

Scientific potential of EE at PUT

Łukasz Amanowicz, PhD

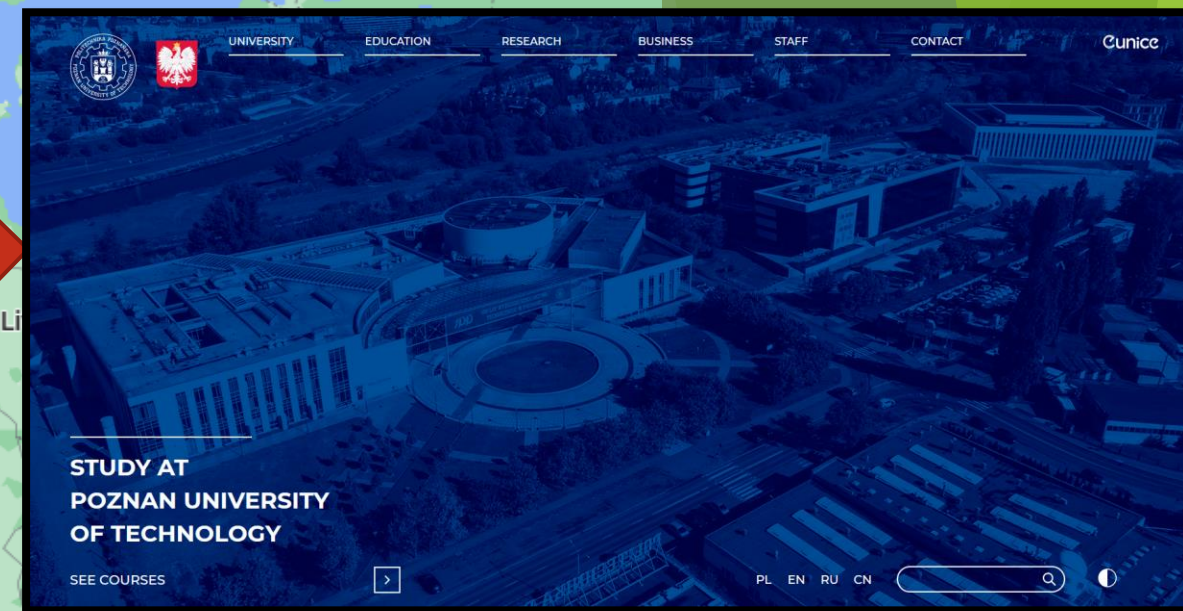
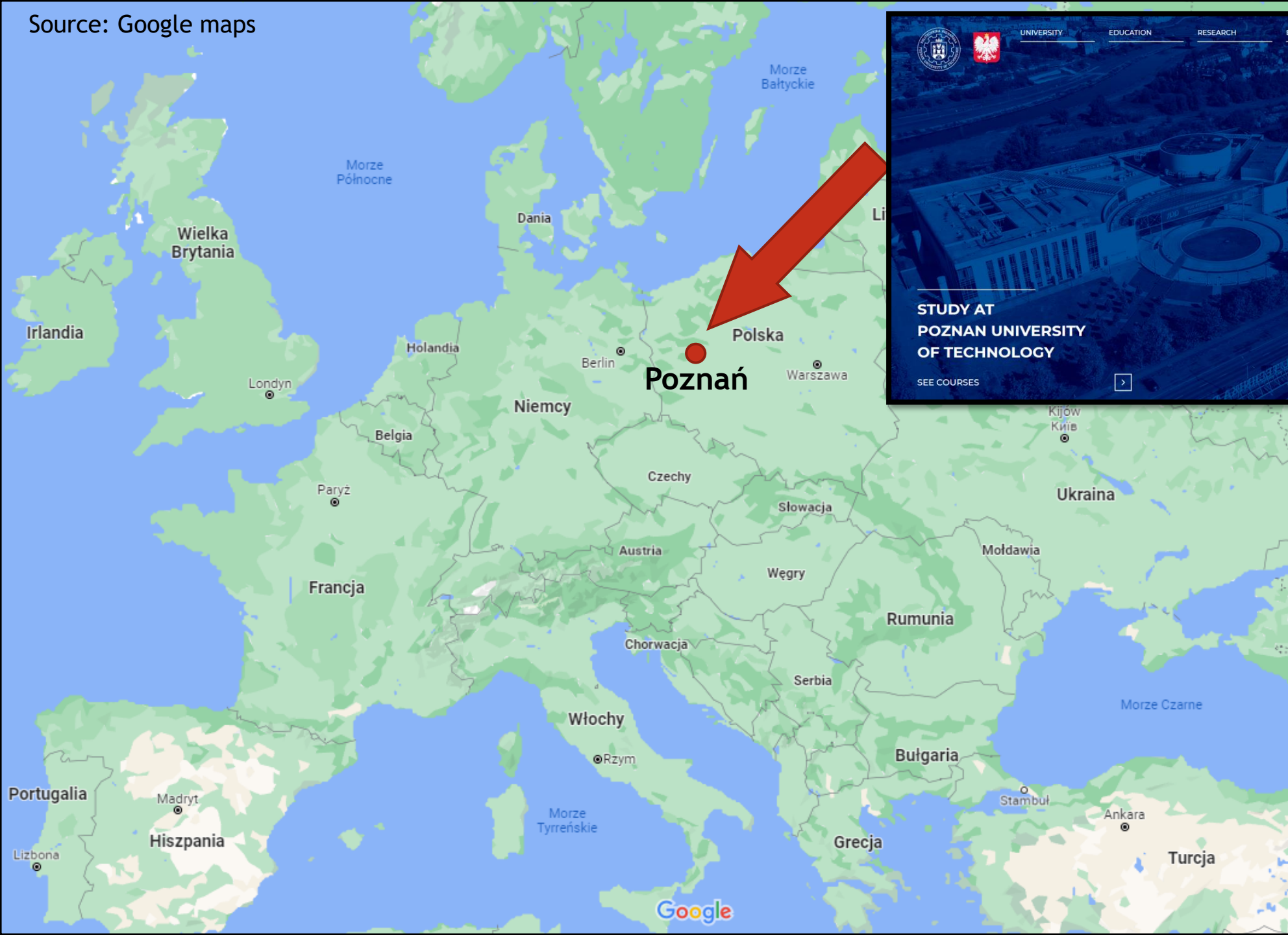
Karol Bandurski, PhD

