

FRAUNHOFER INSTITUTE FOR BUILDING PHYSICS IBP

PRESS RELEASE

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Doors open at award-winning Fraunhofer Centre, Benediktbeuern

Back in 2010, the Fraunhofer Institute for Building Physics IBP and the Fraunhofer Information Center for Planning and Building IRB teamed up with conservators, architects and the construction industry to launch a unique pilot project aimed at conserving historic buildings and renovating old buildings. On the grounds of Benediktbeuern Abbey in southern Germany, they began to renovate the Old Cooperage – and in doing so, they paved the way for the Fraunhofer Centre for Conservation and Energy Performance of Historic Buildings, Benediktbeuern. Their goal was not just to conserve and repurpose historic buildings. The partners also intended to create a space for applied research that would showcase the processes, materials and methods belonging to building physics, and communicate the knowledge gleaned there to experts and the public at large. With renovation work now complete, the Centre will open its doors on November 18. In addition, the work accomplished and the overall concept are to be honored during the opening celebrations as one of the 100 top projects in the “Landmarks in the Land of Ideas” competition – under the banner of “NachbarschaftInnovation,” or “innovating neighborhoods.”

At a time of climate change, rising energy prices and dwindling resources, there is growing demand for ways to renovate existing buildings to make them more energy efficient. This situation is particularly challenging for those in charge of conserving listed buildings, since façades must retain their appearance, and making any alterations to the original building structure requires a specialist approach. This is where the Fraunhofer Centre for Conservation and Energy Performance of Historic Buildings, Benediktbeuern comes in. Its researchers work on innovative and sustainable solutions for renovating old buildings and conserving historic buildings, with a view to providing tradespeople, architects, engineers, building contractors and other interested parties with the latest research results and consulting services. “We want to marry tradition with innovation. In the Old Cooperage, we use examples and demonstration areas to present not only our sustainable approaches that focus on, say, energy efficiency, cost effectiveness or ecology, but also a range of renovation techniques aimed at achieving durability,” says Professor Klaus Peter Sedlbauer, director of Fraunhofer IBP. In addition, the researchers develop new materials and technologies designed to promote the use of renewable energy in existing buildings and to improve energy efficiency in urban areas.

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Research, demonstrate, and collect and communicate knowledge

This is an accurate description of the approach that Fraunhofer IBP and its partners take at the Fraunhofer Centre, Benediktbeuern. Here is where they test methods for providing historic monuments and existing buildings with long-term protection against structural damage. Furthermore, the Old Cooperage building on the grounds of Benediktbeuern Abbey has been renovated in line with the guidelines for historic buildings and to enhance its energy efficiency. It serves as a showcase for the approaches used – a kind of construction site under glass. In keeping with the principle of reversibility, the materials and techniques used are under constant review and new ones are developed as required. Describing the work undertaken by the network of partners, head of cultural heritage research at Fraunhofer IBP Professor Ralf Kilian says: "We are convinced of the fundamental role for applied research in conserving and preserving our cultural monuments and traditional building landscape."

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Research projects worth over three million euros were carried out in Benediktbeuern between 2010 and 2016, with funding from sources including the European Union, the German Federal Ministry for Economic Affairs and Energy, the German Federal Environmental Foundation, and with various cooperation partners from industry. Sample topics include the development and testing of new, deconstructable systems for interior insulation, high-performance, thin-layer insulation using aerogel-based insulation, the installation and measurement of a highly efficient air-conditioning system for events, and the ways in which various wall heating systems affect energy efficiency and comfort and help minimize damage. In the same time period, the original windows were also given the energy-efficiency treatment. At present, 12 measurement systems are operating in the Old Cooperage as well as more than 200 sensors (for temperature, relative humidity, air speed, heat flow) that record measurements across a variety of materials and new constructions.

Project results are also to be presented in the form of permanent and temporary exhibitions, workshops and events geared towards different target groups, such as architects, engineers, professional planners, tradespeople, conservators, building contractors and communities as well as the general public. In this way, the Centre actively encourages an exchange of ideas among conservators, building contractors, researchers and industry representatives. Sedlbauer has this to say on the Centre's core concept: "We've created a platform that promotes the transfer of knowledge as well as training and education, and it gets young people involved."

A winning idea

The concept for the Fraunhofer Centre, Benediktbeuern also impressed the jury for the Germany-wide innovation competition "Landmarks in the Land of Ideas." Under the banner of "Innovating neighborhoods – community as a model for success," the concept was honored as one of the 100 best projects entered. As part of the 2016

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competition, the “Germany – Land of Ideas” initiative and Deutsche Bank recognized concepts and projects that take the notion of neighborhood – as characterized by community, cooperation and connectivity – and use that notion to help tackle the challenges facing society both now and in the future. “Not only do we have the impression that the world is getting smaller, it actually is. In other words, we are all neighbors. So the theme for this year’s competition affects us all, because it’s all about getting involved to make our community a model for success,” says Christoph Griesser from Deutsche Bank. He emphasizes that “through interdisciplinary collaboration, Fraunhofer IBP has succeeded in bringing historic buildings up to modern standards of energy efficiency without neglecting to proceed with due care and attention. The jury clearly recognized that what we have achieved together here at Benediktbeuern Abbey serves as a groundbreaking example for all of Germany.” Over at Fraunhofer IBP, employees are thrilled about the recognition: “To carry on the success story that we have started with the Fraunhofer Centre, Benediktbeuern, we need our partners and a vibrant exchange of ideas with them. I’m delighted that our project allowed us to highlight the value of community-based enterprise, and that today I have the privilege of accepting an award for the 13th time in this competition in 10 years,” said Sedlbauer.

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Background information about the Old Cooperage

The Old Cooperage at Benediktbeuern Abbey dates back to the second half of the 18th century. This listed building features a baroque hip roof with a truss post construction. The Abbey first used it as a place to make barrels for the neighboring Abbey brewery, and later as a workshop and smithy as well as a residence for young people on non-military service. The establishment of the Fraunhofer Centre for Conservation and Energy Performance of Historic Buildings, Benediktbeuern in the Old Cooperage between 2010 and 2016 has given this historic building a new purpose and a new lease of life.

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**The Old Cooperage in 2016,
after renovations**
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**The baroque attic space,
dated to around 1760,
complete with historic
elevator system.**
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**Katrin Roth (Land der Ideen),
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Pater Reinhard Gesing
(Director of Salesianer Don
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(left to right).**
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Building physics is one of the keys to a successful building project. The **Fraunhofer Institute for Building Physics IBP** focuses its work on research, development, testing, demonstration and consulting in the various fields of building physics. These include noise control and sound insulation in buildings, the optimization of auditoria acoustics and solutions for improving energy efficiency and optimizing lighting technology. Fraunhofer IBP's work also covers issues of climate control and the indoor environment, hygiene and health protection, building material emissions, weatherproofing and protection against heat and moisture, preservation of building structures and the conservation of historic monuments.

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