



Faculty of Civil Engineering  
Warsaw University of Technology

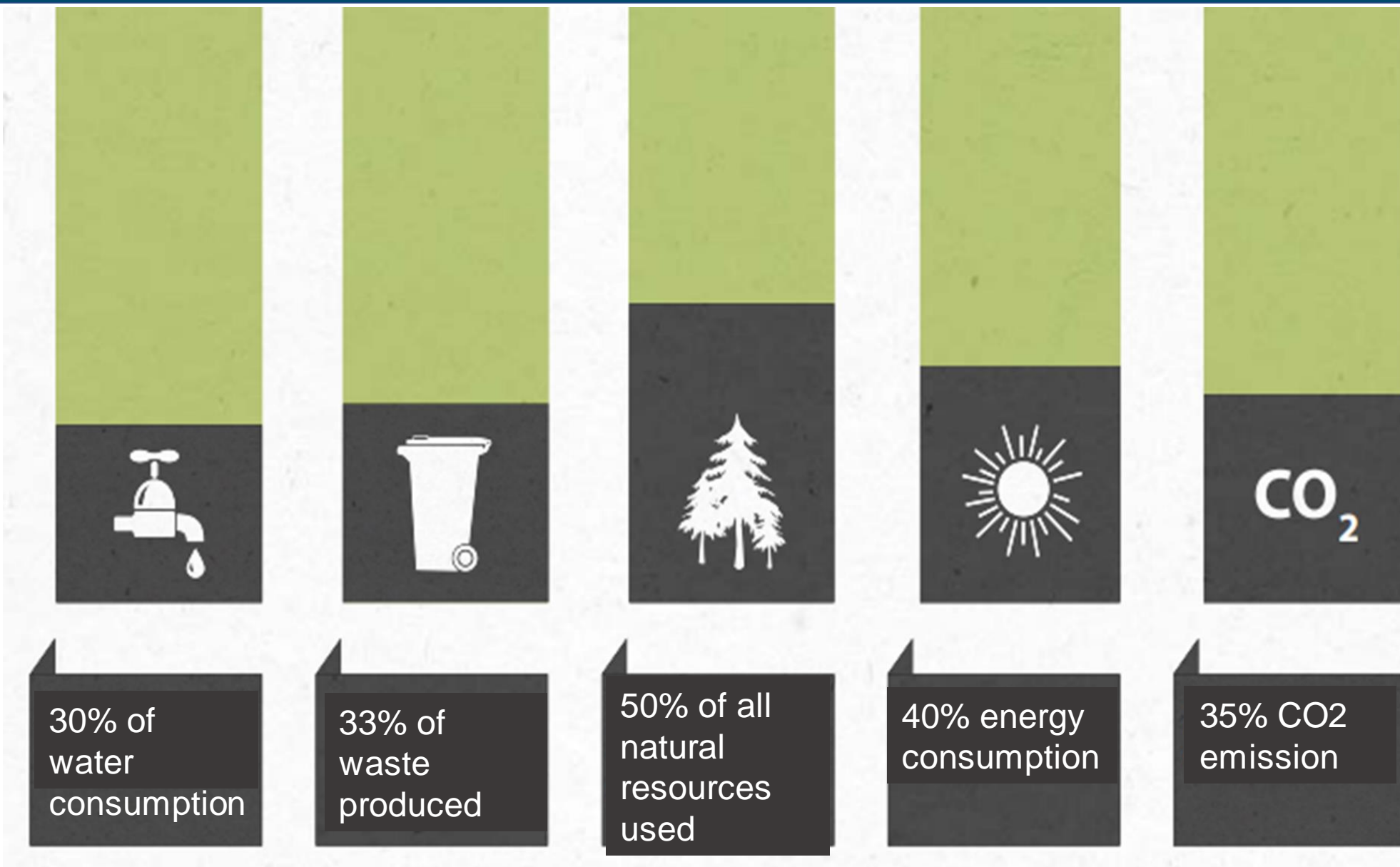
# Sustainable Buildings

Presentation of specialisations



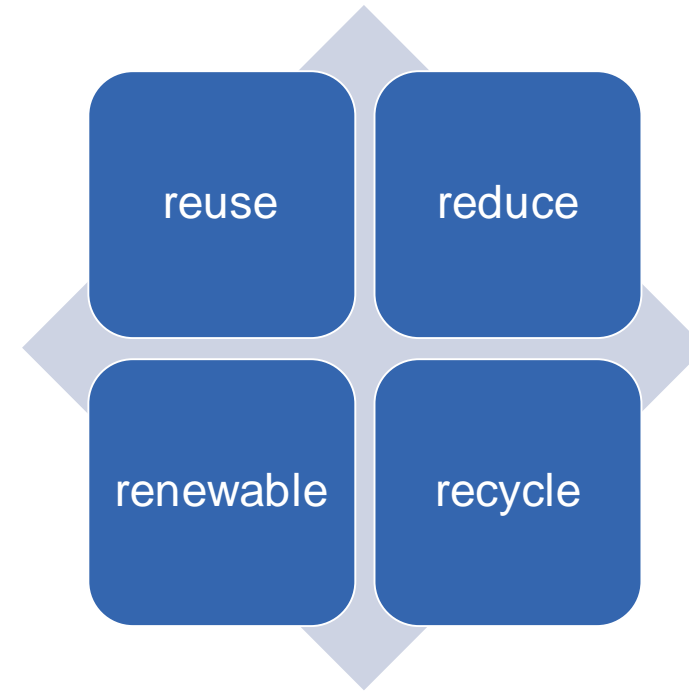
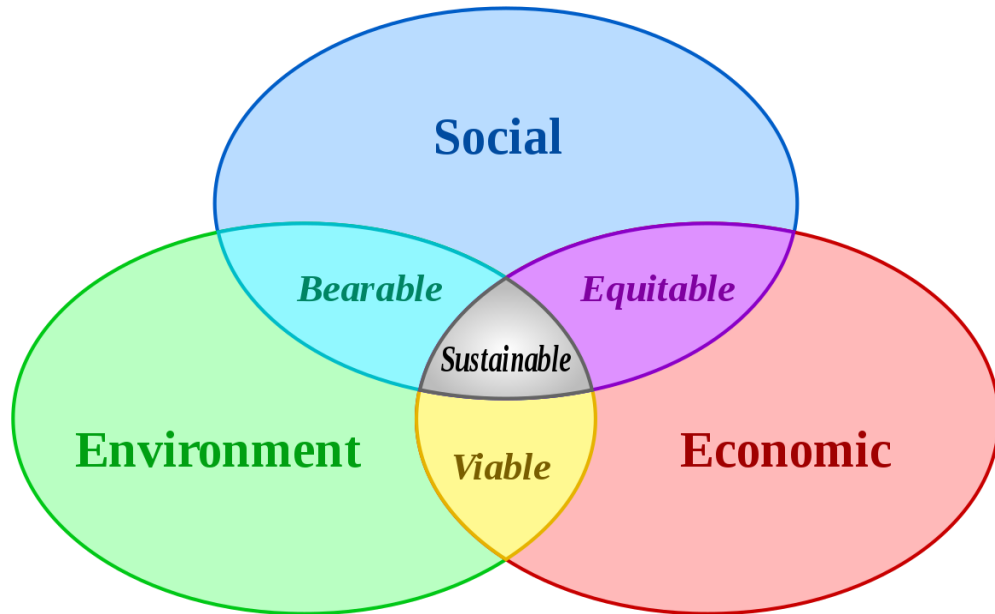
# Sustainable Buildings - Presentation of specialisations

## Environmental aspects in construction





Environmentally friendly construction should implement the principles of sustainable and balanced development.



Sustainability - meeting the needs of today's society while leaving opportunities to meet the needs of future generations.



## Specialist subjects (First degree studies):

- Sustainable building design
- Elements of sustainable architecture
- Sustainable building materials
- Computational Methods in Sustainable Construction
- Building Physics II



## Elements of sustainable development architecture



Masdar City in the United Arab Emirates. First zero-waste city with zero carbon emissions



