

Case Study: Herzo Base II

BUILDER AND CONSTRUCTION COMPANY:

RAAB Baugesellschaft mbH, Herzogenaurach

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ARCHITECT: Andreas Bär**CONSTRUCTION PERIOD:**

Mid-2016 to the end of 2017

COMPLETION: December 2017**LOCATION:**

Herzogenaurach, Erlangen-Höchststadt district, Germany

SCOPE OF SERVICES:

CALOSTAT®, the new-generation thermal insulation material of nonflammable silica, has been used to optimize brickwork and construction elements such as ceiling edge blocks and U-blocks. With a thermal conductivity coefficient of $0.019 \text{ W}/(\text{m}\cdot\text{K})$, CALOSTAT® exceeds the performance of conventional materials by a factor of about 2.5.

DESCRIPTION:

The Herzo Base II housing estate came up on the site of a former military airfield in Herzogenaurach, central Franconia. The row houses here have a very special feature: They produce more energy than they consume.

The house is part of a research project of the Technische Hochschule (TH) Nürnberg. Energie Campus Nürnberg (ECN) is an energy research center that develops new technologies for a holistic energy system. In conjunction with partners in industry, the Herzo Base project investigates the further development of building components.

“The residential block in the Herzo Base project is one of the most advanced in Germany in terms of energy management. Bricks with integrated insulation have been used, as well as geothermal heat pumps, thermal and electrical storage devices, photovoltaic systems, and a DC network,” says Prof. Wolfgang Krcmar, an expert in thermal insulation, material recycling, and the properties of brick at ECN.



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Along with his colleagues Prof. Dentel and Prof. Kiessling of TH Nürnberg, Prof. Dr. Krcmar, who heads the project, is pursuing the goal of achieving a development in thermal insulation that goes beyond the state of the art. "CALOSTAT® is at present one of the most powerful insulating materials on the market; this is why I've chosen it for this research project."

CALOSTAT® is used mainly in the facing bricks in the facade of the row house.

"The focus of the Herzo Base project in the area of passive components lies on the testing of novel wall-building materials. In the project, these recently developed products are being used for the first time and compared with conventional products.

As a new-generation insulating material, however, CALOSTAT® can offer far more than "just" thermal insulation: It is nonflammable and fully recyclable. The purely mineral product is among the most sustainable insulating materials on the market and is the only superinsulating material to have been awarded the Material Health Certificate and the Cradle-to-Cradle Certificate in Gold by the Product Innovation Institute.

Construction engineer and building biologist Gisela Raab of RAAB Baugesellschaft mbH specializes in constructing buildings that are certified compliant with the healthy housing concept of the Sentinel Haus Institut. She too is impressed by CALOSTAT® because the high-performance insulating material, with its open-pore structure allowing diffusion of water vapor, produces a particularly good indoor climate.

The research project is funded by the German Federal Ministry for Economic Affairs and Energy, among others. Prof. Krcmar is excited about the outcome, and is already talking about a "sensationally low U value for the building facades." To verify the results, the first part of the project includes intensive monitoring and optimization of energy processes. The second part analyzes the efficiency over a 3-year long-term monitoring phase. The houses should be ready for occupation at the end of 2017, when long-term monitoring will begin.

ENERGY STANDARD:

Energy storage building / Plus energy building

FACTS AND FIGURES:

- Living space per house: 153 square meters (ground, first, and attic floors)
- Energy Plus building (KfW Efficiency House 40 Plus)
- Certified healthy housing complying with the requirements of the Sentinel Haus Institut in collaboration with TÜV Rheinland
- About 320 square meters of CALOSTAT® have been used.

EVONIK RESOURCE EFFICIENCY GMBH

Thermal Insulation
Rodenbacher Chaussee 4
63457 Hanau
calostat@evonik.com
www.calostat.de