

Press Release

Holzkirchen,
17th of January 2011

"Intelligent Building" as Path to Sustainability

Fraunhofer Building Innovation Alliance at BAU 2011



Picture: The Fraunhofer Building Innovation Alliance is presenting innovative solutions in your city of the future within the context of the special exhibition "Intelligent Building" at "BAU 2011".

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European legislation is betting on energy-efficient building. For example, all new buildings are to generate the energy they need on-site starting from 2019. However, energy efficiency is only one aspect of the future challenges in building. The megatrends of demographic change, climate change, urbanization and globalization will determine the future. The challenge in the building industry is to harmonize sustainable building, comprehensive economic factors and social responsibility. With the special exhibition "Intelligent Building", the Fraunhofer Building Innovation Alliance is presenting innovative solutions for material suppliers, planners, architects and investors under the motto "Intelligent Planning, Constructing and Using" at "BAU 2011" in Hall C2, Stand 131/135 (17 to 22 January 2011, New Munich Trade Fair).

With a forecast population growth rate of 30%, approx. nine billion people will live on Earth in 2050. The greatest amount of population growth will be in Africa and Asia according to a current study conducted by Euroconstruct. The globalization will result in increasing buying power above all in Asia and increasing needs in the areas of building and residences. Approx. two-thirds of all people will already live in cities in the wake of urbanization starting from the year 2025. In the most recent surveys by the international energy agency, an increase in the need for primary energy of approx. 50% is expected and a corresponding increase of CO₂ emissions.

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The greatest leverage for increased sustainability is currently in renovation of existing buildings as well as in the construction industry. According to figures of the World Economic Forum, buildings in industrial nations use 70% of all electricity, 37% of total energy, 28% of total water as well as 30% of wood and materials. The construction industry produces 35% of landfill waste and causes 36% of CO₂ emissions, 45% of SO₂ emissions, 19% of NO_x emissions and 10% of particulate matter emissions worldwide.

The aspect of sustainability concerns the complete construction cycle from planning to renovation and all the way to demolition and new construction. However, sustainable building should not just be limited to individual buildings, but instead to complete cities or at least city districts due to its wide-ranging effects. Today, the prototype of an energy-efficient and sustainable city is the zero-emission Masdar City in Abu Dhabi in addition to the Ecocity Dongtan near Shanghai or the Chinese Tianjin Eco-City. The Fraunhofer Building Innovation Alliance is participating in these model projects. Its members Fraunhofer IBP, Fraunhofer ISE and Fraunhofer ICT advise and develop system solutions dealing with all aspects of energy supply, material requirements and building climate controls.

The Fraunhofer Building Innovation Alliance is focusing on the topic of "intelligent building" at "BAU 2011" and orienting itself to the topics of "intelligent planning", "intelligent constructing" and "intelligent using" as cornerstones on the way to sustainability. Along the chronological value-added chain, the Fraunhofer Building Innovation Alliance presents main research topics of its 16 member institutes on the questions of sustainability and resource conservation at its special exhibition. However, the exhibits will also reflect the

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aspects of the compatibility of building and living with health as well as problems of product, system and process optimization. Coordinated with respect to their subject matter, the main themes especially deal with systematic consideration of buildings: from materials to building parts, rooms, buildings and all the way to complete housing developments.

From immersive building and housing development planning using experienceable virtual reality simulations in 3D , innovative materials such as organic foam, pollutant-absorbing chip boards or gasochromic switchable membranes, innovative joining technology and construction processes and all the way to acoustic and thermal room conditioning processes as well as sensors and measurement techniques for building stock monitoring or non-destructive investigations, the Fraunhofer Building Innovation Alliance will present its contribution to mastering the complex tasks in the areas of development, application and optimization of intelligent buildings and materials, systems and processes at "BAU 2011".

»The Fraunhofer Building Innovation Alliance is presenting innovative product and system solutions on the path to sustainability at the special exhibition "Intelligent Building". Sustainability and energy efficiency have been basic requirements for new buildings in the meantime. The quality of the achieved sustainability is based on what is technically feasible. It is not a set dimension, but instead a standard that has to be improved continually. To improve the sustainability of buildings – new ones as well as existing ones – increasingly in the future, building processes and building operations must be considered intelligently and integrally. Buildings must be planned and built intelligently, but they must also function using intelligent solutions.

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In collaboration with the construction industry, we want to expand the technological lead of Germany further in the areas of building products and processes, especially with respect to the aspect of sustainability in planning, realizing and using buildings«, according to Prof. Klaus Sedlbauer, Spokesperson of the Building Innovation Alliance and head of the Fraunhofer Institute for Building Physics (IBP – Fraunhofer-Institut für Bauphysik).

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Background Information:

The Fraunhofer Building Innovation Alliance includes 16 research institutes of the Fraunhofer Society. More than 3,600 persons work at Alliance institutes distributed among 23 sites in Germany. The objective of the Fraunhofer Building Innovation Alliance is to depict and work on essential issues relevant to research in the topic of building completely within the Fraunhofer Society. As an interdisciplinary organisation, it acts as an interface between the business world, research and politics. The Fraunhofer Building Innovation Alliance also acts in this as an indicator and initiator of new and innovative topics dealing with all aspects of building research.

Participating Fraunhofer Institutes for Building Physics IBP, Industrial Engineering IAO, Structural Durability and System Reliability LBF, Chemical Technology ICT,

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Manufacturing Engineering and Applied Materials Research IFAM, Interfacial Engineering and Biotechnology IGB, Wood Research, Wilhelm-Klauditz-Institut WKI, Information Center for Regional Planning and Building Construction IRB, High-Speed Dynamics, Ernst-Mach-Institut EMI, Microelectronic Circuits and Systems IMS, Silicate Research ISC, Solar Energy Systems ISE, Environment, Safety and Energy Technology UMSICHT, Process Engineering and Packaging IVV, Mechanics of Materials IWM, Non-Destructive Testing IZFP

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