

# architectum

INTERNATIONAL MAGAZINE FOR BRICK ARCHITECTURE

## IN THIS ISSUE:

- Improving quality of living
- Up to date energy standards
- Creating a feel-good atmosphere

#24

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**CHRISTOF DOMENIG**  
CEO Clay Building Materials Europe

## IMPROVING QUALITY OF LIVING – THROUGH BRICK ARCHITECTURE

Individual and creative architecture is more than just designing a beautiful home. It is the art of creating unique living spaces for people and their various needs. A well-designed home or office can enhance quality of life for the occupants by keeping four key issues in mind: economy, energy, ecology and emotion. We have created the e4 house concept, which is based around those four pillars. Combining these four pillars/values is to invest in a building that is affordable to construct and live in. You can be sure that an e4 building will fulfil the latest energy and performance standards, and will continue to do so for every day of its life cycle. At the same time, an e4 house minimises its impact on the environment by using natural resources from local production and promoting an eco-friendly design. Finally, an e4 house enhances the well-being of its inhabitants, to deliver better quality of life. While there is always potential for innovation, the e4 pillars/values remain constant, because they can be applied to any building that is constructed – no matter its purpose or size.

The architects and investors who work with these principles, and our products, create healthy buildings with qualities that endure for generations, such as durability, excellent quality, and beauty. As a company, we contribute to this through our innovative building materials and concepts, our focus on service and our individual support. Every architect has their own approach to achieving a feel-good atmosphere in their constructions, fuelling the discussion about how to create healthy and future-proof buildings. The examples in this issue showcase some of the best examples of such projects.

Enjoy browsing through the issue and be inspired to build healthy buildings!

**Christof Domenig**

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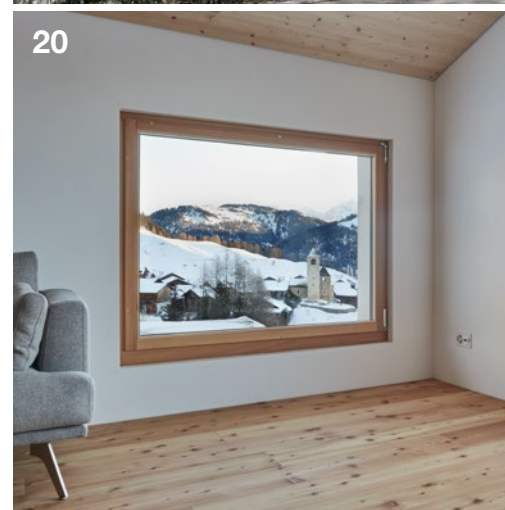
**WIENERBERGER AG** CLAY BUILDING MATERIALS EUROPE, A-1100 Wien, Wienerberg City, Wienerbergstraße 11, T +43 (1) 601 92-10551, [marketing@wienerberger.com](mailto:marketing@wienerberger.com),

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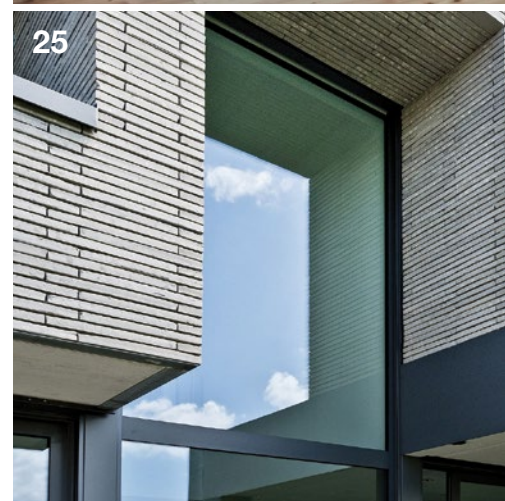
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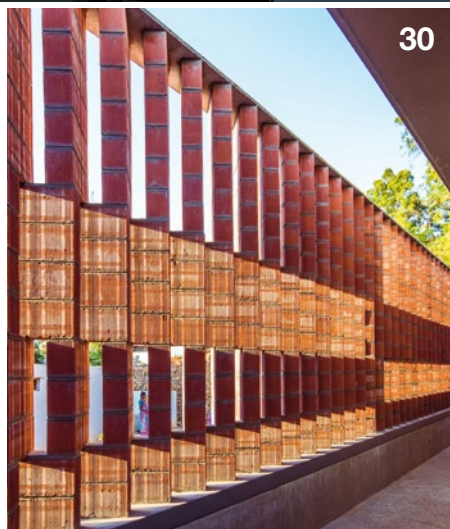
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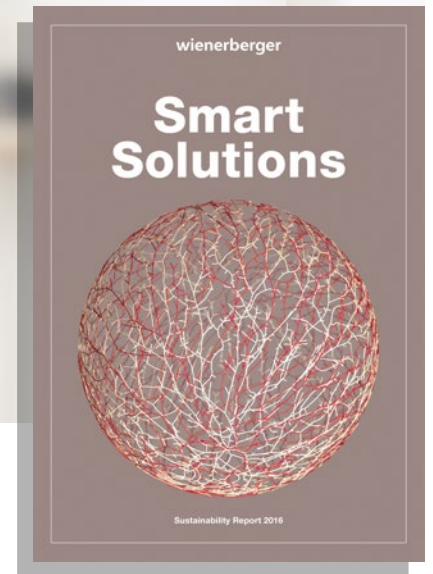
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The latest sustainability update will be published by the 28th of June.

# HEALTHY BUILDING NEEDS A HOLISTIC CONCEPT

We improve quality of living by providing outstanding, sustainable building materials and infrastructure solutions.

Each year we generate **25%** of revenue from innovative products.

A holistic and integrated approach is the foundation of Wienerberger's successful corporate strategy and our self-imposed commitment to continuously improve our ecological, social, societal and economic performance. We are consistently pursuing the ambitious targets set out in our Sustainability Roadmap 2020. All our quantitative and qualitative targets have been informed by issues that our stakeholders have defined as being essential. As part of our approach to Sustainability Management, we consider the entire life cycle of our products.

We are convinced that, in the long term, the companies that achieve the greatest success will be those that act in full awareness of their responsibility, contribute to improving quality of life today, and ensure the wellbeing of future generations.

**PRODUCTS** A central principle of product development at Wienerberger is the creation of lasting value for our customers by supplying them with durable and innovative building materials and infrastructure solutions. In our opinion, the relationship between a product's life cycle and its impact on the environment during raw material extraction, production, transport, installation, use, and end-of-life is important. Wienerberger ceramic products are an integral part of building concepts for healthy living.

These innovations include new products and system solutions that are durable and cost-efficient, contrib-

ute to the energy efficiency of buildings and to climate protection, ensure security and health for users of the buildings, facilitate correct planning, are easy to use and well-suited for an interesting architectural design. We delight our customers with the ease of doing business with us.

