

BUILD

No. 2 – 2023



A MAGAZINE FROM LECA

HOUSING:

Tackling future flooding risks and providing a stable foundation for the future → 4

INFRASTRUCTURE:

Leca® LWA provides rehabilitation to the C Santander bridge in Barcelona - Creating accessibility and safety. → 14

WATER MANAGEMENT:

The green roof promotes natural diversity and prevents flooding by retaining rainwater → 18

CONTENTS

Numbers and facts 2

HOUSING

An ocean of Leca 4

Underfloor under 1 hour 6

INTERVIEW

It's about the people. 8

INFRASTRUCTURE

Railway no. 207 12

Bridge in Barcelona 14

INTERVIEW

Testing Leca® Sportsfiller 16

WATER MANAGEMENT

Green roof in Helsinki 18

Multilane with water management 20

Providing a Sustainable contribution 22

NUMBERS & Facts



50% Recyclate in packaging

Packaging plays an important role in the circular economy, as it accounts for a large share of the waste volume. To reduce this waste, recycled materials, also called recyclates, are increasingly used in the packaging industry.

The way our expanded clay products are delivered in Lamstedt is of great importance to us. Nowadays, the packaging of our bagged products consists of at least 30 % and in some cases already 50 % recycled material. Our goal is to increase the proportion of recyclates in our packaging to a maximum.



50.000 m³

Of expanded clay was used in the construction of the S6 expressway on the Koszalin-Sianów section.

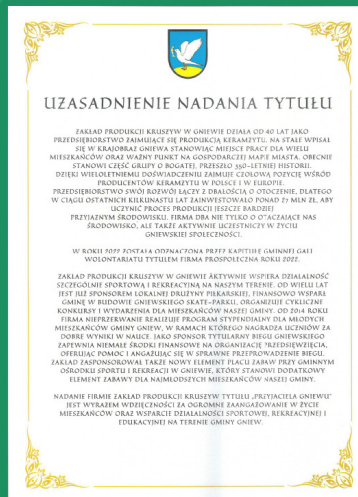
During the construction of the project, it became necessary to increase the height of embankments due to the elevation of the road in relation to its originally designed ordinates. Leca® lightweight aggregate (LWA) was used to relieve pressure on embankments to ensure their stability. Thanks to the construction of the Leca LWA fill with a thickness of 0.6 to 1.2m, the risk of excessive settlement was reduced.

BUILD

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Cover:

Green Roof in Helsinki, Finland



FRIENDS OF GNIEW

We are pleased to announce that the Mayor of the City and Municipality of Gniew awarded our company the title of "Friend of Gniew" on October 6, 2023! This award is an expression of gratitude from the local government for our long cooperation and commitment to the residents. We are incredibly proud and grateful for this award.

Leca Gniew plant has been in operation for almost 50 years and is known for its production of expanded clay. Over the years, we have become an integral part of the Gniew community, providing jobs for many residents and being an important point on the economic map of the city.

We are passionate about taking care of our surroundings. We constantly invest in modern and ecological solutions to make our production even more environmentally friendly.

We actively participate in the life of the Gniew community. In 2022, we were awarded the title "Prosocial Company 2022". We support sports, recreational and educational activities, including as the main sponsor of the local football team Keramzyt Szpru-dowo and the Gniew Run. We have financed the construction of a skatepark and organize competitions for young people there every year. We offer various competitions for students, and for the past 10 years we have continuously implemented a scholarship program for young people with a passion for science subjects. We actively participate in many other initiatives of the local community.

We will continue to work with passion and commitment to serve our beautiful city and its residents.



FOSTERING SUSTAINABILITY THROUGH TEAM BUILDING: NURTURING THE PEOPLE PILLAR

For the LECA Group, sustainability is a core value in various aspects, be it environmental, social, or economic. The sustainability framework, often symbolized by the three pillars of people, planet, and governance, is a guiding principle for creating a

better future. In this context, the "people" pillar plays a pivotal role, and it's essential to find innovative ways to integrate it into our daily lives. One powerful method to do so is through team-building activities that focus on fostering sustainability. An example of these actions took place at Leca Portugal on October 14th, when the Portuguese team reunited and passed the full day together.

During the morning, the team learned about the bee's role on the planet and how they organize themselves to work as a team. After some physical and communication activities, the team needed to prepare the real hives which were offered to a Portuguese institution that promotes the bee's life. To end the day, was time to search for the stolen Sustainable LECA using geocaching techniques. Which again allowed the team to see that the only way to achieve a goal is to work as a team.



AN OCEAN OF LECA[®] LIGHTWEIGHT AGGREGATE LAYS THE FOUNDATION FOR A NEW SCHOOL

SWEDEN *Tackling future flooding risks and providing a stable foundation for the future.*

In Mölndal, Western Sweden, the municipality is proactively preparing for the future. The former Västerbergsskolan has been demolished to make way for a new educational facility. This new structure is a key component of a larger initiative known as "The Lift," with Vestia Construction Group as the main contractor and Mölndal Municipality serving as the client. The new Västerbergsskolan is expected to be completed and ready to start receiving students by March 2025.



