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Abstract: The project will focus on the development of new flexible building envelope solutions to achieve extensive energy savings through renovation of single-family houses in Denmark. An envelope system that combines high insulation and air tightness characteristics with building services systems, improved indoor climate and architectural qualities.

An identification and analysis of the main challenges and barriers for extensive energy renovation of single-family houses according to different participants, from the owner of the house to the tradesman, will be made to provide the necessary knowledge of the problematic and basis for the development.

The idea is that the possibility of future extensive energy renovations of single-family houses can be considerably improved if it can contribute to both a high quality of building and urban regeneration, can be carried out with minimal interference in the occupant's life and home, that the cost can be reduced if several functions are integrated in the envelope system and if relocation of families can be avoided.

Requirements for the envelope system, both performances, technical and aesthetic requirements, are developed in order to achieve a system which can break down the identified barriers for both the house owners and the tradesmen. This will create the basis for the development and analysis of possible building envelope system concepts. The challenge will be to develop concepts for system solutions that provide enough flexibility to be useful for different single-family building types and differences in renovations requirements – technical, architectural and occupant related.

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