

Postdoctoral researcher, optimization for complex energy
and sustainability processes
Aalto University

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Posted Oct. 23, 2025, set to expire Feb. 22, 2026

Job Title	Postdoctoral researcher, optimization for complex energy and sustainability processes
Department	T106 Chemical and Metallurgical Eng
Institution	Aalto University , , Finland
Date Posted	Oct. 23, 2025
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Post-Doc
Academic Field(s)	Mechanical Engineering Chemical/Petroleum
Job Website	https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Postdoctoral-researcher--optimization-for-complex-energy-and-sustainability-processes_R44584-3

Apply By Email

Job Description

Aalto University is where science and art meet technology and business. We shape a sustainable future by making research breakthroughs in and across our disciplines, sparking the game changers of tomorrow and creating novel solutions to major global challenges. Our community is made up of 13 000 students, 400 professors and close to 4 500 other faculty and staff working on our dynamic campus in Espoo, Greater Helsinki, Finland. Diversity is part of who we are, and we actively work to ensure our community's diversity and inclusiveness. This is why we warmly encourage qualified candidates from all backgrounds to join our community.

The Process Systems Engineering research group in the [[url=https://www.aalto.fi/en/departments-of-](https://www.aalto.fi/en/departments-of-)

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chemical-and-metallurgical-engineering]Department of Chemical and Metallurgical Engineering is now looking for a motivated

**POSTDOCTORAL RESEARCHER IN OPTIMIZATION FOR COMPLEX ENERGY AND
SUSTAINABILITY PROCESSES**

Are you looking for a future industrial research position or a long-term academic career? Do you want to be part of building up research - preferably together with industrial partners? Do you like supervising students and participating in teaching? If you are a creative and analytical person and have a PhD in a field related to mathematical modeling and experience in optimizing industrial processes, this might be something for you!

We are looking for a postdoctoral researcher ("PostDoc") to support the group and complement our research portfolio in the field of optimization. The work comprises combining theory and practice by investigating efficient ways to model and solve demanding industrial problems related to energy and sustainability. The decision levels mainly focus on planning and scheduling of production and associated supply chains, but an understanding of dynamic process models and life-cycle aspects is a big asset. In this work, you also need programming skills (e.g. Python, Julia) to merge concepts of chemical engineering, operations research and computer science, as you may also need to deploy machine learning to support data analytics and complex decision-making processes. Knowledge of modern SW-tools in the area of energy and sustainability is highly beneficial.

Your role and goals

You will be responsible for conducting research in the area of integrating different decision layers (supply chain, planning and rescheduling of production processes), with a specific focus on developing collaborative models on how to optimally link the different decision levels. The candidate is expected to:

- * Build models embedding dynamics and flexibility of process operations and related supply chains
- * Combine analytical and data-driven surrogate models in optimization
- * Include sustainability aspects into decision-making
- * Implement and solve your models using state-of-the-art optimization engines
- * Collaborate with experts across school borders to support the topical development

The postdoctoral researcher is also expected to perform independent research that supports the group strategy, present at scientific conferences, publish in academic journals, plan and apply for research funding, participate in the activities of the research group, and assist in supervision and teaching activities.

Your network and team

This position will be based in the [url=<https://www.aalto.fi/en/departments-of-chemical-and-metallurgical-engineering/process-systems-engineering>]Process Systems Engineering group led by Prof. Iiro

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Harjunkoski, which focuses on finding solutions for how to design and operate future production systems and supply chains using cross-cutting models and state-of-the-art optimization tools, also supported by machine learning. Here, sustainable collaborative models play a very important role. We also work with other groups to learn more about and support topics such as process electrification, circularity, recycling, hydrogen economy, etc.

The unique competitive edge of the Department of Chemical and Metallurgical Engineering in the School of Chemical Engineering is based on sustainable utilization of raw materials, designing more efficient processes and developing new materials and products. Our department's areas of expertise enable a sustainable future with high-performance products and processes in circular economy and bioeconomy. The department is in a key position in the research of chemical engineering, materials technology, IS processing, efficient energy technologies, and digitalization of these. Our core competences include unit operations and processes in chemical engineering, hydro- and pyro-metallurgy, catalyst and polymeric materials, novel catalytic process, process control, and process systems engineering.