The project started in 2022 and is planned to be finished in the spring of 2025.

Photo: Mölndals stad.

25 000 CUBIC METERS OF LECA® LWA FOR THE NEW FOUNDATION

But before the construction of the new school could begin, extensive ground works were carried out during the fall and winter of 2022/2023. This was partly to avoid flooding problems in the future. The ground needed to be raised by about a meter to provide resilience to tackle rainwater, which has been established in the area for over 100 years.

Upon removal of segments of the pre-existing soil, ground contractor HTE Produktion filled the area with

roughly 25,000 cubic meters of Leca® Infra 10/20. Due to the lightweight aggregate's low weight, it significantly reduced the extra load on the ground. This ensured that the ground maintained sufficient stability to place a heavy structure directly upon it. Load compensation is a common and proven engineering solution method when building on soft soil or where the ground has a low load-bearing capacity. It can also be a cost-effective alternative to traditional foundation methods that require large amounts of concrete or steel.



Installation ran smoothly with the help of an excavator.

EFFECTIVE MEASURE AGAINST HEAVY RAINFALL

Leca LWA possesses the capability to function as a water detention solution through its external porosity of approximately 45%. This characteristic offers favorable conditions for the storage of substantial water volumes. This serves to slow down water runoff, thereby lessening the load on the structural network during heavy rainfall—a climatic extreme becoming increasingly prevalent.

LIGHTWEIGHT AGGREGATE WAS DELIVERED ON A WALKING FLOOR

For the foundation of the new Västerbergsskolan, the material was delivered by walking-floor vehicles. A walking-floor truck is a type of truck often used for transporting bulk materials, and it differs from a regular truck because it has a movable floor that can shift the load backwards or forward in the cargo space.

Project information

Project: Load compensation for school, Västerbergsskolan

Location: Mölndal, Sweden

Client: Mölndal Municipality

Main contractor: Vestia Construction Group

Ground contractor: HTE Produktion

Leca-product: Leca Infra 10/20



The environmental benefits of using Leca Insulation Fill were factored in the decision-making process

TERRACE HOUSE UNDERFLOOR UPGRADE & REFURBISHMENT IN UNDER 1 HOUR

UK Leca® Insulation Fill was utilised for the renovation of a 3-bedroom terrace house in Liverpool. This project was an upgrade and refurbishment to make the property a more energy-efficient property with a reduction in fuel bills and carbon emissions, whilst increasing comfort levels.

Leca® Insulation Fill was utilised by local contractors Penny Lane Builders (PLB) for the whole ground level of the property. Leca Insulation Fill is a lightweight expanded clay insulation that typically cuts foundation time by hours, and this was further accelerated through the unique pneumatic delivery option, which completed the ground floor within 45 minutes. The natural compaction of the material to find its place when delivered as an aggregate increased the efficiency of the delivery.

OVERVIEW OF PROJECT

Marianne Heaslip, Technical Director for Powered Retrofit who was the project lead for the development provided feedback; “My day job is as Technical Director for People Powered Retrofit, a not-for-profit 'one-stop shop' providing retrofit services to householders across the North-West - offering advice and support to community energy groups across the country. As part of this I spend a lot of time looking at different products and understanding their performance and when you might best use them. I chose Leca Insulation Fill for the ground floor insulation in my own house for a few different reasons.”

upwards in party and partition walls. If the house ever does flood it should also mean the insulation and the floor suffer minimal damage and will minimise the need to be replaced. As we're on the edge of a surface water flood risk zone, and through family in Carlisle, I've seen the damage the flooding can do. This was important and one of the reasons why we chose to remove the partially suspended timber floor and go for a full solid floor.”

ENVIRONMENTAL FACTORS

Furthermore, the environmental benefits of using Leca Insulation Fill as an alternative to hardcore were factored in the decision-making process, Mar-



Leca Insulation Fill was utilised for the renovation of a 3-bedroom terraced house in Liverpool

FUTURE-PROOFING AGAINST FLOOD RISK

Future-proofing the property against the risk of flooding was an important factor for selecting a suitable under-floor fill, “I was keen to manage moisture risks and using granular insulation like Leca Insulation Fill means there is no capillary action, so moisture doesn't track upwards towards the slab, and it also reduces moisture pressure on the surrounding walls, so reducing the risk of moisture tracking

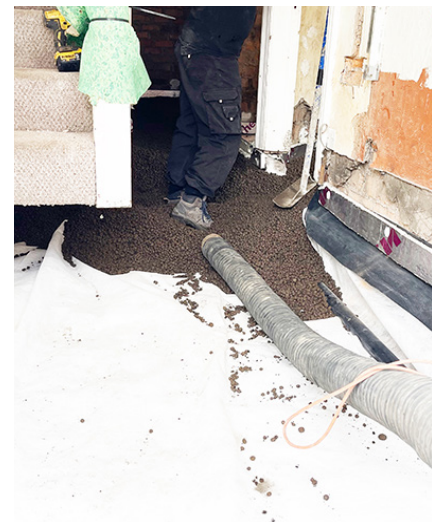
ianne goes onto explain, “I was keen to reduce the amount of plastic used in our project, and also reduce the embodied impacts of construction overall. Using clay balls as the main insulation rather than plastic foams or other high energy and petrochemical-based products should help with this.”

