms for disabled patients.

A unique feature of the project is that it will be the first clinic in the Czech Republic to be designed with innovative features for nearly zero-energy consumption.

To achieve such low energy requirements, the architect specified ROCKWOOL solutions throughout, for floors, partition walls and pipe insulation. The natural thermal performance of stone wool is perfect to meet nearly zero-energy levels since it has a very low U-value for thermal insulation yet remains 'breathable'. This will lower energy bills for the clinic while ensuring greater indoor comfort and air quality for patients and staff. The clinic will reduce its need for heat in winter, as well as maintaining a comfortable interior temperature in summer.

Fire-resistance has been ensured throughout since ROCKWOOL solutions are entirely non-combustible and withstand temperatures above 1000°C. Stone wool insulation also resists the growth of mould, rot or harmful bacteria, which is an important consideration since many patients will have gastroenterological or hepatological disorders.

Today, the energy performance of Pavilion II is ten times lower than that of the hospital premises to which it is connected by a corridor. And the long-lasting robustness of stone wool will ensure that the clinic can give care and protection to its patients for many decades to come.

"On a global scale, there is potential for energy savings of 50-90 percent in existing and new buildings. ROCKWOOL solutions are, among others, an important part of the solution to release this potential."

Source: Report: World Urbanization Prospects, United Nations, 2014

Decades of fire prevention built in

New Build

Fire protection for a building that's different from every angle

Baltyk Tower, Poznań, Poland
2017

Baltyk Tower is a dramatic new 16-storey building in Poland, featuring an unconventional cascading structure which resembles a giant staircase. The 25,000m² tower includes a mix of retail spaces, offices and a panorama restaurant.

Due to the unusual design and height of the building, the key focus for Dutch architects MVRDV was fire safety. The client required a building that was completely safe for office workers, shoppers and visitors.

For this reason, stone wool insulation from ROCKWOOL was specified for its thermal performance and non-combustible fire properties. It withstands temperatures above 1000°C and prevents the spread of fire without contributing to the emission of toxic smoke. ROCKWOOL insulation was used throughout the building for the fire protection of heating and ventilation pipework, as well as steel ductwork.

Robustness was another focus, since the client demanded a building that would stand for many decades. Being highly robust, stone wool insulation lasts for decades and will not change its shape or form. For Baltyk Tower, this gives the surety of unchanged fire protection and energy-saving performance to reduce costs for the building's lifetime.

An additional advantage of stone wool insulation is its sound absorbing quality, which will reduce noise in this busy mixed-use building in the city centre.

Baltyk Tower has now become a new landmark in Poznań. As well as being an impressive building, it is first and foremost a place of work and a centre of commerce. Thanks to the use of non-combustible stone wool, everyone connected with the building can enjoy its facilities in greater safety, now and in the future.

"We wanted to create a shape which would be beautiful and at the same time different from each side. We've spent a lot of time to get the right appearance of the building. In addition, we had to deal with a very specific construction site. Our client and partners supported us throughout the entire project implementation period. We are all proud that so ambitious a building has been so well received."

Natahlie de Vries,
Architect at MVRDV

Jen Deelstra

ROCKWOOL: The power of stone wool & the passion of our people

"As a former Marine Engineer, I was hired by ROCKWOOL Netherlands in January 1995 as a manager in the technical department of Rockfon.

I clearly recall the instance of my first modification of machinery in the Rockfon department. I got into a collision with purchase telling me: 'You are far too expensive with your ideas and design. We think three years ahead. How long do you think this project must last?' I answered purchase that I was thinking 100,000 running hours ahead.

Eventually we settled the discussion in between – by creating quality machinery that lasts for 50,000 running hours – 'for a few pennies more' as I stated. And this promise on both sides made me stay with ROCKWOOL."

Jen Deelstra
CIT
ROCKWOOL CWE

The ROCKWOOL Group has endured for eight decades for two essential reasons: we are committed to unlocking the strengths of stone to enrich modern living, and we recognise that the passion of our people makes this goal possible. Over the years we've become experts at applying the power of stone to help people around the world create landmark projects and enrich modern living.

Jen Deelstra has spent 23 years with ROCKWOOL and is now an Engineer in the Continuous Improvement Team. He admits that "ROCKWOOL and I are still happy with each other." He also recalls another critical event in his history with the company involving a challenging ROCKWOOL production unit.

