

Jobbnorge ID: 196163
Deadline: 12/11/2020
Website: <http://www.ntnu.no>
Scope: Fulltime
Duration: Temporary

The Department of Electric Power Engineeringxx has a vacancy for a

Postdoctoral position in “Intelligent and Coordinated Control for Inverter in Microgrid”

This is NTNU

At NTNU, creating knowledge for a better world is the vision that unites our 7 400 employees and 42 000 students.

We are looking for dedicated employees to join us.

You will find more information about working at NTNU and the application process [here](#).

Video: <https://www.youtube.com/watch?v=cJgKd1SwGLI>

About the position

Applicants are invited for a two-year position as a Postdoctoral Fellow at the Department of Electric Power Engineering (IEL), Norwegian University of Science and Technology (NTNU), Trondheim, Norway. The candidate will be part of a Power Electronic Systems and Component (PESC) research group.

This Postdoctoral position is part of NTNU's strategic research within this field and it will be closely connected with the activities on Microgrid development within the Research Centre on Smart Energy Systems: [FME Cineldi](#). The center is funded for the period 2016 - 2024 with a total budget of approximately 36 mill. Euros. Currently, about 25 PhD candidates/Postdoctoral Fellows are connected to the activities of the research center. At least 6-7 researchers and PhD candidates are directly related to the topic of Microgrid within this research center.

This position is particularly focusing on intelligent control development for microgrid inverter. A key contribution of this work to the state-of-the-art is the practical implementation of intelligent and coordinated control development for the microgrid inverter to manage high penetration of solar PV, electric vehicle, and energy storage systems. The goal of embedding intelligent technique in the microgrid inverter controller is to plant expert intelligence in the processor so that a control algorithm of the converter can think intelligently by taking appropriate action. The developed control will allow the coordination of PV, electric vehicle, and energy storage systems with intelligent devices and loads in a microgrid, thus providing reliable and seamless operation of the microgrid.

Competences in the following areas will be required:

- Power systems and power electronics analysis techniques
- Mathematical models based on explicit/implicit and probabilistic approaches, hybrid modeling with evolutionary algorithms such as Artificial Neural Networks (ANNs), Genetic Algorithms (GAs), Particle Swarm Optimization, among others

The supervision team will be Associate Prof. Mohammad Amin (mohammad.amin@ntnu.no), Dept of Electric Power Engineering, (NTNU) and Prof. Marta Molinas (marta.molinas@ntnu.no), Dept. of Engineering Cybernetics, (NTNU).

The position reports to the Head of Department.

Duties of the position

The duties of the position include the following items:

- The candidate is expected to work in the development and implementation of intelligent control for microgrid inverter. First, the controller will be modeled analytically and be tested in the computer-aided simulation tool and hardware-in-the-loop (HIL) test. After successful implementation in the HIL, the controller will be tested in a microgrid system in the lab.
- The candidate will work in a team, and therefore good interpersonal skills and the ability to work in a complex, international project team is expected.
- The results of the project are expected to be published in scientific journals and conferences and presented to research partners and user partners.
- The candidate may be involved in proposal writing, teaching duties, and supervision of Master and PhD students if required.

Required selection criteria

A postdoctoral research fellowship is a qualification position in which the main objective is the qualification for work in academic positions.

- Applicants must hold a degree equivalent to a Norwegian doctoral degree in electric power engineering or control engineering. Only applicants with an approved doctoral thesis and public defense are eligible for an appointment.
- Applicants must demonstrate research ability in the application of power electronics in power system.
- Experience in power electronics hardware and/or software development
- Competences in one of the following: the Artificial Neural Networks (ANNs), the Genetic Algorithms (GAs) and the Particle Swarm Optimization
- Relevant industry experience may be an advantage.
- Academic results, publications, relevant specialization, work or research experience, personal qualifications, and motivation and a desire to make an impact on critical societal problems will be considered when evaluating the applicant
- Applicants must have excellent English language skills, written and spoken. Applicants from non-English speaking countries outside EU/EEA/Switzerland must provide preliminary documentation of English language proficiency, in terms of an approved test. The following tests can be used: TOEFL, IELTS and Cambridge Certificate in Advanced English (CAE) or Cambridge Certificate of Proficiency in English (CPE). Minimum scores are:
 - TOEFL: 600 (paper-based test), 92 (Internet-based test)
 - IELTS: 6.5, with no section lower than 5.5 (only Academic IELTS test accepted)

Further assessment of both written and oral English language skills and the ability to communicate fluently will be conducted in the continued selection process and during any interviews for the shortlisted applicants.

If, for any reason, you have taken a career break or have had an atypical career and wish to disclose this in your application, the selection committee will take this into account, recognizing that the quantity of your research may be reduced as a result.