EASE OF INSTALLATION

The installation methods available through Leca Insulation Fill also provided a key factor to the selection of



Futureproofing against the risk of flooding was an important factor



Leca Insulation Fill creates no capillary action, so moisture doesn't track upwards towards the slab

the material, “It needed to be practical to install. Granular insulation works better in this context because it can act as hardcore, blinding and insulation - so it's just one operation to do what would normally be two or three jobs. It also doesn't need to be cut and shaped to the awkward shapes of the existing ground floor layout - the bay window and the wonky walls etc. Instead, it can simply be raked into place. We went with Leca Insulation Fill in the end over other granular products because it's a relatively modest mid-terraced house with not much space for storage of materials on site. With Leca Insulation Fill we were able to simply 'blow' the material in direct from the truck parked in the street, rather than having to find space for bags full of insulation. The other advantage was that for the depth of insulation we were using (about 300mm) it is self-levelling - so didn't need to be 'whacked' into place, which would be another awkward job in a small, terraced house.”

Project information

Client: Marianne Heaslip, Technical Director for Powered Retrofit

Contractor: Penny Lane Builders

Delivery Method: Pneumatic Delivery

Product: 20m³ Leca® Insulation Fill

INTERVIEW



Meet the Human Resources Director at Leca International HANNA CRONSTRÖM

It's about the people

– a conversation with HR Director Hanna Cronström at Leca international

Hanna Cronström has been HR Director at Leca International since the beginning of 2023 and has a long and solid background in HR and Saint-Gobain. We took the opportunity for a chat with her after a few months at Leca.

IT MUST START FROM WITHIN

Her career journey in HR and Saint-Gobain began in 2009 when Hanna started at the Nordic-Baltic headquarters immediately after completing her university degree. This was a broad role that included everything from coordinating reporting; ensuring that policies and processes were followed in the countries; to providing training for employees. Subsequently, she worked as an HR Manager at Saint-Gobain Sekurit Scandinavia, Glass solutions – Emmaboda Glas, Autover in Sweden and Norway, and most recently at ISOVER.

During her time at Sekurit and later ISOVER, there was a clear focus on employer branding.

— Employer branding always starts from within! You cannot go out and talk about values and culture, employee commitment, development of people and then when you arrive, it is something completely different. It was about first making sure that processes for development, training, and communication were in place and working. At ISOVER, one important goal was to improve internal communication and the people survey me@Saint-Gobain. This meant supporting, coaching, and training leaders and clarifying the expectations in the internal communication process.

— HR plays an important role in creating a positive and inclusive corporate culture. This is done in part by setting the process, and in part by helping and challenging the organization to create an open and engaging climate. To avoid one-way communication, an open dialogue needs to take place. Such a forum can be the workshop linked to the people survey me@Saint-Gobain, where we can help managers and leaders to understand their role in creating an open and positive culture.

HANNA'S WHY

The role of HR Director at Leca is both strategic and operational. Hanna emphasizes the importance of knowing your WHY, and for her this is clear -

"The good feeling I get to see the success of others".

— I am very passionate about people and their development. If you focus on creating a culture where you give trust, empower, and collaborate then you build a workplace where employees are happy and enjoy being apart of. This will ultimately result in a company that delivers good results.



Bo is an electrician, he has worked in Leca for 47 years at the Hinge plant in Denmark - "I am proud that we can offer a workplace where you want to be for so many years"

FIRST IMPRESSION OF LECA

— My first impression was incredibly welcoming, both from the management team and local Leca sites. It was clear that there was a great wish for a central HR. I found that there is a large portion of humor and having fun at work, especially within the management team. Which is important.

— Leca has people with long experience and incredibly high competence. I think it's impressive when we have people who are so passionate about their area. From Filtralite, which I didn't even know existed before, to the production process and all that is possible solutions with Leca LWA.

— In fact, it was another discovery for me. I had no idea that we were doing as much with Leca LWA as we do. I must say that makes me very proud. Supported by Saint-Gobain's vision 'Making the world a better home', Leca contributes to sustainable construction through our products and solutions.

