

PROJECT PARTNER SEARCH FORM

I offer my expertise to participate as a Partner in a Horizon Europe Project

I am planning to coordinate a project and I am looking for Project Partners

TOPICS OF INTEREST

HORIZON-CL5-2022-D3-03-01: [Innovative components and/or sub-systems for CSP plants and/or concentrating solar thermal installations](#)

The official deadline for the topic: 10 January 2023

Type of action: HORIZON Innovation Actions

Deadline for Expression of interest: 30 November 2022

Anticipated duration of the project: 36 months

PARTNER INFORMATION

University of Žilina as one of partners of project “**StisolGen**” is looking for coordinating partners.

The aim of the project is to build an ecological electricity generator that uses the energy of the sun. The device will be built on the basis of a linear, parabolic concentrator of solar energy and a Stirling electric generator. The Stirling engine is an external combustion thermal engine. The performance and rated power of these machines is limited by the intensity of heat transfer between working fluid and external heat sources. This is a technical issue that limits development of such systems due to the fact that with the increase of the size of the device, the amount of the medium (volume of the working space) increases with the third power of the characteristic dimension, while the external surface of the device (and thus the heat transfer area available to contact with external heat sources) only with the second power. These engines are much larger than those with internal heat supply (combustion), which limits the practical power of Stirling engines to several dozen kW, preventing the widespread use of these interesting designs. Therefore, in the applied project, it is planned to eliminate this problem by replacing one high-power motor with a battery of tiny motors with a power of several to several dozen kW.

Description of the Legal Entity

University of Žilina (UNIZA) with its sixty-five years of history belongs to one of the leading educational and scientific institutions in Slovakia. With its rich tradition it occupies a significant place among Slovak universities. This fact is not only connected with the number of students or offer of interesting and quality study programmes, but the university also has significant research and foreign activities. At present, there are about 8 000 students being educated at seven faculties in 129 accredited study programmes in all forms and degrees of university studies. In the field of science and research. UNIZA is involved in the solution of nearly 200 national and 65 international scientific projects and organises about 60 scientific and professional events annually. The results of science and research activities of the university have a major influence not only on educational activities, but also on the development of international cooperation or application in practice.

Higher Education

Research Institution

Public Administration

Industry /SME

NGO

Other: *Please specify*

Description of the Research Team

University of Žilina

The Department of Power Engineering (DPE) of the University of Žilina in Slovakia is profiling in the field of reducing the energy intensity of technological processes, in the economical use of energy in the form of optimization of energy transfer in machinery and equipment for industry, energy, construction, agriculture, transport and in equipment for creating and protecting the living and working environment. At the Department of PE, international, grant and institutional projects are being solved, focusing mainly on:

- solution to reduce the energy intensity of technological processes by using heat recovery from low-potential massive heat sources,
- solution of modern ventilation and cooling systems new progressive methods of construction of thermal equipment based on the use of low-potential geothermal heat pumped from deep wells using heat pipes
- design of sophisticated heating, heating and ventilation equipment and systems
- the use of renewable energy sources in their transformation into heat and electricity,

Other partners:

The Silesian University of Technology

The Silesian University of Technology (SUT) in Poland is the oldest technical university in Upper Silesia and one of the largest in the country. It was established in 1945 as a scientific and educational facility for the most industrialised area in Poland, and one of the most industrialised in Europe. For over 75 years it has been an important institution of public life. It plays a significant cultural and opinion-forming role in the region. The mission of the Silesian University of Technology, as a prestigious European technical university, is to conduct innovative scientific research and development works, as well as to educate highly qualified staff for the benefit of the knowledge-based society and economy, and to actively influence the development of the region and local communities. The university, through continuous improvement of processes and organisation, is a friendly and open place for work and development of the academic community.

Expertise of the Team Leader

prof. RNDr. Milan Malcho, CSc. (46 years of relevant expertise)

With decades of experience, Milan holds leading positions at the department of Energy engineering at the Faculty of Mechanical Engineering at the University of Žilina. During last years, he was actively lecturing the topics of thermodynamics, experimental methods and thermal energy. His practical focus is on Experimental and numerical methods in the field of fluid dynamics and heat transfer, as well as design of systems for heat recovery from technological processes. The admirable career started with a decade dedicated to research and development followed by different educational and leading positions at the Department of Thermal and Hydraulic Machines of Mechanical Engineering and Electrical Engineering Faculty. He has obtained his academical degrees at Comenius University in Bratislava and the University of Žilina.

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Potential role in the project

Research

Training

Dissemination

Other: ***Please specify***

e.g. project leader, scientific coordinator, workpackage leader, product development expertise.

Project details:

Workpackages (WP)

- WP 1.1 – Research of low cost linear Stirling engine with build in generator (possible partners: Universities, Research institutions)
- WP 1.2 – Research of solar concentric collector for higher temperatures (possible partners: Universities, Research institutions)
- WP 1.3 – Development and design of pair Stirling engine – collector (possible partners: Research institutions)
- WP 1.4 - Development and design of energy system, control and additional equipment (possible partners: Universities, Research institutions)

//first year//

- WP 2.1 – Layout and design of scalable system based on linear Stirling engine (possible partners: Research institutions, Private sector companies)
- WP 2.2 – Construction and manufacturing of system with Stirling engine coupled with concentric collector (possible partners: Research institutions, Private sector companies)

//second year//

- WP 3.1 – Prototype testing and determining limiting values (possible partners: Research institutions, Private sector companies)
- WP 3.2 – Measurements under real conditions (possible partners: Research institutions, Private sector companies)

//third year//

Already experience as a	Coordinator	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
	Partner	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
	Expert Evaluator	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

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