Poznan University of Technology
Institute of Environmental Engineering and
Building Services

Horizon Europe Matchmaking Event
Energy Research

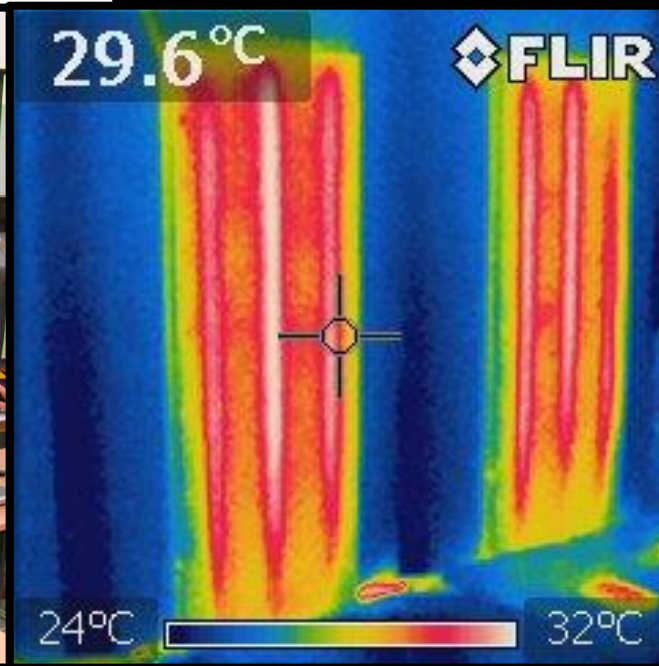
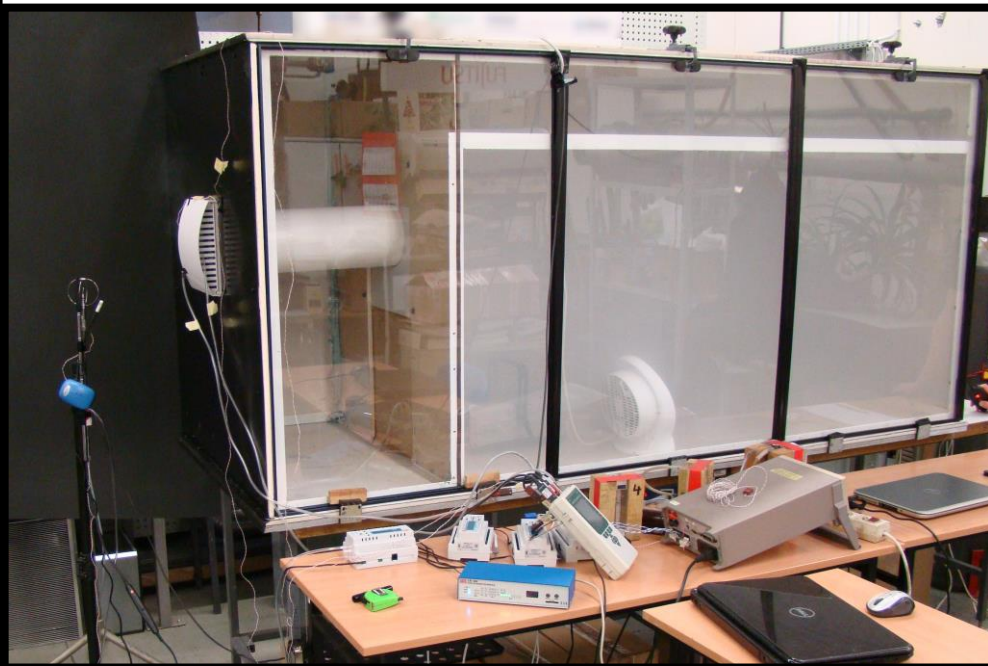
19 October, 2021.