THE CHALLENGES IN AN INTERNATIONAL ROLE

— I am very much Saint-Gobain and have a lot of Saint-Gobain in my heart. I have previously worked closely with the Baltic and Nordic region and have always been part of an international team. But within Leca we also have, for example, Spain, Portugal, and Poland. That is a new and

interesting part of my role, which will help me develop even further.

— A challenge is to be visible. Unfortunately, I can't be everywhere. I have always strived to be as visible as possible, by actively engaging with the people in all parts of the organization, for instance, by working on the production line for a day. That relationship is very important to me personally, but it also creates a level of trust from the team towards me. It comes back to the open dialogue - if they know who Hanna is, it increases the chance of better cooperation.



I will always strive to be as visible as possible



WHAT MAKES A GOOD EMPLOYER

— A good employer must have a clear and open communication. In what is expected of the employee and that there are opportunities for development and training. Feedback and having a dialogue with your manager is also very important. If you talk about salary and benefits, these factors are actually quite far down the priority list for employees, instead, other things are more important. This includes a pleasant working environment, feedback culture, possibilities for development, an open-minded atmosphere and that there are opportunities for social engagements in and outside of work.

— But again, you must have your processes as an employer in place. And the employees need to be trained in our processes, such as annual appraisal, Me@Saint-Gobain etc. It's not something to just tick off, it should generate something tangible and meaningful.

— It is also important that you work to achieve good internal communication and that it is linked to our strategy. This means that ambassadors at the workplace play a crucial role. It is important that we talk about the opportunities with being part of Saint-Gobain and show the real stories. Sometimes you can't keep all employees in the local company, but we can at least keep them within the group. And the same thing works the other way around, Leca can retrieve employees with experience and competence from the group. Through this it is important that we think about what the long-term goal is and what competence are needed to achieve it.



When it has been an intense day and I need to clear my head, I close the day by running or taking a dip in the sea.

COOKING, RUNNING, AND WINTER BATHS

Hanna lives in Helsingborg with her husband Fredrik, their two children Siri and Signe, the cat Åke, and the hamster Conny.

— I love cooking, it is relaxation for me. I also gain energy from the environment I live in. We live in an area called Råå, an old fishing village, which is incredibly picturesque with small cobblestone streets and hollyhocks with proximity to the beach. I also like running and winter bathing. When it has been an intense day and I need to clear my head, I close the day by running or taking a dip in the sea.

In their house, they have an apartment in the basement that they rent out.

— I think it's fun. It comes back to people again. We get to meet people from all over the world. When I retire, I would like to run a small hotel in a warmer place where I can still meet and engage with new people... and of course, the experience of good food will be included.

“FROM OPERATOR TO PLANT DIRECTOR”

WHAT HAVE BEEN THE DIFFERENT STEPS IN YOUR SAINT GOBAIN CAREER AND WHAT ARE YOU DOING CURRENTLY?

- Leca Gniew Poland is my first job

1. 1995 - Production operator
2. 1996 - Kiln operator
3. 2003 - Assistant Director of Production
4. 2005 - Production manager
5. 2009 - Production and mine manager
6. 2013 - Deputy plant manager
7. 2017 - Plant manager
8. 2020 - Plant Director still today



Michael Bakowski / Age 47 / Plant Director

WHAT DID YOU DO TO REALISE THESE STEPS? WHICH BEHAVIOUR, COMPETENCY, ATTITUDE HELPED YOU TO BE SUCCESSFUL?

1. I worked while studying at university. I finished AGH University of Science and Technology in Krakow, two specializations engineering Ceramic and master mining technology.
2. I trained in many areas, including EHS, WCM, Lean, specialist training like mining process, management, English language, and training in another Leca Plants such as; Norway, Sweden etc.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE, WHO ALSO WANTS TO DEVELOP AT SAINT-GOBAIN?

Saint-Gobain is very good place to develop yourself, you can expect great help and support from superiors and colleagues and from Saint-Gobain.

Be open and show you manager that you want to develop, train yourself, get involved in the company's activities, be active and open to new things.

DESCRIBE YOUR PROFESSIONAL JOURNEY AT SAINT GOBAIN IN THREE WORDS:

1. Setting goals.
2. Implementation and control of the achievement of my goals.
3. Big help from Saint-Gobain and the Leca Plant Gniew, support from supervisors and colleagues.

**LET'S TALK
ABOUT CAREER
OPPORTUNITIES
AND PROFESSIONAL
DEVELOPMENT!**

CAREER

DAY

SAINT-GOBAIN



Railway line no. 207 connecting Toruń with Malbork

REVITALISATION OF RAILWAY LINE 207 TORUŃ-MALBORK

POLAND *Railway line no. 207 connecting Toruń with Malbork, with a total length of 133 km, was put into service at the end of the 19th century. After more than 100 years of operation, due to the deteriorating technical condition of the line, significant speed restrictions were introduced on many sections and even temporary suspension of traffic by launching replacement bus services.*

RESTORATION OF FULL FUNCTIONALITY

At the turn of the first and second decades of the 21st century, modernisation, renovation and revitalisation works were launched with the aim of restoring the line's full functionality and raising the road speed to 90-120 km/h (it was originally 50-80 km/h). This will help the local community to gain a reduction in travel times between towns and cities and improve freight transport for entrepreneurs.