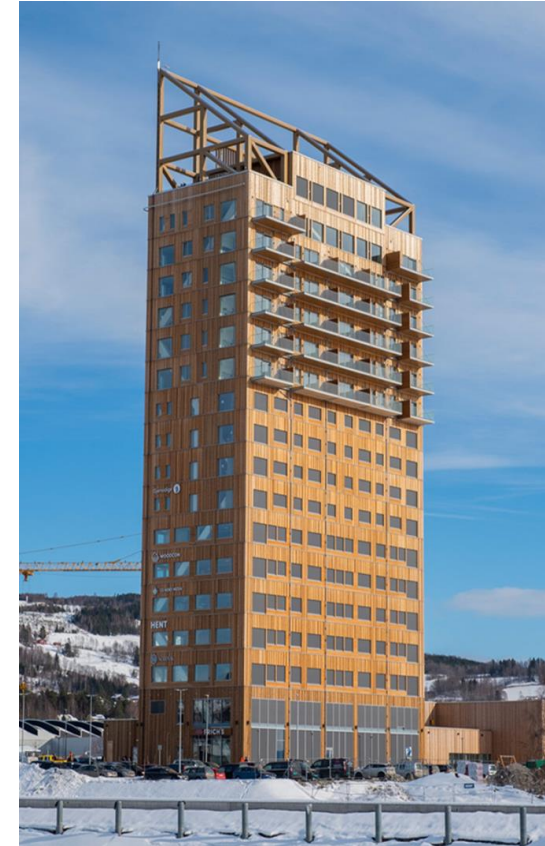
## Sustainable building design



Gary Neville's house



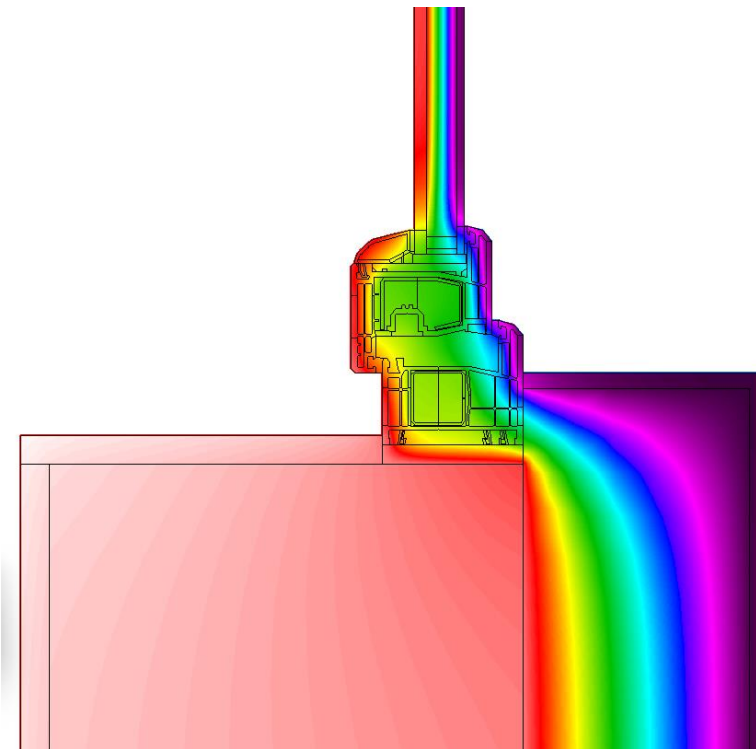
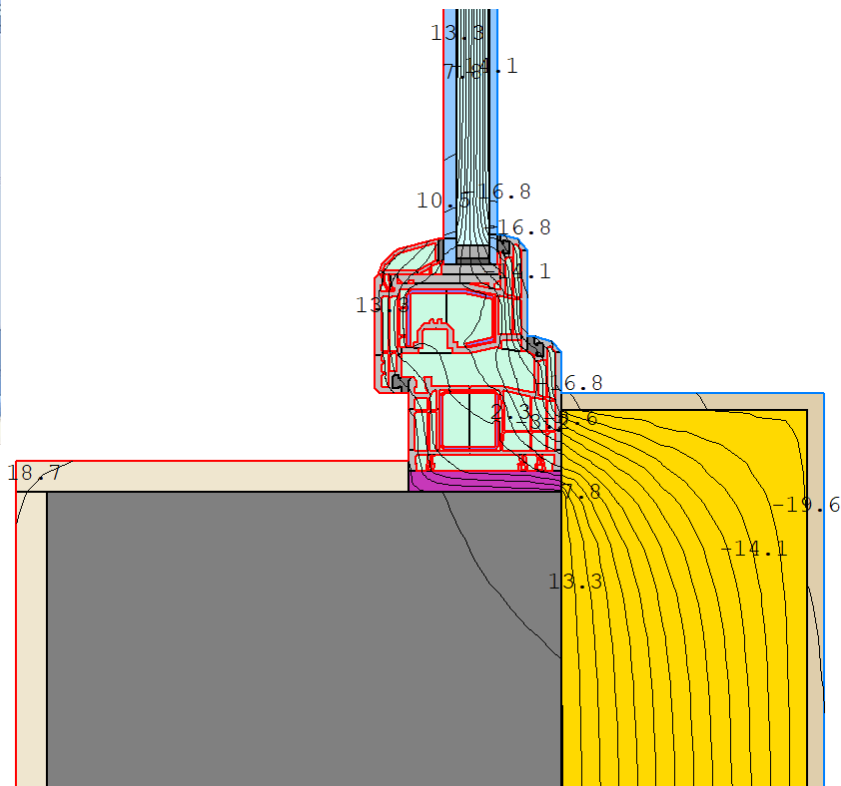
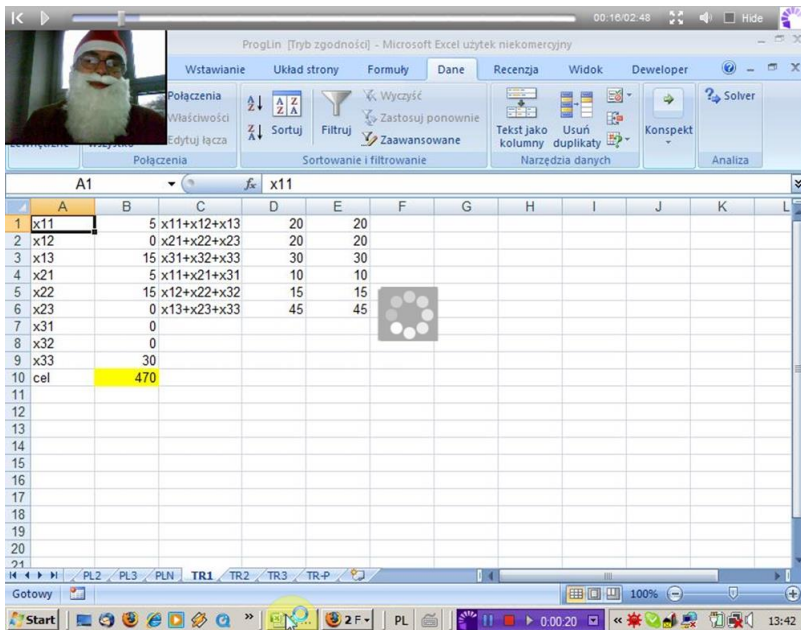
Urban cactus,  
Rotterdam