Source: Google maps



Short introduction of the institution

- HVAC laboratory:
experimental investigations,
test chamber,
thermal-flow characteristics



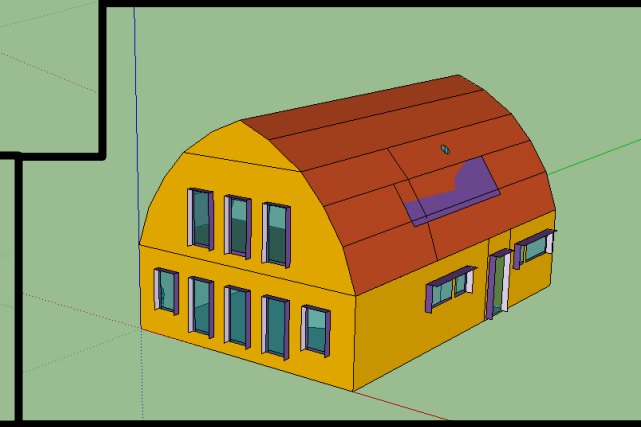
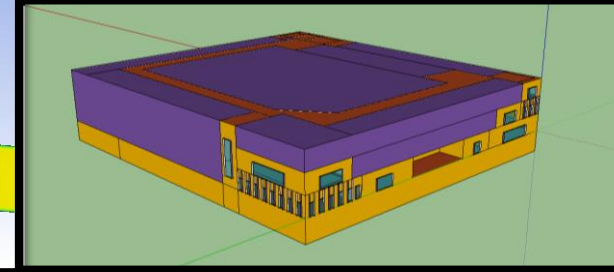
