L-Università ta' Malta

Research Support Services Directorate

University of Malta
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Call for Expression of Interest
Marie Skłodowska-Curie Postdoctoral Fellowship
(HORIZON-MSCA-2024-PF-01-01)

The University of Malta (UM) is interested in hosting Marie Skłodowska-Curie Action fellows to work in its research teams and welcomes expressions of interest from excellent post-doctoral researchers to apply for the Postdoctoral Fellowship call.

University of Malta (UM) is the sole public and highest teaching institution in Malta, with its structures being in line with the Bologna Process and the European Higher Education area. UM has a 400-year history and there are over 11,500 students including 1,000 foreign/exchange students from nearly 92 different countries, following fulltime or part-time degree and diploma courses. Around 3,500 students graduate each year. UM is comprised of 14 Faculties and several other campuses: at Valletta, Marsaxlokk and Gozo. As of 2020, the UM employed a total of 2,848 employees including academics, administrative, technical and industrial staff (1,885 on a full-time basis and 963 on a part-time basis). Over the past ten years, the UM has been involved as coordinator and partner in numerous EU-funded projects under various Programmes including Horizon Europe, Horizon 2020, FP7, Erasmus+, Lifelong Learning Programme, INTERREG, National Funding and various other international and national programmes and initiatives. The UM is also represented in a number of European and International University networks and groups.

Faculty of Engineering

Department Electrical Engineering

The Department of Electrical Engineering forms part of the Faculty of Engineering at the University of Malta. The department has been at the forefront of research and lecturing in various areas of electrical engineering: Power Electronics and Distributed Generation; Power Systems and Grid Integration of Renewable Energy Sources (RES); Electrical Machines and Drives; and Electrical Services. We strive to achieve excellence in these areas by our contribution to lecturing, research and innovation in collaboration with both local and international partners and academic/research institutions.

The main objective of research area being proposed is to conduct a technical feasibility study of a hybrid energy storage system (distributed battery energy storage system (ESS), supercapacitors and green hydrogen) applied to a novel Energy Hub concept that is aimed at a sustainable mobility in an industrial setting. The project aims to design, model, simulate and analyse a hybrid energy storage system-based DC microgrid that incorporates a mix of energy storage components to maximise the use of energy generated from renewable energy systems (RES) installed within the microgrid. The Energy Hub concept shall also contribute towards the elimination of RES energy curtailment and at the same time paving the way for more RES integration.

This research shall perform a thorough technical analysis of the Energy Hub concept and the specific aims that shall be conducted are:

1. Design, size, model and simulate a DC Microgrid incorporating various ESS components;

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2. Design, model and simulate a novel supervisory control energy management system (EMC) for the electric-hydrogen based DC microgrid project that is suitable for operation in very diverse countries – the focus here will be to optimise the sizing of various energy storage components and the operation of the microgrid within the scenario of the different countries;

3. Promotion of green modes of transportation within the industrial sector due to the availability of onsite Electrical Vehicle (EV) charging infrastructures. A secondary area consists of the intersectoriality due to the generation and storage of green hydrogen which enables onsite and offsite applications.

Research Field: Information Science and Engineering (ENG)
Keywords: Smart Grids, Energy Hubs,
Energy Storage, Renewable Energy,
Microgrids, Electrification of Transport.

The selected candidates will receive dedicated support from the supervisor Dr. Inġ. John Licari, and the Research Support Services Directorate to write a successful proposal and submission.

Interested candidates must be in possession of a doctoral degree with not more than 8 years post PhD research experience and must not have resided in Malta for more than 12 the past during the past 3 years. Furthermore, their research interests should be relevant to the above project. Kindly send a covering letter and CV to the corresponding supervisor, Dr. Inġ. John Licari,, keeping in copy funding.rssd@um.edu.mt with 'MSCA-PF-2024 '*candidate name*" as the email subject by **24 May 2024**.