**PRODUCTION** Wienerberger strives to achieve a production process that is as environmentally friendly as possible. For us, the conservation of resources is a key element of production. We focus on the responsible use of raw materials, energy and water. We constantly work to help combat climate change through greater energy efficiency and by reducing our CO<sub>2</sub> emissions. At the same time, we strive to increase the amount of recycled material used, provided this is technically and economically feasible.

**In 2016, the energy consumption for production at Clay Building Materials Europe was almost 10.5% lower than in 2010.**

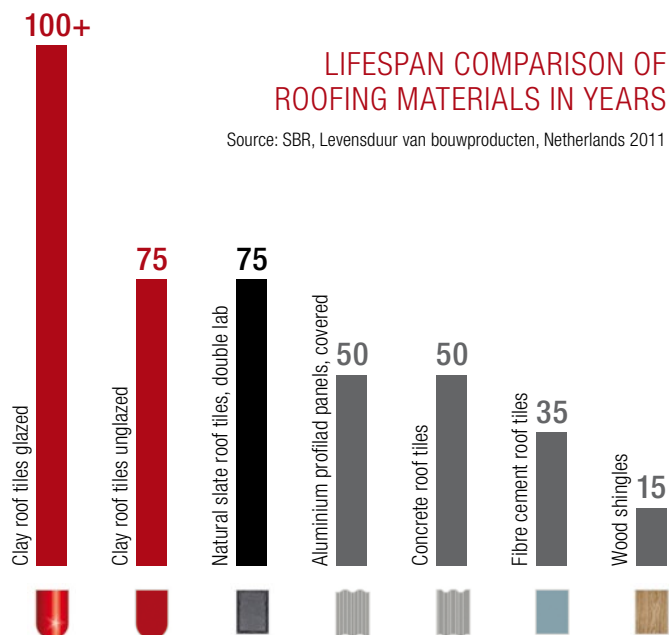
In the coming years, we will continue to work intensively to achieve our targets and implement appropriate measures. Follow our progress and read the full reports (by 28 June 2018):

<http://sustainabilityreport17.wienerberger.com>



## THE MOST DURABLE ROOFING MATERIAL

Clay tiles have a proven service life of up to 150 years. There are many examples of traditional buildings around the world that still have their original cladding, which has lasted centuries. Clay bricks and roof tiles, although exposed to the weather, are not susceptible to environmental influences such as UV radiation, rain, frost, and pollution. Houses constructed from clay building materials require very little maintenance, ensuring ongoing, constant quality and beauty – which lasts a lifetime and beyond. These products are fired to produce very hard bricks and tiles, making them almost indestructible.



CONSUMPTION KG CO<sub>2</sub> EQ/YEAR

**e4 brick house**  
460 kg CO<sub>2</sub> eq/year

**car**  
3.200 kg CO<sub>2</sub> eq/year

**cow**  
4.000 kg CO<sub>2</sub> eq/year

**truck**  
144.000 kg CO<sub>2</sub> eq/year

**airplane**  
1400.000.000 kg CO<sub>2</sub> eq/year

Source: Calculation from Wienerberger International Product Management

In relation to other every-day objects, the emissions of an energy efficient brick house are very small.

## AN ENERGY EFFICIENT BRICK HOUSE HELPS TO REDUCE ENERGY CONSUMPTION AND CO<sub>2</sub> EMISSIONS

It is important to view the high energy consumption of clay product manufacturing in the context of the whole life cycle of these products. Maintaining and servicing a building is an important cost factor. Brick constructions demonstrate good energy efficiency when the whole life cycle of the building is considered. The energy required for production, and the CO<sub>2</sub> emissions from this process, represent only one chapter of the story. When the whole service life of the building is taken into consideration, the impact of clay building materials on the environment is very low. 90% of the

overall CO<sub>2</sub> emissions from a building arise during the usage phase – including maintenance and deconstruction – only 10% arise during construction. CO<sub>2</sub> emissions should be seen from the right perspective. In relation to other everyday objects, the emissions from an energy efficient brick building (constructed in line with the e4 principles: economy, energy, ecology and emotion) are very low. For example, in the course of a year, a cow produces 8.7 times more CO<sub>2</sub> emissions than an energy efficient brick house, and one aeroplane produces 870 times more CO<sub>2</sub>!



# BETTER CONSTRUCTION WITH BRICK

The architecture firm Engelshove likes designing and building with brick. Their core business is single-family homes, but the firm also works on industrial architecture projects. The use of brick in passive house projects is particularly noticeable.

**O**n your website you have a quote from Antoine de Saint-Exupéry: “To build a future, you must live in the present”. How does this idea influence your work?

When we start a new job, our first discussions with the client are an intensive analysis of the way they live. How they are currently living is an important part of that. For us, that's the starting point. We want to find out as much as possible about the client before we begin the planning process.

**Does it become apparent at this stage what materials would be suitable to make the customers feel comfortable?**

Natural construction materials, of the highest possible quality, are certainly suitable for the quality of the environment. Brick is perfect in that sense. Of course, a lot also depends on taste, and the location and plot are crucial. External influences, the surroundings, and sometimes even restrictions imposed by development plans, also play a significant role.

**You prefer using brick for your projects. How important is the choice of building materials? How important are they in terms of sustainability and durability?**

We really like brick architecture, as you can tell from our office. Brick materials exude durability. Quite simply, a brick façade means something different to a plaster surface. But, of course, we often end up using a combination, which depends on the architecture and the premises.



Anja & Jochen Engelshove

**You also prefer brick for passive house projects. Lots of passive house designs use wood, concrete, etc. What is the special quality that you feel you achieve by building with brick?**

First and foremost it's the longevity of the material. You can see it in the façade – I won't need to do anything for 80 years. Many other types of façade need repeated interventions to keep them looking good.

**And what about indoors? How does it help create a feel-good atmosphere?**

Brick is often incorporated in the internal rooms, but there are also plastered walls. When mixing materials, we're guided by the philosophy that less is more.

**What are the challenges involved in successfully completing a passive house project these days?**

With brick, passive houses are relatively easy to build. It's easily manageable with brick construction, there are no particular problems.

**The versatility of brick makes it suitable for a diverse range of styles – for clear, modern lines, but also for existing older buildings.**

Brick lends itself to a huge spectrum of creative pos-

»With passive houses, in particular, brick construction has a positive effect on the indoor climate. Brick has better thermal insulation properties than other materials. You can also affect the internal acoustics, so brick allows you to do everything to achieve a comfortable atmosphere.«

Anja & Jochen Engelshove





Clay bricks create a timeless yet contemporary look.

sibilities. Once a block has been chosen, the next question is what kind of joints and what colour mortar shall we use? How will the bricks be laid? There are so many variables that you really can use brick in a variety of ways. You don't always have to use a classic red brick or facing brickwork.

#### **Do different types of construction affect the indoor climate?**

In terms of the external façade – of course there are differences, such as how much water a block can absorb. With passive houses, in particular, brick construction has a positive effect on the indoor climate. Brick has better thermal insulation properties than other materials. You can also affect the internal acoustics, so brick allows you to do everything to achieve a comfortable atmosphere.