Mjostarnet - the world's tallest wooden skyscraper was built in the Norwegian town of Brumunddal. It is 18 floors and 85 metres high.



## Computational Methods in Sustainable Construction





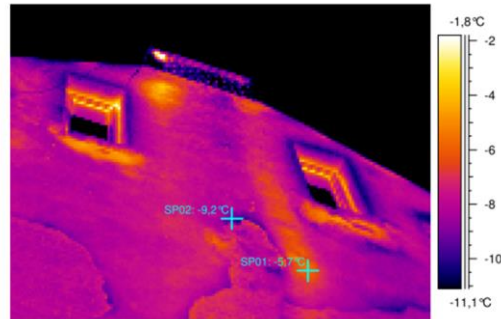
## Sustainable building materials



Experimental building of the Warsaw University of Technology with rammed earth



## Building Physics II



ŚWIADECTWO CHARAKTERYSTYKI ENERGETYCZNEJ	
dla budynku mieszkalnego nr 1	
Ważne do: 2021-12-07	
<b>Budynek oceniany</b>	
Rodzaj budynku	Blok 4-piętrowy
Adres budynku	
Całość/Część budynku	Całość budynku
Rok zakończenia budowy/rok oddania do użytkowania	1976
Rok budowy instalacji	1976
Liczba lokali mieszkalnych	50
Powierzchnia użytkowa ( $A_t$ , m <sup>2</sup> )	2500,0
Cel wykonania świadectwa	<input type="checkbox"/> budynek nowy <input checked="" type="checkbox"/> budynek istniejący <input type="checkbox"/> najem/sprzedaż <input type="checkbox"/> rozbudowa
<b>Obliczeniowe zapotrzebowanie na nieodnawialną energię pierwotną<sup>1)</sup></b>	
EP - budynek oceniany	
↓ 302.6 kWh/(m <sup>2</sup> rok)	
Wg wymagań WT2008 <sup>2)</sup> budynek nowy	Wg wymagań WT2008 <sup>2)</sup> budynek przebudowany

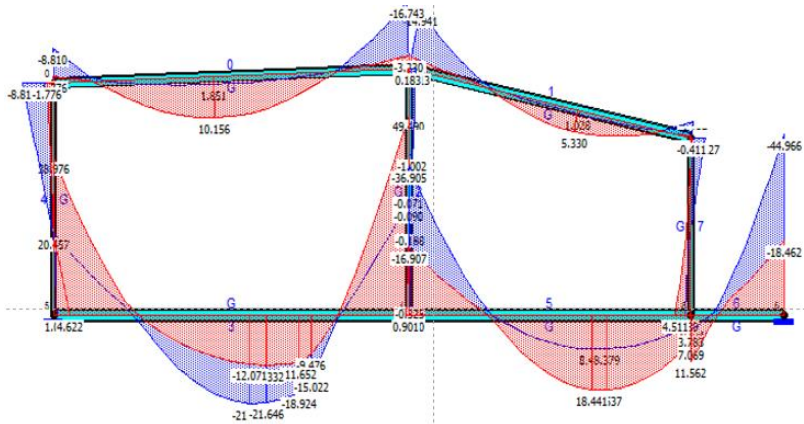


# Sustainable Buildings - Presentation of specialisations

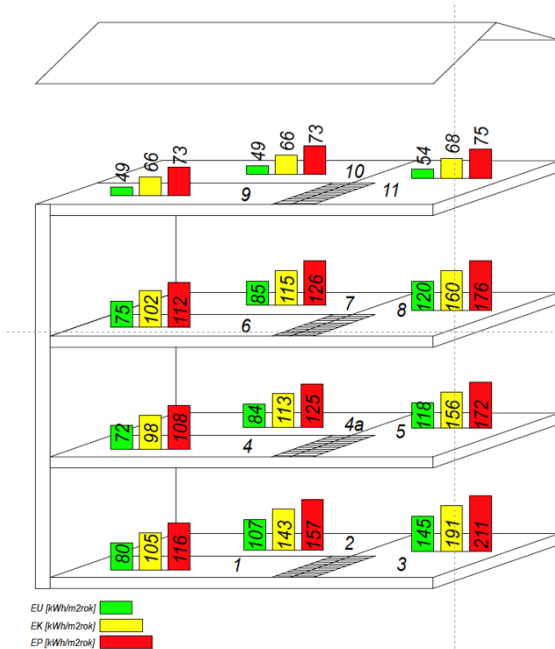
## Sample diploma:



