Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

Graduation Plan:

Personal information	
Name	Anisa Hallulli
Student number	4519930
Telephone number	
Private e-mail address	

Studio	
Name / Theme	Building Technology Graduation Studio
Teachers / tutors	Leo Gommans(first mentor), Frank Schnater(second mentor), Ype Cuperus (third mentor)
Argumentation of choice of the studio	Zero-Energy Buildings, Sustainability, Floating structures, Modularity, Energy, Material durability

Graduation project	
Title of the graduation project	Floating Cities: "Design of a self-sustained floating settlement"
Goal	
Location	Temperate climate zone. In the Sea. More specific information about the type of water in which the settlement can be placed will be defined according to the type of waves and the minimum solar radiation and wind needed to provide sufficient energy to the settlement to be self-sustained.
The posed problem	Nowadays architects and engineer are facing two main problems; urbanization and climate change. For the first time in history the number of people living in towns and cities is bigger than the one living in the countryside. Not only, migration to the cities is increasing exponentially and is predicted that in 2050 70% of the world population will leave the countryside to settle in urban environment. Only one-eighth of earth surface is supposed to be suitable for humans to live in (excluding seas), and despite the fact we are currently occupying only 5% of it, the lack of available building ground and the consequences of climate change, are encouraging the use of water as building land. Moreover floating structure are characterized by many positive aspects, mainly taken into account for this research are: - The possibility to use alternative energy production techniques - The possibility to move a platform that can be used

	in different places when needed. Despite the fact that the concept of floating cities is still partly considered futuristic, its positive characteristics could be used to develop settlement that can be energetically independent and offer new ways to build cities that can be characterized by dynamic geography.
Research questions	- How can a floating city be self-sustained? - How can the floating city be moved and moored according to need?
Design assignment in which these result	The design consists in developing a close cycle settlement that can be totally self-sufficient. It won't consider buildings such as offices or workspaces but only dwellings. The design is meant to be modular, so despite the constrains it leaves the possibility to be incremented in the future, when floating cities will be an accepted reality and the flexible settlement can become one of the many fixed floating cities we will see in 50 years from now. Constrains are meant not only to analyze the technical potential of a movable settlement but also to develop a design that could be already a reality in the present and that can be developed within the graduation time available.

Process

Method description

The design will be based on research. The plan consists in doing enough research to start the design. While the design is made, some energy calculation will be done to ensure the sustainability and the energy efficiency of the design itself. Therefore the method will be "design by research" on a first phase, and efficiency "verification" in a second phase.

Literature and general practical preference

The literature partly already consulted and that will be consulted analyses the following topics:

- Floating structures (floating systems, connection systems, mooring systems)
- Zero-energy buildings and zero–energy large scale closed-cycle systems
- Modularity
- Climate and environment analysis for floating settlements (wave, wind, solar exposure etc.)

Reflection

Relevance

The concept of floating cities is still a new development in urban design and the idea of floating cities still looks like a futuristic option. Despite this, floating cities are going to be part of the future architectural development as shown by the many conceptual projects that firms worldwide are designing.
As part of the "climate change generation" it is wise for nowadays architects and engineers to analyze the potential of a new type of architectural, technological and urban development. Moreover the design itself of a movable floating settlement is meant to help problematic situations due to lack of immediate living space.
As a student of Building technology, this theme is an optimal opportunity to study and develop knowledge of technical features as construction systems and energy optimization and at the same time architecture design and dwelling.

Time planning

Before P2:
Period dedicated on research, mainly on floating systems, construction systems, and energy production systems for floating structures.

Between P2 and P3:
Start of the design process and pursuance of literature study, mostly on circularity of resources and Zero-energy design.

From P3 to P4:
Design verification and completion. For P4 the design is meant to be completed and verified.

Before P5:
Design refinement according to P4 review.