

Building Energy Performance

Connecting the Dots

GENERAL (in an additional text box on the posters)

Our specialisation modules this semester are characterised by two factors:

- *To maximise the synergies between research and teaching for both teaching staff and students, both modules we are offering this semester are based on and intimately aligned with the PhD topics of 2 key staff at our institute. You will be working with people who are both knowledgeable about these topics but also very passionate about them*
- *This semester, we have decided to place more emphasis on the social and economic aspects of sustainable urban design and architecture. Nobody talks about money in architecture school. However, money is part of life and real projects and economic and social factors have a strong influence on what architecture can do.*

Efforts in architecture and urban design to create a more sustainable future have largely focussed on new-build buildings and cities. Refurbishment in general is far behind where it needs to be to meet the climate goals and the CO₂-roadmap agreed in Paris in 2015. The reasons are technical, economic and social.

Alongside technical challenges and financial issues, refurbishment in typical existing neighbourhoods in European cities is made difficult by social factors such as:

- heritage protection
- ownership structures
- NIMBY

A key question is how these existing neighbourhoods, which make up the vast majority of our cities, can be integrated into the necessary energy transition our society needs so urgently. This semester, we will study and develop novel methods and models to enable the refurbishment of these areas despite the legal, financial, technical, and social challenges faced. This will include both new architectural and technical solutions as well as the implementation of new social and economic models.

To study ways to increase energy efficiency, switch to decentralised CO₂-free energy production and form energy sharing communities, we will use the example of the neighbourhood in which our university campus is located, focusing particularly on the immediate surrounding residential area, in which many students reside.

To help us understand these issues, we have chosen to study our own immediate environment and our own behaviour. How often do we stop and analyse our living environment? How much do we know about our own use of energy? How much impact do we have in energy usage in the environment in which we live and work? What is the price of our comfort and is it reasonable? How can neighbours work together to create a mutually beneficial energy-sharing community?

What will this neighbourhood look like in 2050?

What effect does the refurbishment of a single building have?

How can an old historic building be renovated?

What happens if you renovate your apartment, but your neighbours do not?

What will be the effect of installing a PV module on your balcony?

What if you buy an electric vehicle and integrate it into your apartments energy system?

In this course, you will learn the answers to these and many other questions concerning our urban environment and future.