- superstructure of a historic building
- static analysis
- thermal analysis
- building insulation, including heat pump and mechanical ventilation installation

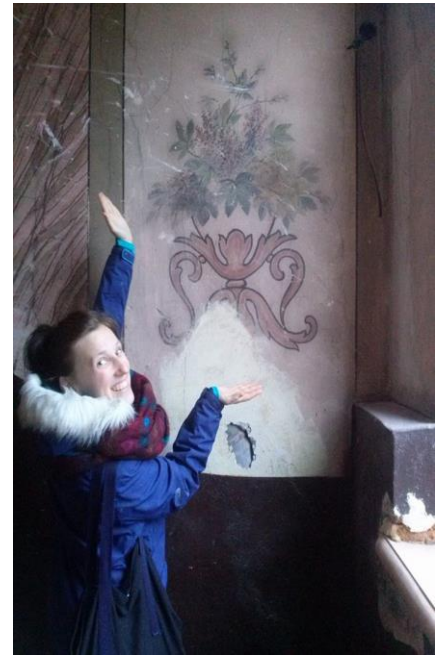


Wykres momentów zginających  
Statyka liniowa - Kombinatoryka obciążeń (SGN - Kombinacja podstawowa (PN-EN))

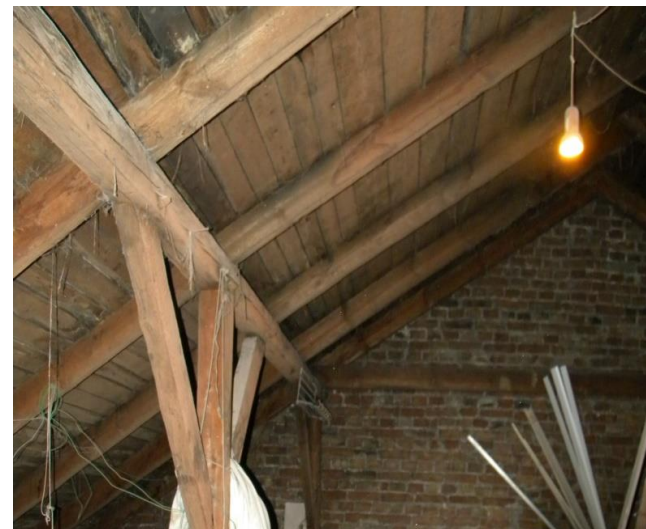




# Sustainable Buildings - Presentation of specialisations

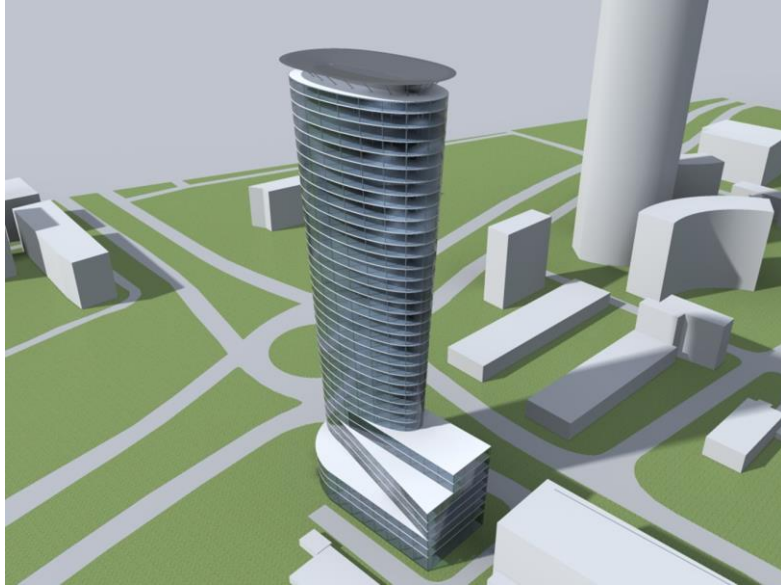