#### **You yourself live in a brick-built passive house, and can speak from experience when advising your clients. Does feedback from your clients suggest that their expectations are being met?**

We've only had positive feedback so far. The clients are proud of their new homes, they feel comfortable in them. They're happy with the indoor climate and atmosphere. ■



# HOLISTIC APPROACH TO BUILDING

The e4 concept stands for economy, energy, ecology and emotion. In Poland, the first e4-compliant houses were built near Warsaw and serve as best-case examples of how to combine top-quality, innovative solutions with comfortable living for residents and an aesthetic form.

Future-oriented architecture puts a lot of demands on designers, investors and manufacturers in terms of house design principles and the properties of construction and installation materials. The current demand for energy-efficiency focuses on the technical values and parameters which buildings are expected to offer. What is often forgotten in this discussion is the wellbeing and comfort of the residents and a healthy way of living. The e4 house concept responds to the requirements associated with responsible, energy-efficient and healthy architecture, which places high importance on the environment and quality of life. Of seven houses planned for construction in Cisie, near Warsaw, three have already been completed.

**MODERN FORM – FLEXIBLE HOUSING** The modern structure of the building was designed so that rooms can be easily changed and adapted to the size and needs of the family – it is a modular system. The number of rooms and their dimensions can be defined by the residents to suit anyone from a couple to a family with up to three children, or to create a multi-generational home with a room for an older person.

**CONTEMPORARY DESIGN, TRADITIONAL MATERIALS** The walls of the e4 house are made of natural clay blocks filled with mineral wool, and constructed using Dryfix technology on thin, fast-drying mortar. The flat ceramic roof tiles not only provide a solid roof covering, but also protect the elevation, reinforcing it and giving the building a modern and individual look – accentuated by a modern shade of dark grey. To create contrast, brown clay facing bricks cover the walls between the terrace windows, both inside and out. Beautiful, natural materials and a wholesome concept make these individual houses a place to feel at home. ■

## FACTS & FIGURES

### Project name

e4 residential estate,  
Cisie, Poland

### Architect

Mąka-Sojka Architekci

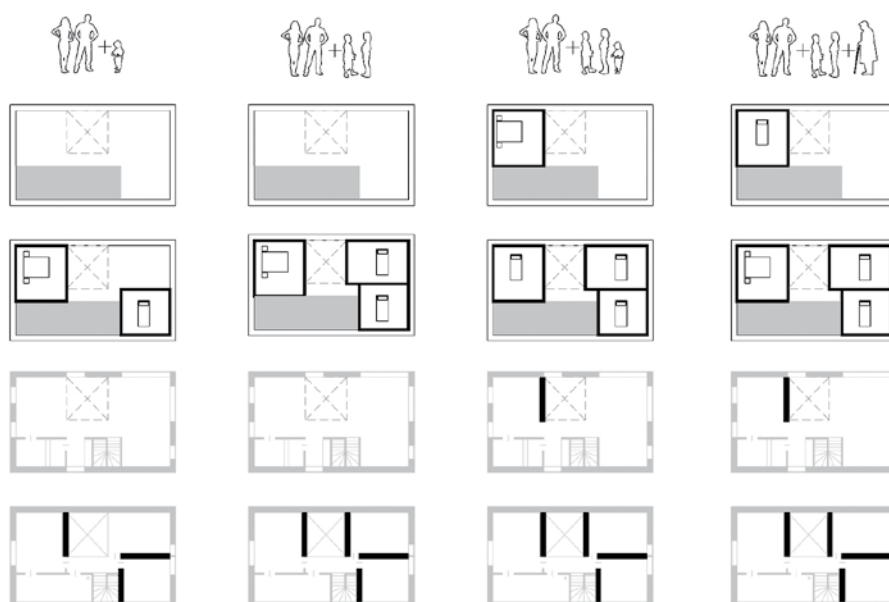
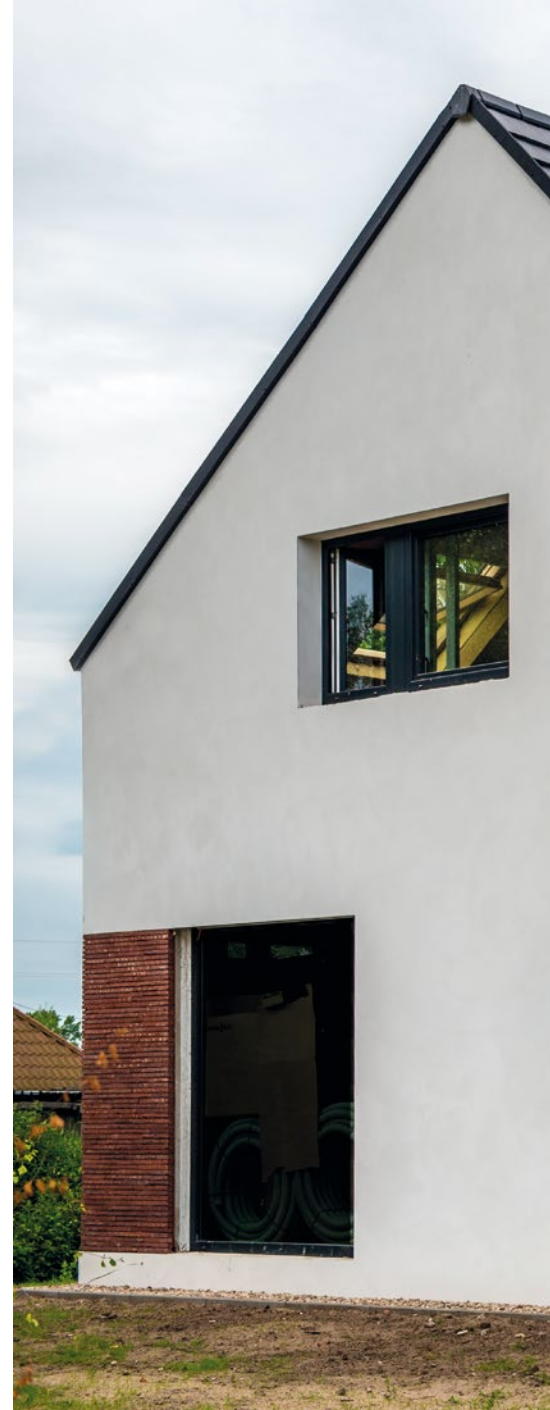
### Products used

Porotherm 44T, Porotherm 25,  
Dryfix, Koramic Orea 9,  
Terca Long John

### Year of completion

2017 and ongoing

Flexible: Future residents can choose how to partition off their rooms depending on their own needs.





The e4 house concept responds to the requirements associated with responsible, energy-efficient and healthy architecture, which places high importance on the environment and quality of life.