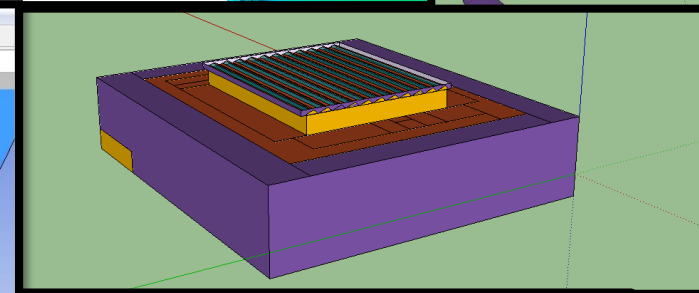
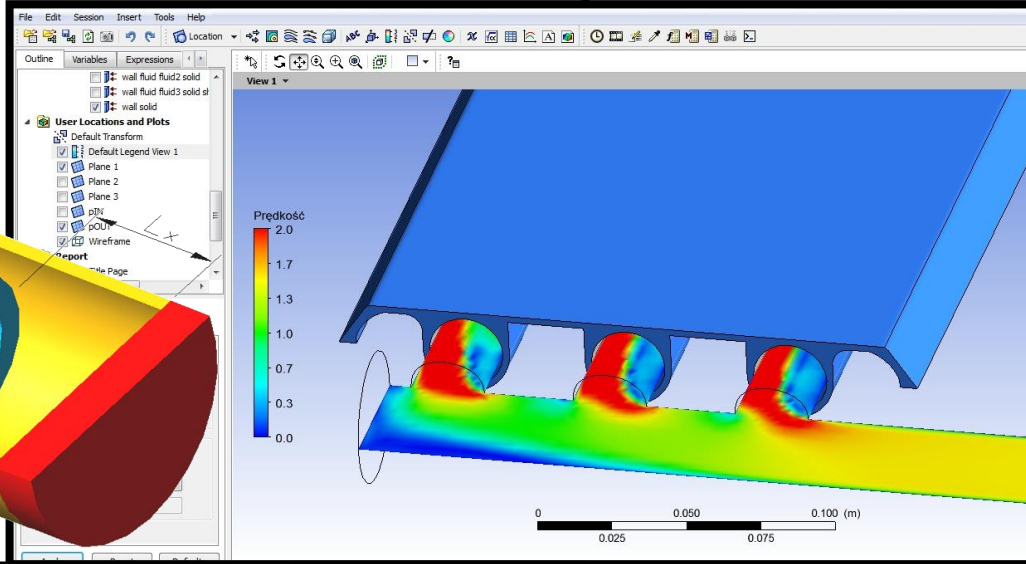
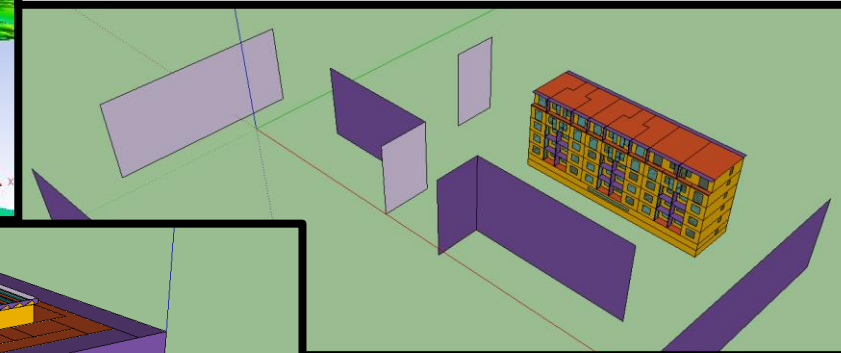
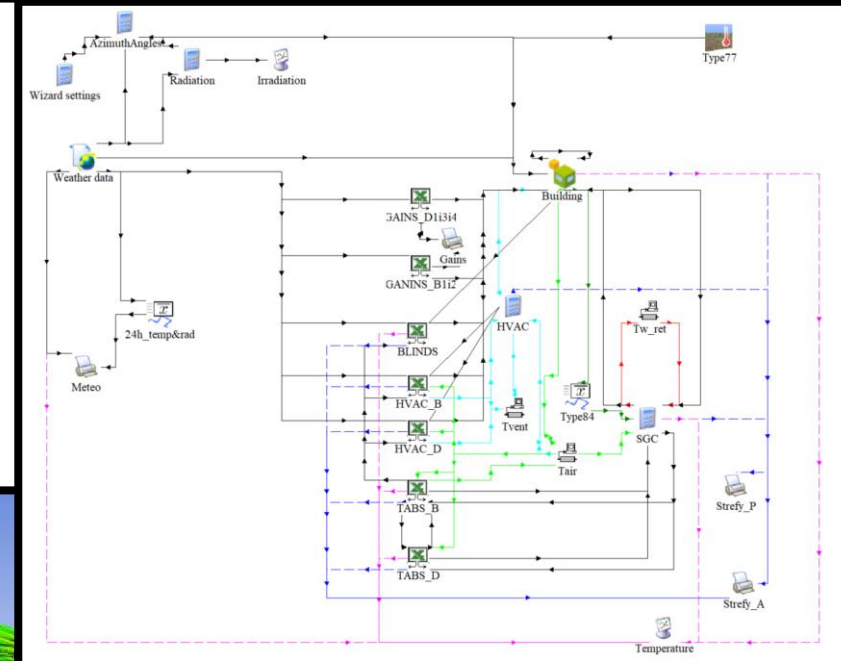
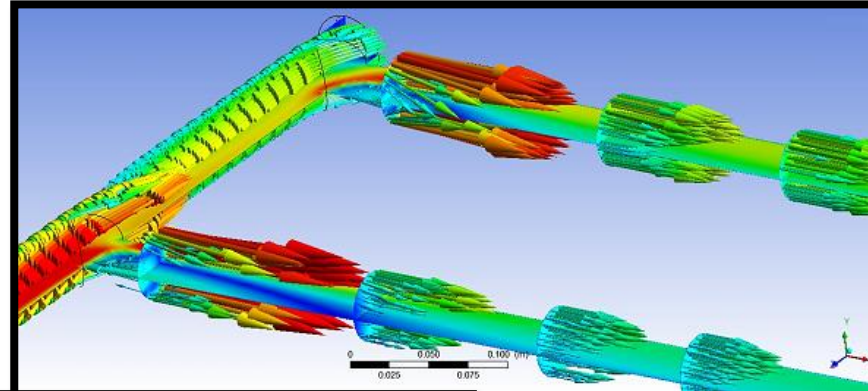
Short introduction of the institution