**Photos from a sample diploma:**

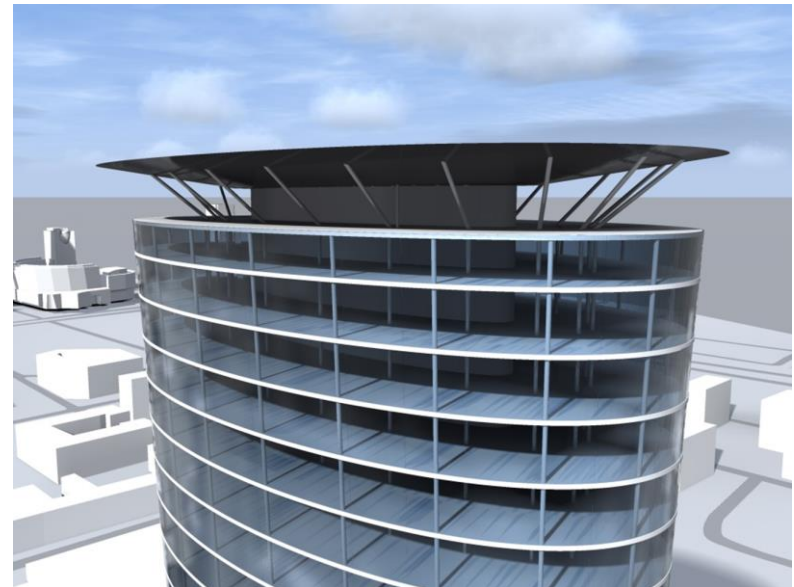




# Sustainable Buildings - Presentation of specialisations



**Example of a high building design diploma:**





## **Additional opportunities for student development within the specialisation:**

- Opportunity to be active in research clubs related to the specialisation (KING);
- Classes taught by external experts;
- Participation in research work and scientific publications;