»The e4 house meets all the typical criteria of energy-saving homes, but its aesthetics make it stand out from other available projects, countering common misconceptions about the aesthetic values of these houses. Our challenge was to effectively combine innovative solutions with quality architecture and good functionality.«

Maciej Mąka, co-founder  
of Mąka-Sojka Architekci



# PLAYING AND LEARNING IN A HEALTHY ENVIRONMENT

Building for children is always a challenge. And the same is true when it comes to fulfilling strict requirements for sustainable and economic running costs. The day care centre in Heidenau, Germany meets all these criteria – thanks to the e4 concept: economy, energy, ecology and emotion.


Children need a place to feel safe and relaxed in order to develop their full potential. This colourful day care centre invites them in, to play and learn without hesitation. But it is not just the appearance that is well thought out: energy efficiency, renewable energy sources, affordable construction, and maintenance costs, as well as a unique quality of living, were all taken into consideration as part of the project.

**DESIGN AND FUNCTION COMBINED** The single-storey building is a curved shape, made with monolithic construction with integrated insulation. Thanks to the perlite filling, no additional insulation is needed. An organic building shape appeals to the eye, and a generously glazed south façade with a landscaped roof completes the design. But the day care centre is more than just a visual highlight, it combines functionality and creativity, energy efficiency and well-being and, on top of all that, it also saves operating costs.

**OPTIMAL ENERGY CONSUMPTION** Notable energy savings are achieved through careful planning, the choice of building materials suitable for passive houses, and highly efficient ventilation technology with heat recovery. The massive masonry, built from insulation-filled clay blocks, provides the healthy, airtight, and simultaneously breathable, basis of the building. Wall heating in all communal rooms ensures an especially mild radiant heat and, together with the clay blocks, a healthy and biologically optimal indoor climate.

**MAKING THE MOST OF RENEWABLE SOURCES** In addition, the solar thermal system provides 70 percent

of the hot water. Externally mounted, sliding shading elements protect against overheating in summer. Thanks to these features, the day care centre has an annual heating energy consumption of 13 kWh/m<sup>2</sup>a.

**MODEL FOR CHILDREN** Through the organic architecture, the conscious closeness of the environment, low energy consumption, and increased comfort thanks to the use of building materials that promote healthy living, the 72 children experience, from a very young age, the importance of an ecological and energy-efficient building method for one's personal wellbeing and the protection of the environment. 

## FACTS & FIGURES

### Project name

Day care centre Heidenau, Germany

### Architect

Architectural partnership  
Reiter & Rentzsch

### Products used

Poroton-T8-P filled with Perlit

### Year of completion

2014







The day care centre promotes healthy living to the children.

The project includes a thermal solar system, controlled ventilation with heat recovery, and wall heating.





The design of the houses is a combination of a contemporary twist on local 'barn' vernacular and a simple palette of black and white materials, designed so that they sit comfortably in their woodland setting.





# BUILDING HOMES – INVESTING IN QUALITY AND ENERGY EFFICIENCY

Norwich city council in the United Kingdom commissioned an innovative passive housing scheme with 14 dwellings (8 detached, 6 semi-detached). The goal was to provide high quality of life combined with excellent energy efficiency.



## FACTS & FIGURES

**Project name**  
Carrowbreck Meadow,  
Norwich, United Kingdom

**Architect**  
Hamson Barron Smith,  
Sarah Lewis, Dan Towers

**Client**  
Broadland Growth Limited,  
NPS Group

**Products used**  
300 mm Porotherm Blocks  
100 mm Porotherm Blocks  
Zero-Plus Mortar

**Year of completion**  
2016

All 14 passive house dwellings, for sale and shared ownership, were built according to the e4 principles.

The passive house standard is the fastest growing energy performance standard in the UK. Its aim is to promote the construction of houses with excellent thermal efficiency and exceptional airtightness with mechanical ventilation.

**THE E4 PRINCIPLES** Wienerberger offers a holistic approach to delivering these requirements – the e4 house concept, which stands for economy, energy, ecology and emotion. Homes constructed in line with this concept offer optimum build performance while meeting market needs in an affordable, accessible way – economy. They focus on the efficient use of energy, meeting the latest energy performance standards – energy. They minimise their environmental impact by using responsibly sourced, resource-efficient materials and by promoting low-impact living – ecology. These houses also providing a feel-good atmosphere that people want to live in; houses that not only provide flexibility and practicality, but also deliver a better quality of life – emotion.

**CLAY BLOCKS – THE BEST CHOICE** Clay blocks have been specified for the project as an efficient alternative to other building materials. They comply with the passive house standards by delivering high thermal efficiency, an exceptionally fast and virtually dry construction, plus excellent strength.

**FUTURE-ORIENTED INVESTMENT** In addition to all this, and more importantly, the project marks a change in the way the local authority invests in local housing. With this project, it is beginning to invest directly in quality, by choosing excellence, high energy efficiency and a principle like e4. For high quality of life and a focus on creating a sense of wellbeing for occupants. ■



# URBAN REGENERATION PROJECT

Located within a conservation area in Salford, United Kingdom, Timekeepers Square is a development of 36 two, three, and four bedroom townhouses adjacent to the Grade II\* listed St Philip's church and the Georgian square which it fronts. The scheme forms part of the English Cities Fund's Salford Central regeneration scheme, which is regenerating more than 50 acres of the historic centre.

The design of the houses draws inspiration from the area's Georgian terraces and reinterprets this in a contemporary manner. The new townhouses respond to the historic terraces in height and mass, and are vertically oriented on the pattern of the old windows. This is further emphasised by deep niches to the windows and door sets, which contrast and add detail to the flat façade.

**SHARING THE PUBLIC SPACE** New terraces reinstate the area's lost urban atmosphere, strengthening the whole area and establishing the historic church as a focus point. It also defines the new pedestrian boulevard – St Phillip's Walk – at the heart of the development. The public space has been enhanced with new outdoor spaces that vary from private, ground-floor green spaces and roof gardens to communal >

The homogeneous look is reinforced by the choice of mortar, which is close in colour and tone to the bricks.











Clay bricks provide a warm domestic feel to the external envelope. This tactile quality contrasts with the smooth, engineered quality of the external aluminium window frames.







## FACTS & FIGURES

**Project name**  
Timekeepers Square, Salford,  
United Kingdom

**Architect**  
Buttress

**Client**  
English Cities Fund (ECf is a joint  
venture between Muse Develop-  
ments, Legal and General and the  
Homes and Communities Agency)

**Products used**  
Terca ForumSmoked Branco

**Date of completion**  
2017

> spaces and pedestrian, play-friendly, high-quality, home zone streets.