"Ten months after my arrival at ROCKWOOL I was asked to move from Rockfon production to the Line 7/Rockfibres combination (this was a line in need of technical improvement and increased profitability). During my first working day at Line 7, a frustrated mechanic came to me and spoke the following words: 'I have had thirteen bosses in twelve years on this line. How long do you think you are going to stay here?'

I answered: 'About ten months I guess, so let's not waste any time and get started!'

I stayed a bit longer than 10 months… It took me over 18 years before handing over a totally renewed production-unit consisting of Line 7, with now Rockfibres lines 1+2. In those years, I had gained the reputation of 'The Expensive One'.

Interestingly, the mechanic who confronted me became my dearest colleague, and worked with me through all those years. A lot of machinery installed in the early years has already passed 100,000 running hours. And see how profitable the Fibres Unit is today! Now consisting of Line 7, Rockfibres 1+2, and Rockpanel, this is a unique combination of production lines and products within ROCKWOOL."

Safety first for a grand hotel

A historic building required ultimate safety and comfort

Europejski Hotel, Warsaw, Poland
2013 – 2018

Raffles Europejski Warsaw, commonly known as Hotel Europejski, was originally opened in 1857. It is now one of the most distinctive buildings in Poland. After five years of top to bottom renovation, its 109,000m² of space including 106 hotel rooms, 3,000m² of luxurious retail space and 7,000m² of offices have been restored to their former glory.

For SUD Architects, the focus of this huge renovation was the future safety and comfort of guests throughout the building.

ROCKWOOL Superrock, Toprock Super and Rockfon were chosen as the perfect materials for insulating the roof and ceilings of this historic building. The main reason is they are made of stone wool, which can withstand temperatures above 1000°C . This prevents fire from spreading onto subsequent floors, increasing the time available for evacuating guests while also protecting the building.

Reducing noise was also fundamental to the renovation of such a large building in a city centre location. Stone wool provides perfect insulation against interior sounds and exterior traffic noise, which increases the comfort of guests and contributes to the overall feeling of luxury in the hotel.

Hotel Europejski will also benefit from energy savings for decades to come thanks to the inherent insulation properties of ROCKWOOL products, which retain their thermal properties for at least 60 years, and have excellent dimensional stability.

While the stone wool will go unnoticed by the many thousands of guests and employees at Hotel Europejski, its presence ensures that they will be protected from the risk of fire and can relax and work in a building that’s both peaceful and luxurious.

“Our goal was to restore the former glory to the icon of Warsaw, to make it a showcase of the capital and what's best in Poland for Varsovians and guests from around the world.”

Julien Barbotin-Larrieu,
President at H.E.S.A.

A place of comfort for hospital visitors

"At ROCKWOOL Hungary we are proud that our products were chosen for the renovation of Mother's House. It is a really positive use of ROCKWOOL stone wool, since it helps mothers to be close to their children when they're hospitalised."

Kornél Bányai,
Country Sales Manager at ROCKWOOL Hungary

Well-insulated, comfortable accommodation for visiting mothers

Mother's House, Bethesda Children's Hospital, Hungary
2018

For over 150 years Bethesda Children's Hospital has played an outstanding role in providing care to children in Budapest. The hospital is also concerned about mothers who need to travel long distances to the hospital and find it difficult to spend quality time with their children.

As a result, Bethesda founded the 'Mother's House' to provide beds and cooking facilities for visiting mothers whose children face long-term hospitalisation. Acting as a free of charge hotel, the Mother's House was a renovation and extension to an existing area of Bethesda Children's Hospital.

The structure required excellent thermal properties to reduce its operational costs, so the hospital chose Frontrock. This two-layer stone wool board provides excellent thermal insulation for external façades and will lower energy costs. Since natural stone wool also 'breathes', the boards help to create an airy, comfortable indoor climate which is important to the wellbeing of tired mothers who visit the hospital.

As well as thermal insulation, Frontrock provides very high levels of fire resilience, reduces noise, and prevents the formation of mould and bacteria which is important for hygiene standards at Bethesda Children's Hospital.

Mother's House now accommodates hundreds of mothers every year in comfort, who otherwise may not have been able to afford a hotel room. Being near to their loved ones not only helps the parents, but also the children who are recovering.

