
COMPETITION RULES

1. Competition description

Impetus project partners organise an open competition for students. Student teams will compete in the design and fabrication of proof-of-concept demonstrators of vertical-axis wind turbines (VAWT). The main goal is to obtain the best possible aerodynamic efficiency. The competition will be conducted in two stages:

- Stage 1: Fixed-blade pitch demonstrators (height: 0.4 m, rotor diameter: 0.4 m),
- Stage 2: Variable-blade pitch demonstrators (height: 1 m, rotor diameter: 1 m).

Winners will be selected based on the performance of the developed VAWT achieved during wind tunnel tests. Only four teams (one per competing country, namely Germany, Lithuania, Poland, and Sweden) will advance to the second stage. Teams qualified for the second stage of the competition will continue their research work on a more complex VAWT with passive and active blade pitch control. They will receive remuneration (400 Euros/month/person) for the remainder of the project (minimum 12 months) and support from Impetus partners. Therefore, it is a great opportunity for students to gather materials for their bachelor's and master's theses. Additional benefits are listed in section 5.

Details regarding possible software and hardware usage will be provided at a later date. Also, the technical drawings of a universal attachment of the proposed VAWT to the performance test rig will be provided at a later stage. It means that student teams will have to design and develop only a rotating body of VAWT (without a generator and associated electronics).

2. Eligibility criteria

All students are eligible from Germany, Lithuania, Poland, and Sweden. Note that the localisation of FabLab is given in section 5.

3. Teams

The team should be composed of three members. We encourage diverse team formation and invite women to participate.

4. Documents required for the application

1. CV of each team member (PDF)
2. Picture of the VAWT that you would like to develop (JPG, PNG, PDF)
 - a. It can take any form, e.g. CAD drawing, handmade painting, sketch
 - b. It can be a replica of an existing solution or your original idea
 - c. You can take inspiration from Internet resources
3. Short description of your VAWT vision (PDF)
 - a. No longer than one page
 - b. Indicate the type of VAWT you would like to develop
 - c. Is your vision original, inspired by existing solutions, or do you want to propose modifications, improvements?
 - d. What is your motivation for this competition?
4. Application form to be filled out at www.interreg-impetus.eu
 - a. Mark the country where you are studying
 - b. Indicate which topic is the most interesting for each team member: aerodynamics, structural mechanics and vibrations, electronics, mechatronics, structural health monitoring, and blade pitch control (you can indicate more than one)
 - c. Indicate if at your University/Polytechnic, you can pursue a master's or bachelor's thesis in engineering related to VAWT development and who can be your supervisor.

Documents should be submitted through the Impetus project website www.interreg-impetus.eu

Application deadline: 31.12.2025, 10:00 CET

Queries regarding competition should be submitted to contact@interreg-impetus.eu, with the email subject: **Impetus competition**. Don't forget to include the email subject; otherwise, your questions might be unanswered.

5. Benefits

- Access to FabLab (3D printing, laser cutting, electronic components, etc.) in the headquarters of Impetus partners:
 - Institute of Fluid-Flow Machinery, Polish Academy of Sciences (IMP PAN)
 - <https://www.imp.gda.pl/>
 - Address: ul. Fiszera 14, 80-231 Gdańsk
 - Country: Poland
 - IWEN Energy Institute gGmbH
 - <https://iwen-energy.org/>
 - Address: Am Strom 1-4, 18119 Rostock
 - Country: Germany,
 - Klaipeda University
 - <https://www.ku.lt/>
 - Address: Herkaus Manto 84, 92294 Klaipeda
 - Country: Lithuania
 - Lund University
 - <https://www.lunduniversity.lu.se/>
 - Address: Paradisgaten 5C, 22 100 Lund
 - Country: Sweden
- Access to the Impetus Cloud for file exchange and collaboration
- Free SOLIDWORKS Student Edition Desktop licenses
- Support from Impetus partners
- Scientific materials, lectures, and workshops
- Possibility to participate in wind tunnel tests
- Remuneration for the 4 winning teams (400 Euros/month/person)

Find us at: www.interreg-impetus.eu



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