Girnghuber GmbH
Ludwig-Girnghuber-Strasse 1
84163 Marklkofen

PRESS INFORMATION

Modern perforated clay blocks

Recyclable masonry becomes suitable for large-scale use

General type approval for thin-bed clay masonry according to DIN 18940 for building class 5

Great success for circular construction: For the first time, the German Institute for Construction Technology DIBt has granted Girnghuber GmbH a general type approval for load-bearing clay masonry using the thin-bed method. Simultaneously, the GIMA perforated clay block has been granted general building approval in accordance with the DIN 18945 standard under no. Z-17.6-1306. The clay block in combination with ClayTec thin-bed clay mortar can thus be used according to DIN 18940 without restrictions for all buildings of building class 5 and can be processed just as efficiently as conventional building blocks. "With the GIMA perforated clay block, we have developed an affordable building material suitable for large-scale use and industrial manufacture which, as a purely natural product made of 100 per cent clay, also meets the highest sustainability requirements," says Simon Irlbeck, who as head of GIMA construction technology was instrumental in the development.

Structural clay-brick masonry (DIN 18940)

Building using clay is considered one of the most resource-saving and energy-efficient construction methods. The DIN 18940 standard, which came into force in 2023, was the first standardised basis for load-bearing clay-block masonry up to five storeys. Until now, however, only masonry with small-format clay bricks using the time-consuming thick-bed mortar method was approved.

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With the general type approval now granted to GIMA, load-bearing masonry with large-format clay blocks using the thin-bed method has been officially approved for the first time. “This saves us more than a third of costly working time compared to the thick-bed mortar masonry method. That makes clay masonry economically competitive and proves that clay building materials as practical industrial products are now on an equal footing with conventional materials,” says Maximilian Breidenbach, head of production and company development at ClayTec.

Healthy, sustainable, fully recyclable housing

Clay is the defining ingredient of loam, which consists of clay, gravel, sand and silt and, given an appropriate amount of water, is easy to process as a plastic mass. As a building material, clay meets the highest ecological and biological requirements: It is available locally, conserves resources and can be 100 per cent recycled. Not needing to be fired, clay requires little energy in manufacturing.

Furthermore, clay significantly improves the indoor climate: It does not secrete pollutants and naturally regulates humidity by absorbing and releasing water vapour. In addition, due to its mass, clay provides good sound insulation and has heat-storing properties.

Carbon-neutral production of clay blocks

GIMA uses standard masonry brick formats for the shaping of its perforated clay blocks, so that existing production lines for masonry bricks are used in their production. After shaping, clay blocks dry in the drying chambers at approx. 80 °C; no subsequent firing is necessary. The energy requirements of all production steps can therefore be covered by the electricity generated by GIMA’s own photovoltaic systems and by heat recovery within the plant.

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Clay block formats

GIMA perforated clay blocks meet the requirements of compressive strength class 5 and can be used for both load-bearing and non-load-bearing walls. Owing to their conventional brick formats, they can be processed efficiently and quickly. The LZ11 and LZ17 clay blocks with widths of 115 and 175 millimetres are available for non-load-bearing internal walls. For load-bearing internal and external walls, GIMA produces formats with widths of 240, 300 or 365 millimetres.

Thin-bed clay mortar

The award-winning thin-bed clay mortar is an innovation from ClayTec and consists of construction clay, other mineral primary raw materials and plant fibres that are ground and mixed. In its production process, thin-bed clay mortar requires a fraction of the energy used in the production of mortars containing cement. Thanks to its solubility, masonry once bonded can be separated again without leaving any residue. The product can be processed like any conventional thin-bed mortar: The dry mass is stirred with water and then applied at a thickness of 2 millimetres using conventional thin-bed mortar slides, mortar rollers or mortar application rollers. The joints harden by drying alone.

Wall construction and processing

GIMA recommends designing external walls as a two-shell wall construction. This makes the best use of the clay block’s advantages for the indoor climate and permanently protects it from external environmental influences. Composite-free wall mounting allows for complete dismantling: On the outside, a curtain wall protects the clay blocks bonded with thin-bed clay mortar. On the inside, the recyclable wall structure is completed by clay

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plaster, so that all materials can be sorted and recycled at the end of the building's life.