**CONNECTING OLD AND NEW** A key design objective was to create a scheme that was sensitive to the area's heritage, yet had a clear, contemporary identity. As such, clay bricks were selected for their ability to mediate between the red brick of the Georgian houses and the sandstone of St Philip's church. Grey in colour with a light texture, the brickwork contributes to the development's limited material palette, and together this creates homogeneity, and gives the scheme its unique sense of place. This homogeneity is further reinforced by the choice of mortar, which is close in colour and tone to the bricks. The mortar joints have been subtly recessed by 3 mm to underline the bricks' tonal variation, and to provide visual interest. Making the most of the limited space, while respecting the historic centre, the project serves as a best-case example of how historic cities can be transformed without losing their unique identity. The handmade quality of the clay bricks fits in well with the regenerative aspect of the project. ■



# CLAY FAÇADE SYSTEM FOR A “ZERO-CARBON” UNIVERSITY

The RIZOMM, housing the Faculty of Management, Economics & Science in Lille, France consists of three buildings. Following a new concept of a zero-carbon university, all three buildings were covered with a clay façade system.

The three buildings of the university complex were constructed at different times, the first one was completed in 1954, therefore a restoration was necessary anyhow. The main requirement was to unify this collection of buildings intended to accommodate the Faculty of Management, Economics & Science, which is a centre for both teaching and research. The project also aimed to be consistent with the concept of the current “Third Industrial Revolution” (REV3) in France by creating a zero-carbon university building. A Lille-based initiative, LIVE TREE (Lille Vauban en Transition Énergétique Ecologique et Economique [Lille Vauban Programme for Energy, Ecological and Economic Transition]) set some ambitious objectives for the project: to produce and consume its own energy also sharing and providing it to others.

## A COMBINATION OF HISTORY, INNOVATION AND MODERNITY

For Thomas Druon, an architect at the Lille based architectural firm MAES, the façades of clay panels “anchor the building in history and the local region, whilst promoting the values of innovation and modernity”. Together with the French architectural review board, he developed a clay panel in warm shades of

## FACTS & FIGURES

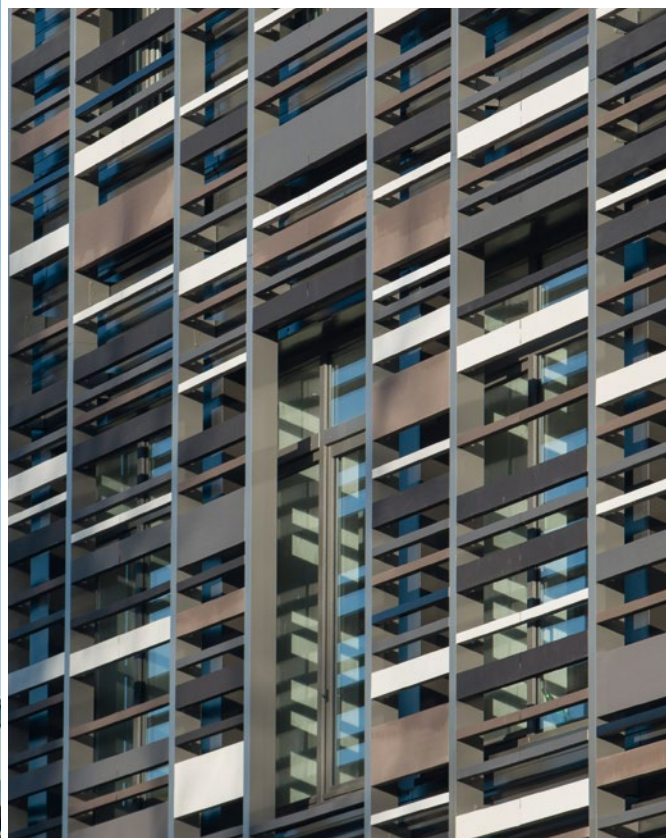
- Project name**  
RIZOMM, Lille, France
- Architect**  
MAES Architectes Urbanistes  
[urban architects]
- Client**  
Ecolopo, Bondues  
(French department 59)
- Products used**  
Argeton Barro clay tile cladding
- Year of completion**  
2018








The unique name RIZOMM was created after the rhizome root system.



beige and ochre, to blend in with the colours of the neighbourhood. “Clay panels catch the light, but not in a showy way”. The architect selected six shades, including a white glaze, and four sizes of shingle to create the modules of the façade.

**DELIVERING ON AESTHETICS AND PERFORMANCE** Thomas Druon used these materials to design 80 modules, which are repeated across the façade, which covers the corners of the building and the two adjoining walls. The goal: to create an impression of ‘ordered randomness’ by combining the modules to unify the façade whilst creating visual variety. The glazed white shingles sparkle amongst the other shades. The very tight framework and the interplay of the shingles, in vertical lines, is a visual reference to the genome, and to the rhizome root system after which the RIZOMM is named. 









# MODERN TWIST ON LOCAL ARCHITECTURE

The municipality of Lohn, with just under 50 inhabitants, lies 1,585 m above sea level on the Schamserberg mountain in Switzerland. Here, a nature-loving couple has realised their dream of having their own home and Bed & Breakfast business. The design focused on adding value to the local environment.

Like many small communities, the municipality of Lohn has struggled with a trend towards depopulation. In an effort to counteract this, and to attract newcomers, new building plots were made available for development. Having fallen in love with the area after a holiday there, the couple decided to take advantage of this opportunity and appointed the architects Rööslí Architekten to help them. They wanted to build both a new home and a business based around sustainable tourism. The “Bed & Breakfast Legreia” was born – a building comprising a main residence with an attached, self-contained apartment.

## ADDING VALUE TO THE LOCAL ENVIRONMENT

In keeping with traditional local architecture – most homes are built from Ashlar stone – a monolithic, single thickness brick wall with good insulation properties was chosen as the basis for the build. The façade is plastered with lime, another typical local >

## FACTS & FIGURES

### Project name

Bed & Breakfast Legreia, Lohn, Switzerland

### Architect

Rööslí Architekten AG

### Client

Private

### Products used

Porotherm T7

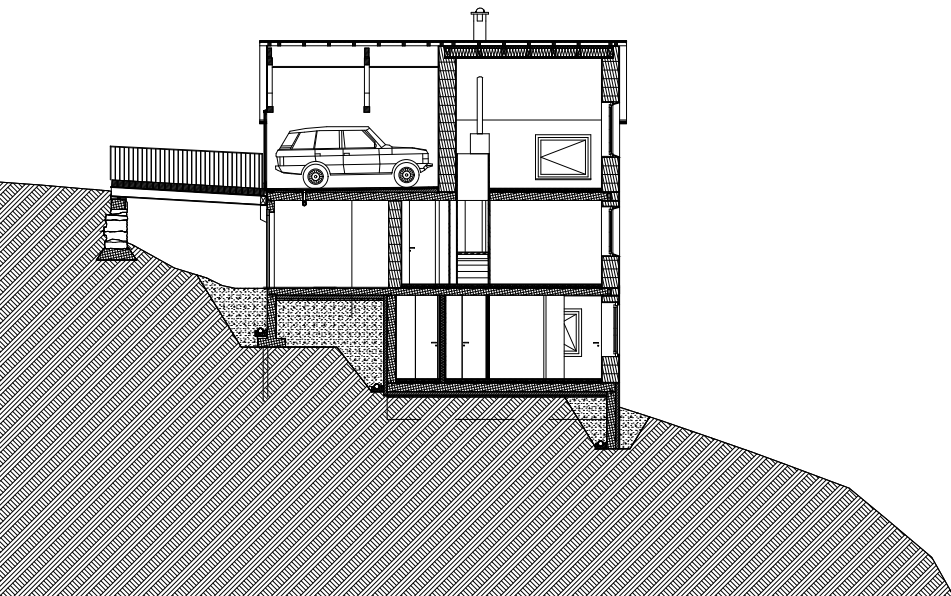
### Date of completion

2016





»Adding value to the local environment was a key element of the project for the nature-loving couple behind it and the finished building has brought their dream to life.«



> architectural feature. So that this material can be appreciated in all its natural glory, only a light layer was applied. The interior also has a strong focus on local tradition.