New Build

Driving safety and savings at Jaguar Land Rover™

Cutting edge plant gets an A1 fire safe roof

Jaguar Land Rover, Nitra, Slovakia
2018

Jaguar Land Rover is building a new manufacturing plant in Slovakia to launch a range of all-new aluminium cars. When completed, the £1 billion plant will have an annual capacity of 150,000 vehicles.

The plant construction already includes a range of environmental measures, such as water saving devices and heat recovery systems, to ensure sustainable and efficient operations. Jaguar Land Rover was therefore driven to find equally sustainable, energy efficient, and fire-safe insulation materials for its giant roof space.

The design team at contractors TAKENAKA EUROPE GmbH were impressed by the A1 non-combustible performance of Rockfall stone wool insulation, which resists temperatures above 1000°C and so prevents the spread of fire.

Rockfall also has excellent mechanical properties: its intertwined fibres of stone wool create strong, durable panels which will not expand or contract – an important factor for such a large structure.

The insulation is compatible with all types of pitched roof systems and increases the thermal and acoustic performance of any building, reducing energy bills and creating a comfortable environment which is cool in summer and warm in winter.

When fully operational, 2,800 workers in this cutting-edge plant will work in a safe, quiet and relaxed environment which has achieved **BREEAM certification** in recognition of its environmentally friendly and energy efficient design.

"Stone wool's built-in fire protection is not dependent on flame retardants. Stone wool withstands temperatures above 1,000 degrees Celsius, is durable and will not change its fire performance during its working life."

Taming the sounds of the city

Acoustic comfort was essential for mixed-use buildings in a busy city centre

Marina One, Singapore
2018

Marina One comprises four high-rise buildings, which are **LEED Green Mark Platinum** (a local building rating scheme in Singapore). Its two office towers are occupied by blue-chip tenants like Facebook and PwC, while its two residential towers provide 1,042 city apartments and penthouses for around 3,000 residents.

For architect Christoph Ingenhoven, the key challenge in this prestigious development project was providing acoustic comfort for the occupants of its offices, residences and retail outlets – all of which are in the busy city centre district of Singapore, with lots of surrounding traffic noise.

This project employed the acoustic capabilities of ROCKWOOL Safe'n'Silent using an estimated 165,000m^2 of the drywall partition system. To aid the design process, ROCKWOOL Asia provided the architect with a complete toolset to meet the required Noise Criteria (NC) and achieve the desired ambient noise level in specific rooms of Marina One.

Since Safe'n'silent is made of natural stone wool it has excellent acoustic insulation performance, as well as being non-combustible, thermally efficient, sustainable and long-lasting. This means that workers and residents in the high-rise buildings will benefit from a reduction in noise pollution, high levels of fire safety and better indoor comfort in their daily lives.

Noise and disturbances are common in a mixed environment of residences and offices. In Marina One it has been significantly minimised, and these buildings will stand for many years as examples of how quality living and working can be safely and silently combined.

"Marina One is just one example of how Safe'n'silent allows us to be more focussed on specific customer-requirements with segmented product offerings and customised collaterals for our different stakeholders. We are also able to serve them better by providing system data and build-up solutions that make it easy for architects to specify the different acoustic design elements for various building types."

Kwok See Chun,
Business Unit Director, Singapore and Marketing & Business Development Director at ROCKWOOL Asia

New Build

Keeping city noise down

Creating quieter living and working spaces in a bustling metropolis

DUO Residences, Ophir-Rochor, Singapore
2017

DUO Residences is a large premium twin-tower development in the Ophir-Rochor area of Singapore. One 49-storey tower consists of 660 luxury residential units, while the other 39-storey tower is home to a 5-star hotel and multiple levels of premium office and retail space.

The architect's key requirement for this lively mixed-use development was reduction of noise pollution and improved acoustics, particularly for homeowners in luxury units ranging from studios to penthouses.

Thermalrock insulation from ROCKWOOL Asia was chosen for the partitions and ceilings, since stone wool has excellent sound-absorbing qualities. In addition, the acoustic performance of stone wool does not change over time. This meant ROCKWOOL Asia was able to provide the architects with acoustic calculations for the various partition systems in the building, to demonstrate noise reduction.

Since DUO was designed and built with elegant and stylish touches throughout, the architect also sought to add value to the properties by using materials that increased safety, thermal performance, comfort and long-term sustainability.