Building with clay also has health benefits for construction workers: "Working with natural materials such as clay blocks, clay mortar and clay plaster is healthier for the company carrying out the work than working with building materials that often contain a large amount of chemicals," says Daniel Neuer, contractor at the GreenConceptLehm pilot project in Meissen, which used GIMA perforated clay blocks.

Circular economy

When using clay mortar and clay plaster, clay blocks can be completely returned to the raw material cycle. Scrap bricks can also be completely recycled at any time. Thus, new clay blocks can be produced from the material of old clay walls, obviating the need for new raw materials. If a clay pit is no longer productive or the quality of the clay is no longer adequate, GIMA immediately begins restoring the site.

"The advantage of clay block is that, as a sustainable building material, it can be returned to its original state at the end of its life cycle. The climate is naturally regulated for healthy living. Living in a clay house is better than living in any other" says Prof Wolfram Jäger, initiator of the GreenConceptLehm pilot project and former professor of structural design at TU Dresden.

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About GIMA:

GIMA continues a long tradition in the manufacture of clay construction materials.

No other plant in the world produces such a wide range of different clay and loam products on one site as Girnghuber GmbH. In addition to bricks for facades and floors, the Marklkofen plant also produces roof tiles for its sister company Erlus and large-format brick panels for its subsidiary MOEDING. For the shell construction sector, GIMA offers a wide range of back-wall bricks and, since 2024, unfired clay blocks for non-load-bearing internal walls and load-bearing internal and external walls. The family business, in its fourth generation, is managed by Claus Girnghuber and currently employs 350 people at its Marklkofen site in the Vils Valley in Lower Bavaria.

About ClayTec:

ClayTec is Europe's leading manufacturer of clay building materials and an expert for resource-saving solutions in solid construction and interior fittings. Started more than 40 years ago as a specialist in the preservation of historic buildings and the renovation of timber frames, the company now develops and sells ecological and recyclable clay construction products of the highest quality for large-scale use. The product range includes masonry mortar, internal insulation, clay plasters and versatile clay dry construction systems. By its research, development and training, ClayTec promotes the professional use of clay construction materials and supports architects, developers and builders using them. The owner-managed family business, headquartered in Viersen, has production sites all over Germany for an international market and employs around 80 people in seven locations.

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Figures:

Recyclable masonry becomes suitable for large-scale use

GIMA perforated clay blocks can now be used in accordance with DIN 18945 for residential buildings of building class 5. GIMA thus provides the market with an affordable building material suitable for large-scale use and industrial manufacture which, as a purely natural product made of 100 per cent clay, meets the highest sustainability requirements.

Photo: Bauhaus Filmwerkstatt

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Recyclable masonry becomes suitable for large-scale use

Carbon-neutral production: With no firing needed, GIMA can cover the energy required for all production steps in making perforated clay blocks by using its own photovoltaic systems and by heat recovery within the plant.

Photo: Bauhaus Filmwerkstatt

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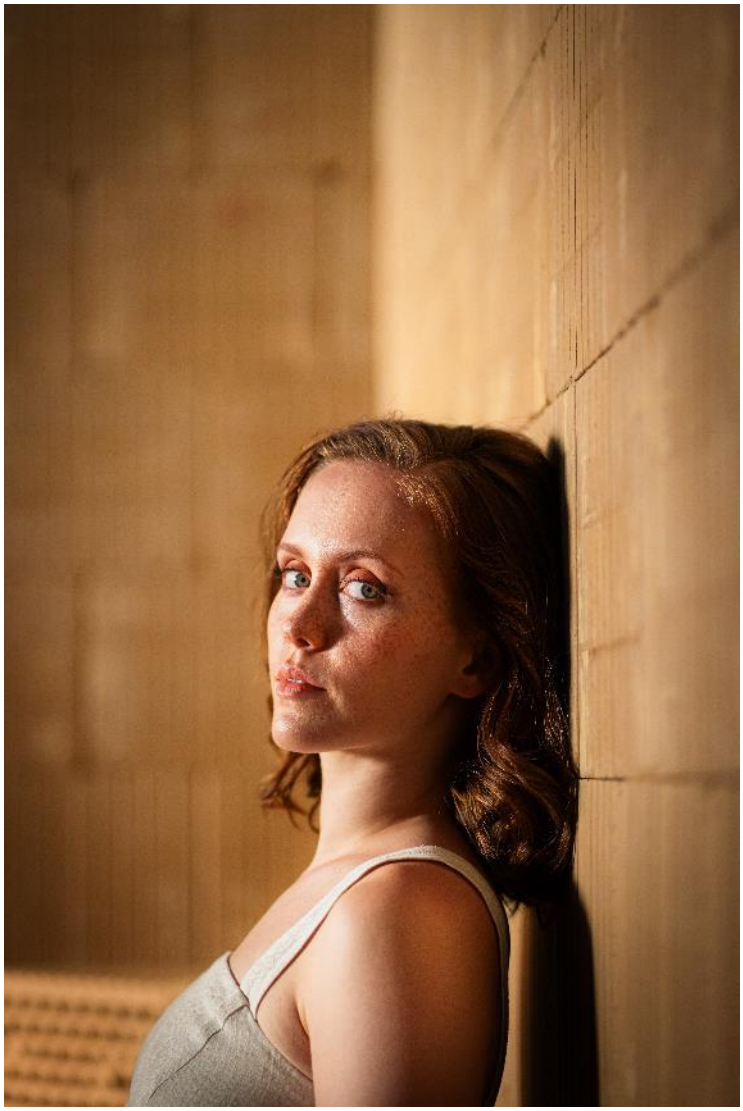

