

Position	ESR1.2		
Title	Decentralised control for RES by fast market-based multi-agent systems		
Centre	Delft University of Technology (TU Delft, www.tudelft.nl)		
Location	Delft, The Netherlands		
Start date	1 July 2016	Duration	48 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 fast, market-based control approaches in multi-agent systems as well as strategies and decision modules of agents that can act on a time scale of at most seconds or in fractions of these, for control in grids with numerous and heterogeneous RES, owned by different parties. As a consequence, the solutions designed need to:

1. contain a type of market mechanism for which the allocation or adjustment of generation per party is computed efficiently, i.e. in at most seconds;
2. have this market mechanism in order to regulate the overall power injected into the grid in an effective way, yielding stable behaviour of the grid as well as optimization of the electricity production;
3. can be computed efficiently by individual agents, especially regarding the agent strategies for acting in these markets and controlling their local generation; and,
4. have a low communication complexity within the agent system.

Tasks

- Modelling smart grids with numerous, heterogeneous RES owned by different parties, for control purposes.
- Developing fast and efficient control strategies using market-based agent systems that can act on a time scale of at most seconds.
- Developing agent strategies and agent decision modules that can act in these markets in fractions of these time scales.

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 TU Delft, Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS), and will have secondments related to their research at Universitat Politècnica de Catalunya (UPC, www.upc.edu) and Catalonia Institute for Energy Research (IREC, www.irec.cat). She/he will be enrolled in a TU Delft PhD programme and conduct the research corresponding to the IRP at EEMCS 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 ESRs 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 TU Delft Faculty Graduate School.

Supervisor

Han La Poutré



Planned secondments (compulsory)

The ESR will perform secondments at UPC (Barcelona, Spain) and IREC (Barcelona, Spain), 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 **THE NETHERLANDS** 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 PhD programme of the TU Delft Faculty Graduate School.

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 TU Delft Faculty Graduate School, the candidate must:

1. have an MSc degree (or equivalent) in a relevant field of science or engineering
2. proven proficiency in the English language (e.g. being a native speaker or having a TOEFL score of at least 100 or an IELTS score of at least 7).

Qualifications

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

Language

English: Good communication skills both oral and written.

Experience

Candidates are preferred to have a background in several of the areas of:

- Multi-agent systems
- Algorithms
- Optimization
- Economic markets
- (Smart) Energy Systems

Skills

- Strong motivation to pursue a PhD degree.
- Ability to work independently and as part of a team.



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- Creativity
 - 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.
 - Interest in multi-disciplinary research.

Job details

Gross salary	Between €2174 and €2779 per month depending on the family situation (Amounts subject to taxation according to Dutch law). The position covers tuition fees and other training expenses.
Duration	48 months
Type of contract	Full-time
Hours per week	38 hours
Place of work	Delft
Province/State	South Holland
Local language	Dutch
Country	The Netherlands

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 the Netherlands.

Selection criteria

- Fit with general requirements listed above.
- Previous achievements of the candidate (e.g. in his/her education).
- Motivation for selecting this project and for selecting TU Delft.
- Ability to overcome and solve problems.

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** (including grades and courses) **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.

