

Position	ESR4.4		
Title	Advanced functionalities for the future smart secondary substation		
Centre	Efacec Energia (Efacec Energia, www.efacec.com)		
Location	Porto, Portugal		
Start date	1 June 2016	Duration	36 months
Closing date for applications	6 March 2016		
Communications of results	15 May 2016		

Job description

Individual Research Project

The objective of this Individual Research Project is to develop, implement and test advanced functionalities for the future Smart Secondary Substation. The project entails the development of advanced control solutions that contribute for an effective smart grid implementation. The ESR will be working together with several other specialist research engineers allowing a strong knowledge sharing across several activity areas. The development of in-house solutions (Hardware and Software) will strongly benefit the implementation of the outcome of the project allowing the test of the algorithms to be developed on embedded platforms that can actually be tested on real scenarios. Therefore, centralised and distributed control algorithms will be developed to regulate the power flow in order to reduce cost and improve quality. The power regulation also makes it possible to improve economic benefits by programming the purchase and sale of energy depending on its price. Furthermore, the Distribution System Operator (DSO) or third parties such as aggregators will be enabled with the possibility to interface with field equipment and even low voltage loads and generation units through their communicative equipment interfacing with inverters and controlling its power output.

Tasks

- Develop advanced control solutions that contribute for an effective smart grid implementation.
- Provide functionalities such as local energy balancing, voltage control, peak-shaving and grid constraints reduction, micro/mini-generation control, demand response, dynamic tariffs, storage and electric vehicle integration, losses optimisation (technical and commercial) and fault detection, location and management.

Career

In Marie Sklodowska-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 Efacec Energia (Strategic Projects department, www.efacec.com) and will have secondments related to their research at Catalonia Institute for Energy Research (IREC, www.irec.cat) and Université Grenoble Alpes (UGA, www.univ-grenoble-alpes.fr). She/he will be enrolled in the Doctoral Program in Electrical and Computer Engineering of the University of Porto and conduct the research corresponding to the IRP at Efacec Energia 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 Doctoral Program in Electrical and Computer Engineering (PDEEC) at University of Porto (sigarra.up.pt/feup/en/cur_geral.cur_view?pv_curso_id=682).

Supervisor

Dr. Nuno Silva



Planned secondments (compulsory)

The ESR will perform secondments at IREC (Barcelona, Spain) and UGA (Grenoble, France), 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 **PORTUGAL** 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 the Doctoral Program in Electrical and Computer Engineering of the University of Porto.

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 Doctoral Program in Electrical and Computer Engineering of the University of Porto, the candidate must be holders of a Master's degree or legal equivalent; holders of a Bachelor's degree with a relevant academic or scientific curriculum recognized by the Scientific Committee or those with an academic, scientific or professional curriculum recognized by the Scientific Committee as attesting to their ability to attend this cycle of studies.

Note: the candidate students should contact the PDEEC Scientific Committee (campilho@fe.up.pt) to confirm their eligibility before applying for the ESR position.

Qualifications

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

Language(s)

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

Experience

Candidates must have a solid inter-disciplinary research record (particularly on foundational work), in one or more of the following areas:

- Power Systems
- Computer Science
- Informatics
- Electronics



Skills

- Solid knowledge of Power Systems tools (power flow, state estimation, OPF, volt/var control) and controls
- Capability for architecture design, implementation and testing of complex algorithms
- Software development for embedded systems
- Software development using programming languages c, c++, python, c#, Matlab
- Operating Systems Windows e Linux
- Strong motivation to pursue a PhD degree.
- Ability to work independently and as part of a team.
- Excellent skills in research paper and report writing.
- 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

Gross salary	Between € 2.200 and € 2.600 per month depending on the family situation (Amounts subject to taxation according to Portugal Law). The position covers tuition fees and other training expenses.
Duration	36 months
Type of contract	Full-time
Hours per week	40 hours
Place of work	Efacec Energia, Un. Automation, Rua Frederico Ulrich, PO Box 3078, 4471-907 Moreira Maia, Portugal
Province/State	Porto
Local language	Portuguese
Country	Portugal

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

Selection criteria

Essential criteria:

- A solid research record in the areas of power systems and control, algorithms development and implementation
- Proven ability to balance theory and algorithmic science with practical implementations
- A genuine interest in the aims of the research programme
- Ability to work in a team
- Good verbal and written communication skills in English
- Possess high business ethics

Desirable criteria:

- MSc in a subject relevant to the proposed project
- Expertise or a clear interest in the broad area of optimization of energy systems is considered an advantage



- Possess strong organizational skills needed to participate in multiple project teams simultaneously while completing tasks on time
- Knowledge of electric utility systems a plus

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 using the templates available in the website.

For further information: coordinator-incite@irec.cat.

