

CALL FOR AWARDING RESEARCH FELLOWSHIPS WITHIN PROJECT GRANTS AND R&D INSTITUTIONS

1 Research Fellowship in Special Regime (BI-RE) for PhD Student

1 Research Fellowship(s) under Special Regime (BI-RE) is(are) open at the **FCiências.ID – Associação para a Investigação e Desenvolvimento de Ciências**, for the project/R&D institution SATO - Self Assessment Towards Optimization of Building Energy, and SMART2B - Smartness to existing Buildings, funded by European Union's H2020 research and innovation programme under Grant Agreement no. 957128 and 101023666, respectively, under the following conditions:

1. **Scientific Area:** Energy and Environmental Engineering, Engineering Physics, Mechanical Engineering or Civil Engineering or similar areas.
2. **Requirements for admission:** Portuguese nationals, foreign and stateless persons may submit applications to this selection procedure, provided they hold a Master degree in Energy and Environmental Engineering, Engineering Physics, Mechanical Engineering or Civil Engineering or similar areas, and fully comply with the following requirements: The master degree must have been granted in the last 2 years;; Demonstrated professional experience in the area of thermal energy simulation (EnergyPlus).
3. **Additional optional skills and qualifications:** The candidate must also have experience in using the following software: EnergyPlus, Python, MATLAB and Sketchup. Professional experience in energy certification of service buildings is also valued.
4. **Contracting requirements:** Presentation of the academic qualifications and/or diplomas. Enrolment in the 3rd cycle of higher education (PhD).
5. **Work plan:** The work plan is related to two ongoing H2020 projects: SATO and SMART2B. The plan includes the following stages:
Write a review manual and automated building energy assessment (P1); Prepare the FCUL library (SATO) and AirBnB Lisbon (SMART2B) pilots « and start recording data; Perform heat loss and COP assessments and implement two artificial intelligence approaches for the assessments developed (P2); Perform infiltration, natural ventilation, and mechanical ventilation assessments and implement two artificial intelligence approaches for these assessments (P3); Perform the comparative assessments in the Worten stores and whole building self-assessment in the SATO platform (P4).
The thesis will be a compilation of the papers: P1, P2, P3 and P4.
Main innovations related to this thesis:
(1) The use of AI to achieve optimal assessments, both from ANNs and optimal RC model configurations;
(2) An assessment of NV capabilities: how much can it do depending on indoor-outdoor temperature difference and wind;
(3) Same as 2 but adding feedback from users (via an app): here the objective is to explore how far we can take NV in a given building;
(4) An assessment of NV use throughout the year, i.e., if the building is using its full NV potential;
(5) An assessment of HVAC ventilation efficiency, using occupancy data and outdoor airflow rate we can map ventilation efficiency;



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(6) An assessment of HVAC cooling efficiency, but global cooling, including AHU and not only the heat pump; (7) When the building has operable electrical shading: an assessment of daylighting efficiency, meaning how much solar loads does the daylighting bring?

In addition to understanding and implementing these innovative approaches, the main challenge of this thesis is setting up the SATO pilots (putting sensors and controllers and bringing them online).

The work plan is included in several tasks from WP1 to WP6 of the project SATO.

In SMART2B the thesis will contribute to WP3, WP4, WP5 and WP6. The candidate is expected to take a leading role in overseeing the AirBnB based Lisbon pilot and its connection to the SMART2B platform.

In SATO, this thesis will contribute to the development of the self-assessment and flexibility management services.

The Smart Self-Assessment Services builds on the developments of Task 2.2 which develops the framework that gathers monitoring data on the performance of the technical building systems and the building-as-a-whole in a seamless and GDPR compliant way.

Two Smart Performance Assessment Services will be provided:

(1) A real-time performance assessment displaying information on building and energy consuming equipment performance;

(2) An automated self-reporting of inputs for a number of smart ready services. These inputs can be later used for the (potentially automated) SRI assessment of the building.

The Flexibility Management Service maximizes available system flexibility to the grid while respecting all energy and comfort constraints, as specified by the user or learned from its past actions/preferences. The service will control equipment and appliances to make use of different storage capacities (thermal, BaB, battery or bi-directional charging of electric vehicles), taking into account the existence of local generation, to provide the flexibility necessary for demand side management while minimizing any perceived discomfort by the end user.

