CALL FOR GRANT APPLICATIONS

(AE2025-0311)

INESC TEC is now accepting grant applications to award 1 Research Grant (BI) within the scope of the ATE funded by IAPMEI with reference 56 Co-financed by Component 5 - Capitalization and Business Innovation, integrated in the Resilience Dimension of the Recovery and Resilience Plan within the scope of the Recovery and Resilience Mechanism (MRR) of the European Union (EU), framed in the Next Generation EU, for the period 2021 - 2026.

1. GRANT DESCRIPTION

Type of grant: Research Grant (BI)

General scientific area: ENGINEERING

Scientific subarea: Electrical engineering

Area of Work: Electrical Engineering - Power Systems

Grant duration: 9 months, starting on 2025-10-01.

Scientific advisor: Clara Sofia Gouveia

Workplace: INESC TEC, Porto, Portugal

Maintenance stipend: € 1040.98, 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:

- Characterize the challenges of protection systems in inverter-dominated networks and the monitoring, protection and control solutions based on Phasor Measurement Units (PMU), such as Wide Are Monitoring and Control systems
- Develop advanced adaptive control and protection functions, taking into account up-to-date information on the state of the grid and the knowledge acquired from digital models of the grid
- Validate the algorithms in a Hardware in the Loop (OPAL RT) environment with physical protection relays, in a laboratory environment.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

- The grant holder will develop a five-stage work program designed to deliver both technical results and specialized training:
1. Review of the state of the art and development of a test network to study through simulation the challenges of protection systems in systems with high penetration of renewables. The simulation studies will be carried out using commercial network simulation software such as PowerFactory and MATLAB/Simulink.
2. Evaluation of conventional protection, with targeted analysis of distance, directional overcurrent and frequency/ROCOF functions under various fault current scenarios, highlighting coordination gaps.
3. Development of adaptive strategies to ensure the coordination of protection devices, taking into account the increasing variability of operating scenarios and PMU information.
4. Hardware in the Loop validation: modeling and simulation of a transmission network equipped with a WAMC

system, including relays and commercial PMUs, consolidating skills in real-time testing.
5. Performance evaluation and dissemination with the collection of experimental data, KPI analysis and preparation of a scientific article, developing and deepening skills in technical writing and presentation of results.
- Throughout the project the holder will gain practical expertise in WAMPAC architectures, real-time simulation and advanced protection coordination, equipping with up-to-date skills demanded by TSOs, DSOs and protection field of application.

4. REQUIRED PROFILE:

Admission requirements:

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

Preference factors:

- previous experience in real-time simulation and Power Hardware In the Loop test systems.At least one paper in conference or journal.
- previous experience in power system modelling and control;
- previous experience in modelling and operating real time simulation systems and Hardware in the Loop test setups;
- familiarity with MATLAB/Simulink, Python and power system simulators (e.g., DIgSILENT PowerFactory);
- high organization and communication skills with attention to detail;
- ability to work both autonomously and collaboratively.

Minimum requirements:

- solid experience in power system operation and modelling;
- programming experience

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: Clara Sofia Gouveia
Full member: Cleberton Reiz
Full member: Ricardo Jorge Bessa
Substitute member: Justino Miguel Rodrigues

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 2025-07-24 to 2025-08-24

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