

Energy Performance of Sustainable Houses: LCA of the FOLD project house

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GOAL

The aim of this master project is to deliver a detailed LCA of the FOLD project house (DTU project for Solar Decathlon Europe 2012 Competition), components and technical installations, focusing especially on aspects of energy consumption. Besides generating general insights on the properties of processes involved in production this work furthermore has the goal to identify possible hot-spots and also offer suggestions for improvements regarding the environmental impacts of used materials and construction techniques. The LCA will therefore practically serve as orientation and decision-support tool during the development of the house and will also be part of the sustainability report (Sustainability in Energy Efficiency), as a final deliverable for the Solar Decathlon Europe 2012 Competition.

BACKGROUND

The modern definition of sustainability goes far beyond only considering the primary properties during the use phase of a product. Therefore, the main purpose of the FOLD project is to ensure the house's sustainability over its lifecycle. Since most of the parts of the house are completely new developed, it is important to not only look at how the application of these affects the environment but also what are the environmental impacts from extraction of raw materials, production and use.

METHOD

The work will be divided into two main parts, the special course that will aim at collecting the necessary basic data followed by the master thesis where the product system will be modeled and the energy balance calculated. The product system will be modeled using the GaBi LCA software and the aim is to use primary data, if available, to model the important processes. In order to gather as much primary data on the relevant processes as possible, the work will include research on the production of materials and their assembly. To establish access to these numbers a close cooperation with the sponsors and material and components' suppliers is crucial. Therefore one of the main project objectives is also considered to maintain a good communication and cooperation with the data providers. For the background processes generic data, available from various databases will be used.