

Longlife Design Class

winter semester 2010



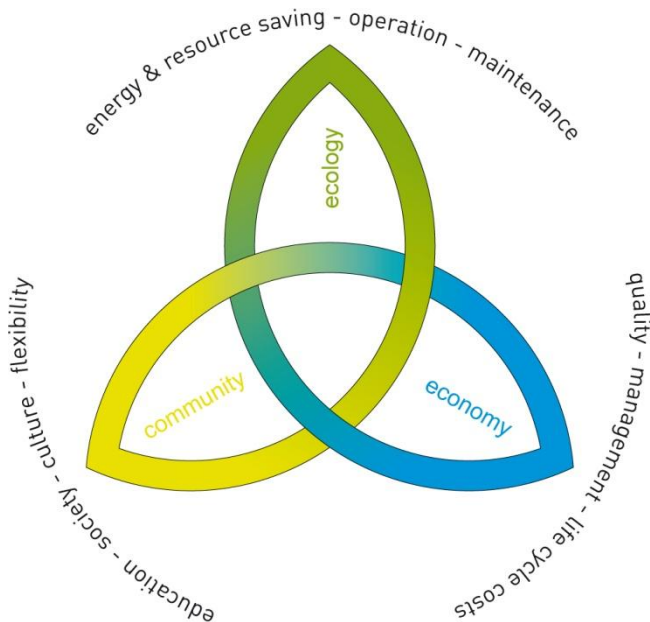
TEK Design Class
Chair of design and structure
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1. Task

The goal of the design class is a prototype of a sustainable, energy efficient multi residential building. Environmental aspects, ecological materials and resource saving design approaches shall be considered during the design process.

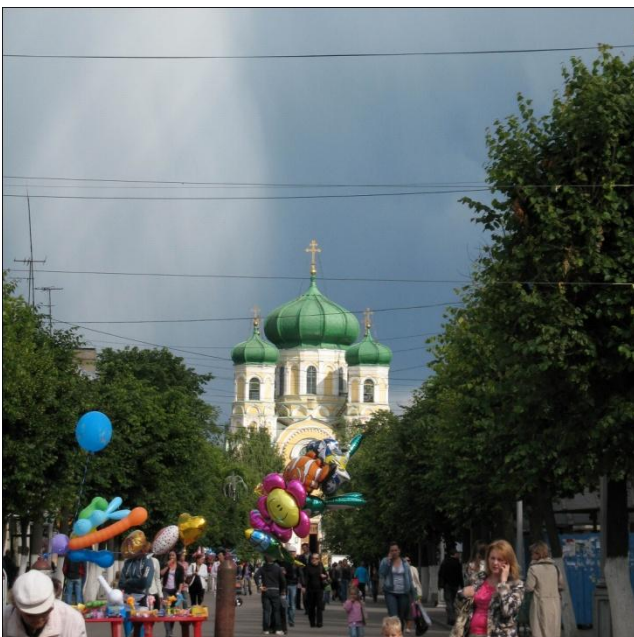


The design process includes the development of an energy concept, energy requirements, materials, construction, detailing and engineering. While designing with clear, modern and timeless aesthetics. Optimized methods for buildings, constructions and technologies shall lead to reduction of the energy consumption during the building's lifecycle and minimize maintenance and operational costs. The task is to be done in groups of two or three people. The groups will be decided upon at the second meeting, which takes place on Thursday the 28nd of October.

The design class includes lectures, which will be offered in the course of the semester. These lectures are mandatory and attendance is required.

2. Two Sites

The selected sites for this design are located first in the rural outskirts of Gatchina, a city in Leningrad Oblast, Russia, and sited ca. 50 km south of St. Petersburg and second site is in the growth area of Hashtgerd New Town the capital of Savojbolagh County, Iran. Hashtgerd is located ca. 70 km west of the Iranian capital Tehran.



The uniqueness of each location attributing to various parameters, such as climate, urban fabric, density, cultural and social backgrounds of the people as well as the adjacencies and the surrounding landscape should be respected and integrated into the design

3. Typology

According to the dissimilar urban contexts diverse residential building typology should be implemented. In Gatchina – in comparison to the surrounding buildings which consists mostly of detached houses and free-standing dwellings with minor height – the notional buildings should have a similar height as the already existing buildings and also a related density.

“Low-rise – high density” is the theme for the development of the urban design in the new town of Hashtgerd. This will lead to the implementation of terraced house/row house or town houses. The current plan for the urban design has to be respected.

