

HORIZON 2020 PARTNER SEARCH FORM

- I am a Coordinator in a Project Proposal looking for Partners
- I am a **Partner in a Project Proposal looking for a Consortium**

- **LC-SC3-EE-1-2018-2019-2020: Decarbonisation of the EU building stock: innovative approaches and affordable solutions changing the market for buildings renovation**
- **LC-SC3-EE-18-2019: Bioclimatic approaches for improving energy performance in buildings in Africa and Europe**

Contact Details

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Short Profile of the Organisation, the Coordinator and Other Personnel to be Involved

The Lodz University of Technology is one of the biggest technical universities in Poland, playing an important role in increasing the competitive edge of the regional as well as national and international economy. TUL is the only university in Lodz to have a place among the national top ten universities in the "Perspektywy" magazine university ranking and ranks sixth in the Best Technical University category. TUL is one of the twelve Polish universities to be represented in the Times Higher Education World University Rankings.

Total number of the TUL staff is 2806 persons, of academic staff - 1301, of professors – 229, of students (first-cycle programmes, second-cycle programmes) – 16726, of Ph.D. students – 669. Number of fields of study – 45. Education is provided at nine Faculties, in three Colleges.

In 2016, the University was awarded, as the first technical university in Poland, the HR Excellence in Research badge which certifies that the University follows the principles laid down in The European Charter for Researchers and The Code of Conduct for the Recruitment of Researchers.

The Department of Environmental Engineering has an expertise in laboratory experimentation, numerical simulation analysis, system prototypes development, and measurements in operational environments. Members of this group have participated in many research projects addressing the energy efficiency of building envelope elements, new approaches to façade design, including building integrated renewable energy systems, and the enhanced efficiency of thermal insulation components. The scope of previous projects covered both theoretical and numerical analyses but also real scale experiments. Moreover, Department of Environmental Engineering team gained experience in conducting measurements in hot box testing facility, in-situ measurements, prototype demonstration in real environment and numerical simulation taking part in many research projects connected with energy efficiency of building envelope elements, new approaches to façade and material design:

- "Solar hybrid translucent component for thermal energy storage in buildings" ERANet-LAC 2nd Joint Call on Research and Innovation, 2017-2019;
- "Towards Indium free TCOs" EU Horizon 2020 research and innovation programme, 2016-2018;
- "Promoting Sustainable Approaches Towards Energy Efficiency in Buildings as Tools Towards Climate Protection in German and Polish Cities: developing facade technology for zero-emission buildings" R&D Polish-German bilateral project, 2013-15;
- "Aerogel-Based Composite/Hybrid Nanomaterials for Cost-Effective Building Super-Insulation

Systems” EeB.NMP.2010-1-New Nanotechnology -based High Performance Insulation Systems for Energy Efficiency, 2011-2015;

Moreover, Department of Environmental Engineering has a unique equipment to conduct experimental measurements. There are two experimental office rooms, which gives opportunity to investigate performance of the external wall components in real exploitation environment. Already developed data acquisition system can be further improved and adjusted for gaining the data from sensors and meters installed for the purpose of this project. Additionally, fully equipped weather monitoring station is located on the roof of the building, allowing comprehensive analysis and evaluation of the proposed solution.

The coordinators from TUL will be Dr. Hab. Dariusz Heim, Prof. TUL. He performs research in the areas of energy systems including renewable energy sources, building performance simulation, heat and mass transfer, daylighting, sustainable architecture design and urban planning.

Project Information

Topics Covered:

- **LC-SC3-EE-1-2018-2019-2020: Decarbonisation of the EU building stock: innovative approaches and affordable solutions changing the market for buildings renovation**
- **LC-SC3-EE-18-2019: Bioclimatic approaches for improving energy performance in buildings in Africa and Europe**

My offer / expertise

Role in the consortium / Project idea

We would like to participate in the projects as a partner.

As for the topic LC-SC3-EE-18-2019: Bioclimatic approaches for improving energy performance in buildings in Africa and Europe, we would like to mention, that we are ready to contribute to the project implementation by providing input in the area of sustainable urban development and planning as well as sustainable building design. In order to meet the specified challenge described in the project call, which is “providing technologies and strategies to avoid overheating and high demand for expansive active cooling”, proper design in the city scale needs to be considered. We are able to propose and analyse different approaches supporting effective district arrangement taking into account heat island effect, ventilation channels (in city scale) and bioclimatic approaches. Moreover, according to the city design we are able to propose and analyse different techniques of passive cooling of the building.

Another challenge specified in the call that we are able to contribute is development of construction materials, as well as techniques development, suitable to local context. We are experienced in the analysis of the problems concerning thermal inertia of the building, which is strictly connected with identified challenge for overheating protection. We are able to conduct comprehensive analysis of energy performance and thermal effects on the building dynamics, considering application of different local (low-tech, reusable, bio) materials. According to our experience we can also contribute to the project realization by conducting comprehensive analysis of the thermal comfort and living quality in buildings of proposed constructions.

Concerning the topic LC-SC3-EE-1-2018-2019-2020: Decarbonisation of the EU building stock: innovative approaches and affordable solutions changing the market for buildings renovation, we have to mention that we expertise in simulation analysis of energy performance using advanced simulation software like ESP-r. We are able to conduct detail analysis of energy performance, effectiveness and replicability of proposed solutions for defined building typologies, various climate conditions and locations. Furthermore, we have experience in analysis and tests of building integrated renewable energy systems, especially BIPV facades, in real exploitation environment. Moreover, members of our group expertise in novel materials and possibilities to use them for enhancement of thermal insulation components efficiency. We also have experience in small scale demonstration and testing in real exploitation environment of building facades system for nearly zero-energy buildings.

We are ready to contribute to the project implementation by providing input in the area of revitalisation, deep thermomodernization as well as new material and technology development. We are able to propose and analyse different approaches supporting effective decarbonisation taking into account climate change, user behaviour and availability of removable energy sources.

Our team has great experience in the field of environmental and civil engineering, architecture and urban planning. We expertise in simulation analysis of whole building energy performance using advanced simulation software like ESP-r. Previously conducted studies allowed us to gain experience in the techniques to predict physical phenomena in the buildings and components scale. We are also able to conduct simulation of air pollution, wind flow and solar radiation distribution in urban scale. Moreover, members of our group expertise in novel materials and possibilities to use them for

building energy efficiency enhancement. We also have experience in small scale demonstration and testing in real exploitation environment of building facades system for nearly zero-energy buildings.

Type of Action:

- Research and Innovation Actions
- Innovation Actions
- Coordination and Support Actions
- Marie Skłodowska Curie Actions (ITN, IF, RISE, COFUND)
- ERC Grant Schemes
- Fast Track to Innovation Pilot
- SME Instrument
- Support to Pre-Commercial Procurement (PCP)
- Public Procurement of Innovative Solutions (PPI)
- Co-Fund Actions
- Inducement Prizes
- Dedicated loan and equity instrument