Cenaero

Ref.BE-JO-2025-02

JOB OFFER

(Senior) Researcher Energy System Modelling and Control for the Built Environment

Cenaero, located in Gosselies (Belgium), is a private non-profit applied research center providing to companies involved in a technology innovation process numerical simulation methods and tools to invent and design more competitive products. Our ambition is to be internationally recognized as a technology leader in modeling and numerical simulation, to be a strategic partner of large global industries as well as a real support to regional companies including innovative SMEs.

Cenaero provides expertise and engineering services in multidisciplinary simulation, design, and optimization in the fields of both mechanics (including fluid, structure, thermal, and acoustics) and electro-magnetics, manufacturing of metallic and composite structures as well as in analysis of in-service behavior of complex systems and life prediction. It also provides software through its massively parallel multi-physics platform Argo, its manufacturing process simulation and crack propagation platform Morfeo and its design space exploration and optimization platform Minamo. Cenaero operates the Tier-1 Walloon supercomputing infrastructure, launched in November 2022.

In the frame of its research activities in the “Energy Efficient & Resilient Built Environment” field, Cenaero is developing methodologies and tools to

- Size and retrofit living places facing climate changes;
- Design and optimize low carbon technologies integrated in the built environment.
- Provide energy digital twins for user awareness, use optimisation, predictive maintenance, and self-consumption in energy communities.

This field requires diversified expertise (not all aimed in this position) in:

- Building energy dynamic modelling;
- Optimization, machine learning and predictive control, in strong interaction with the Cenaero “Machine Learning for Modelling, Optimization, Data Mining, Monitoring & Control” Group;
- Development of Back-end, Web applications, Interfaces with database and BIM/GIS environments.
- Aero-thermal CFD simulations;

To support the expanding research activities in this field, Cenaero is currently looking for a (**Senior) Research Engineer in Modeling and Control of Energy Systems integrated in Buildings** (M/F/X). This permanent position is available immediately.

Position

The candidate will participate in cutting edge research in energy system and building modelling, machine learning and predictive control, and develop solutions for real-world applications. The candidate is expected to both adequately exploit existing (open source) software tools and develop new tools and methods to reach the objectives.

Profile

Required qualifications:

- Master or Doctoral degree in Engineering or Physics with a background in heat and mass transfers, or in Applied Mathematics with a minimum of 3 years’ experience in the above-mentioned topics;
- Strong knowledge of the energy systems modeling and control in line with building profiles and demand forecasting.

- Minimum 2 years of hands-on experience in machine learning and control methodologies and tools (ex. Neuronal Network, Time series forecasting, MILP, Model based Predictive control);
- Fluent either in French or English, both written and spoken, with a passive understanding of the other language;
- Good analytical and problem-solving skills;
- Good communication skills (written and spoken).

Additional qualifications

- Strong programming skills on commonly used languages (ex. Python, Modelica, MySQL, HTML, Javascript, C++);
- Expertise in methodology and tools related to Uncertainty Quantification and Propagation is a plus;
- Expertise in Building dynamic simulation frameworks such as Openstudio/Energy+, TRNSYS, or equivalent is a plus;
- Basic knowledge and hands-on experience in BIM or GIS;
- Relevant experience in contractual and collaborative research project set-up.

Offer

Cenaero offers a position in growing and leading technological sectors, a direct relationship with their business actors and technical experts, a competitive salary package and a stimulating and dynamic work environment. The successful candidate will benefit from outstanding supercomputing capacity with a brand-new Tier-1 facility at regional level and the possibility to access one of the most powerful supercomputers in the world through the LUMI consortium, in which Belgium has a significant share.

Application procedure

Interested candidates should send a cover letter, quoting the reference number of the offer (BE-JO-2025-02) and a resume to rh_be-jo-2025-02@cenaero.be