



Fraunhofer
BAU

Fraunhofer Building Innovation
Alliance



Building the future
with research

Building the future with research

The construction and real estate industry is facing a turning point. On the one hand, those involved face an almost impossible task of building sufficient affordable living accommodation. At the same time, infrastructures and existing buildings need to be comprehensively renovated, which further increases the pressure on productivity. On the other hand, there is an inevitable transformation toward closer cooperation, sustainability, resource conservation, digitization and a circular economy.

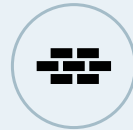
Innovation, productivity and knowledge will thus have a decisive impact on the construction and real estate industry's future viability: innovation in the sense of more environmentally compatible and recyclable solutions, from building materials and building products to processes for constructing and dismantling buildings and infrastructures. Productivity through a more systematic approach, less variance and better interfaces. Digitization for transparent control and operational optimization as well as to ensure that know-how gained through experience is enriched by new knowledge and efficiently provided.

The Fraunhofer Building Innovation Alliance is an association of all Fraunhofer institutes and experts active in the field of building research which aims at becoming a "one-stop shop" for business of all sizes - from small workshops to large corporations. Through our unique constellation of 76 institutes with 30,000 employees, we can put together interdisciplinary teams to solve anything from simple to complex networked development tasks, enabling us to respond quickly to almost any research issue with a knowledgeable and experienced team.

The Fraunhofer Building Innovation Alliance is divided into nine business units

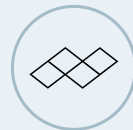
Advanced Materials

- New CO₂-reduced building materials
- Programmable materials
- Carbon capture solutions
- Hybrid materials and new insulating materials



Modular Construction

- System construction kits
- Interface solutions
- Configurators
- Prefabrication processes



Energy and Resource Efficiency

- Energy efficiency of buildings
- PV, geothermal energy and heat pumps
- Energy concepts and interlinking sectors
- Recycling and Circular Economy



Building with Renewable Raw Materials

- Development of building materials and building components
- Insulation materials made from natural fibers
- Hybrid building components (wood & concrete, natural fiber & textile-reinforced concretes)
- Timber construction: testing building materials, bonding, durability
- Fire resistance of building materials
- Emissions



Comfort and Health

- Evaluation of the impact of building products on health
- Resilience and sufficiency
- New working environments and user acceptance
- Indoor climate, acoustics and light



Digitization and BIM

- Process mining
- BIM tools and applications
- Digital platform architectures, GAIA-X and AI
- Simulation and digital twins
- Multi-modal acquisition of geometry, structure and material composition
- AI-based object identification



Smart building

- Planning, supplementing and operating electronic infrastructure
- Sensor development
- Digital building operation, IoT and predictive maintenance
- Monitoring building structures



Smart Cities

- Energy concepts for urban districts and cities
- Material flow analyses
- Decentralized energy storage
- Heat recovery



Safety

- Hazard and risk analysis
- Safe building materials
- Fire protection
- Earthquake protection
- Nondestructive testing techniques
- Design for testing



Members of the Fraunhofer Building Innovation Alliance

Fraunhofer Institute for ...

- Industrial Engineering IAO
- Building Physics IBP
- Chemical Technology ICT
- Factory Operation and Automation IFF
- Wood Research Wilhelm-Klauditz-Institut WKI
- Information Center for Planning and Building IRB
- High-Speed Dynamics, Ernst-Mach-Institut, EMI
- Physical Measurement Techniques IPM
- Solar Energy Systems ISE
- Industrial Mathematics ITWM
- Environmental, Safety and Energy Technology UMSICHT
- Nondestructive Testing IZFP

Where we are located



Building for the future -
Ask us:
www.bau.fraunhofer.de

“The Fraunhofer Building Innovation Alliance has set itself the task of strengthening the innovative power of the building industry by addressing current building trends in its research work and developing application-oriented solutions. Its services are aimed at small and medium-sized enterprises as well as large companies or corporations.”

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