To ensure the stability of the embankment, ground relief was designed using Leca LWA

DESIGN AND BUILD

The revitalisation of the 55 km section of railway line 207 between Gardeja and Malbork was undertaken by a consortium of NDI and Pomorskie Przedsiębiorstwo Mechaniczno-Torowe. The task was carried out in the design-and-build system, meaning that the consortium was responsible for both design and construction. The scope of the revitalisation work was technically very diverse. They ranged from relatively simple repairs to the track superstructure through to the rehabilitation of engineering structures and the improvement of embankment stability.



A 0.7m thick expanded clay geomaterac.

ENSURING EMBANKMENT STABILITY

One of the major problems encountered during implementation was the ground conditions in the vicinity of Białki. Earlier studies had indicated that on the section described, the railway embankments would not remain stable after upgrading due to the parameters of the soil in the embankment base.

On the basis of the results of supplementary and more detailed studies, the type of soils forming the embank-

ment was determined (mainly fine and medium sands and local clays), under the layer of railway embankments organic soils were found in the form of peats, silts, humus sands and humus clays and locally stagnant silty clays, and below the deposits in the form of fine and medium sands. The ground was found to have a free and a tight water table.

SOLUTION TO THE PROBLEM

Due to the great variety of geotechnical conditions and the organic soils lying in their base, in order to ensure the stability of the embankment and to compensate for settlements, a solution was designed in the form of relieving the subsoil (reducing the stress) and compensating the stresses transferred to the subsoil. The use of a geomaterac made of Leca® geotechnical expanded clay 8/10-20RX (a lightweight material with a weight of 4.5 kN/m^3 , about 14 kN/m^3 less than

the soil in the embankment), rolled in a polyester geotextile, was adopted. Directly on top of the 0.7 m thick expanded clay geomaterial, a geomaterial of crushed aggregate with a minimum thickness of 40 cm placed between two layers of geo-grid was designed throughout the section.

CHOICE OF TECHNOLOGY

For PPMT, this was another project using Leca® lightweight aggregate. The positive experience from the previous construction facilitated the decision regarding the proposed technology. Fast and easy implementation requiring only standard earthmoving equipment and a favourable cost balance ultimately determined the choice.

Project information

Investment: Revitalisation of railway line No. 207 (Sadlinki-Kwidzyn section)

Investor: PKP PLK

Geotechnical design: GEO-EKSPERT

Contractor: Consortium of NDI, PPMT

Product: Leca Geotechnical 8/10-20

Quantity: 2800 m³



Quick and easy implementation requiring only standard earthmoving equipment.



BRIDGE IN BARCELONA - CREATING ACCESSIBILITY AND SAFETY

Spreading and compaction process. Containment elements using gabions and geogrids

SPAIN During 2023, the rehabilitation of the C Santander bridge in Barcelona has been carried out, creating connectivity and eliminating the scars of historical urban infrastructure. The railway line divides the neighborhoods of La Verneda i la Pau and Bon Pastor, but with this rehabilitation will facilitate the movement for travel on foot and by bicycle. This project is part of the local neighborhood's urgent requests and has been supported by almost 5,000 local signatures.

The Santander Street bridge connects two old neighborhoods in Barcelona - La Verneda i la Pau and the Bon Pastor. Before the initiation of the project, the connection between the neighborhoods was accessible through a bridge with one lane in each direction – with pedestrians having to cross through a metal walkway – accessible only through stairs.

The bridge renovation project had a budget of 9.92 million euros from the Barcelona City Council to develop an extension of the platform, allowing pedestrian traffic through new sidewalks and this also includes a bicycle lane. That renovation is planned to facilitate mobility within the city in a sustainable way.

The investment will see the increase in the size of the platform from 6 m to almost 24 m, but this would involve two major engineering issues. The first is to develop a complex geotechnical system over soils with a low bearing capacity and the second is to support the works on the existing platform where the new development is to be constructed.



Truck with 75 m³ capacity unloading



Compaction of the material using doozers

Arlita® L solution was selected as a light-filling groundworks material to construct the new vials upon it. Retaining walls would be established on site and reinforced with Arlita® L supported by reinforcing geogrids – reinforcing the strength of the structure.

The construction company for this project is FCC Construcción and the total volume supplied to the site was 8,500 m³ of Arlita® L and this was delivered by walking floor vehicles. This was a complex logistical operation as the supply was required simultaneously to fill the retaining walls and allow for the the spreading and compaction of the light material.

Project information

Project: Improvement of Puente Santander connectivity to the San Martí district

Client: Ayuntamiento de Barcelona.

