

New insulating plaster for Bamberg's old town

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Bamberg's old city building gets new plaster. Credit: Stadt Bamberg

They have that "certain something" and yet unrenovated historic buildings are not energy efficient. Researchers in the European project EFFESUS, working jointly with partners from business and management, are working on how to improve these buildings with energy efficiency, and how to supply them with renewable energies. They present their project at the Hannover-Messe from April 8 to 12

(Hall 1, Booth E16).

Bamberg, Santiago de Compostela or Budapest: their old towns spread charm, and entice tourists as much as residents with cozy street cafés. But no matter how beautiful these historic buildings and districts might appear, there is a need for improvements to [energy efficiency](#) even here. Walls are poorly insulated in some parts, windows frequently allow drafts, and the heating systems are not exactly economical.

This balance needs to improve, so 23 partners from science, business and community administration from 13 different European nations have come together in the EFFESUS Project, in order to help bring greater energy efficiency to historic city districts. Among the other institutions involved are the Fraunhofer Institute for Building Physics IBP in Holzkirchen and Kassel, as well as the Fraunhofer Center for Central and Eastern Europe MOEZ in Leipzig. The abbreviation EFFESUS stands for "Energy Efficiency for EU Historic Districts Sustainability." The total budget for the project is 6.7 million euro. Across national borders, these researchers are [developing new technologies](#) and materials for window repair and interior insulation, an insulating plaster and reflective coatings, among other things. "We link each technology to a case study – that is, a European city in which the technology is tested in an historic building," says Dr. Britta von Rettberg, Scientific and Technical Coordinator of the Project. The seven cities where the case studies are taking place – Bamberg (Germany), Santiago de Compostela (Spain), Genoa (Italy), Budapest (Hungary), Istanbul (Turkey), Glasgow (Scotland) and Visby (Sweden) – represent a variety of climate zones.

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So the reflective coatings under the sun of Istanbul and the insulating plaster in Bamberg need to show what they can do. Bamberg residents are proud to take part in this project. "We want to show that Bamberg is

not only a medieval city, but that we also think of ourselves as modern," says Michael Ilk, town councilman for the city of Bamberg. "The issue of saving energy is a nationwide issue – so if we can contribute just a tiny stone to the mosaic of the EFFESUS project, that would be great." Yet why should you need a different kind of insulating plaster for historic buildings than for new buildings? "Conventional insulating plasters are really thick – up to ten centimeters. Prominent elements and other details become lost, or cannot be read clearly anymore. Therefore, the goal is to develop an insulating plaster of just two to three centimeters in thickness," says Claudia Schindler, scientist at IBP. In addition, the Dutch manufacturer combines the plaster with insulating aero-gels – which are highly porous solid objects whose volume consists of up to 99.98 percent pores, and retains the warmth of the house well.

However, before these insulating plasters are applied to Bamberg's historic façades, researchers still have to conduct scientific studies on test buildings constructed just for such tests. Once the plasters have achieved good results here, the scientists will apply an approximately hundred square meter wall of it to Geyerswörth, the Bamberg city hall. "Before we apply the plaster, we'll study the wall's condition. Then we'll add measurement sensors to the insulating plaster," says Schindler. By means of sensors, they can determine the temperature and moisture content of the plaster, in order determine its influence on heat transmission. In addition, the researchers analyze how the energy needs change for the space that lies directly behind the wall to be plastered.

Software to support decision-making

Another key task of EFFESUS is to engineer a software product that should make it easier for architects and other professionals to make certain decisions. For example, the software supplies them with definitive information about what options are available for energy production in the respective district – and which options can be excluded

at the outset, due to the structure of that city neighborhood. What data have to be entered into the system? Which data only serve to "refine" the results? How do you arrive at these data, and how do they have to be prepared? These are the questions that the IBP scientists in the EFFESUS project also want to clarify.

Provided by Fraunhofer-Gesellschaft

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