

<b>Position</b>	<b>ESR3.1</b>		
<b>Title</b>	Control strategies for hybrid AC-DC grids		
<b>Centre</b>	Catalonia Institute for Energy Research (IREC, <a href="http://www.irec.cat/en/">www.irec.cat/en/</a> )		
<b>Location</b>	Barcelona, Spain		
<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 the Individual Research Project is to propose and develop control strategies for hybrid AC-DC (Alternating Current-Direct Current) grids ensuring a stable and secure operation of the power systems with high penetration of renewable sources. The project will cover not only development of solutions for the new ancillary services but also the analysis of new phenomena that could appear in such hybrid systems.

### Tasks

- Modelling of AC and DC grids for control design purposes.
- Detecting interactions among AC and DC systems.
- Designing controllers for DC grids to support AC power systems.
- Defining coordinated controls between AC and DC systems.

### 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 IREC (Electric Engineering Department) and will have secondments related to their research at Université Grenoble Alpes (UGA, [www.univ-grenoble-alpes.fr](http://www.univ-grenoble-alpes.fr)) and General Electric Global Research (GE, [www.ge.com/research](http://www.ge.com/research)). She/he will be enrolled in a UPC PhD programme and conduct the research corresponding to the IRP at IREC 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 of the Electric Engineering Department at Universitat Politècnica de Catalunya (UPC, [www.upc.edu/](http://www.upc.edu/)).

### Supervisor

José Luis Domínguez-García  
Oriol Gomis-Bellmunt

## Planned secondments (compulsory)

The ESR will perform secondments at UGA (Grenoble, France) and GE (Munich, Germany), 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 (short stays such as holidays are not counted).
2. The candidate must be within 4 years of the diploma granting you access to doctorate studies at the time of recruitment and has not yet been awarded the doctorate degree.
3. The candidate may be of any nationality.
4. The candidate must work exclusively for the project during the employment contract.
5. The candidate must fulfil the conditions to be admitted in PhD programme of the Electric Engineering Department 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 of the Electric Engineering Department 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.

For further information visit: <http://goo.gl/GJKr9R>

### Qualifications

Preference will be given to candidate with a master degree (or equivalent) in Electrical, Electronics or Control Engineering, Applied Mathematics or other relevant disciplines.

### Language(s)

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

### Experience

Desirable background in:

- Power System Dynamics and Power Electronics.
- Programming and modelling softwares: Matlab/Simulink, DlgSILENT/Power Factory or other electrical software.
- Computer modelling related to Renewable Energy Sources, Power Systems and Power Electronics (desirable).
- Linear Algebra and Control systems theory (desirable).



**Skills**

- Strong motivation to pursue a PhD degree.
- Ability to work independently and as part of a team.
- Excellent skills in communication.
- 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 € 2800 and € 3200 per month depending on the family situation (Amounts subject to taxation according to Spanish 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>	39.5 hours
<b>Place of work</b>	IREC, Jardins de les Dones de Negre, 1, 2 <sup>a</sup> pl., 08930 Sant Adrià de Besòs, 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**

The evaluation committee will take into consideration the academics records, research experience and publications. 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 **application form** (INCITE template).
2. A detailed **CV**, including list of publications, a Master thesis summary and the names of two referees (name, title, affiliation, e-mail and telephone number(s)) who are willing to provide detailed recommendation letters about the candidate ( INCITE template).
3. One **motivation letter** for each position applied for (INCITE template).
4. **Copies of academic transcripts and degree certificates**, in English.

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 templates available in the website.

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

