

CALL FOR GRANT APPLICATIONS (AE2024-0071)

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: Power systems

Grant duration: 12 months, starting on 2024-04-05, with the possibility of being renewed until the end of the project.

Scientific advisor: Ignacio Gil

Workplace: INESC TEC, INESC TEC, Portugal

Maintenance stipend: € 990,98 or 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:

- Enlarge the knowledge of the state of the art regarding the MV/LV distribution fault levels and the uncertainty of network outages' impact and identification at both the substation and point of common coupling (PCC) level.
- Development of generic/benchmark models of typical MV/LV (EU) systems considering the wide range of distribution network topologies and demand.
- Comprehensive analysis and understanding of the hosting capacity of LV networks for a diverse range of renewable energy sources, in particular EVs and PV systems, and the aggregation of flexible demands on the customer's side (e.g. heat pumps, water heaters and overall energy storage).
- Fault Level Risk Management will implement and exploit a new highly transferrable system-level solution - using real-time knowledge of fault level (FL) status - for an optimal application of FL mitigation and control strategies.
- Develop research skills through the application of the selected methods
- Implementation and test at INESC TEC laboratory facilities
- Apply the scientific method to the research process and have a critical attitude towards the obtained results.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

- The key aim of this project is to provide: i) new fundamental FL risk models to characterise the uncertainty of network outages, ii) a much higher time granularity in fault-level forecasting to suppress the need for complex and extensive fault-level monitoring in networks.

- Development through simulation of a new fault level (FL) assessment framework to reduce uncertainty from the wide range of MV/LV distribution network topologies and demand.
- Deliver a new probabilistic solution in the form of fault-level risk models/algorithms to capture the uncertainty of outages affecting the extensive number of system assets and demands. This solution is encouraged to be Machine Learning based, i.e. reinforcement learning, robust optimization, or other methods are envisaged.
- Validation of a wide range of realistic network scenarios using the algorithms developed into a fault level (FL) hardware demonstrator at INESC TEC laboratory and pilot system.

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:

- Knowledge of power system protection and automation
- Knowledge of self-healing strategies and algorithms
- Knowledge regarding the implementation of standards in MV/LV distribution substations and networks
- Knowledge of programming (and Machine Learning basics)

Minimum requirements:

- Previous academic background in power systems or similar
- Proven experience in power system protection and automation project and test

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 (70%) and EI (30%).

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: Ignacio Gil
- Full member: Justino Miguel Rodrigues
- Full member: Clara Sofia Gouveia
- 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 2024-02-15 to 2024-03-15

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