The appointment is to be made in accordance with the regulations in force concerning [State Employees and Civil Servants and national guidelines for appointment as PhD, post doctor and research assistant](#).

Personal characteristics

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal suitability.

- Be structured, targeted and solution-oriented;
- The successful candidate will be a team player in a group with the project consortium, professors, researchers, PhDs and scientists from the industrial sector
- Self-driven with a strong ability to work independently when required
- Proven ability to work with an interdisciplinary team
- Have good dissemination skills
- Personal skills like a positive and friendly attitude, and contributing to a sustainable social environment will also be valued

We offer

- exciting and stimulating tasks in a strong international academic environment
- an open and [inclusive work environment](#) with dedicated colleagues
- favourable terms in the [Norwegian Public Service Pension Fund](#)

Salary and conditions

Postdoctoral candidates are placed in code 1352, and are normally remunerated at gross from NOK 545 300 per annum, depending on qualifications and seniority. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.

The employment period is two years.

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants, and the acts relating to Control of the Export of Strategic Goods, Services and Technology. Candidates who by assessment of the application and attachment are seen to conflict with the criteria in the latter law will be prohibited from recruitment to NTNU. After the appointment you must assume that there may be changes in the area of work.

It is a prerequisite you can be present at and accessible to the institution daily.

About the application

The application and supporting documentation to be used as the basis for the assessment must be in English.

Publications and other scientific work must follow the application. Please note that applications are only evaluated based on the information available on the application deadline. You should ensure that your application shows clearly how your skills and experience meet the criteria which are set out above.

The application must include:

- A cover letter where the applicant describes the personal motivation, summarizing scientific work, and how the applicant sees her/his background suitable

- A draft research proposal (1 or 2 pages) for the postdoctoral career, where the candidate presents her/his ideas for the postdoctoral work and how it can be applied, based on the project description given in this advertisement. This proposal will be neither final nor binding for the project.
- CV (summarising education, positions, pedagogical experience, administrative experience and other qualifying activity).
- Copies of educational certificates, academic transcript of records and letters of recommendation. Applicants from universities outside Norway are kindly requested to send a diploma supplement (https://ec.europa.eu/education/diploma-supplement_en) or a similar document, which describes in detail the study program and grading system.
- A publication list, including citation rates according to Google Scholar or Web of Science. Highlight up to five of the most significant and relevant publications. These publications must be attached.
- The required documentation of English language proficiency.
- Names and contact information of at least two references (name, relation to candidate, e-mail and telephone number).

Joint works will be considered. If it is difficult to identify your contribution to joint works, you must attach a brief description of your participation.

Incomplete applications will not be taken into consideration.

In assessing the applications, emphasis will be placed on the documented, academic qualifications, the cover letter and the ideas and/or originality of the draft research proposal in shortlisting of candidates. Interviews with the best-qualified candidates will be arranged.

In the final assessment of the candidates also strategic considerations at the Department of Electric Power Engineering will be taken into account.

It is expected that the successful candidate will be able to complete the project in the course of the period of employment.

NTNU is committed to following evaluation criteria for research quality according to [The San Francisco Declaration on Research Assessment - DORA](#).

The Department of Electric Power Engineering works closely with key players in the Norwegian electricity supply sector, which manage critical infrastructure. A comprehensive risk assessment of the candidates' research interests and potential activities related to national threat assessments will therefore also form basis for the final selection of candidates.

General information

[Working at NTNU](#)

A good work environment is characterized by diversity. We encourage qualified candidates to apply, regardless of their gender, functional capacity or cultural background.

The city of Trondheim is a modern European city with a rich cultural scene. Trondheim is the innovation capital of Norway with a population of 200,000. The Norwegian welfare state, including healthcare, schools, kindergartens and overall equality, is probably the best of its kind in the world. Professional subsidized day-care for children is easily available. Furthermore, Trondheim offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life and has low crime rates and clean air quality.

As an employee at NTNU, you must at all times adhere to the changes that the development in the subject entails and the organizational changes that are adopted.

Under the Information Act (Offentleglova), your name, age, position and municipality may be made public even if you have requested not to have your name entered on the list of applicants.

Questions about the position can be directed to **Associate Professor Mohammad Amin**: mohammad.amin@ntnu.no or to the **Head of Department Prof. Ole-Morten Midtgård**: ole-morten.midtgard@ntnu.no

Please submit your application electronically via jobbno.no with your CV, diplomas and certificates. Applications submitted elsewhere will not be considered. Diploma Supplement is required to attach for European Master Diplomas outside Norway. Chinese applicants are required to provide confirmation of Master Diploma from [China Credentials Verification \(CHSI\)](#).

Application deadline: 11.12.2020.

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Additional information

Place of service:

NTNU Campus Gløshaugen 7491 Trondheim (Trondheim Municipality)