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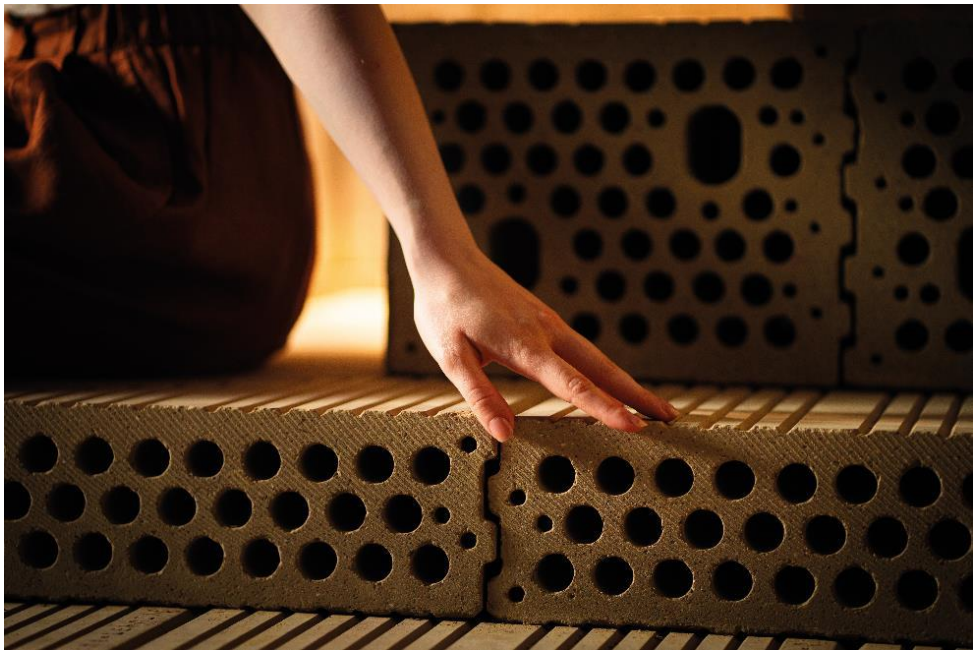

Recyclable masonry becomes suitable for large-scale use

GIMA perforated clay blocks meet the requirements of compressive strength class 5 and can be used for both load-bearing and non-load-bearing walls.

