

SCHOLARSHIP OFFER

ATEKNEHT_Student Competition for the Position of Doctoral Scholarship Holder within the framework of the **National Science Centre (NCN) OPUS-26 (LAP)** research project entitled:

"Advanced Techniques for Efficient Kinetic Energy Harvesting",

project No. **2023/51/I/ST8/02739**

Host Institution: Lublin University of Technology – Faculty of Mechanical Engineering – Department of Automation

Position: Doctoral Scholarship Holder (PhD Candidate)

REQUIREMENTS:

- a) PhD Student status (participant of the doctoral school) in engineering or technical sciences;
- b) research interest in nonlinear dynamics, energy harvesting, computational engineering, and precision mechanics;
- c) basic knowledge of algorithms and data structures, computer programming, data analysis, artificial intelligence concepts, and statistics;
- d) proficiency in English (advanced level);
- e) working knowledge of MATLAB;
- f) scientific achievements, including at least 1 peer-reviewed scientific publication;
- g) eligibility for receiving a scholarship in accordance with the **NCN Regulations on Awarding Scholarships**, Resolution of the NCN Council No. 25/2024 of 4 March 2024;
- h) Confirmation of the experience in experimental work.

ADDITIONAL ASSETS:

- a) knowledge of fundamental concepts related to efficient kinetic energy harvesting techniques;
- b) programming skills;
- c) experience in conducting experimental investigations, including data processing and interpretation;
- d) experience in preparing scientific publications;
- e) general knowledge of computational modelling and Finite Element Method (FEM) simulations;
- f) ability to work effectively in a research team.

RESPONSIBILITIES:

- a) prepare and conduct experimental investigations, including interpretation of the obtained results.
- b) develop numerical models and perform Finite Element Method (FEM) simulations.

- c) analyze and compare experimental and numerical results,
- d) contribute to the preparation of scientific publications,
- e) prepare regular progress reports on the research activities,
- f) implement developed algorithms in MATLAB or a comparable computational environment,
- g) process and evaluate research results,
- h) prepare research outcomes for publication, conference presentations, and inclusion in reports submitted to the National Science Centre (NCN),
- i) contribute to dissemination and promotion of the project,
- j) disseminate research findings through scientific activities.

ADDITIONAL INFORMATION

- a) monthly scholarship: **PLN 5,000** for an initial period of **6 months**, with the possibility of extension **up to 1 year**,
- b) expected starting date: **1 October 2026**,
- c) application deadline: **28 September 2026, 12:00 noon (Central European Time)**,
- d) competition results announcement: **29 September 2026** (applicants will be informed electronically),
- e) place of research: **Department of Automation, Faculty of Mechanical Engineering, Lublin University of Technology**.

IMPORTANT INFORMATION

Applications must be submitted **exclusively in PDF format** by e-mail to:

wm.ka@pollub.pl

A complete application must include the following documents (using the specified file names):

1. **Curriculum Vitae** (maximum one A4 page)
File name:
Competition_ATEKNEHT_Student2/3(App_1)_Surname_Name.pdf
2. **List of Scientific Achievements and Publications**
File name:
Competition_ATEKNEHT_Student2/3(App_2)_Surname_Name.pdf
3. **Copy of the Master's Degree Diploma**
File name:
Competition_ATEKNEHT_Student2/3(App_3)_Surname_Name.pdf
4. **Motivation Letter**
File name:
Competition_ATEKNEHT_Student1(App_4)_Surname_Name.pdf
5. **Certificate Confirming PhD Student Status**
File name:
Competition_ATEKNEHT_Student2/3(App_5)_Surname_Name.pdf
6. **Copies of 2-3 confirmation (level the English language, internships, recommendation letter from a professor)**

File name:

Competition_ATEKNEHT_Student2/3(App_6)_Surname_Name.pdf

7. Signed **Consent for the Processing of Personal Data** for the purposes of the recruitment procedure (GDPR) (template attached).

PROJECT SHORT DESCRIPTION

ATEKNEHT – Advanced Techniques for Efficient Kinetic Energy Harvesting

The project focuses on the development of innovative technologies for harvesting low levels of kinetic energy available in the surrounding environment.

- **Main objective**

To recover low-level ambient kinetic energy (generated by vibrations and motion) and convert it into usable electrical energy.

- **Applications**

Development of advanced **energy harvesting** technologies capable of efficiently powering miniature electronic devices while reducing energy losses in industrial applications.

- **Innovative aspects**

The research is focused on nonlinear dynamical systems, multistability, resonance phenomena, and multi-oscillator configurations. These approaches enable a significant widening of the frequency bandwidth over which kinetic energy harvesters operate efficiently, thereby improving their overall performance and energy conversion efficiency.