ESTIA INSTITUTE OF TECHNOLOGY	**CALL FOR APPLICATIONS** **POSTDOC POSITION IN ELECTRICAL ENGINEERING/AUTOMATION AND BUILDING MICROGRIDS** **CDD** **Section CNU 63 ou 61**

Renewable Contractual status, possible permanent contract at the end of the fixed-term contract.

ESTIA (http://www.estia.fr, https://www.youtube.com/watch?v=is8g0inD8_I) develops three activities: the training of trilingual generalist engineers and Bachelor (200 graduates per year), research and transfer, the management of 3 business incubators and a technopole. ESTIA trains trilingual engineers in 3 years in the fields of energy, embedded systems, mechanics, IT and industrial organization. ESTIA is a member of the "Conférence des Grandes Ecoles » and is accredited by the Commission of Engineering Degree. In addition to the training mission, ESTIA develops collaborative projects with industrial companies in the Aquitaine region, France and Europe in both applied and fundamental research projects through its multidisciplinary Estia-Recherche team. To enhance the value of all these activities, ESTIA animates and uses several technical platforms: EneR-GEA, CompositAdour, PEPSS, SIMECOMP and the new ADDIMADOUR platform.

As part of developing its research activities, ESTIA is looking for a Postdoc in Electrical Engineering with a strong data-driven approachs dominance.

Position

The Postdoc will be attached to the ESTIA-Research service and the Renewable Energy Integration (IEnR) team. He/she will work on a funded project on "Energy Management Optimisation in Building MicroGrid", where predictive and learning-based control are key topics.

Research activities

Estia-Recherche is the Research Unit of ESTIA, registered at the RNSR under the n° 201420655V Estia-Recherche, associated with the doctoral schools SPI (Sciences pour l'Ingénieurs) and MI (Mathematics and Informatics) of the University of Bordeaux. We expect the Postdoc to be part of the "*Sustainable and Empowering Interfaces*" research project, which addresses the study, design and implementation of System-System, Human-System and Human-Human interactions. More specifically, considering the profile, the Postdoc will work within the research axis Renewable Energy Integration (IEnR), focusing on the following issue: *how to move from the traditional paradigm of power grids as a utility-oriented system to a customer-centric system. In particular, the Postdoc should have* **data-driven approach *methods oriented towards power system resilience***. The candidate must be involved in research activities including but not limited to Micro-Grid, SmartGrids, power electronics and control applied to renewable energy sources and storage. The Postdoc will investigate research questions directly while coordinating research activities within the project team. He/she will contribute to deploying, testing and validating a Hierarchical Model Predictive Control structure on the ESTIA Building Microgrid demonstrator. He/she will have the freedom to develop and execute his research ideas in close collaboration with our team. Furthermore, he/she will support the dissemination of research findings across the community, which includes collaborating with other researchers and institutes and publishing in scientific journals and conferences.

Tasks

- Model and control development in the domain of Building Microgrids, Energy Management Systems (EMS) and Power Electronics
- Deployment of EMS based on Hierarchical Model Predictive Control and Experimental validation of developments on the ESTIA Building Microgrid demonstrator
- Contribute to the development and implementation of a digital twin and a predictive maintenance strategy
- Publish in scientific journals and conference proceedings
- Project coordination and project ideation
- Support of project acquisition
- Supervise MSc students and Co-supervise PhD students

Profile

The applicant must have a PhD or be in the process of finalising a PhD in Electrical Engineering / Automation with **a strong mathematical focus and data-driven approachs**.

- PhD related to power flow control and/or Microgrids
- Applied experience in energy dynamic systems simulation and control
- Experience in control technics and Machine learning, in particular: Model Predictive Control, neural networks and deep reinforcement learning (theoretical and practical)
- Background in power electronics
- Experience in using Matlab, Python is preferable
- Experience in real-time simulation (OPAL-RT, dSPACE...)
- Excellent written and oral communication skills in English are mandatory, and French language skills are a strong plus
- Ability to teach in French, English and/or Spanish are appreciated

Submission of applications

A CV accompanied by a cover letter and the names and e-mail of three referees who can provide a recommendation letter and any evidence of skills developed in previous experiences should be sent to: *Prof. Ionel VECHIU, i.vechiu@estia.fr, +33 559.43.84.74.*

The candidates' formal assessment will begin on November 24, 2022, and continue until the position is filled.