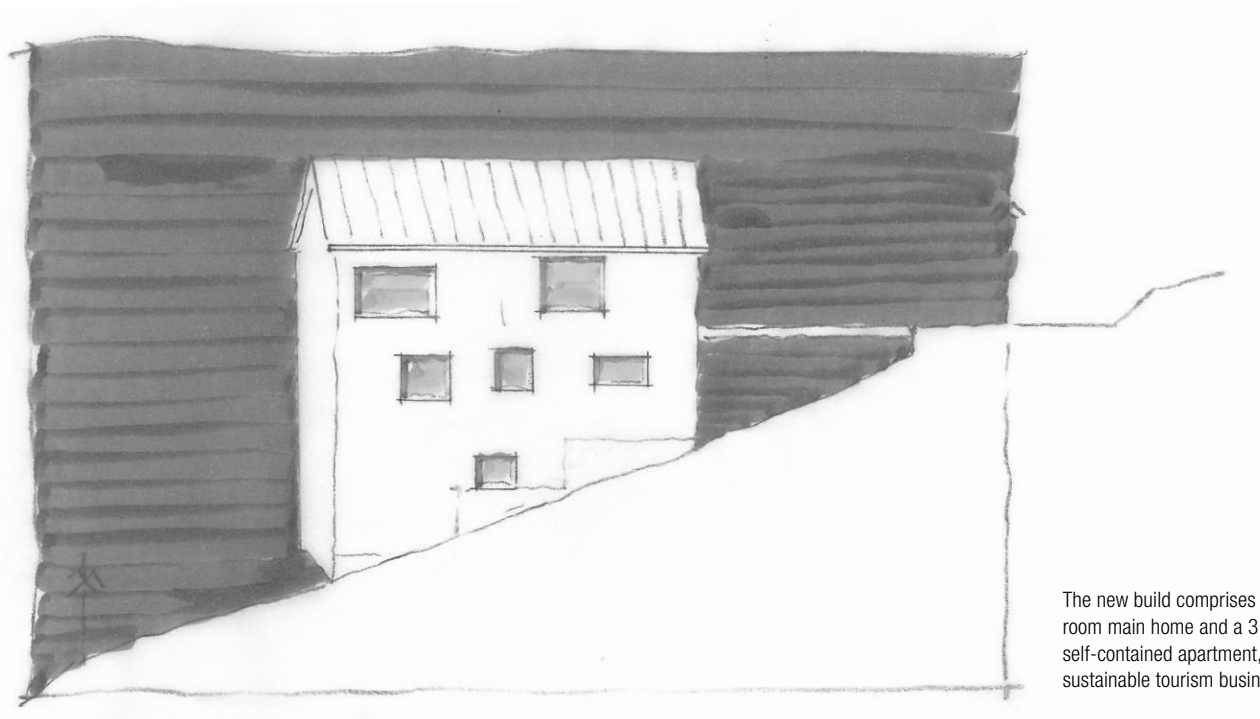
#### DRAWING INSPIRATION FROM TRADITIONAL CONSTRUCTION METHODS

Balconies under overhanging eaves on one side of a building are typical of the local architecture. A modern timber construction on the south-facing elevation references this feature and affords the building's occupants a sunny and sheltered outdoor space. A variety of different-sized windows and window frames set into the wall at varying depths add interest to the simple exterior and create a subtle accentuating touch. The windows give onto the surrounding landscape and offer views of the mountains and the village church.

#### INTEGRATED INTO THE LANDSCAPE

As the house is built on steep terrain, it has a large driveway with a gate on the slope side, reflecting the style of stables that are typical of the area. Thanks to its thoughtful design, the building blends in with its natural environment and its overall composition represents a modern continuation of the local architectural style. ■





The new build comprises a 4 bedroom main home and a 3 bedroom self-contained apartment, which is a sustainable tourism business.





# CONTEMPORARY AND TIMELESS PASSIVE HOUSE

This multi-generational building in Germany impresses with its straightforward architecture and expressive façade. Clay bricks create a timeless yet contemporary look. Behind the façade, clay blocks provide an environment that fosters wellbeing.

## FACTS & FIGURES

### Project name

Multi-generational house Engelshove, Neuenkirchen, Germany

### Architect

Anja & Jochen Engelshove

### Products used

Terca Polaris, Poroton-T18, Poroton PFZ-T, Poroton-T

### Year of completion

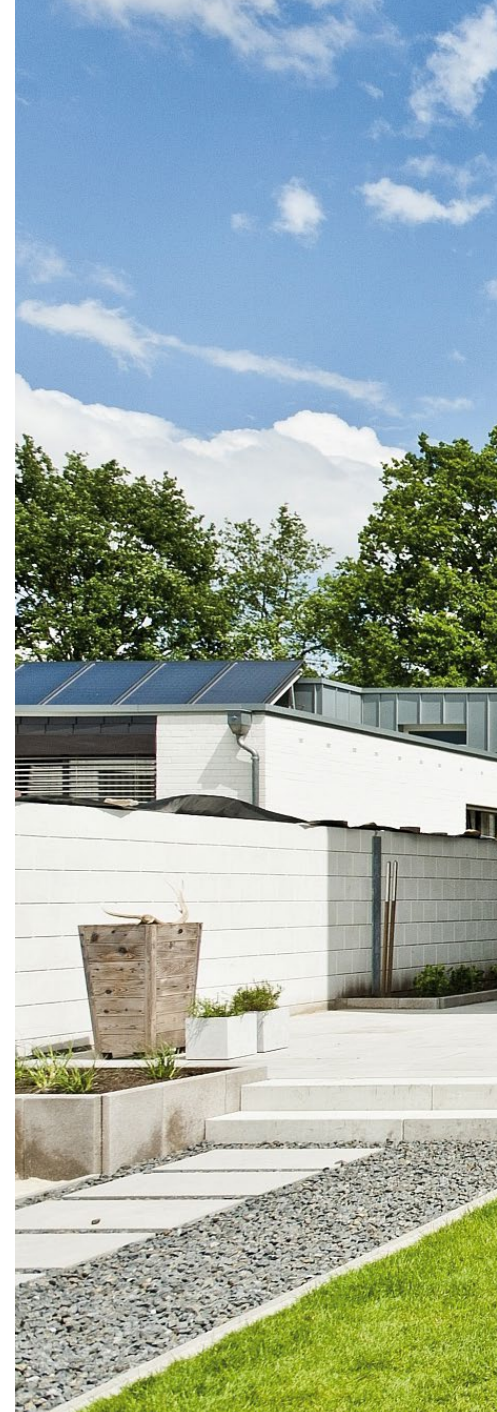
2016

Living together under one roof – this was the dream of architect couple Anja and Jochen Engelshove in Neuenkirchen. They brought their dream to life by creating a home for their family of four plus their parents. The older generation lives on the ground floor because it is more accessible. On the first floor the family, including the children, have enough space of their own. The concept of keeping the family close together whilst maintaining privacy to respect everyone's different needs was a concept that was incorporated into the design from the outset.

