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Sensitivity Analysis of design parameters in a Danish Passive House

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Question Denmark is still far behind compared with Germany, Austria and Swiss in building passive houses. There are several barriers to cross before the houses will rise across the country. The main purpose for the Ph.D. is to follow and document the most ambitious building project in passive houses until today in Denmark, "The Comfort Houses". The project is initiated by Saint-Gobain Isover Scandinavia and involves building 10 passive houses, single-family houses, in the same neighbourhood constructed by 10 different construction groups.

One barrier is to break with the "normal" building tradition and develop some constructions and construction details that can help the architects, engineers and craftsmen building these houses. When generalising you can say that the architects are afraid to lose the aesthetics and the craftsmen just want to build as they always have done. This leads to one of the main purposes of the project "The Comfort Houses". It wants to show that it is possible to build passive houses in Denmark in respect for the Danish building tradition, without sacrificing the architectural quality.

This paper focuses on an investigation of the different details from "The Comfort Houses".

Method The details from "The Comfort Houses" are evaluated according to "traditional" Danish construction principals and are further developed into other concepts. They are evaluated according to thermal bridges, architectural expression, workmanship and economy.

Contents The aim is to sketch the consequences of different ways of solving a specific detail.

Results The investigation leads to a catalogue of different construction details that illustrate the solution both aesthetically and technically. They are categorised into different types of construction masses; heavy, semi heavy, semi light and light. Selected details are illustrated in each type; wall construction, window placement, foundation and roof-wall.

Conclusions The catalogue will of course never cover everything, but it is seen as a catalogue for inspiration, with the most common details, for architects, engineers or others that wants to build passive houses. This will hopefully generate a better understanding of the construction principals in a passive house and help the Danish building industry to begin building passive houses.

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