Engineering: DOPEC

Constructor: FCC Construcción S.A.

Product: Arlita® L

Volume: 8.300 m³



Arlita® containment through gabion walls and use of geogrids



Manual spreading in areas close to walls

INTERVIEW

The man with the green fingers

Ulrik Leth

Chief Greenkeeper, Randers Golf Club



An early morning on the Randers Golf Club

Ulrik Leth has been a greenkeeper for 10 years. He began his career as a greenkeeper after 14 years as a professional soldier in the Danish defence. Work as a greenkeeper started in Hobro and later in Himmerland. In March 2021, Ulrik was employed as a Greenkeeper at Randers Golf Club. Ulrik and his team in Randers Golf Club have played a decisive role in the testing and implementation of Leca's new product, **Sportsfiller**.

Ulrik, what have we been doing here at Randers Golf Club?

We have done a test of Sportsfiller on one of our greens on our par 3 course. It's a green that we've had quite a few challenges with regarding moisture, so we thought it might be good to test Sportsfiller to see the draining effect.



In the spring - crammed the greens of the golf courses, it gives air.

Can you tell me, how did you do the experiment?

We took plugs from our test green and filled half with sand and the other half with Sportsfiller. Already here we could start to see some advantages of Sportsfiller compared to sand. Normally, when you use sand after tamping, you must water and add more sand in the following days. With Sportsfiller, you only need to fill up once. It was easy to distribute on the green, and Sportsfiller's round shape meant that it did not damage the green.



Sportsfiller VS Sand - Sportsfiller was tested against sand.

What were your expectations or concerns before the project started?

Immediately I expected it to have draining properties. Otherwise, I didn't have high expectations for the product, as I didn't know it very well. I had doubts about whether the holes filled with Sportsfiller could close after the probing, and I was also nervous about whether the green would grow properly. However, these concerns were very quickly put to shame.



Plugs with Sportsfiller - The holes grew together nicely and have given 20% more growth of grass on the Sportsfiller site.

The experiment is valid right up to the spring of 2024, but what have we seen so far?

In a very short time we could see an effect on the side with Sportsfiller; The grass became significantly greener, which we call "Green up". We also observed increased growth in the grass; Over a period of three months, we had 20% more clipping on the side with Sportsfiller. Throughout the trial, we have challenged the green by stopping the fertilizer for longer periods. Here, the

side with Sportsfiller performed optimally. It is as if Sportsfiller absorbs the nutrients and acts as a depot until the grass needs it. We have also noticed a stronger root network on the grass as well as thicker and healthier blades of grass. So far, we are very satisfied and will of course follow the development closely. And yes, it actually has a draining effect. In the past, we had trouble mowing the greens when it was too wet and it left marks. But on the Sportsfiller side, we haven't had any problems at all, even though we've had large amounts of rain-water.

What is to be done with the green for winter?

It will be exciting to follow Sportsfiller under the colder and more difficult growing conditions. Last autumn, many golf courses were affected by fungus, including here in Randers. It will be interesting to see how the development of fungus will look this year and whether the grass's immune system has been strengthened. We know that Sportsfiller has a high iron content, so based on pure chemistry we stand stronger with Sportsfiller. At least I'm not nervous.



3 weeks - The green after three weeks

You have worked with the product. What do you think the future looks like for Sportsfiller?

It looks promising. This spring, we plan to integrate it into the green on hole 7. In addition, we are in full swing with the big plan to remodel the entire course. All the new greens and extensions of greens will include a construction with both Sportsfiller and Leca® lightweight aggregate.



The area of the planted green roof is 3,500 square meters.

A VERSATILE GREEN ROOF OF HELSINKI'S URBAN ENVIRONMENT BUILDING

FINLAND *The green roof of the Helsinki Urban Environment Building promotes natural diversity and prevents flooding by retaining rainwater.*



The green roofs and terraces feature a wide variety of different plants.

The building has been awarded the BREEAM environmental classification of Excellent. The commitment to eco-friendliness shows in the building's solutions, which have a long lifespan and allow the facilities to be used flexibly for a range of purposes.

LOCI Maisema-arkkitehdit planned and Viher-Pirkka Oy implemented three different habitats on the building's uppermost green roof. The three roof areas feature soils and plants that are typical for Helsinki and Finland in general but differ starkly from one another. One of them imitates a combination of a sandy beach and a gravel beach, other mimics a dry meadow, while the third resembles a moorland.

A GREEN ROOF IS A VERSATILE OPTION

The green roofs and terraces feature a wide variety of different plants, a whopping 22,000 species in total. All species found on the building's roofs and terraces are indigenous to Finland and can largely be found in the Helsinki area. "The Terola nursery grew them especially for this site", explains Olli Sundholm, manager at Viher-Pirkka Oy.



The building has been awarded the BREEAM environmental classification of Excellent.

