

CALL FOR GRANT APPLICATIONS (AE2021-0287)

INESC TEC is now accepting grant applications to award 1 Research Grant (BI) with the reference GREENH2ATLANTIC funded by CE, project (reference 101036908)

1. GRANT DESCRIPTION

Type of grant: Research Grant (BI)

General scientific area: ENGINEERING

Scientific subarea: Electrical engineering

Grant duration: 12 months, starting on 2022-02-01, with the possibility of being renewed for a maximum term of four years, in the cases of students enrolled in a PhD.

Scientific advisor: João Peças Lopes

Workplace: INESC TEC, Porto, Portugal

Maintenance stipend: € 1104,64, according to the table of monthly maintenance stipend for FCT grants (<http://www.fct.pt/apoios/bolsas/valores>), 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.

Costs attributable to INESC TEC may include registration, enrolment or tuition fee stipend, either directly or through reimbursement, during the grant duration.

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

2. OBJECTIVES:

- Modeling the electrical behavior of eletrolisers (Alkaline and PEM) as dynamic loads.
- Develop models to control frequency via load response from the eletrolisers.
- Develop power electronic converters to control electrolysis DC current.
- Development of studies related with the exploitation of electrolyser converters when providing support to primary and secondary frequency control in the Iberian system following large disturbances.
- Develop AC/DC power converters for eletrolisers capable to provide grid voltage support.
- Develop research skills in large-scale dynamic simulation.
- Training a critical spirit in the evaluation of the research process and the obtained results.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

- Model the load behavior of electrolyzers.
- Develop models and hardware to control electrolysers when providing to the grid frequency and voltage ancillary services.
- Develop studies using PSS/E and or DigSilent software for the development of dynamic behavior studies for scenarios of the Iberian system between 2030 and 2040.
- Dissemination of work in international journals

4. REQUIRED PROFILE:

Admission requirements:

MSc degree in electrical engineering;

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

Preference factors:

- Advanced knowledge in stability, dynamics and control of power systems when dealing with large-scale integration of renewable power converters. - Experience in power electronics. - Advanced knowledge of MatLab Simulink. - Experience in PSS/E or DigSilent. - Advanced Python programming skills. - Knowledge about the process of conversion to hydrogen.

Minimum requirements:

Average grade on the degree and on o MSc of 14 out of 20;

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%).

The Selection Jury is composed of the following members:

President of the Jury: João Peças Lopes

Full member: Carlos Moreira

Full member: Rui Esteves Araujo

Substitute member: Bernardo Silva

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 dully recognised in Portugal;
 - Documents proving the awarding of academic degrees and diplomas, or the according recognition - in cases of academic degrees or diplomas granted by a foreign higher education institution - can be dismissed in the application process, and replaced by the applicant's declaration of honour, with the verification of said condition taking place during the grant's hiring stage. The submission of the certificate is mandatory when signing the contract.
 - Academic degrees or diplomas awarded by a foreign higher education institution require an authentication by a Portuguese higher education institution, and the corresponding registration on the DGES platform, in conformity with Decree-Law no. 66/2018, of August 16, and Ordinance no. 33/2019, of January 25. More information available on the website <https://www.dges.gov.pt/pt/pagina/reconhecimento?plid=374>
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 2021-12-17 to 2022-01-15

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