



MSCA Postdoctoral Fellowships

HORIZON MSCA PF 2023

EXPRESSION OF INTEREST



Deadline for submission of documents
15th of July 2023



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HR EXCELLENCE IN RESEARCH

Contact Person/ Scientist in charge

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Brief description of the Research Group

The principal activity of the Electrical Systems Unit is the development of intelligent algorithms for management of future electricity networks and energy systems. To achieve high levels of energy system flexibility, efficiency and sustainability solutions are sought in integration of energy storage devices and renewable energy sources as well as in application of centralized and distributed control methods. Smart Homes, Smart Buildings, SmartGrids (Smart distribution electricity networks), advanced power electronics interfaces and energy efficiency are commonly used to describe the research interests of the unit.

Project description

The project can be presented in one of the following research lines:

Active management of distribution power networks

The objective of this line is the development of new services and related tools for distribution system operators (DSOs) and incorporation of residential and industrial users to the management schemes. New intelligent schemes for solving distribution network issues like state estimation, demand forecasting, voltage control, congestion management etc. are sought. Exploring demand management and coordinated demand response schemes and their application in industrial and buildings sector are some of the main research challenges.

Optimal design and management of energy systems

“Smart buildings” and “Smart Homes”, their energy management, coordination and integration to power networks, are all of increased importance to this research unit. Holistic and user oriented approaches have all been used for modelling energy demand of a building. Options for renewable and storage device integration are sought in order to improve the building autonomy and increase its self-consumption. Finally, real-time optimal energy resource management techniques aimed at the minimisation of operational costs are under development.

Power electronics interfaces for future power networks

The research activities include development of control algorithms for advanced power electronics interfaces. Energy management of microgrids (both islanded and grid-connected), control and operational aspects of power converters, renewable and storage management, proactive and optimal dispatch algorithms and stability analysis for small power networks are all studied. Energy scenarios of interest are recreated and the algorithms validated in the “Smart Energy Integration Lab” environment.

Research Area

Information Science and Engineering (ENG)

Applications



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Documents to be submitted:

- ✓ Brief outline of the proposed research project (2 pages maximum)
- ✓ Complete curriculum vitae stating background and skills + two reference letters