The total area of the roof spans 4,500 square meters, of which 3,500 square meters have been built as planted green roofs. The meadow area of the green roof also offers shelter for a variety of pollinator species.

STRUCTURE OF A GREEN ROOF

Work on the City Urban Environment Building's roof began in autumn 2019 and was completed in three phases. "The winter of 2019–2020 was exceptionally warm, so we were able to continue working almost without interruption throughout the winter.

The starting point for the first working phase carried out by Viher-Pirkka was an insulation surface covered with a filtering fabric. A drainage layer was installed on top of the filtering fabric. In addition to providing drainage, the layer also retains water.

The honeycomb structure was filled with crushed brick. The growing medium was laid, and the greenery was planted on top of this filled structure. Finally, the planted areas were covered with sand mulch, coarse gravel mulch, crushed stone mulch and slate.

A TAILORED GROWING MEDIUM

Tieluiska delivered the tailored, ready-mixed growing media directly to the site. Leca® lightweight aggregate (LWA), which was to be placed on the bottom of the plant beds, was delivered to the site in big bags.

The growing medium's nutrient and sand contents vary from one area to another. Its thickness was 150 mm with mounds rising to a total thickness of 250 mm. A total of about 1,000 cubic metres of green roof soil was delivered.

Leca LWA can be mixed with soil to make the medium lighter, which has proved to be an excellent solution for green roofs. Sundholm says that in his experience, all the plants, including plants from the orpine family, perennials, shrubs, and trees, have fared very well on sites where Leca LWA mix has been used.

For Viher-Pirkka, the Urban Environment Building was an exceptional project in all aspects. "We knowingly took an exploratory and experimental approach to the implementation of this large-scale green roof project", Sundholm says.

He also has high praise for LOCI Maisema-arkkitehdit's project designs. "It was clear that they had put even more time and thought into drawing up these designs than usual. It was great to get to dive into the particulars and go through the designs with the designers."

Project information

Project: Helsinki Urban Environment Building, Helsinki

Architectural design: Arkkitehtitoimisto Lahdelma & Mahlamäki

General contractor: Skanska Talonrakennus Oy

Landscape design: LOCI Maisema-arkkitehdit Oy

Implementation: Viher-Pirkka Oy

Growing media: 1,000 m³ of mulch mixed with crushed Leca® lightweight aggregate 3–8 mm and crushed brick / Tieluiska Oy



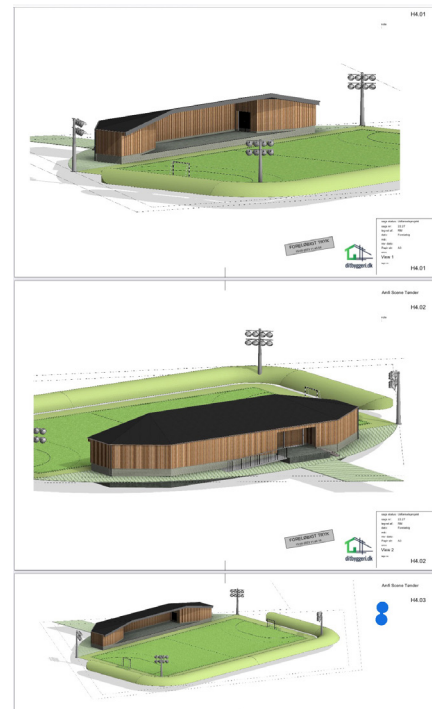
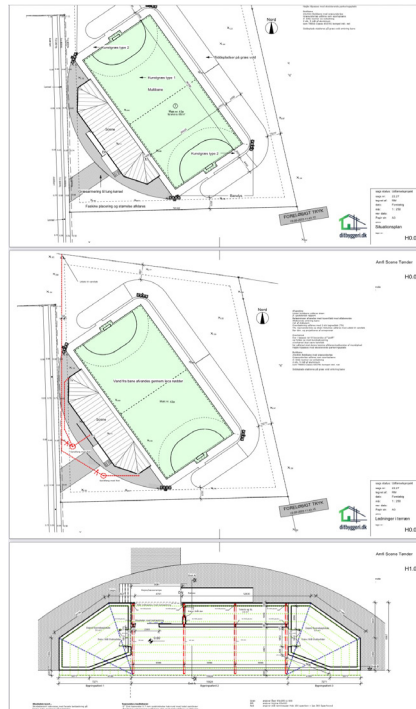
MULTILANE WITH WATER MANAGEMENT

The upcoming multi-purpose field and artificial turf promise to be an asset for the community and a source of joy for sports and culture

DENMARK In Tønder, an exciting project has been initiated. The project sees the construction of a multi-purpose facility on soft ground conditions with the specification of Leca® Lightweight Aggregate, creating an effective water management system — two solutions in one product.

One of the key issues for this ambitious project was the soft ground conditions. This required meticulous planning and the selection of appropriate materials to tackle this problem. The contractor and his dedicated team decided to use Leca LWA as the primary material for the project, and this choice has been made carefully and thoughtfully.