**MODERN & TIMELESS FAÇADE** The materials for the project were selected carefully to create the clean and timeless look envisaged by the architects: a house that appeals to all generations and generations yet to come. The anthracite-coloured façade bricks in the entrance, terrace and interior areas, match the aluminium windows and external blinds in the same colour. The contemporary appearance is primarily achieved through the use of long-format clay facing bricks. Light grey, nuanced, and constructed with very thin bearing joint masonry; the facing bricks create an elegant and durable building.

**ECONOMICAL PASSIVE HOUSE** The multi-generational house was built with a highly heat-insulating, double-skin construction in the form of a passive house. For the outer walls, clay blocks with a thickness of 17.5 centimetres were used. The inner walls needed effective sound insulation, which was also achieved by using clay blocks. The idea behind this was that the children could play without disturbing their grandparents.

**A WORTHWHILE INVESTMENT** In addition to insulating clay materials with triple-glazed windows, controlled ventilation with heat recovery, and economical underfloor heating in all rooms, the owners benefit from low operating costs. So they are saving money in the long term, with a clever investment in an attractive home – an environment that fosters wellbeing for all generations. ■







Clay blocks and clay facing bricks were the key for this passive house concept. They are also providing good sound insulation which is needed when three generations live under one roof.





# AN ALLERGY-FRIENDLY APARTMENT BLOCK

This innovative and pioneering project in Switzerland, for people who suffer from severe allergies, could only be constructed in natural building materials. It is breaking new ground in the field of ecological and healthy building.



The first apartment block in Europe designed for people who suffer from Multiple Chemical Sensitivity (MCS) was built in Zurich. People with MCS experience an allergic reaction to the chemicals and heavy metals that are added to almost all conventional building materials to make further processing easier or to optimise the properties of the materials. Even very tiny amounts of these chemicals can poison. The symptoms experienced by sufferers include dizziness, pains in the arms and legs, and skin and respiratory tract problems.

**HIGH DEMANDS – REASONABLE BUDGET** The special needs of the residents were considered from the outset, and the future occupants were involved in the project. Nevertheless, one of the requirements of the project was that it be economically viable. Many MCS sufferers live in financially modest situations and the apartments had to be affordable. The

## FACTS & FIGURES

**Project name**  
MCS-compatible residential house, Zurich, Switzerland

**Architect**  
Andreas Zimmermann  
Architekten AG

**Client**  
Wohnbaugenossenschaft  
Gesundes Wohnen MCS

**Products used**  
Porotherm T7

**Year of completion**  
2013

Gesundes Wohnen MCS [“healthy living”] housing cooperative, together with the city of Zurich and the housing cooperatives of Zurich, executed the pilot project as a building with 15 living units.

### A BUILDING MATERIAL WITH NO HARMFUL OFF-GASSING

The initial concept was always going to rely on mineral and, therefore, natural materials, because they do not present off-gassing issues, non-toxic and therefore suitable for allergy sufferers. The choice of clay blocks was made quickly: a block filled with perlite granules, which was used in a purely monolithic massive construction for the outer walls. Additional insulation is not required when using high thermal insulation blocks, thus excluding another potential source of pollutants.

**PROTECTION AND SOUND INSULATION** Furthermore, clay blocks meet the highest requirements in terms





This innovative and pioneering project is breaking new ground in the field of ecological and healthy building.

»Many building materials are modified by adding chemicals to make construction processes quicker and easier for the workers. In the MCS house, natural building materials were used exclusively, making it compatible also for allergy sufferers. Clay blocks contain no chemical substances and were therefore perfectly suited for the MCS-compatible residential house.«

Andreas Zimmermann, Architect

of static, sound insulation and protection from electromagnetic waves. When used together with other building materials, this keeps the indoor air free of odours, radiation and other emissions, and contributes to a healthy living climate. Timber materials were almost completely avoided in this project because MCS sufferers react very sensitively to the resins and other components in wood.

To achieve the best possible quality of living, all the rooms in the MCS residential building feature a multi-shell layout. The more one advances into these apartments, the "cleaner" they become. There is an airlock at the entrance to each apartment, which houses the wardrobe and washing machine. Here, harmful external and environmental influences are removed from clothing before one accesses the actual apartment. The bedrooms are located at the very end, next to the outer wall. ■



The new findings from this project will help inform other future building projects.









## FLEXIBLE HOUSING – INDIVIDUAL HOMES

The residential towers of New Grove are the first project of its kind in Slovakia. It is constructed to provide the inhabitants with the opportunity to design and customise their apartments. The architectural concept is based on the principle of flexible housing units to produce a virtually unlimited number of variations, and was built with clay blocks.


**N**ew Grove was designed by the architectural studio Šebo Lichý in collaboration with acclaimed Slovak architect Drahan Petrovič, who worked for several years in Vancouver. He brought with him his expertise in Canadian housing, where the needs and wishes of the people are put at the centre of the design.

**DESIGNING YOUR DREAM HOME** The result is a fresh, modern, and original construction, which revives the area, improves family life on the largest Slovak housing estate, and elevates it to a new level. Clients can choose the number of bathrooms, number of rooms, open and connected living room with kitchen, or design a loft. This flexible concept also allows for changes to the living space in the future. To deliver all this, a flexible and modular building material was needed – clay blocks offer that versatility and can be arranged in an almost unlimited number of ways. What makes this project even more interesting is that clients can design both their own interior and exterior. By the time construction started, they were able to select either the number or size of windows or balconies. This created a distinctive facade design with various balconies and loggias, which has a very clean and pleasant appearance.

**RETAIL AND PARKING INCLUDED** The project consists of two residential towers connected by a ground floor area, which is composed of smaller retail outlets. It is a compartmentalised project with 72 apartments, ranging in size from one to five rooms. 83 parking spaces are available, with one overground and one underground car park.

There are also storage spaces for each apartment. Entrances from the street and to the garages are barrier-free. Access to the apartments is provided by two core units with stairs and lifts.

