

It is important to reflect on this Thesis so the strong points and the weak points become clear. This will add to the learning process. Secondly, a weak point of this study could be researched in more detail as a subject for a future study. To reflect this Thesis, it is not only important to look at the results and their accuracy or the effect of the design, but also the relationship of the research and design, the relationship between the research and the chosen subject and the relationship between the design and the social context.

There is a direct connection between the research and the design present. The research contains understanding living wall systems (LWS) that are currently on the market, which is the basis for designing a new living wall system. Not only does this offer a set of ideas and the needed specifications for a LWS, such as weight and water consumption, to enter the market, but it also provides the numbers to compare the various systems in their specifications, which can be used in the design phase for optimization. The research also provides a set materials and connections that can be used in the design process.

The chosen method for this research might not be optimal, but can still be considered effective. While a common design project would indeed start with a literature study, contextual study and a research of a certain aspect leading to a design, this has not been the case with the current LWS on the market. Most of the LWS start from an innovation, which is turned into an economical design that can be used almost everywhere. This approach, however, would not utilize the research part. Taking this different approach leads to different solutions and innovations.

The personal experience of this literature research was rather solid. The information available on vertical green and especially living wall systems was easy to find and concentrated within a few books and reports. This is probably due to the fact that vertical living wall systems are a fairly young concept. Information on modularity was rather broad with many sources leading to different interpretations of modularity. Eventually these interpretations could be collected and were merged into the four main principles for designing with modularity.

The analysis of the living wall systems currently on the market was a big job, which is why this had to be done along with my colleague Maaïke Kok. The communication with the companies providing living wall systems was a large part of this analysis and led to a variety of problems. Some of the companies either didn't want to share information about their product. Other companies showed their willingness to help with this analysis, but eventually kept sending us from one contact to another. This was shown to be a tedious process, but eventually it was possible to compare eight LWS, while the actual goal was to compare a minimum of five systems.

Although the method of literature research and analysis of systems on the current market is fairly good towards the design phase in terms of general properties of systems, it could be stronger in determining the circularity of the researched systems. Perhaps an existing method, such as a cradle-to-cradle scoring or a NIBE scoring would be more interesting for companies, since these methods could lead to a certificate.

The design process had a quick start due to the fact that a lot of work had been prepared, like understanding of the context and the requirement. Eventually there were many moments where the design was reviewed to ensure it was still on the right track to becoming a successful LWS. Many steps backwards had to be made to improve the design. There were many requirements and the idea was to integrate all of them in a smooth and simple way. The drainage within the aluminum profiles is a great example of a successful integration. As the design process continued, some element just seemed to be simply attached to the planter box. This led to many elements affecting the aesthetical value. Decreasing this impact was a big problem within the design process.

Another element that deemed problematic in the design process was the gutter. For modular design one always strives for rectangular elements in a horizontal or vertical direction. The gutter, however, needs to be provided with a slope, so water can easily find its way out of the system, which means the gutter needs to be placed at different heights all over the façade. This problem was eventually solved by connecting the gutter to the inner aluminum profiles which can be adjusted on their height when installing the system.

The final big problem in the design process was the maintenance of the system. Although a single planter box could be easily retrieved from the structure, it was important to look at the maintenance on a larger scale and think of the building maintenance units that are used to retrieve this planter box. Considering the Europoint-complex was already provided with a façade elevator, the most effective building maintenance unit, thinking out of the box and with an eye for the future was critical here. Eventually, making the LWS futureproof by designing with drones in mind, the maintenance of the LWS was taken one step further.

As for the final design itself, the focus on modularity has led to a probably cheaper and easier design than what's currently on the market. In the wider social context this could improve and enlarge the application of living wall systems. The user has more options by choosing what benefits of the living wall system he wants to amplify. The design is not perfect, however, and could be improved by redesigning it at a smaller scale with industrial engineering values and economical values. It would be recommended to do this before making this product available for the public market.

In conclusion, an understanding of what's currently on the market leads to great insights that could help industry as a whole. By collecting the problems and solutions of every company and combining them with the principles of modularity and other innovations that could tackle these problems or increase the benefits of the systems, it was possible to create a better product. The living wall system is now ready for large scale implementation.