- Simulation tools:

TRNSYS

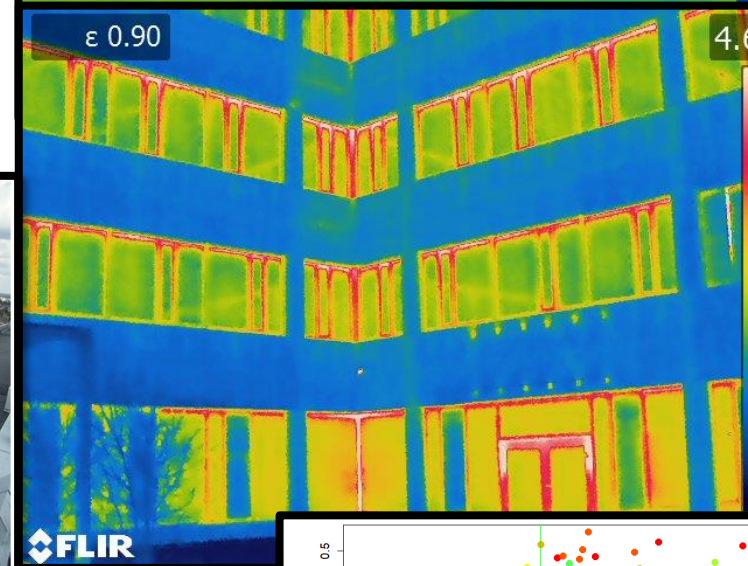
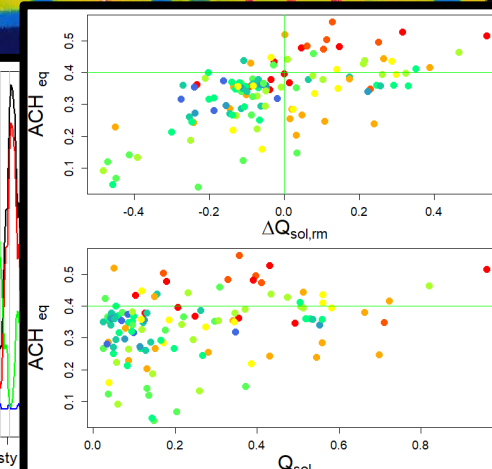
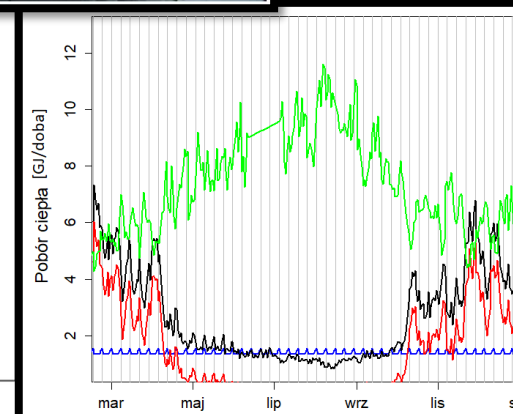
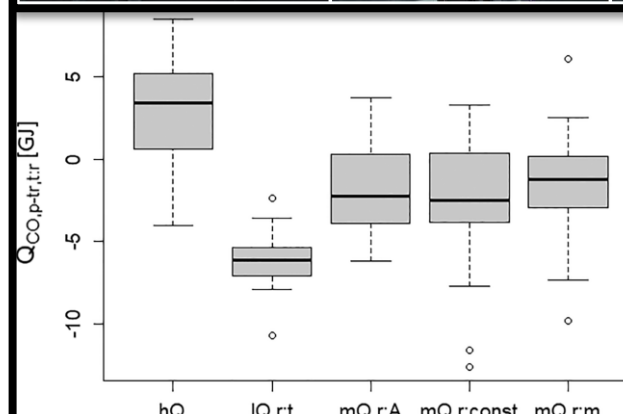
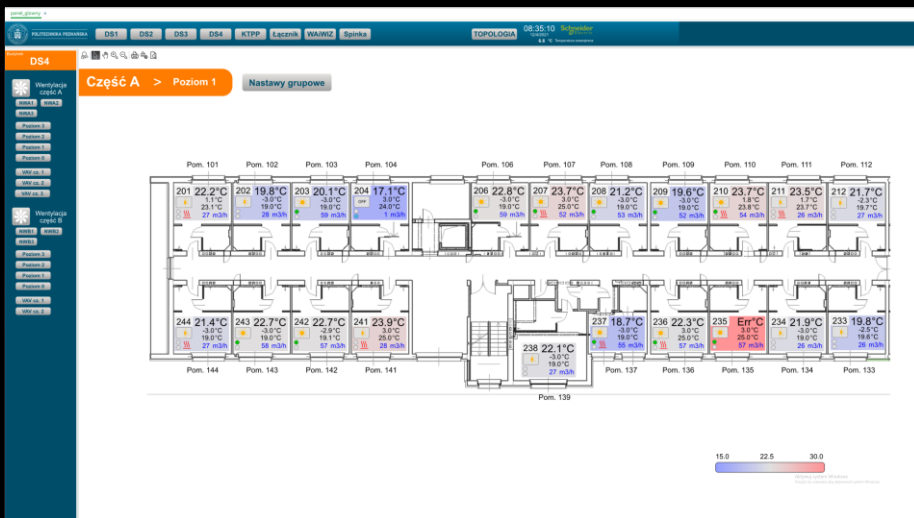
ANSYS