6. **Legislation framework:** Research Fellowship Holder Statute, in accordance with Law 40/2004, of 18 August, in its current version and the FCT Regulation for Research Studentships and Fellowships, in its current version (Reg. 950/2019 published in DR on 16th December: <https://dre.pt/application/file/a/127230968>, or at the FCT website: <https://www.fct.pt/apoios/bolsas/regulamento.phtml.pt>), and FCiências.ID Fellowship Regulation, as approved on 12th May 2020 (available at [Regulamento de Bolsas de Investigação Científica da FCiências.ID](#)).

7. **Place of work:** The work will be developed at the Instituto Dom Luiz (IDL), in Faculty of Sciences, University of Lisbon, Campo Grande, Lisbon, Portugal under the scientific supervision of Professor Guilherme Carvalho Canhoto Carrilho da Graça.

8. **Fellowship duration:** This position is initially opened for 6 months and will begin on September 2021. The fellowship contract may be potentially renewed for until the end of the project SMART2B, in accordance with the provisions of Regulation of Research Fellowships from the Foundation for Science and Technology, I.P. and FCiências.ID Fellowship Regulation.

9. **Monthly allowance:** The fellowship amounts to € 1526,47, according to [table values](#) of the FCiências.ID Fellowship Regulation. The fellowship holder will have a personal accident insurance and can ensure the right to social security through adherence to the voluntary social insurance scheme, if not covered by any other social protection scheme, pursuant to *Código dos Regimes Contributivos do Sistema Previdencial de Segurança Social*.



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The fellowship will be paid monthly by bank transfer

This research grant includes annual tuition fees divided in the 12 months. It is the student responsibility to pay the annual tuition fees.

10. **Evaluation and selection process:** Candidates will be assessed by the quality of their CV and possibly, a selection interview. If the selection interview is not carried out, the final evaluation will be obtained with a weighting of 100% in the curriculum evaluation. If the jury chooses to carry out the selection interview, it will be carried out to the 2 (two) candidates with the best classification in the curriculum evaluation and, therefore, the final evaluation will be as follows: 50% for the curriculum evaluation and 50% for the selection interview.

11. **Selection Committee:** Professor Guilherme Carvalho Canhoto Carrilho da Graça (President), Professor Marta João Nunes Oliveira Panão (1st Effective Member) and Professor Killian Paulo Kiernan Lobato (2nd Effective Member). Professor José Manuel da Silva Cecílio (1st Alternate Member) and Professor Miguel Centeno da Costa Ferreira Brito (2nd Alternate Member) are alternate members.

12. **Publication/notification of results:** All the candidates will be notified by e-mail, sent by the call holder, with the selection meeting minutes enclosed.

13. **Deadlines:** This call for applications is open from 09/08/2021 to 17/08/2021 .

14. **Application:** Applications should be sent via e-mail to cdrosa@fc.ul.pt, referring in the e-mail subject the ID SATO-BIRE-202109, by attaching the following documents:

- a. Curriculum vitae – **CV may be provided in pdf or through the [CIÊNCIAVITAE](#) system;**
- b. Certificate of completion of previous degree;
- c. other documents considered relevant

15. **Time limits for the appeal procedure:** In case of negative decision, the candidates have 10 business days, after the date of announcement of the results of the candidates evaluation, to pronounce their disagreement in accordance with the *Código do Procedimento Administrativo*. Appeals against the final decision may be submitted to the Administration Board of FCIências.ID (fciencias.id@fciencias-id.pt) within 15 business days after the notification date

Note 1: The documents that prove the entitlement of the academic qualifications and diplomas, or the proof of registration in the academic degree or diploma requested on the call, can be dismissed during the application period and replaced by a declaration on their honour from the applicant. Their delivery is mandatory for the fellowship contractualization.

NOTE 2: Please note that - higher education degrees and diplomas awarded by foreign higher education institutions need to be recognized by a Portuguese higher education institution, pursuant to the [Decree-Law nr. 66/2018](#) (August 16) and the [Ministerial Order nr. 33/2019](#) (January 25). The presentation of the recognition certificate is mandatory for contract signature. More information can be obtained at: <https://www.dges.gov.pt/en/pagina/degree-and-diploma-recognition>.



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