CALL FOR GRANT APPLICATIONS
(AE2025-0348)

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: Electrotechnical Engineering

Grant duration: 9 months 23 days, starting on 2025-09-08.

Scientific advisor: José Silva

Workplace: INESC TEC, Porto, Portugal

Maintenance stipend: € 1309.64, 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:

In the scope of the ATE project, the X-Energy Laboratory aims to advance research and development in charging infrastructure for electric vehicles (EVs), including AC and DC chargers and EV simulation platforms. Reliable and standardized communication between the EV and the Electric Vehicle Supply Equipment (EVSE) is essential to ensure interoperability, safety, and efficiency of the charging process. This project involves embedded systems development, with a focus on implementing communication protocols such as ISO 15118, DIN 70121, and IEC 61851 in firmware for various charging scenarios.

In this context, the main objectives of the grant are:
1. Contribute to the development and implementation of embedded firmware for AC and DC chargers, ensuring compliance with EV communication protocols.
2. Investigate and implement communication interfaces (e.g., PWM, PLC, CAN) used between EVs and EVSEs based on international standards.
3. Assist in the integration and testing of firmware on EV simulators to validate charger-EV communication.
4. Contribute to research and development activities in the scope of the ATE project, particularly regarding smart charging strategies and V2G (Vehicle-to-Grid) interactions.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

1. Investigate the state of the art of EV charging systems, including AC and DC chargers, and their associated communication protocols (e.g., IEC 61851, ISO 15118, DIN 70121).

2. Study the principles and implementation details of communication interfaces used in EV-EVSE systems, such as PWM signaling, Power Line Communication (PLC), and CAN.
3. Analyze the architecture and functionality of EV simulators and their role in testing and validating charging protocols.
4. Develop and test firmware modules for the communication stack of AC and DC chargers, including state machines, message parsing, and error handling.
5. Integrate the developed firmware into prototype charging systems and simulators.
6. Perform validation and debugging of communication between EV simulators and chargers under various scenarios and protocol configurations.
7. Document firmware development, test procedures, and results; assist in developing user manuals or technical documentation.
8. Contribute to the preparation of scientific or technical publications in case of innovative results or advancements.

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:
- Previous experience (or academic training) in embedded systems or electric vehicle charging infrastructure
- Knowledge of communication protocols for EV charging (e.g., ISO 15118, IEC 61851, DIN 70121)
- Experience with microcontroller programming in C/C++
- Aptitude for laboratory work, including hardware testing and debugging

Minimum requirements:
Previous academic background in applied electrotechnical engineering, informatics, automation or similar.

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: Ricardo Jorge Bessa
Full member: Justino Miguel Rodrigues
Full member: Cleberton Reiz
Substitute member: Manuel Matos

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 2025-07-31 to 2026-08-13

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