4. Design a Multi Residential Building

Scenarios for different kind of users should be developed and implemented into further steps of the design process. This will lead to a variety of a typology of dwellings which vary in size and orientation

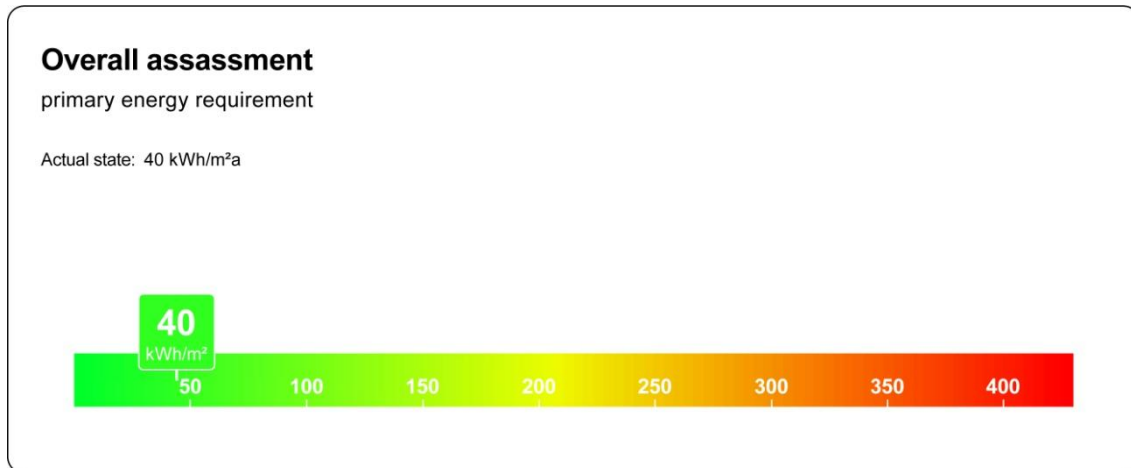
	Gatchina	Hashtgerd
size of plot:	5040 m ²	6225 m ²
number of buildings:	dependent on the design	
number of floor levels:	3 - 4 floors	2 -3 floors
size of the apartments:	Type 1: ca. 40 m ² Type 2: ca. 60 m ² Type 3: ca. 75 m ²	Type 1: ca. 60 m ² Type 2: ca. 80 m ² Type 3: ca. 100 m ² Type 4: ca. 130 m ²

4.1. Requirements / Specification

- Application of a simple and significant design vocabulary which at the same time is looking beyond short-lived, fashionable accessory
- Building orientation, taking into account energy requirements (solar energy, wind exposure, etc.)
- Mid-range building costs and simple, constructive-technical and structural design approaches
- Detailing in consideration of technical regulations to minimize damage and to maximize utility value
- Limiting the choice of materials to a few durable materials with properties corresponding to aging capability

4.2. Energetic standard

The building has to exhibit a yearly final energy demand of not more than 40 kWh per square metres floor space and the yearly heating demand has to be not more than 15 kWh per square metres living space.



5. Outputs

5.1. First Presentation

A general approach to the urban or rural context should be developed and converted into an extempore draft for the urban design. This presentation is indicated as work in progress.

5.2. Seminar paper

Each group has to write one paper dealing with one of the topics listed below. Which group does which topic will be decided at the meeting on Thursday the 28nd of October.

- Building Life Cycle
- Waste Management
- Sustainable construction elements and materials (Thermal Envelope)
- EnEV History/requirements
- Overview of DGNB (Criteria)
- Overview of LEED
- Overview of BREEAM
- Examples of Multi Residential Buildings with sustainable certificate
- Examples of Industrial / Office Building with certificate
- Energy saving heating, cooling
- Water saving systems
- Renewable energy
- Passive House- Zero Energy House
- Operational/ Running Costs

5.3. Final Presentation

Output final presentation:

- design concept, description
- energy concept
- construction, structure, materials
- site plan M 1:500
- floor plans M 1:100
- view, sections M 1:100
- detailed floor plans for one dwelling M 1:50
- facade section M 1:20
- details M 1:20
- perspectives
- working model any scale
- final model M 1:100
- calculations of energy demand, building costs, etc. operational costs, approx. structural design

5.4. Portfolio

The output of the final portfolio should contain all the plans from the final presentation as A3 pages

- written description of building (construction, structure, materials, ...)
- written description of energy concept
- all required calculations
- pictures of the model
- CD with: softcopy portfolio/folder (formats: doc, indd (package), jpeg, dxf, dwg)

6. Assessment criteria

- Functional layout and design
- Structural design
- Selection and use of materials
- Building physics
- Energy design
- Calculation and amount of energy demand
- Calculation and amount of building costs

7. Links

- www.tek.tu-berlin.de
- www.longlife-world.eu
- www.youngcities.org
- www.wikipedia.org/wiki/Gatchina
- www.wikipedia.org/wiki/Hashtgerd

8. Timetable (Excerpt)

4. Week CW 45	Th. 11.11	A 310	10.00:	1. Presentation: Project concept	Prof. Klaus Rückert
9. Week CW 50	Th. 16.12	A 310	10.00:	Midterm Presentation	Prof. Klaus Rückert
16. Week CW 5	Th. 03.02	A 310	10.00:	Final Presentation	Prof. Klaus Rückert Jury
17. Week CW 6	Th. 10.02 Fr. 11.02	A 318	14.00:	Deadline for project portfolio	