

Reflection Paper

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Studio: Architectural Engineering -1 Million Homes
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This paper indicates the integration of the research and design in my graduation project:100-step-city as provided in the Graduation Manual.

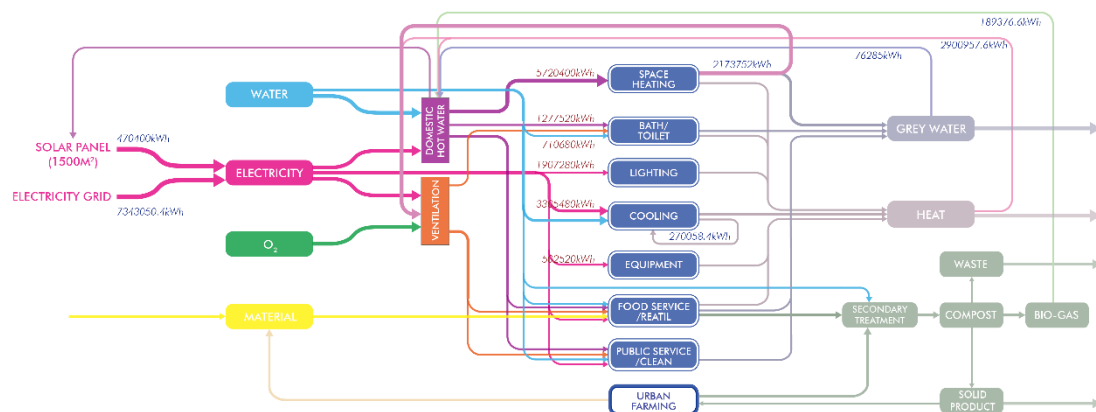
Graduation Project:100-Step-City

Based on the new lifestyle, the homebodies, with the related topic such as homebody economy, homebody design, homebody fashion, etc., the project mainly focus on how to provide a multifunction and inter-disciplinary scenario for this group of people. It also investigates the identity of a residential construction shifting from a pure private property to a mixed-use social design, as well as completing the goal of energy balance.

The relationship between research and design

The 100-step-city project requires solutions of two aspects: energy problems based on the background of *productivity*, and the improvement of the *supply chain* based on the technical means like drones, new logistic carriers, etc... The research in the first semester was mainly focused on energy topics, the optimization of the flows in a mixed-used, vertical building, including water, heat, and bio-waste.

During this period, the current energy consumption was calculated and presented the degree of reusability. Based on these, three energy systems (water, ventilation and food circularity) were introduced and established a new energy exchange logic (*Fig.1*), which could improve the energy efficiency and show the possibilities of the program organization, which is, as a conclusion, the preliminary program design in the next phase, including the schematic footprint of each function.



Besides, the research on the current building technology cases and on the context of Amstel III gives the hints of inspiring the shape of the final project and design decisions. It verified the feasibility of the new energy mapping.

The relationship between graduation topic, the studio topic and the master track

The Architectural Engineering Studio allows exploring the integration of design and building technology solutions, and in my case, it is about sustainability and circular economy and climate. The track of 1 Million Homes requires an even more complete story and integrated design on the

new kind of daily life of the *homebody* and freelancers, based on their new identity and developing social recognition.

The graduation topic of mine is trying to find the answer to the route and comfort of the specific group of people, also the possibility of promoting the lifestyle. In this scenario, the carrier will be the residential space, and it may provide a solution to the current housing challenges in another dimension. With its new energy system and the attitude towards life/work/shopping/leisure, 100-step-city may meet a future ambition on the 1Mhomes aims.

Research method and approach in relation to the graduation studio methodical line of inquiry

My research result and conclusion were mainly based on literature research, a lot of calculation, and case study. Literature is the basic, for various possible technical solutions and providing the potentials. Document reading gives the scientific knowledge system, also the selected solutions and details. After that, the calculation on the current and improved mapping is possible, which settles the organization of the new flows.

The case study adjusts the practice energy performance and controls the cost in a further phase, as well as correcting, and adding more passive methods considering the equipment, lighting, and public service sectors. Moreover, the cases give a better understanding of the advantages and weaknesses of each technical solution and test the feasibility and applicability.

Relationship between the graduation project and the wider social, professional and scientific framework, the transferability of the project results

A number of people are desperately seeking for the ideal housing nowadays, and for the homebodies who are extremely adapted to the brand-new logistic chain and carrier, dwelling space means 24 hours for 7 days per week, instead of the traditional commuters. It is now a great practical significance of the subject especially when the epidemic suddenly comes up and the lockdown becomes normality maybe in further one or two years.

The issues also stand out on the context, Amstel III, when it could be clarified as an abandoned office area and urging to be alive again. New storied are desired both technically and socially, which are reflected on the project. One of the solutions is a new vertical city with all the functional elements within it, making up the gap between the outdated, unfriendly infrastructure and the lifestyle that depends heavily on new technologies.

From my point of view, the 100-step-city has the potential to be a template for the area without perfect infrastructure, or some extreme climate/energy situation (let's say, nuclear pollution...) for its well-achieved energy performance. It is not only a heaven for the freelancers and homebody, but a refuge for human-being one day as well.

The ethical issues and dilemmas

The energy performance may be different in the practice for sure via the case study, and this is interfered with by the design strategy, especially if more natural climate and energy situations are applied. This means that façade and the underground situation could be totally different if we take the 100-step-city project as a template on a larger scale. This means the daily route and the new disposal chain might be interfered after application.

Besides, we keep discussing the relationship between nature and human-being, and querying if the homebody is *healthy* enough. This might still keep controversial even if the gym is set as one of the programs in the tower. Certain connections are taken into consideration such as the urban farm and bio-gas disposal system, also the balcony strategy is open. So be curious and let us leave it alternative.