### FULFILLING THE NEEDS OF FUTURE APARTMENT OWNERS

The project is in a location with good public facilities, shops, schools, public transport connections and various options for leisure and recreational activities. The architects planted the building elegantly in green surroundings and have managed not only to create a visual link between the housing and its surroundings, but also to let in sun and light to the whole neighbourhood. This has created pleasant, sunny, airy, and spacious apartments with spectacular views. The architecture of the New Grove apartment building is unique, pioneering and, more especially, based on the real needs and wishes of its future occupants. 

The project consists of two residential towers connected by a ground floor area, which is composed of smaller retail outlets.

### FACTS & FIGURES

**Project name**  
New Grov, Starohájska,  
Slovakia

**Architect**  
Architekti Šebo Lichý

**Products used**  
Porotherm 25 AKU,  
Porotherm 11,5 AKU

**Year of completion**  
2014



Through the dancing sunlight on the structural clay block surface, the light itself becomes the ornament.

# PREVENTING OVERHEATING AND PROVIDING A COMFORTABLE SPACE TO FIND PEACE

At first glance, this Hindu temple in Vennached, India, breaks with all traditions. These temples are usually constructed in stone but, in this case, clay blocks were used, because they performed better in tests in terms of sturdiness, building logistics, and durability.

## FACTS & FIGURES

**Project name**  
The Temple and the People,  
Vennached, India

**Architect**  
SEA – Studio for Environment  
and Architecture

**Products used**  
Porotherm Smart bricks  
(clay blocks)

**Year of completion**  
2015

Indian architecture is considered to be some of the oldest in the world. Its origins can be traced back to the cities of the early Indus culture, in the third century BC. A type of construction known as Hindu Temple or Mandir has been practiced since the seventh century AD.

**PREFERENCE FOR CLAY BLOCKS** The architect Hari Krishna Karri planned a plain temple, dedicated to the saint Shirdi Sai Baba, which was to be constructed in Tandur stone, a common local building material. However, during the consultation with the clients and the authorities, it was decided to switch from the grey stone to a more robust building material due to its better performance.

The use of materials is innovative and unique: 15 cm-thick, perforated clay blocks were used for the inner and outer walls of the temple room. For the seven metre-high shikhara, as the convex, stepped spire is called, 10 cm-thick blocks were used.

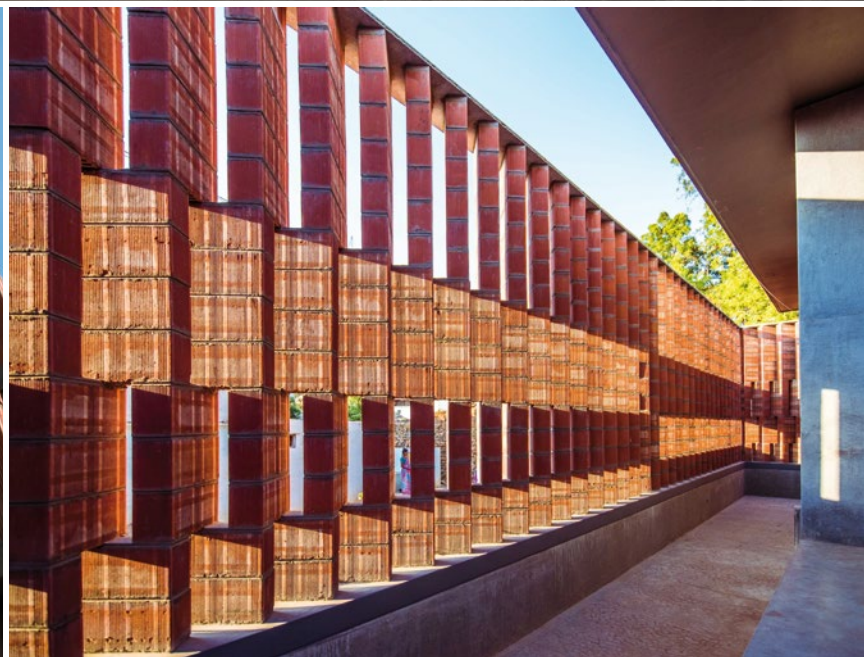
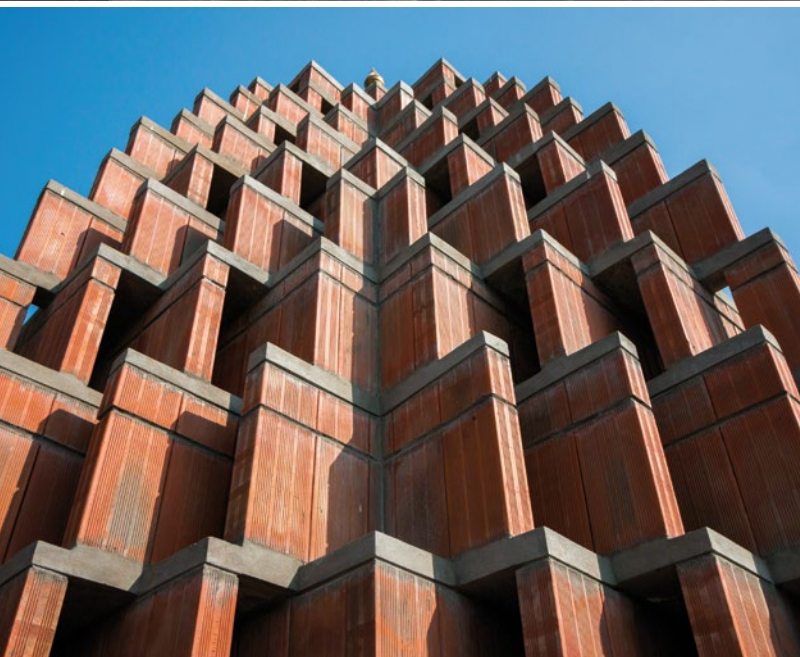
“In retrospect, I am very happy with this development,” says Karri, the architect, “The way that sunlight sometimes falls to cast symmetrical shadows and, at other times, dances unpredictably across

the surface of the structure means that light itself becomes an ornament.”

**ABSTRACT ORNAMENTATION** The choice of material is harmonious, because the red not only reflects the earth, but also the different saffron tones that are to be found in many Hindu buildings and objects. “But the most important element of every temple,” says the architect, “is the ornamentation, which usually depicts people, animals, and deities. In this temple, however, the resplendent decoration is abstract in the pure geometry of the shikhara.

**AN OASIS IN THE HEAT OF THE CITY** And the colour ... it comes from the people who go in and out of here.” The whole temple area benefits from the wind blowing through the perforations in the clay blocks, delivering a refreshing breeze. The cooling effect is enhanced by the mass storage capability of the clay blocks – they don’t heat up easily and serve as natural air-conditioning for all the temple visitors. Together with a large tree, they create shelter from the heat of the day and a place to rest one’s thoughts in a spiritual environment. ■









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**Wienerberger**