

# Postdoctoral Position(s) in Energy Systems Modelling and Optimization

The Department of Business Development and Technology ([BTECH](#)) at Aarhus BSS, Aarhus University invites applications for postdoctoral position(s) in Modelling and Optimization of Energy Systems.

The positions are fixed-term full-time employment (two years). The starting date is 1 April 2025 (or as agreed upon).

## Job description

The position is an interesting opportunity for a postdoctoral researcher to work with a variety of projects on Energy Systems. The candidate will support several of these activities jointly with other researchers.

The core pillars of the current research proposal include the following:

### 1. Flexibility and stability of the power system

This will include research study regarding the security that the European transmission system should have through various scenarios that may lead to widespread outages or even blackouts, and how these must be prevented must be examined. HVDC interconnections and the new energy storage technologies (e.g., hydrogen) will also be examined.

### 2. Hybrid power systems

Technical and economic analysis of hybrid power plants combining photovoltaics, wind, hydrogen, and battery storage technologies using software for real case scenarios.

### 3. Optimization techniques for energy harvesting

The following techniques will be applied for optimizing energy harvesting:

- Developing Optimization Algorithms for Parameter Extraction of Solar Modules.
- Applying Artificial Neural Networks and/or machine learning techniques to maximum power point tracking in solar panels for different radiation and temperatures.

### 4. Suggestions for the redesigning process of the current European electricity energy market

As the EU electricity market is designed to incentivize the clean energy transition while delivering on key objectives of energy security and affordability, the methods listed below are some of those that can be used for this goal:

- Accurate prediction of the energy production from RES utilizing next-generation technologies, including Artificial Intelligence (AI) and weather-based models.
- Accurate power load prediction using AI and machine learning as well.
- Energy storage needed at the national and European level, finding the optimal sizing and location of these energy storage technologies.
- Implementation of energy storage technologies in the future pan-European electricity energy market.

## Qualification requirements

- A PhD in energy engineering, electrical engineering, power engineering, or a related field completed within the last 5 years.
- A strong background in mathematics and analysis from the PhD studies, which may be used to perform research assessments on clean energy technologies and the power system (transmission and distribution).

**Ansøgningsfrist:**  
28. februar 2025

**Fakultet:**  
Aarhus BSS

**Institut/VD-område:**  
Institut for  
Forretningsudvikling og  
Teknologi

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**Forventet  
tiltrædelsesdato:**  
01-04-2025

- Proficiency in using MATLAB, HOMER Pro, and NEPLAN.
- The candidate is expected to have a proven track record in AI and Machine Learning, in particular in topics relevant to the research projects stated above.
- Experience in developing mathematical and computational tools for modeling power systems.
- Knowledge of the European Energy Market will be an advantage.

### Who we are

BTECH is part of Aarhus BSS, Aarhus University – a top 100 university. BTECH is located in the business-oriented city of Herning. The department excels in business, IT and engineering disciplines and emphasises the importance of company collaborations. We have around 1,200 students and close to 100 faculty and staff. Each year, approximately 500 students are involved in company projects in more than 250 companies ranging from SMEs to leading multinationals.

More information about BTECH is available [here](#).

### Further information

For further information about the position and the department, please contact Associate Professor Georgios Fotis, tel.: +45 9352 1672 email: [gfortis@btech.au.dk](mailto:gfortis@btech.au.dk).

If you need help uploading your application or have any questions about the recruitment process, please contact HR Supporter, Charlotte Thomsen, tel.: +45 8716 5362. email: [charlotte@au.dk](mailto:charlotte@au.dk).

### Place of work

Birk Centerpark 15, DK-7400 Herning

### Application deadline

28 February 2025

### International applicant?

Aarhus University offers a broad variety of services for international researchers and accompanying families, including relocation service and career counselling to expat partners. Please find more information here:

<https://internationalstaff.au.dk/relocationservice/>

Please find more information about research opportunities at Aarhus University here:

<http://international.au.dk/research/>

Aarhus University also offers a Junior Researcher Development Programme targeted at career development for postdocs at AU. You can read more about it here:

<http://talent.au.dk/junior-researcher-development-programme/>

### Terms of employment

The appointment is made in accordance with the [Memorandum on Job Structure for Academic Staff at Danish Universities](#) as well as the circular on the [Collective Agreement for Academics Employed by the State](#) (in Danish).

The job content and qualification requirements are described in further detail in the [Ministerial Order on the Appointment of Academic Staff at Universities](#).

### Application procedure

When you apply for this position it is mandatory to attach the following:

- Application
- Curriculum Vitae. You are encouraged to declare any periods of leave without research activity, including, for example, maternity leave, since your research activities are assessed in relation to your actual research time
- Education (diploma for master's, PhD and possibly higher doctoral degree)
- List of publications (the enclosed publications must be clearly marked on the list of publications)
- Publications. Up to three publications can be included in the application. In the event of several authors the publications must be accompanied by a co-author statement concerning the applicant's share of the collaborative work with the consent of the co-authors. [This template may be used for the purpose](#)
- Teaching portfolio. The specific requirements regarding the documentation can

be found [here](#)

Materials which cannot be uploaded together with the application may be submitted in three copies to Aarhus BSS HR & PhD, Aarhus University, Tåsingevej 1, 2nd floor, DK-8000 Aarhus C.

Read more about how to apply for an academic post at Aarhus BSS [here](#).

#### **The evaluation process**

*After the application deadline, an assessment committee is appointed. Please note that the assessment of applicants is based solely on the material received prior to the application deadline. For further information, see [Guidelines for Assessment Committee, Aarhus BSS](#).*

*Aarhus University's ambition is to be an attractive and inspiring workplace for all and to foster a culture in which each individual has opportunities to thrive, achieve and develop. We view equality and diversity as assets, and we welcome all applicants. The application must be submitted via Aarhus University's recruitment system, which can be accessed under the job advertisement on Aarhus University's website.*

#### **Om Aarhus Universitet**

*Aarhus Universitet er et fagligt bredt og forskningsintensivt universitet med høj kvalitet i uddannelse og forskning, og et stærkt engagement i samfundsudviklingen nationalt og globalt. Universitetet tilbyder et inspirerende uddannelses- og forskningsmiljø for 38.000 studerende og 8.300 medarbejdere med en årlig omsætning på 7,0 mia. kr. Læs mere på [www.au.dk](http://www.au.dk)*