PHDesign (PHPP)



Short introduction of the institution

- *In-situ* measurements
- Campus BMS
- Analysis with: R, Phytos



Expertise

- ▶ Case studies (residential building, dormitory, university buildings, office buildings and others),
- ▶ Data mining, data driven models,
- ▶ Control strategy for HVAC, energy systems,
- ▶ Methodology of designing Plus Energy Buildings,
- ▶ Psycho-sociological impact of technical solution, occupant-building interaction models,
- ▶ Surveys, semi-structured interviews.



Energy and Buildings
Volume 227, 15 November 2020, 110427



Assessment of the air streams mixing in wall-type heat recovery units for ventilation of existing and refurbishing buildings toward low energy buildings

Katarzyna Ratajczak , Łukasz Amanowicz, Edward Szczechowiak



Renewable Energy
Volume 158, October 2020, Pages 585-597



Approximated flow characteristics of multi-pipe earth-to-air heat exchangers for thermal analysis under variable airflow conditions

Łukasz Amanowicz , Janusz Wojtkowiak



Geothermics
Volume 88, November 2020, 101896



Thermal performance of multi-pipe earth-to-air heat exchangers considering the non-uniform distribution of air between parallel pipes

Łukasz Amanowicz , Janusz Wojtkowiak

Popularization of research results in the international journals: Applied Energy, Energy Conversion and Management, Energy and Buildings, Renewable Energy, and many others... (writing experience)



Energy Conversion and Management
Volume 182, 15 February 2019, Pages 461-496



Energy optimization of HVAC system from a holistic perspective: Operating theater application

Mieczysław Porowski



Applied Energy
Volume 226, 15 September 2018, Pages 849-861



Influence of geometrical parameters on the flow characteristics of multi-pipe earth-to-air heat exchangers – experimental and CFD investigations

Łukasz Amanowicz



Energy Conversion and Management
Volume 181, 1 February 2019, Pages 621-644



The optimization method of HVAC system from a holistic perspective according to energy criterion

Mieczysław Porowski



Environment International
Volume 132, November 2019, 105098



Impact of physical and microbiological parameters on proper indoor air quality in nursery

Małgorzata Basińska , Michał Michałkiewicz, Katarzyna Ratajczak



Energy Procedia
Volume 78, November 2015, Pages 2040-2045

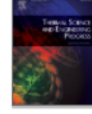


Assessment of Thermo Modernization Using the Global Cost Method ☆

Małgorzata Basińska , Halina Koczyk , Andrzej Kosmowski



Thermal Science and Engineering Progress
Volume 5, March 2018, Pages 44-49



Validation of CFD model for simulation of multi-pipe earth-to-air heat exchangers (EAHEs) flow performance

Łukasz Amanowicz , Janusz Wojtkowiak

Topic and project idea

We are open to cooperation in the field of projects related to increasing the energy efficiency of buildings and energy systems using the previous expertise in the field.

We have cooperation with:

- IT partner with high European project experience,
- District heating company,
- Municipal buildings managers.

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