

23J001 Internship proposal

Title: Development of an optimization algorithm for the sizing of hydrogen infrastructure (mobility)

Are you interested in working on the development of an optimization algorithm applied to an existing simulation model (proprietary code)?

The European Institute for Energy Research EDF-KIT EWIV (EIFER) is looking for a

Trainee (f/m/d)

in the research group “Low carbon hydrogen systems”.

The simulation tool for optimization is already used by a customer to pre-size hydrogen refueling station and simulate its operation. The optimization algorithm to develop should give the user the best configuration of the hydrogen refueling station from an economic perspective.

Hydrogen has been used in many industrial processes for decades. More recently, a new sector is emerging for this molecule: the transport sector, in particular for heavy transport uses (buses, trucks). The refuelling infrastructure for hydrogen vehicles is complex and expensive. It is therefore essential to be able to optimize the sizing of these installations in order to ensure the economic viability of such projects.

The European Institute for Energy Research was founded by EDF and the KIT in 2002 aiming at enhancing collaboration through joint projects applied to industrial issues and utilities' needs. With its applied research orientation EIFER is bridging the gap between science and industry for more than 20 years. In the context of the European energy transition, EIFER provides research-based innovative energy solutions for the sustainable development of cities and communities, economic activities, and territories.

The assigned tasks involve

- Bibliography study on optimization algorithms (e.g. genetic algorithm, Particle Swarm Optimization, etc.) and identification of the most suitable method for the project
- Implementation of the algorithm(s) and coupling with an existing internal simulation tool (support for improving some functions of this existing tool may be part of the tasks, depending on the needs)
- Validation of the model and report

Required qualifications, skills and interests

The position is aimed at Masters students in material sciences/informatic engineering.

- Good knowledge in scientific coding and mathematic (especially Python)
- Strong interest in the energy sector
- Professional working proficiency in English (institute's official working language), French or German is a plus

What you can expect

- A stimulating, multicultural and multidisciplinary environment
- An institute at the intersection of academic research and one of the largest energy utilities in Europe
- If the opportunity arises: participation to conferences, involvement in scientific publications

Conditions

- Duration: 6 months
- Starting date: February/March 2023
- Location: EIfER, Emmy-Noether-Str. 11, 76131 Karlsruhe, Germany
- Working hours: 39.5 hours per week
- Monthly compensation: 520 € for a compulsory internship

Contact

If you want to join a highly motivated research group, please forward your electronic application with one single pdf of max. 5MB including all relevant information (curriculum vitae and cover letter) to jobs@eifer.org. **Please refer to the offer number 23J001.**

For additional information concerning the work, please contact:

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