Federal Ministry
for Economic Affairs
and Climate Action

Best practice example

for lightweighting in Germany

Infralight concrete

Demonstrators

Sustainable construction using infralight concrete

Fields of application

Construction sector (newbuilds)

In this example, lightweighting allowed for the following reductions compared to a conventional thermal insulation composite system:

Global warming potential approx. -30%*

*Based on a reference period of 100 years.

Application

Infralight concrete is a structural lightweight concrete that performs heat-insulating functions. Its specific weight of less than 800 kg/m³ results in favourable insulating properties and it can be used as a monolithic building shell, as ready-mix concrete and also in prefabricated elements. Infralight concrete consists mainly of expanded clay granulate, a small proportion of lightweight sands and cement.

Challenge

The largest share of a building's energy consumption over its entire life cycle accrues to heating and cooling during use, as well as to construction, maintenance and dismantling. If a building is well insulated, the energy needed to regulate room temperature is lower. However, the additional weight of wall insulation, which is made up of a complicated multi-layer construction, is usually applied to the load-bearing element.

Solution

Infralight concrete is a type of self-supporting thermal insulation that makes it possible to construct simple and well-architected buildings again. In the design process, a key starting point is to make it environmentally friendly, durable and recyclable. By keeping the specific weight of the insulation low, the buildings that use it will have good physical construction characteristics i.e. the building envelope will be self-supporting whilst also being made of a heat-insulating material.

Best-Practice-Beispiel | Infralight concrete

Residential house made of infralight concrete

Betonoase – construction project made of infralight concrete

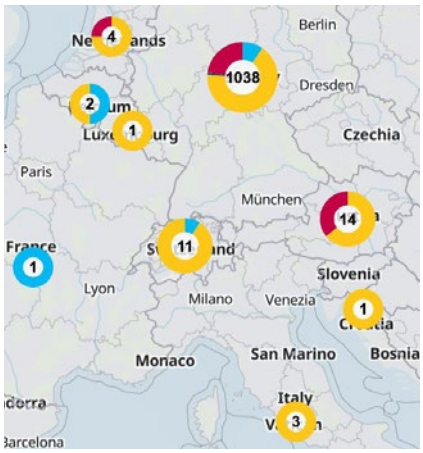
Other potential applications

Construction sector (full renovation)

Research into infralight concrete has been going on for more than 15 years. The first building was completed in 2007 and has stood the test of time.

In the construction of a single-storey children's and youth leisure facility Betonoase in 2018, infralight concrete was used not only in interior and exterior walls, but also in curved components such as window lintels and canopies, representing another important step forward for the material in terms of structural engineering.

Compliance with all requirements relevant for the sector is ensured. Research activities are being conducted so as to further improve health and safety, environmental protection and recycling.



Der LIGHTWEIGHTING ATLAS

The LIGHTWEIGHTING ATLAS is an interactive web portal that pools information on those active in lightweighting and their skills across different industries and materials. The atlas is free to use and entries into the atlas are also free. You can find the LIGHTWEIGHTING ATLAS at www.leichtbauatlas.de

The Lightweighting Initiative

Modern lightweighting is of pivotal importance for German industry and its competitiveness. The Federal Ministry for Economic Affairs and Climate Action has established the Lightweighting Initiative to support lightweighting in Germany. The Lightweighting Initiative Coordination Office in Berlin, which is financed as part of the initiative, pools all activities relevant to lightweighting and supports German companies, especially SMEs, as they implement lightweighting.

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