

<b>Position</b>	<b>ESR2.2</b>		
<b>Title</b>	Control and management of storage elements in micro-grids		
<b>Centre</b>	Universitat Politècnica de Catalunya (UPC, <a href="http://www.upc.edu">www.upc.edu</a> )		
<b>Location</b>	Barcelona		
<b>Start date</b>	1 July 2016	<b>Duration</b>	36 months
<b>Closing date for applications</b>	<b>6 March 2016</b>		
<b>Communications of results</b>	<b>15 May 2016</b>		

## Job description

### Individual Research Project

The objective of this Individual Research Project is to develop low-level control algorithms for electrical energy storage elements (batteries, supercapacitors, etc.) connected to a distribution network (energy sources, and loads). These algorithms will automatically handle the power converter, which connects energy storage devices to the distribution grid and try to overcome most relevant limitations of the energy source. Additionally, the low-level algorithms to integrate these elements with green sources like fuel cell will be developed. Finally, energy management algorithms, which take into account energy storage devices, will be developed.

### Tasks

- Modelling, simulation and controller design for energy storage elements (batteries, supercapacitors).
- Low-level control system implementation (DSP/FPGA based systems).
- Integration of energy storage elements with energy sources such as fuel cells and grid (modelling, simulation and controller design).
- Energy management algorithm development and implementation.

### Career

In Marie Skłodowska-Curie Actions, ESRs are paid a competitive salary, including a Mobility Allowance and a Family Allowance (subject to family situation). The successful candidate will be working on an Individual Research Project (IRP) at the UPC (Automatic Control Department, ESAII) and will have secondments related to their research at EFACEC ENERGIA (Efacec Energia, [www.efacec.com](http://www.efacec.com)) and Università di Bologna (UniBo, [www.unibo.it](http://www.unibo.it)). She/he will be enrolled in a UPC PhD programme and conduct the research corresponding to the IRP at the UPC as part of her/his thesis. Tuition fees will be covered by the fellowship and the network will also support training activities and periodical events, which will allow the ERSs to develop their career in a multi-sectorial environment and to obtain a wide knowledge on the control of electrical networks.

### PhD Programme

The successful candidates will be enrolled in the PhD programme - Automatic control, Robotics and Computer Vision at the UPC ([www.ioc.upc.edu/students/darv](http://www.ioc.upc.edu/students/darv)).

### Supervisor

Ramon Costa Castelló



## Planned secondments (compulsory)

The ESR will perform secondments at Efacec Energia (Maia, Portugal) and UniBo (Bologna, Italy), which will be less than 30% of the total employment time.

## Eligibility conditions

1. The candidate must not have resided or carried out his/her main activity (work, studies, etc.) in **SPAIN** for more than 12 months in the 3 years immediately prior to his/her recruitment under the project.
2. The candidate has not yet been awarded the doctorate degree.
3. The candidate must be in the first 4 years of his/her research career.
4. The candidate may be of any nationality.
5. The candidate will work exclusively for the project during the employment contract.
6. The candidate must be in condition of being admitted in the PhD programme - Automatic control, Robotics and Computer Vision at the UPC.

**These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative.**

## General requirements

### Education Degree

To be eligible for the PhD programme - Automatic control, Robotics and Computer Vision at the UPC, the candidate must be in any of the following circumstances:

1. Individuals holding an official university degree from Spain or any other country in the European Higher Education Area that qualifies holders for master's degree courses, provided they have also completed a minimum of 300 ECTS credits of official university coursework overall, of which at least 60 must be at the master's degree level.
2. Individuals holding a degree from a foreign education system, providing that it can be shown that the university in question offers a level of training equivalent to that of the official Spanish master's degree and that, in the issuing country, individuals holding the degree in question are eligible for doctoral degree courses.

### Qualifications

Preference will be given to candidate with a master degree (or equivalent) in automatic control/power electronics or other relevant disciplines.

### Language(s)

- **English:** Good communication skills both oral and written.
- **Spanish or Catalan:** Basic level (desirable).

### Experience

Desirable background in:

- Automatic Control
- Power electronics (Converter design and implementation)
- FPGA/DSP programming
- MATLAB/Labview Experience



### Skills

- Strong motivation to pursue a PhD degree.
- Ability to work independently and as part of a team.
- Excellent skills in writing and presentation.
- Highly-motivated with the ability to set and meet deadlines appropriate to the progress of the project.
- Willingness to interact closely with the INCITE partners.

### Job details

<b>Gross salary</b>	Between € 33900 and € 38600 annual depending on the family situation (Amounts subject to taxation according to Spain Law). The position covers tuition fees and other training expenses.
<b>Duration</b>	36 months
<b>Type of contract</b>	Full-time
<b>Hours per week</b>	40 hours
<b>Place of work</b>	<b>ESAII department</b> , Campus Diagonal Sud. Building U, Calle Pau Gargallo, 5, 08028 Barcelona
<b>Province/State</b>	Barcelona
<b>Local language</b>	Spanish/Catalan
<b>Country</b>	Spain

The contract will be subject to the regulations of the Marie Skłodowska Curie Innovative Training Network Fellowships of the European Commission and in accordance with the work contract regulations of Spain.

### Selection criteria

Taking into account background (and qualifications), experience and skills it will be determined which candidates best suited to the tasks. Candidates will be ranked according to these criteria. After the first selection stage, the top five candidates will be invited to a remote interview via video conference.

**Equal consideration will be given to female and male applicants.**

### Applications

All applications must include:

1. The INCITE application form.
2. A detailed CV, including list of publications and a Master thesis summary (use INCITE template).
3. A motivation letter (use INCITE template).
4. Copies of academic transcripts and degree certificates, in English.
5. Names of two referees (name, title, affiliation, e-mail and telephone number(s)) who are willing to provide detailed recommendation letters about the candidate.





## *ESR Job Vacancy*

All applications must be submitted by means of on-line application on the official website of INCITE - [www.incite-itn.eu](http://www.incite-itn.eu) using the template available in the website

For further information: [coordinator-incite@irec.cat](mailto:coordinator-incite@irec.cat)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Marie Skłodowska-Curie grant agreement No 675318.