

## **PhD Position on Energy Systems Modeling, KU Leuven, Belgium.**

At the division of Applied Mechanics and Energy Conversion (TME) of the Department of Mechanical Engineering, a young research group led by prof. Erik Delarue is working on energy systems modeling (unit commitment, system planning, equilibrium modeling, renewables integration, energy policy and energy market design). The group of PhD students and post-docs consists of about 15 people. We currently have a PhD position available.

Website unit  
Project

Many electricity generation systems are undergoing drastic changes, through rapidly increasing shares of intermittent renewable energy sources (RES) like wind and solar photovoltaics. Computation and optimization models are often used to address the corresponding challenges (technical, economic, policy), by analyzing system operation and planning.

We have a PhD position available, in the context of the NEPTUNE project, granted under the Belgian Energy Transition Fund.

NEPTUNE stands for North-sea Energy Plan for Transition to sUustainable wiNd Energy. High-voltage direct current (HVDC), applied in point-to-point links or meshed grids, is the only technically and economically feasible solution for the transition towards a future system with a large share of offshore wind energy. However, the technology implies a paradigm shift for the Belgian grid with respect to transmission system planning, protection and control. The vacant PhD position in this project focuses on scenario building for grid expansion planning. Focus is on electricity generation and corresponding unit commitment models. Uncertainty is a key element to account for, together with the relationship between planning of the generation system and planning of the required network. Iterative and integrated approaches are envisioned. The planning scenarios developed during this PhD will further be used to obtain the Belgian high voltage grid development plan for 2050 within the NEPTUNE project.

The PhD candidate can start from existing energy systems models and dedicated expertise available in the research group, and will collaborate with the other research group members. This research is part of the EnergyVille framework, a research collaboration on sustainable energy between KU Leuven, VITO, imec and UHasselt.

Profile

We are looking for a highly motivated, enthusiastic and communicative researcher with a Master of Science degree in Engineering or a related field, from a reputable institute. You should have obtained excellent study results.

The candidate should have a strong interest in energy, and especially in energy system operation and planning, renewables integration, energy policy and modeling. Experience with Matlab/Python/GAMS/Julia is a plus. Candidates with a background in a.o. optimization, computer science, operations research are also encouraged to apply. Applicants should also have good English communication skills.

Offer

KU Leuven is among the top European universities (ranked first as Europe's most innovative university in 2018 -Times Higher Education). It is a key player in the field of energy research, also through the collaboration within EnergyVille.

We offer:

A doctoral scholarships (fully funded) for four years (net monthly salary of about ~ €2,000), and a PhD degree in Engineering if successful

A highly specialized doctoral training, making the candidate expert in energy systems modeling

Multiple benefits (health insurance, access to university infrastructure and sports facilities, etc.)

The opportunity to be active in an international research environment, engage in research collaborations and participate at international conferences

Interested?

Applicants should express their interest by sending an email to prof. Erik Delarue via the dedicated email address [jad@kuleuven.be](mailto:jad@kuleuven.be) . The email should \*strictly\* contain the following information in the text body, in bullets:

- Name
- Master degree (Master specification, University + Country, Year obtained)
- Master thesis (Title, Promoter)
- A one paragraph (up to half an A4 page) statement explaining the motivation for applying for this vacancy at KU Leuven. In this regard we strongly encourage you to visit the research group's website (see link above), and read one or several of the recent publications, to get a clear view on the type of work being conducted.

Please also attach an academic CV to your email. Do not directly apply in the online system as referred to below. This will be only necessary for selected candidates in a second stage. Note that if you do not receive a response to your email within two weeks, this means you have not been selected for the second stage. Decision: as soon as a suitable candidate applies (so do not wait till the closing date to apply). Starting Date: earliest start is June, 2019. Later start is possible. For more information, please contact prof. Erik Delarue via [jad@kuleuven.be](mailto:jad@kuleuven.be) .

You can apply for this job no later than June 30, 2019 via the online application tool

KU Leuven seeks to foster an environment where all talents can flourish, regardless of gender, age, cultural background, nationality or impairments. If you have any questions relating to accessibility or support, please contact us at [diversiteit.HR@kuleuven.be](mailto:diversiteit.HR@kuleuven.be).