Photo: Bauhaus Filmwerkstatt

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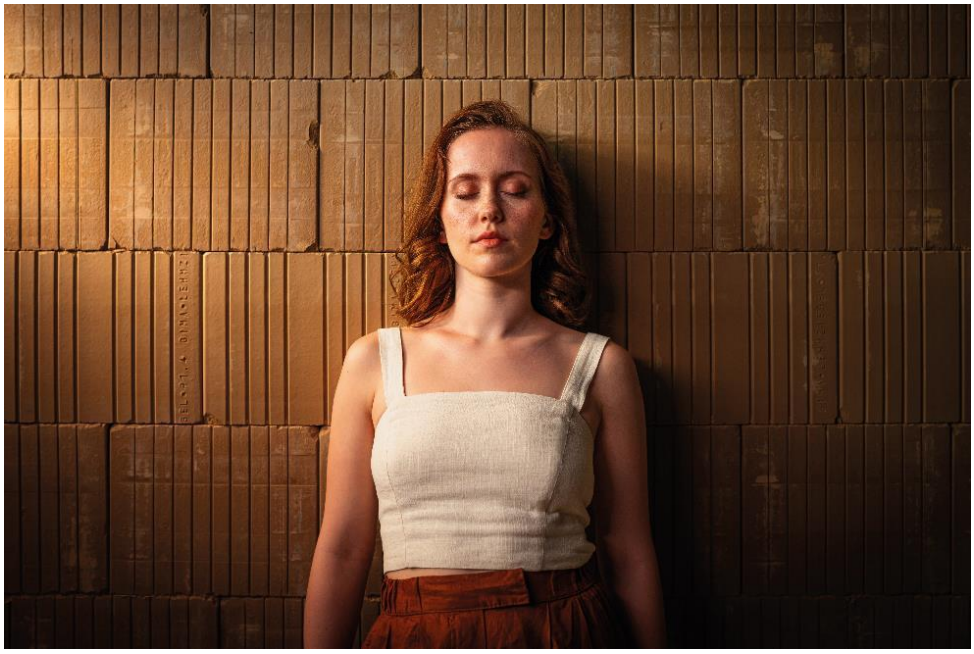

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Owing to conventional masonry brick formats, GIMA clay blocks can be processed efficiently and quickly. The LZ11 and LZ17 clay blocks with widths of 115 and 175 millimetres are available for non-load-bearing internal walls. For load-bearing internal and external walls, GIMA produces formats with widths of 240, 300 or 365 millimetres.

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Recyclable masonry becomes suitable for large-scale use

GIMA uses standard masonry brick formats for the shaping of its perforated clay blocks, so that existing production lines for masonry bricks are used in their production. After shaping, clay bricks dry for four days in the drying chambers at approx. 80 °C; no subsequent firing is necessary.

Photo: Bauhaus Filmwerkstatt

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Recyclable masonry becomes suitable for large-scale use

Application using the mortar roller: Bonding GIMA perforated clay blocks with ClayTec's thin-bed clay mortar works in a similar way to constructing masonry using conventional building materials.

Photo: ClayTec

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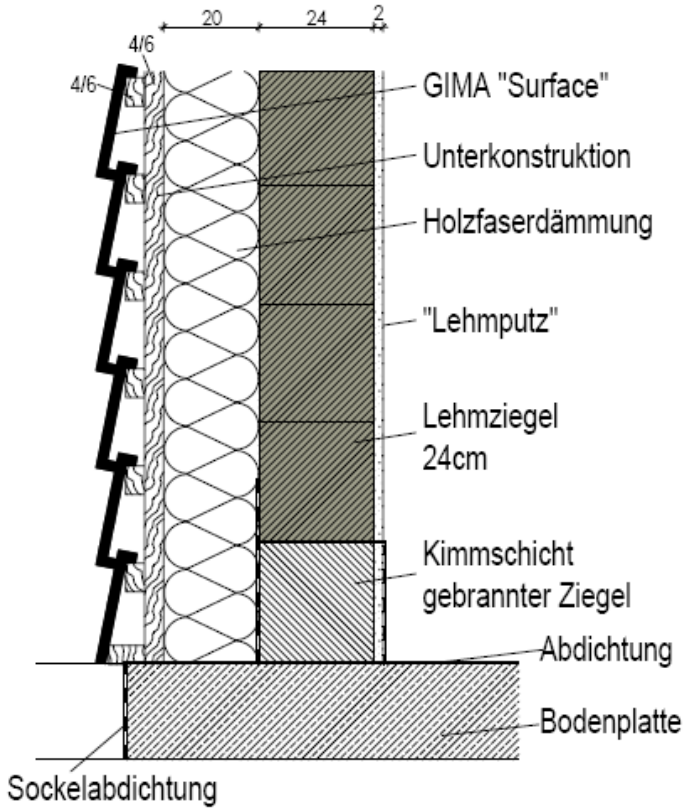

Recyclable masonry becomes suitable for large-scale use

GIMA recommends designing facades as two-shell masonry. The clay block is thus protected from external environmental influences, and the curtain wall allows for a composite-free assembly of matching clay building materials, which can be separated and sorted at the end of the building's lifetime.

Drawing: GIMA Girnghuber GmbH

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