



**Opening for PhD student position
in the frame of double degree program
in cooperation between**

**Institute of Fluid-Flow Machinery Polish Academy of Science (IMP PAN)
and University of Lleida (UdL)**

Subject: Cooling of photovoltaic panels using phase-change material

Possible scientific supervisors:

prof. Luisa F. Cabeza Fabra (UdL),

dr hab. Marcin Lackowski, prof. IMP PAN (IMP PAN)

Scholarship from the IMP PAN side will be financed from mTSDPAN STER project funded by the Polish National Agency for Academic Exchange (NAWA)

About the project

We are looking for a talented person holding MSc title, who is interested in continuing her/ his scientific work and writing a doctoral dissertation in a form of a double degree program in Mechanical Engineering. The research will be realised in the cooperation between Institute of Fluid-Flow Machinery Polish Academy of Science (Gdańsk, Poland) and University of Lleida (Lleida, Spain).

This research will focus on cooling of photovoltaic (PV) panels using phase-change material (PCM) taking into account climatic conditions (phase change temperature, PCM layer thickness), heat transfer (thermal conductivity) and profitability (economics). Tests on PV module will be realised in both real (external) and laboratory conditions.

During the project PhD student stays at UdL are planned

The offer

We offer a PhD position:

- in the Institute of Fluid-Flow Machinery Polish Academy of Science
- admission to the Tricity Doctoral School Polish Academy of Sciences (TSD PAN)
- position funded with a PhD scholarship is offered for 48 months
- the monthly amount of the PhD scholarship is:
 - 4 400 PLN/month gross before the mid-term evaluation
 - 5 340.90 PLN/month gross after the mid-term evaluation.

Eligibility criteria/ Skills/Qualifications

1. Masters in mechanical engineering, material science, physics or related fields.
2. High average grade obtained during studies.
3. Good knowledge of written and spoken English.
4. High motivation for scientific work and a strong commitment to research work.

Tasks

1. Analyses of phase change materials under a variety of climatic conditions, PCM parameters (phase change temperature, layer thickness), heat transfer (thermal conductivity) and profitability (economics)
2. Developing a method of attaching the PCM to the PV module
3. Testing of the PV module in real (external) and laboratory conditions.
4. Signal processing and results analysis.
5. Preparation of reports based on results analysis.
6. Preparation of journal and conference publications.
7. Presentation of results at scientific conferences related to research topics.
8. Communication and discussion of results within the research team.
9. Participation in experimental and numerical investigations at UdL during planned internships
10. Realisation of the doctoral programs according to requirements at UdL and TSD PAN.
11. Writing PhD thesis containing results of the project

Specific Requirements

We especially seek candidates who:

- possess knowledge about numerical simulation methods and modelling of heat transfer,
- possess practical knowledge about photovoltaic panels testing
- mobility and flexibility for conference travels and internship.

In addition, the following will be assessed:

- the candidates' scientific track record (publications, conferences, projects, scholarships, etc.),
- the prizes and distinctions of the candidate resulting from the research carried out.

Selection procedure

Selection process is in accordance to TSD PAN regulations.

1. Submission of applications is possible until **November 29, 2024, 10:00 AM**
2. Form of applications: Applications in English can be sent by e-mail to **tsdpan@imp.gda.pl** with a subject "PhD student in mTSDPAN".
3. Candidates interested in applying for the position should submit the following documents:
 - cover letter
 - CV / scientific resume
 - copy of the certificate of Master degree



- the list of scientific achievements (publications, participation in research projects, participation in conferences, awards, scientific stays, etc.)
 - optional: letter(s) of recommendation obtained from people (e.g. supervisors, former managers) directly cooperating with the candidate.
4. The application must contain information about the educational background and work experience.
 5. Please, attach the requested documents in the PDF format.
 6. The result of the recruitment procedure will be sent to the candidates via email.
 7. Please include in the application the following statement:

"I hereby authorize to process my personal data included in my application for the needs of the recruitment process (in accordance with the Act of 08.20.1997 r. on personal data protection - Dz. U. No 133, item 883) "

If necessary, selected candidates may be invited for an interview (in person or via online videoconference).

Additional questions could be sent by email to: tsdpan@imp.gda.pl