CALL FOR GRANT APPLICATIONS

(AE2026-0090)

INESC TEC is now accepting grant applications to award 1 Research Grant (BI) within the scope of the within the framework of research project GREENSHIP_E - Electrification of Ships Using Green Fuels and Advanced Technologies, funded by Fundacao Calouste Gulbenkian.

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: 12 months, starting on 2026-07-01, with the possibility of being renewed until the end of the project.

Scientific advisor: Cleberton Reiz

Workplace: INESC TEC, Porto, Portugal

Maintenance stipend: € 1359.64, **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:

▪ Identify and model representative shipboard microgrid architectures, including AC, DC, and hybrid AC/DC configurations.

▪ Design and implement AI-driven Energy Management Systems (EMS) to optimize fuel consumption and power distribution in multi-source shipboard energy systems.

▪ Develop a Digital Twin framework for real-time simulation, monitoring, and performance validation of the proposed architectures.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

Development of an AI-driven Energy Management System (EMS) for AC, DC, and Hybrid shipboard microgrid architectures, focused on optimal power dispatch and source-load coordination. The work involves implementing intelligent algorithms for real-time power arbitration and energy scheduling to balance power flow from diverse sources with fluctuating loads. Validation considering real vessel use cases in a laboratory environment. Publication of results in leading conferences and journals in the field.

Specifically, the main activities to be carried out by the scholarship holder are:

▪ State-of-the-art analysis of AI-driven EMS for small-to-medium vessels, focusing on hybrid battery/fuel cell system integration.

▪ Requirement specification for the EMS layer, aligning maritime mission profiles with energy storage preservation and real-time efficiency.

▪ Development of energy models and efficiency maps to enable EMS trade-off analysis between power output, battery SoC, and system efficiency.

▪ Design of intelligent agents for automated energy dispatch, predictive maintenance-aware control, and operational monitoring.

▪ Implementation of coordination mechanisms between the EMS and power hardware to ensure smooth transitions between energy sources.

▪ Validation and testing using laboratory environment and realistic vessel scenarios to compare AI-based approaches against traditional heuristics.

▪ Scientific dissemination through the drafting of technical reports and high-impact journal articles to document algorithms and results.

4. REQUIRED PROFILE:

Admission requirements:

▪ Master's degree in Electrical Engineering or a related field;
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 Artificial Intelligence and Machine Learning applied to energy systems or microgrids.

▪ Previous experience in MATLAB/Simulink and power system modelling.

▪ Familiarity with AC/DC hybrid microgrid topologies and power electronics.

▪ Experience with real-time simulators (e.g., OPAL-RT).

Minimum requirements:
▪ Master's degree in Electrical Engineering or a related field;
▪ Applicants must either already be enrolled in a PhD programme or be available to enroll in a PhD programme at the earliest possible date;
▪ Average grade in bachelor's and master's degrees higher than 14.
▪ Experience in C or Python programming.

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: Carlos Moreira
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 2026-05-01 to 2026-05-31

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

FUNDAÇÃO
CALOUSTE
GULBENKIAN

INESC TEC
Instituto de Engenharia de Sistemas e Computadores, Tecnologia e Ciência
Associação privada sem fins lucrativos declarada de utilidade pública
Pessoa Coletiva 504 441 361 - CRC Porto

Campus da FEUP
Rua Dr. Roberto Frias
4200 - 465 Porto
Portugal

T +351 222 094 000
F +351 222 094 050
info@inesctec.pt
www.inesctec.pt