By incorporating 800m³ meters of Leca LWA into the construction, Morten the contractor and his team have prioritized efficient water infiltration as a critical factor. This is crucial to ensure that excess water does not hinder the finished requirements of the development and that excess water does not exert pressure on the area surrounding the field.



Section drawings and 3D models show how the project is to be built



Delivered with a walking floor, each load can contain 93 m³



The structure shows how simple it can be done

Another crucial consideration has been the weight of the material. The soft ground necessitates a lightweight material to avoid excessive load. Leca LWA is renowned for its lightweight nature, making it ideal for the project and ensuring the stability and functionality of the fields.

Furthermore, Morten considered the harmony between the chosen material and the existing soil. By ensuring that the new material is not heavier than what is excavated, he has maintained the desired stability and functionality.

The project at Entreprenørgården Syd is a prime example of careful considerations and conscious material choices focusing on sustainability and functionality. The upcoming multi-purpose field and artificial turf promise to be an asset for the community and a source of joy for sports enthusiasts and culture aficionados for a long time to come.



Meierikvartalet i Lillestrøm - an exciting project that has set high standards for quality and sustainability.

PROVIDING A SUSTAINABLE CONTRIBUTION TO MEIERIKVARTALET IN LILLESTRØM

NORWAY The New Meierikvartalet in Lillestrøm is an exciting project that has set high standards for quality and sustainability. As part of this project, Leca® lightweight aggregate (LWA) plays an important role as an environmentally friendly solution for concrete pavements, roofs, and communal areas. With its focus on sustainability and climate adaptation, Leca LWA fits perfectly into the certification requirements of BREEAM-NOR v6.0 - the comprehensive environmental certification system for the construction industry.





Above the concrete surface, there are green areas laid out with Leca® LWA 2/10, which is crushed for storage, drainage, and infiltration of stormwater.

A VERSATILE AND SUSTAINABLE BUILDING MATERIAL

Leca LWA is a building material consisting of granules of expanded clay. This strong, lightweight, and porous ceramic material has several uses, including geotechnical applications - compensating loads for poor ground conditions. It has been used in millions of cubic meters to secure buildings, roads, and railways against poor ground conditions within the Nordic climate for over 75 years. Leca LWA is also recognized for its ability to handle climate adaptation and stormwater management, for example, drainage, retention, infiltration, and blue-green constructions.

THE USE OF LECA LWA IN MEIERIKVARTALET

In this project, townhouses have been built over a concrete deck (garage) and roof gardens have been created, and Leca LWA 2/10 has been applied, which is crushed for storage, absorption, and infiltration of stormwater.

This helps to protect the building against moisture issues, as Leca LWA is both climate and water resistant. The construction will not be damaged by thoroughly moistened Leca LWA, and the material does not provide a breeding ground for fungi or rot damage. It is also unfavorable as a habitat for pests, which ensures a healthy indoor environment.

In addition to offering protection against moisture, Leca LWA contributes to effective water drainage away from the building development. The

porous structure of Leca LWA makes it resistant to clogging compared to traditional materials. This ensures that the drainage access remains free throughout the life of the building and reduces the need for maintenance.

EFFECTIVE MANAGEMENT OF WATER

For Norconsult AS, who was the designer at Meierikvartalet, it was important to find a product that can handle large amounts of water. Sindre Worren, Senior Advisor at Norconsult AS provides feedback, "The entire quarter consists of buildings and roof surfaces, and the municipality's wiring network has limited capacity. It was important to find a product that could provide effective water absorption, and we got that with Leca LWA. We chose to use finely crushed LWA under the entire courtyard, so that all the precipitation that falls is carried through this layer. All the water will then be diverted there, so that we can relieve the municipality's network."



Leca® LWA contributes to the efficient drainage of water away from the building mass.

FUTUREPROOFING FOR CLIMATIC CHANGES

Sindre Worren, Senior Advisor at Norconsult AS goes on to explain, "The new Meierikvartalet has been built with the focus on being able to cope with 20 years of continuous climatic change. In the years to come, we will experience much more intense rainfall, and therefore we need to implement a lot of measures for Meierikvartalet to be able to handle it. The advantages of getting a drainage solution such as Leca LWA is that it can effectively handle a lot of water and is well suited for the future."

WELL ADAPTED TO BREEAM-NOR

Leca LWA is in line with the principles and requirements for the BREEAM-NOR v6.0 certification system. By choosing Leca LWA as part of the construction in the building of Meierikvartalet, the project contributes to several categories and topics that are assessed and recognised in BREEAMNOR.

Project information

Project: Meierikvartalet in Lillestrøm

Customer: Løvdal AS

Main contractor: Bundebygg AS

Design: Norconsult

Product: Leca® lightweight aggregate 2/10, crushed

Volume: 1200 m³





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