

Reflection

The main objective of the 3TU PO-Lab is to provide a platform to test and prototype innovative ideas for the building industry. By developing this platform, not only the amount of research can be increased, but also the awareness of the current problems and possible solutions increases. In fact a platform will be developed to literally investigate and test digital production technologies like CNC milled wood connections, but also a platform in its wider meaning, to investigate the effects and influences of file to factory production, to explore the potential in the field of sustainability, material use, logistics and the interaction of stakeholders within the chain of the building process.

This research to develop the PO-Lab can be divided into four main parts; background and relevance, concept generation, realization and the review. The first part needs to define and prove the relevance of the general concepts of PO-lab and its associated design task. The background and relevance parts consist of four chapters, which all answer sub-research questions that are stated at the start of the particular chapter. These questions were: how can the building industry become more sustainable, and how is sustainability defined? What are the problems of the current building process, and how could we tackle these? And last, how can we use the improvements to the building industry, to change the way we approach design and construction? These three answers provided a comprehensive base that is concluded into a suggestion for a renewed approach for the building industry.

The second part of this research converts the ideas on a renewed approach of constructing, into a concept. The first chapter of this part combines the sustainable design strategies of the previous part, into a framework for the further research. It proves the relevance of PO-Lab, elaborates the general project goals, defines a specific design task and develops a methodological approach to create a concept. Design task in this research was to develop a convenient connection detail that suits the concept and goals of PO-Lab. The methodology was used as a framework during this part of the research. By clearly specifying criteria from the project goals and literature research, a consequent method was provided to approach and evaluate different solutions in all stages of the design process, towards a final design.

To verify the feasibility of the conceptual design for the actual building, it required testing and prototyping. This is carried out in the third part of this research. The concept proposal is prototyped to see if it works like it was supposed to do. Two sub-aspects of the concept were selected to elaborate and test further because they were crucial to its feasibility. After testing and evaluating, the concept is converted into a final design. This final design is the elaboration of the specific design task, derived from the PO-Lab, into a viable building product.

The last part consists of a review. It contains a conclusion that states that the designed connection detail meets most of the project goals. And that the methodology provided a basic framework to consequently assimilate all goals into the phases of the design process. However, by analysing the methodology it could be concluded that there is room for approval. Mainly the way of decision making can be observed as subjective. Further, this part makes a shift from the design task, to the entire building. It compares if the elaborated building system corresponds to the conclusions of the literature research. It shows that the renewed approach, and designed building, are reasonable solutions to solve the problems of the current building industry, stated in the first part. The end of the review contains a chapter with recommendations for further developing this building system. It suggests that further research is required to several aspects in order to make the actual building work.