Stone wool insulation is resistant to fire and temperatures above 1000°C which creates a safer high-rise environment for residents, workers and visitors. It also 'breathes', contributing to better air quality and a more comfortable indoor climate, which improves the quality of life of residents.

In a busy city neighbourhood that is packed with retail and entertainment options, DUO Residences now stands out as a quiet and prestigious place to live and work. It has also been awarded Singapore's **Green Mark Gold Plus certification** (a local building rating scheme in Singapore) which recognises environmentally-friendly buildings.

"As an iconic landmark and a Green Mark Gold Plus-rated building, we are proud to bring to DUO a strong set of insulation solutions that further enriches the lives of its residents."

Alex Low,
Country Sales Manager at ROCKWOOL Singapore

New Build

A cinematic sound experience

Better acoustics improve the cinematic experience at this new complex

Golden Screen Cinemas, Paradigm Mall, Johor Bahru, Malaysia
2017

Acoustics are of utmost importance for a great cinematic experience, so when a new 16-screen cinema was built in the 1.3 million square feet Paradigm Mall, the architect required excellent acoustic performance from the cinema partitions, plus good thermal insulation for the roof.

ROCKWOOL Safe'n'Silent boards were chosen because they are made from natural stone wool which has a dense, non-directional fibre structure which traps sound waves and dampens vibration. Used for partitioning at Golden Screen Cinemas, the boards keep sound inside each movie theatre and prevent exterior mall noise from filtering in. This improves the clarity of movie soundtracks and provides a more immersive experience for movie-goers.

As well as improving the acoustic performance, Thermalrock insulation was also used for the roofing to help this large cinema complex to save energy costs due to stone wool's thermal performance. Since the insulation boards also 'breathe' they contribute to better air quality and improved indoor comfort, which makes the cinema more attractive to customers.

Additional advantages for Golden Screen Cinemas are that ROCKWOOL products are easy to install, highly resistant to fire and therefore safe for customers, as well as durable so they will perform consistently for the cinema's lifetime.

Golden Screen Cinemas has created an attractive new entertainment venue with excellent acoustic performance – without the complexity of adding additional layers of acoustic material. Now 2,000 people at a time can enjoy the latest cinematic technology and sound experiences in total comfort.

"Our success in securing one of Malaysia's largest mall projects is a testament of the strong ROCKWOOL brand and close support extended to the clients and architects throughout the whole tendering process."

Agnez Cheong,
National Sales Manager at ROCKWOOL Malaysia

New Build

Big energy savings for a bold conference center

High performing insulation meets strict requirements

Ningxia International Conference Center, Yinchuan, China
2015

Ningxia International Conference Center is more than 70,000m² in size, and one of the largest convention centers in North China. Both the project owner and architects had high standards and expectations for the construction of this stunning public building, as well as strict requirements for its building materials.

ROCKWOOL FacadeRock was chosen to enhance insulation performance and lower the energy consumption of this landmark building. Since FacadeRock is made from stone wool it provides excellent long-term thermal and acoustic performance, which perfectly meet the requirements of densely occupied buildings. Stone wool also 'breathes' to create a comfortable and healthier indoor climate for visitors and workers.

Ningxia International Conference Center will not only save energy using ROCKWOOL insulation, but also protect people inside the building. Stone wool is an A1 non-combustible material that resists temperatures above 1000°C and does not contribute to the spread of fire and toxic smoke.

Ningxia Autonomous Region Government, the owners of the building, were also impressed by the ability of the ROCKWOOL Group to efficiently supply in the local market and provide technical support throughout the project.

Ningxia now has an iconic structure, which is a blend of Chinese and Arabic cultural influences. Using high quality, durable and energy efficient materials from the ROCKWOOL Group, this premier meeting, exposition and performance center will remain a safe attraction for visitors – and an energy efficient building for its owners – for many decades to come.

"More than one million people a week move to an urban environment. ROCKWOOL solutions help to prevent a considerable increase in energy consumption from buildings in the future."

Source: Report: World Urbanization Prospects, United Nations, 2014

ROBUSTNESS

Insulating the world's longest sea bridge

"ROCKWOOL stone wool is highly resilient, durable and dimensionally stable, maintaining its thickness and shape over time. Moreover due to its fibre and flexible structure, stone wool has a great fitting ability avoiding unplanned air gaps, cracks or other installation errors in the final construction. This can help in easy and correct installation of building elements, which is essential to warranty-stable performance over time."