- Opportunity to participate in specialised expeditions (also abroad)
- Learning about knowledge in a pleasant atmosphere.



WIZJA ZRÓWNOWAŻONEJ PRZYSZŁOŚCI

## EDUCATIONAL TRIPS 😊

### Energy-efficient educational buildings in Silesia



### Construction of a modular, energy-efficient multi-family building



### Utrecht Netherlands

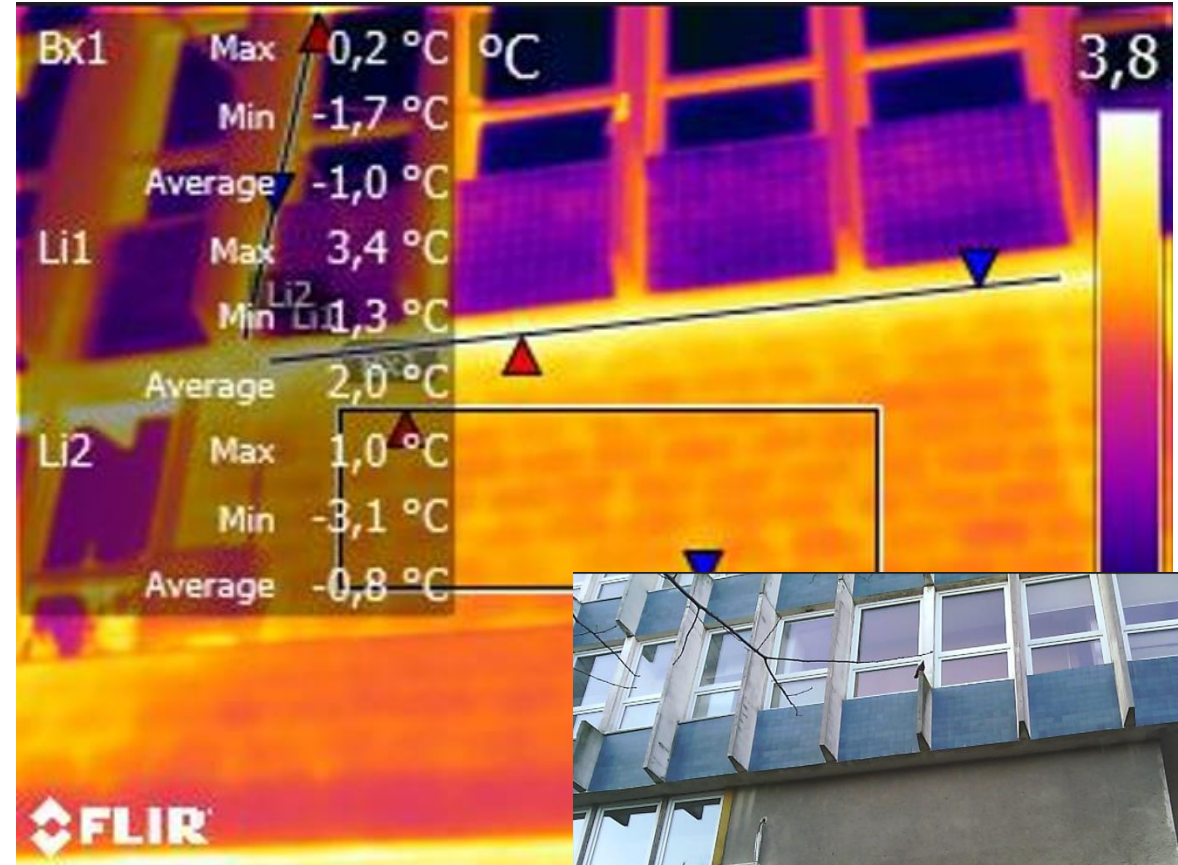
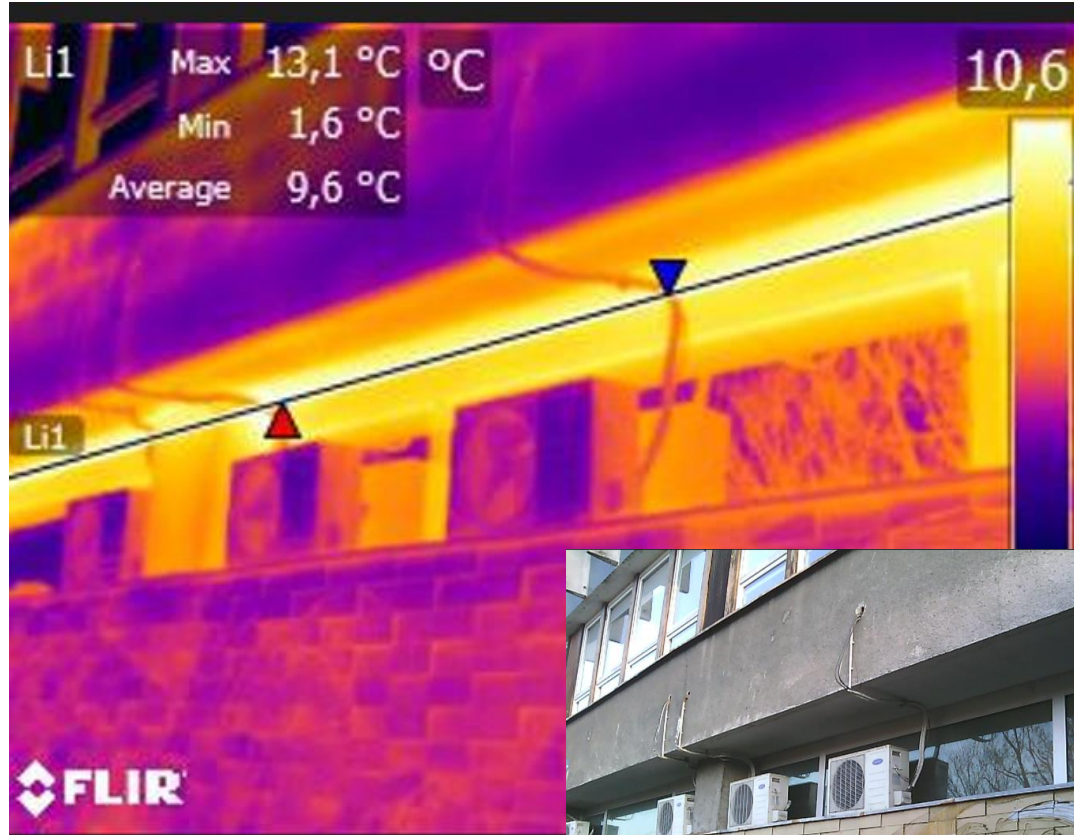


