Fraunhofer WKI coordinates BMEL-funded research alliance on the additional benefits of insulation materials made from renewable raw materials

A consortium of 12 research institutes under the leadership of the Fraunhofer Institute for Wood Research, Wilhelm-Klauditz-Institut WKI is conducting interdisciplinary research into holistic solutions in order to significantly increase the application of insulation materials made from renewable raw materials. The project started on 1.12.2016 and will run for three years.

Insulation materials made from renewable raw materials help to relieve pressure on the environment by conserving resources and also make a significant contribution towards a reduction in CO₂ emissions. In order to make the applicability easier for manufacturers, planners and processors of these insulation materials, the researchers involved in the project determine the material parameters which, for example, can reduce complex component testing in sound insulation and fire protection. Furthermore, the participants want to remove real application constraints. This applies, for example, to standards and other building regulations which came into being in times in which insulation materials made from renewable raw materials barely existed. A further objective is therefore the development of measurement procedures which take better account of the specific properties of insulation materials made from renewable raw materials. In order to demonstrate the additional benefits of the insulation materials, the project participants also carry out sustainability evaluations.

The six working areas of the project, “Fire protection and smolder behavior”, “Sound insulation”, “Thermal insulation”, “Sustainability evaluations”, “Moisture protection” and “Emissions”, lead initially to a holistic overview of the subject. In the working area of “Fire protection”, the researchers establish the parameters for the calculation of the fire resistance duration in constructions with insulation materials made from renewable raw materials, a “B1 equivalent” for thermal insulation composite systems as well as a fire protection guideline for building classes 4 and 5. As an independent material property of these insulation materials, the smolder behavior is also investigated. In order to assess and, if necessary, mathematically determine the acoustic behavior of components, the scientists in the working area “Sound insulation” compile the appropriate primary data and parameters. In the working area of “Thermal insulation”, the project partners investigate the moisture-dependent thermal conductivity and verify possibilities for reducing this. Evaluations of sustainability provide a quantifiable representation of the positive additional benefits of the insulation materials. In the working area of “Moisture protection”, the researchers develop methods for the
material and application-oriented investigation of mold resistance. The project partners in the working area “Emissions” demonstrate the risks associated with the emission of health-impairing or olfactorily-relevant substances and show how these can be minimized if necessary. Furthermore, they also examine the extent to which insulation materials made from renewable raw materials can contribute to a reduction of the pollutant concentration in room air.

In addition to the Fraunhofer WKI, the following institutions are involved in the research alliance: the Institut für Holztechnologie Dresden gGmbH, Rosenheim University of Applied Sciences (Faculty of Applied Natural Sciences and Humanities), the Technical University Braunschweig (Institute of Building Materials, Concrete Construction and Fire Protection), Magdeburg-Stendal University of Applied Sciences, the German National Metrology Institute PTB, the Leibniz Institute for Agricultural Engineering and Bioeconomy, Papiertechnische Stiftung, the Johann Heinrich von Thünen Institute (Thünen Institute of Wood Research), the University of Stuttgart (Chair of Building Physics, Department of Life Cycle Assessment), the Technical University Dresden, the National Material Testing Office North Rhine-Westphalia (MPA NRW). Within the framework of the project, the research institutes work together with numerous reputable companies and associations.

The total funding of the joint project amounts to more than 4 million euros with a duration of three years. The project is funded within the framework of the funding priority “Insulation materials made from renewable raw materials” in the funding area “Material use of renewable raw materials” of the “Renewable Resources Funding Programme” of the German Federal Ministry of Food and Agriculture (BMEL) via the project management Agency for Renewable Resources (FNR).