Your experience and ambitions

We are looking for highly motivated candidates with: * Excellent PhD research results * Experience in industrial collaboration and working in teams * Strong skills in mathematical modeling and optimization * Experience or interest in artificial intelligence / machine learning * Good programming skills, e.g. Python or equivalent * Experience in optimizing chemical processes, including sustainability and/or energy aspects

The experience should be demonstrated by evidence of success in related studies and projects, and a publication record. Other merits demonstrating suitability for a postdoctoral researcher position can also be considered.

Experience in writing research proposals in English for funding acquisition is an asset. Candidates should have an initiative-taking approach, should pay attention to details, and have a high aptitude for continuous learning, and experience in co-operating with industry. Candidates should hold a recent PhD degree (max. 5 years) in a relevant field (Chemical engineering, Process Systems Engineering, Energy or Electrical engineering, Industrial engineering).

What we offer

Aalto University offers an excellent environment for driving and realizing your own research ideas, contributing to a sustainable future, and staying at the forefront of research and networking by interacting with companies and other schools.

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The starting date can be negotiated but ideally by latest early 2026. We offer a full-time, fixed-term employment contract initially for one year with a possibility of extension up to two years.

The starting salary for a postdoctoral researcher is approximately 4000 EUR/month.

We work in a hybrid way, and the primary workplace is Otaniemi, Espoo. The Otaniemi campus is a thriving and connected community of 100 nationalities, 13,000 students and 4,500 employees. Life at the transformed campus is vibrant and filled with amazing architecture, calming nature, and a variety of cafes, restaurants, services and good connections along the recently opened metro line.

Join us!

If you want to join our community, please submit your application no later than 30.11.2025, in English, through our online recruitment system by using the link ("Apply Now"). If you are an Aalto employee, please apply via Workday system (internal jobs). Please note that we only accept applications via Workday.

Please including the following attachments mentioned below, in English: * Motivation letter with a short description of your research interest. Please indicate the preferred starting date (max. 2 pages) * CV including details of all academic merits (including publications), and contact information of two persons who may be contacted to provide a character reference (max. 3 pages) * Summary of the applicant's doctoral thesis (max. 1 page) * Copy of the applicant's degree certificates and a transcript of studies (with a clear explanation of the grading scale)

Please note that the position will be filled as soon as a suitable candidate is identified.

For additional information, kindly contact Prof. Iiro Harjunkoski, iiro.harjunkoski@aalto.fi.

Want to know more about us and your future colleagues? You can watch these videos:

[url=https://www.youtube.com/watch?v=5k_og_6zUJQ]Aalto University - Towards a better world,
[url=<https://www.youtube.com/watch?v=dUfEGVM-ZP8&feature=youtu.be>]Aalto People , and
[url=https://www.youtube.com/watch?v=ZK6pDWm1_CE]Shaping a Sustainable Future. Read more about working at Aalto: [url=<https://www.aalto.fi/en/careers-at-aalto>]

Check out our new virtual campus experience: [url=<https://virtualtour.aalto.fi/>]

About Finland

Finland is a great place for living with or without family - it is a safe, politically stable and well-organized

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Nordic society. Finland is consistently ranked high in quality of life and was just listed again as the happiest country in the world: [\[url=https://worldhappiness.report/news/its-a-three-peat-finland-keeps-top-spot-as-happiest-country-in-world/\]](https://worldhappiness.report/news/its-a-three-peat-finland-keeps-top-spot-as-happiest-country-in-world/)<https://worldhappiness.report/news/its-a-three-peat-finland-keeps-top-spot-as-happiest-country-in-world/>. For more information about living in Finland: [\[url=https://www.aalto.fi/en/careers-at-aalto/for-international-staff\]](https://www.aalto.fi/en/careers-at-aalto/for-international-staff)<https://www.aalto.fi/en/careers-at-aalto/for-international-staff> .

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact

Finland