

Position	ESR4.2		
Title	Fault detection and isolation for renewable sources		
Centre	Université Grenoble Alpes (UGA, www.univ-grenoble-alpes.fr)		
Location	Grenoble, France		
Start date	1 September 2016	Duration	36 months
Closing date for applications	1 April 2016		
Communications of results	15 June 2016		

Job description

Individual Research Project

The objective of this Individual Research Project is to propose fault detection and isolation methods for renewable source (RES) (mostly wind plants and solar plants) connected to grids (through alternating current (AC) or direct current (DC) links). As these sources will be more and more involved in the grid power balance, it will be mandatory to detect as soon as possible any fault that could occur inside these plants.

Dedicated methods (or fault detection and isolation) will be developed and tested in order to ensure the minimal loss of power in case of a fault and also to maintain a given level of ancillary services. Grid stability concerns will also be investigated during this work in order to size of the zone to isolate, to locate the sensors and also to study the impact of fault detection and isolation process duration on the grid stability.

Fault detection and isolation methods could be based on model approach and/or signal approach. The recourse to various methods will be linked to the types and locations of sensors inside the power plant and the grid and also the criticality of the zone under fault. One other concern will be the type of link (AC or DC) which could damp some signature related to a given fault.

Tasks

- Literature review on fault detection and isolation in power systems.
- Proposing an extended modelling approach for RES dedicated to fault detection and isolation.
- Developing fault detection and fault isolation methods.
- Testing these methods through simulations (off-line and on-line).

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 UGA (University of Grenoble-Alpes) and will have secondments related to their research at Universitat Politècnica de Catalunya (UPC, www.upc.edu) and Efacec Energia (Efacec Energia, www.efacec.com). She/he will be enrolled in a Electrical Engineering UGA PhD programme and conduct the research corresponding to the IRP at the Grenoble electrical Engineering laboratory (G2Elab) 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 Electrical Engineering PhD programme at EEATS Doctoral School of UGA (www.adum.fr/as/ed/page.pl?site=edeeats).

Supervisor

Bertrand Raison



Planned secondments (compulsory)

The ESR will perform secondments at UPC (Barcelona, Spain) and Efacec Energia (Porto, Portugal), 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 **FRANCE** 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 Electrical Engineering PhD programme of the UGA.

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 Electrical Engineering PhD programme of UGA, the candidate must have a French Master's degree or another French or foreign degree which is equivalent to the Master's level (a degree awarded following a program which orients and prepares students for research. Foreign Master's degrees should include an element of research orientation).

If you do not have a French degree conferring the level of Master, you will have to request dispensation from the appropriate doctoral school.

For more relevant and complete information, please refer to : http://doctorat.univ-grenoble-alpes.fr/medias/fichier/guidedoctorant-en2015-v03_1440083809108-pdf

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.
- **French:** Basic level (desirable, not mandatory).

Experience

Desirable background in:

- Electrical engineering
- Modelling of electrical systems
- Control of systems and state observers
- Signal processing tools



Skills

- 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	Living allowance (€ 2300 per month) + mobility allowance (€ 600 per month) + family allowance (€ 500 per month depending of family conditions). Some amounts are subject to taxation according to French Law. The position covers tuition fees and other training expenses.
Duration	36 months
Type of contract	Full-time
Hours per year	1607h / year (equivalent to 7h20 /day + 45 days of vacations /year)
Place of work	UGA, G2ELab, Bâtiment GrEn-ER, 21 avenue des martyrs, CS 90624, 38031 Grenoble CEDEX 1, FRANCE
Province/State	-
Local language	French
Country	France

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 France.

Selection criteria

Academic Excellency, Scientific curiosity and Technological awareness will be taken into consideration for the selection. 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.

