

CALL FOR GRANT APPLICATIONS (AE2024-0480)

INESC TEC is now accepting grant applications to award 1 Research Grant (BI) on the scope STORHY with reference 101172905 funded by the European Commission under the Horizon Europe program for the period 2021-2027.

1. GRANT DESCRIPTION

Type of grant: Research Grant (BI)

General scientific area: ENGINEERING

Scientific subarea: Electrical engineering

Area of Work: Power systems – Control and management of innovative pumped storage systems and hydropower units in energy transition era

Grant duration: 12 months, starting on 2025-01-01, with the possibility of being renewed until the end of the project.

Scientific advisor: Bernardo Silva

Workplace: INESC TEC, Porto, Portugal

Maintenance stipend: € 1259,64, [according to the table of monthly maintenance stipend for FCT grants](#), paid via bank transfer. Grant holders may be awarded potential supplements, according to a quarterly evaluation process (Articles 19, 21 and 22 of the [Regulations for Grants of INESC TEC](#) and Annex II), up to a maximum limit of 50% of the monthly maintenance stipend.

INESC TEC supports costs with registration, enrolment or tuition fees, during the grant duration, under the terms established in the internal document: "[Payment of Tuition fees to grant holders](#)".

The grant holder will benefit from health insurance, supported by INESC TEC.

2. OBJECTIVES:

- Designing an energy management system for innovative hydropower and Pumped Storage Plants (PSP) integrated with Battery Energy Storage Systems (BESS) and solar Photovoltaics (PV) considering the degradation of the components.
- Development of strategies to optimize the participation of hybridized hydropower units in ancillary service markets with respect to the capability of accelerating the transient sequences constrained by the technical requirements of the system.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

Hydropower units and PSPs will have an important role in maintaining the dispatchability of future power systems in the presence of renewable energy sources. However, the power fluctuations of renewable energy sources can expedite the degradation of these units and decrease their lifetime. In this regard, an effective control and management strategy for innovative PSP and hydropower units integrated with PV-BESS not only extends component lifetimes but also enhances the system's economic benefits by improving its capability to participate in ancillary service markets.

The expected works in this area regarding the given description is as follows:

- Assessment of the wear and tear of different components in the hybridized PSP and hydropower systems
- Development of frameworks/tools for the optimal energy management and control of the hybridized PSP and hydropower systems considering the wear and tear of the components.

- Evaluation of the effect of participating in ancillary service market on the system.
- Expanding the control and energy management strategies considering the participation in the ancillary service markets.
- Preparation of the reports and presenting the results of the project in the conferences and as journal publications.

4. REQUIRED PROFILE:

Admission requirements:

The awarding of the fellowship is dependent on the applicants' enrolment in study cycle or non-award courses of Higher Education Institutions.

Preference factors:

Experience in the development of the optimization tools for energy management of storage-aided systems.
Experience in ancillary service market studies.

Minimum requirements:

Master degree in Electrical Engineering or similar
Experience in the energy management studies in the area of the electrical energy systems.
Basic knowledge in the area of PSP, hydropower systems, and hybrid energy systems.

5. EVALUATION OF APPLICATIONS AND SELECTION PROCESS:

Selection criteria and corresponding valuation: the first phase comprises the Academic Evaluation (AC), based on the criteria referred to in Article 12 of the [Regulations for Grants of INESC TEC](#), while the second phase comprehends the Individual Interview (EI). All factors are evaluated on a scale of 0 to 100, taking into account the applicants' merit, suitability and conformity with the preference factors.

The weight of the AC factors are as follows: Academic Qualifications (FA, 50%), Scientific Publications (PC, 20%), Experience (EX, 20%) and Motivation Letter (CM, 10%).

Candidates who score less than 50 points in the AC average will be considered excluded on absolute merit. The top five candidates approved on absolute merit will be qualified for the individual interview. The Final Grade (CF) is obtained by the weighted average of AC (80%) and EI (20%).

DISABILITY INCENTIVE

Candidates who present a degree of disability equal to or greater than 90% will benefit from an incentive (20) in the score of the CV Assessment.

Candidates who present a degree of disability equal to or greater than 60% and less than 90% will also benefit from an incentive (10) in the score of the CV Assessment.

Said score may, in these cases, exceed 100 points.

Candidates must demonstrate the degree of disability during the application, namely through the submission of the Multi-Purpose Medical Certificate of Disability, issued in accordance with Decree-Law no. 202/96, of October 23 - currently in effect.

Candidates must declare, in the application form, the type of disability used throughout the selection process, in order to proceed with the required adaptations.

The Selection Jury is composed of the following members:

President of the Jury: Bernardo Silva
Full member: Ehsan Kazemi-Robati
Full member: Tiago André Soares
Substitute member: Ricardo Jorge Bessa

Release of results and prior hearing: the results of the selection process, as well as the terms and procedures for prior hearing, will be released to the applicants by email, under the terms referred to in Article 13 of the Regulations for Studentships and Fellowships of INESC TEC.

6. FORMALISATION OF APPLICATIONS:

Application Documents:

1. Motivation letter;
2. Curriculum Vitae (must include the list of previous fellowships, their type, beginning and end dates, funding entities and host institutions);
3. Certificate or diploma degree;
4. Proof of enrollment in a degree awarding study cycle or in a non degree awarding Higher Education program.
 - The proof of enrollment may be presented just during the grant hiring stage.
5. Signed declaration stating the infringement of the grant holder's duties (article 14, no. 4)
6. Documental evidence to support the country of residence, residence permit or other legally equivalent document, in cases where the applicant is a foreigner or non-resident in Portugal - valid until the beginning of the grant.
7. Other supporting documents relevant to the final assessment.

Failure to deliver the required documents within the 90-day period after the date of the notice of the conditional awarding of the grant implies its cancellation.

Application period: From 2024-11-14 to 2024-12-14

Submission of applications: the application will be formalised by submitting the form available in the *Work With Us* section of INESC TEC website.

7. BINDING LEGISLATION AND REGULATION

The hiring process shall comply with the current legislation regarding the Research Grant Holder Statute, approved by Law no. 40/2004 of August 18, in its current wording, as well as by the [Regulations for Grants of INESC TEC](#) and for [FCT Grants Regulation in force](#).

For more information, please check the [Regulations for Grants of INESC TEC](#) and relevant annexes at www.inesctec.pt/bolsas



Funded by the
European Union