

Projekttitlel: Development of an ecological wall system with integrated composite insulation textile and a lightweight steel skeleton for modular prefabricated houses

Partner: Regensburger GmbH

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Förderträger: Zentrales Innovationsprogramm Mittelstand (ZIM) des Bundesministeriums für Wirtschaft und Energie (BMWi)

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Mission Statement

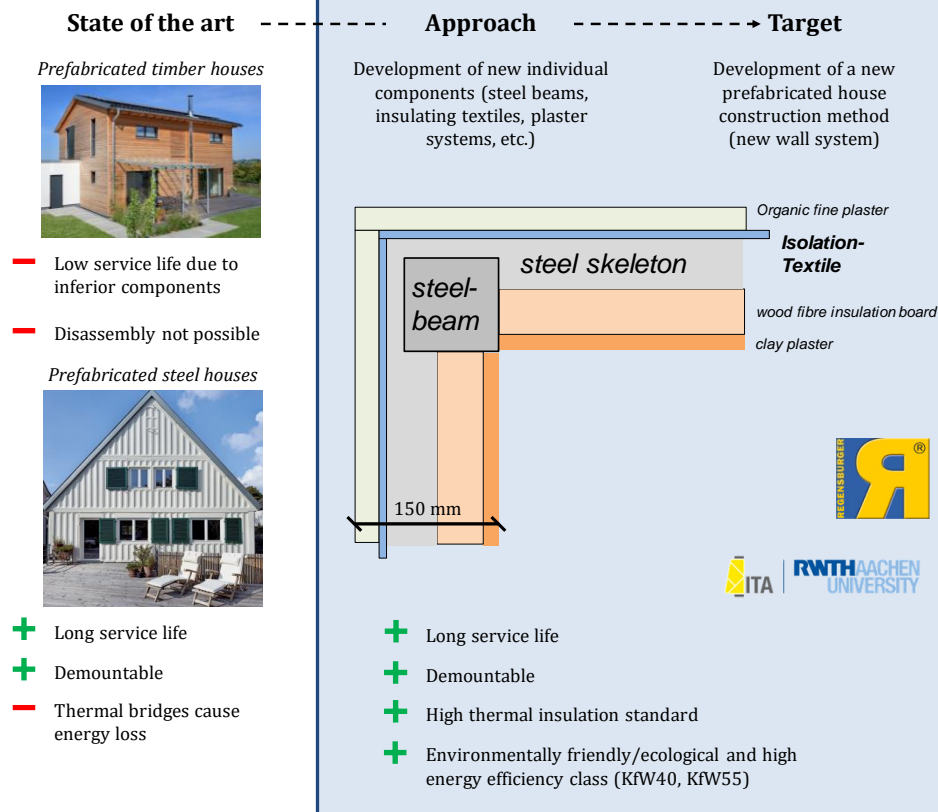
State of the art/challenge

- Prefabricated houses are usually offered "turnkey" and are cheaper than conventional solid construction houses. The low costs are achieved due to a high degree of prefabrication and the use of "inferior" or non-ecological products → low durability, cannot be dismantled (materials cannot be separated after the use phase)
- Prefabricated houses based on a steel skeleton construction are of higher quality and can be dismantled, but there are high deficits in the area of thermal bridges.

Target

- Development of a new wall system based on a filigree and flexible steel skeleton construction and a heat-insulating textile using ecologically high-quality materials.

Development process



Market/relevance

Market volume of the German prefabricated house industry increased by 11.3 % in 2016 → 18.3 billion € turnover

Approach:

The core development goal is the development of a novel, fully recyclable wall system with integrated insulating textile. The wall insulation system should be designed in such a way that it has a low thermal conductivity, a good building material and fire protection class as well as a high moisture resistance. The aim is to achieve a modular design using ecological and environmentally friendly materials. The innovative textile is intended to suppress the cooling effect and thus reduce the overall heat loss of the house. For the realization of the textile structure, a biaxial fabric in combination with a nonwoven, for example, is conceivable. The aim is to achieve a thermal conductivity of 0.10 and heat transfer coefficient of 0.13 to 0.15. Furthermore, a lightweight steel structure is to be developed. The steel skeleton should be constructed in such a way that the walls do not have to be load-bearing. This results in a low weight of the wall system and enables the realization of comparatively light, environmentally friendly prefabricated houses. The system is KfW40/KfW55 eligible for funding.

Acknowledgement

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