### Dania



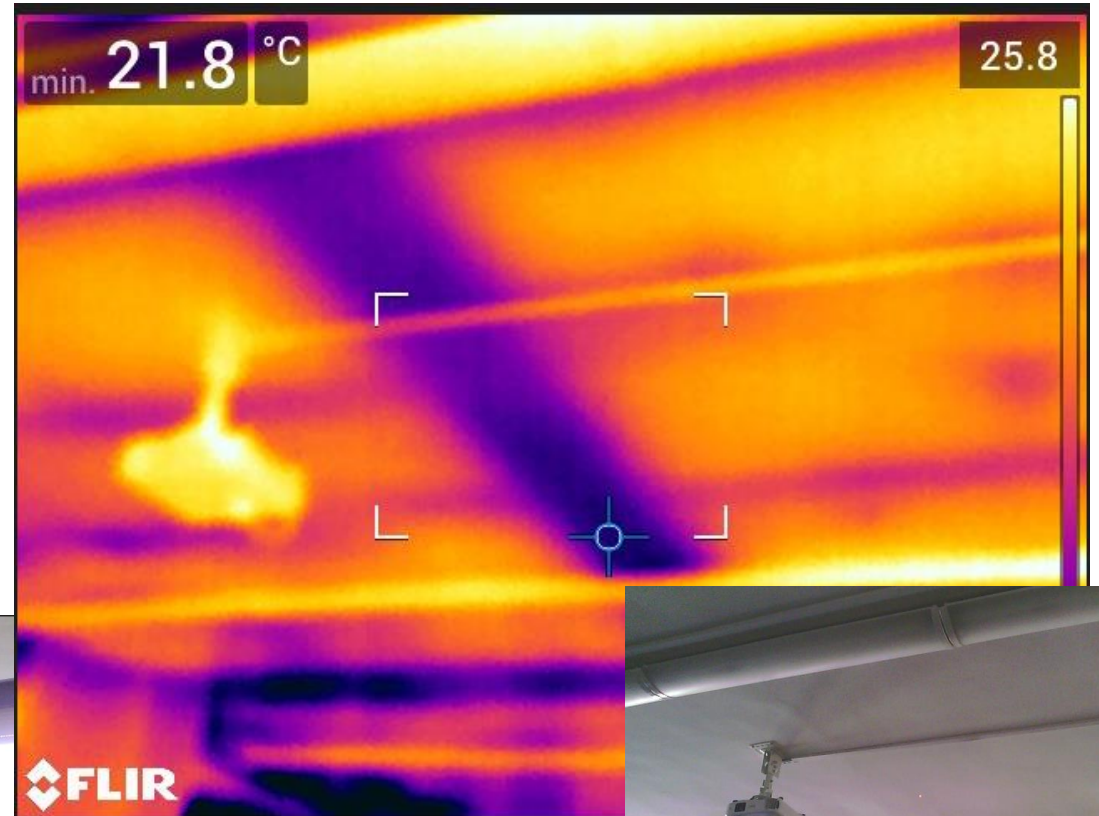
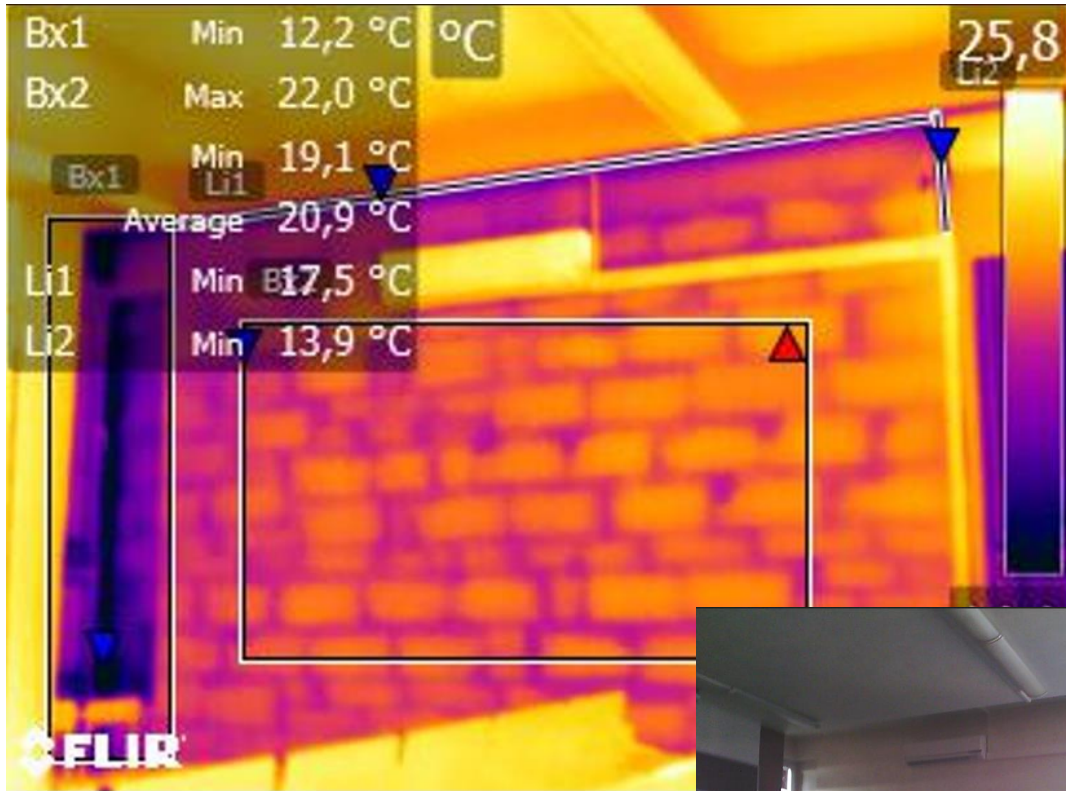


# Sustainable Buildings - Presentation of specialisations





## WORKS OF THE STUDENTS FROM KING - Decarbonisation of the WIL building - facades





## WORKS OF THE STUDENTS FROM KING – Workshops „Let’s make our WIL”





## WORKS OF THE STUDENTS FROM KING – Workshops „Let’s make our WIL”





## Employment opportunities after graduation:

***SELF-EMPLOYMENT***  
*in the field of energy auditing and energy certification*

***CONTRACTOR COMPANIES***  
*implementing the thermomodernisation of buildings*

***LOCAL GOVERNMENT ADMINISTRATION***  
*environmental protection and building departments*

***CONSULTANCY COMPANIES*** *focusing on energy efficiency and green building*

***PROJECT OFFICES***  
*specialising in energy-efficient construction*



Thank you  
for your  
attention