Source: Report: Durability Project Mineral Wool, FIW Munchen, 2016

New Build

Saving energy in three major port buildings

Hong Kong–Zhuhai–Macau Bridge
2018

At 55 kilometres in length, the Hong Kong–Zhuhai–Macau Bridge is the world's longest sea bridge, costing over 30 billion Hong Kong dollars. Opened in 2018, it now connects the Hong Kong and Macau special administrative regions with the mainland Chinese city of Zhuhai.

The project required port travel buildings in Hong Kong, Zhuhai and Macau to accommodate entry and exit procedures for passengers, the inspection of vehicles and port offices. The scale was immense, with the building at Macau alone covering an area of 169,498m^2 .

Thermal performance was a key requirement to ensure significant energy savings for the bridge project and to create a comfortable environment for tens of thousands of travellers using the facilities.

ThermalRock was chosen for all inspection buildings due to its excellent thermal properties and long-lasting performance. Since it is made of stone wool, it does not change shape or form, and will give predictable low energy costs for decades to come. Its resilience ensures that it will perform at its best for more than 60 years – even in China's hot, humid environment where frequent storms, rainfall and temperature changes could affect other insulation materials.

The ROCKWOOL Group also provided safe and reliable fire prevention solutions for partition walls, smoke exhaust ducts and fire-proof blocking. Stone wool withstands temperatures above 1000°C which prevents fire from spreading, a crucial capability to safeguard passengers who use the bridge every day.

The Hong Kong–Zhuhai–Macau Bridge features some of the highest construction requirements and standards in the history of Chinese transportation. The ROCKWOOL Group's thermal and fire-resilient materials passed strict engineering inspection and acceptance tests, which sets a precedent for the use of stone wool products in cross-sea bridges. Today, our solutions comprehensively guarantee the energy performance, comfort and safety of this first-class engineering project, for thousands of travellers.

New Build

The HQ of energy and fire performance

"Continuing population growth and urbanisation are projected to add 2.5 billion people to the world's urban population by 2050. ROCKWOOL solutions will help to prevent a severe increase in energy consumption from buildings in 2050."

Source: Report: World Urbanization Prospects, United Nations, 2014

High energy savings and safety for a suburban tech campus

Tencent Seafront Towers, Shenzhen, China
2015

Tencent is one of the largest Internet companies in the world, providing a variety of online and digital services including the WeChat app. The company's new landmark headquarters in Shenzhen consists of two towers of 50 floors and 41 floors respectively, connected by three bridges.

The 'vertical campus' includes advanced sustainability features to maximise passive energy efficiency. For architects NBBJ, employee well-being was a key requirement of the design and they chose ROCKWOOL insulation to further improve energy efficiency and ensure fire safety for this huge project.

Thermalrock was used for general insulation since it offers thermal performance to low U-values and allows Tencent's building to breathe. This creates a healthy indoor climate for workers, with good air quality all year round, which is an important consideration for the hot and humid climate of southern China.

As well as ensuring positive thermal performance, fire resilience was important too. Rocksafe was therefore used as fire protection for the curtain wall since it is made of stone wool that withstands temperatures above 1000°C. It provides fire compartmentation on each floor of the Tencent building and so prevents the risk of fire spreading. Since Tencent Seafront Towers' curtain wall incorporates a modular shading system that varies according to the degree of sun exposure, ROCKWOOL's technical service team provided a highly customised fire insulation solution for the building.

Now, energy consumption and carbon emissions are 40% less than those from a typical office tower and Tencent Seafront Towers has gained **LEED NC Gold certification**. The use of stone wool, which is 100% recyclable, also complements the sustainability features of this amazing building.

At the ROCKWOOL Group, we're committed to enriching the lives of everyone who experiences our solutions. Our expertise is perfectly suited to tackle many of today's biggest sustainability and development challenges, from energy consumption and noise pollution, to fire-resilience, water scarcity and flooding. Our range of products reflect the diverse needs of the world, while supporting our stakeholders in reducing their own carbon footprint.

Stone wool is a versatile material and forms the basis of all our businesses. With over 11,000 passionate colleagues in 39 countries, we're the world leader in stone wool solutions, from building insulation to acoustic ceilings; external cladding systems to horticultural solutions; engineered fibres for industrial use to insulation for the process industry – as well as marine and offshore.

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