NTNU
Norwegian University of Science and Technology

Jobbnorge ID: 182880
Deadline: 3/18/2020
Website: http://www.ntnu.no
Scope: Fulltime
Duration: Temporary

The Department of Electric Power Engineering has a vacancy for a

PhD position in Electric Power Systems - Flexibility as a resource in distribution system development

This is NTNU

At NTNU, creating knowledge for a better world is the vision that unites our 7 000 employees and 40 000 students.

We are looking for dedicated employees to join us.

Video: https://www.youtube.com/watch?v=clgKd1SwGLI

About the position

The Department of Electric Power Engineering (IEL) has a vacancy for a 100% position as a PhD candidate within the field Electric Power Systems - "Flexibility as a resource in distribution system development", which is a project carried out under the umbrella of The Centre for intelligent electricity distribution (FME CINELDI).

The Centre for intelligent electricity distribution is a multidisciplinary research Centre for Environment-friendly Energy Research (FME) awarded by the Research Council of Norway. CINELDI is hosted by SINTEF Energy Research with NTNU as a major research partner. The centre is funded for the period 2016 - 2024 with a total budget of approximately 36 mill. Euros. Currently about 25 PhD/Post docs are connected to the activities of the research centre.

CINELDI seeks to develop expertise and promote innovation through focus on long-term research, development and education related to flexible and intelligent energy systems (smart grids). CINELDI works towards digitalising and modernising the electricity distribution grid for higher efficiency, flexibility and resilience. The objective is to tailor the grid for use by smart grid customers, electric vehicles, solar power facilities and other renewable electric power in a cost-efficient way.

The prospective candidate will work in the research group Power Systems Operation and Analysis (PSOA).

The main supervisor of the PhD candidate will be Prof. Olav Bjarte Fosso, and the co-supervisor will be Research Manager Oddbjørn Gjerde. Additional co-supervisors may be appointed.

The position reports to the Head of Department.

Main duties and responsibilities

Job description

The objective of the PhD education is to qualify for scientific research of high international standard. The PhD education has a nominal duration of three years of full-time study and includes required coursework or similar academic training comprising a minimum of 30 credits. The most important component of the PhD education is an independent scientific research project carried out under academic supervision, which results in the PhD thesis. The PhD degree is conferred based on these two elements and the doctoral examination, which consists of a trial lecture and a public defense of the scientific thesis.

The candidate is expected to fully complete the course work and the PhD thesis within the period of employment, which could be 3 or 4 years. The doctoral examination may take place after the period of employment. The option of 4-year employment would imply 1 year of duties as Teaching Assistant for the Department and may be offered to a candidate with clear motivation and ability for such work, if the Department sees the need. This will be clarified during and after any interview.

Project description

In distribution system development, the goal is to identify the optimal grid solution to meet demand resulting from connected power generation sources and loads. Traditionally, the options considered have been building e.g. new lines or reinforcing the existing grid. A deterministic approach has been used, and the grid has typically been dimensioned for maximum load even though the probability for its occurrence is low. For the development of the future electricity distribution grid, we need to consider new options as renewable energy resources, energy storage and end user flexibility. Uncertainties related to such flexible resources have hardly been considered. This calls for the introduction of

probabilistic methods and models to deal with the uncertainties introduced. The candidate should focus on adapting the distribution system development methodology into the new environment where flexible resources will play an important role. The results will be new methods, algorithms, tools, and recommendations for distribution system planners. The candidate should preferably have a background within power systems with interests for theoretical development, verification of concepts and implementation. Alternatively, candidates with a strong background within operation research with interests in power systems are encouraged to apply.

The PhD will work closely with other PhDs/Postdocoral Fellows and researchers within CINELDI. The supervision team has a background from power systems and industrial economics with a strong track record within research and development of industrial applications. The main supervisor will be prof. Olav Bjarte Fosso, Department of Electric Power Engineering.

Qualification requirements

The qualification requirement is completion of a master's degree with strong academic background with a grade of B or better in terms of NTNU's grading scale. Applicants must hold a master's degree or equivalent in e.g. Electrical Engineering, Computer Science or Industrial Economics and Technology Management, with specialization in a topic relevant for this PhD position and the given project description.

Master's students who expect to complete their master's degree studies by summer 2020 are also encouraged to apply. Employment will then be postponed until the master's degree is finished and will be under the condition of at least a grade of B on the master's thesis.

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, postdoctor and research assistant

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

Other qualifications

Applicants must have very good 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).

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 all applicants.

Personal characteristics

In the evaluation of the candidates, emphasis will be placed on education, experience and personal suitability, as well as personal motivation for the position, in terms of the qualification requirements specified above. We look for candidates who show clear signs of independence, original thinking and scientific mindset.

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

PhD candidates are remunerated in code 1017, at gross from NOK 479 600 per year. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is for three; however there is a possibility for extension up to four years if selected for assistantship.

Appointment to a PhD position requires admission to the PhD programme in Electric Power Engineering. Applicants must be qualified for admission as PhD candidates at NTNU. See https://www.ntnu.edu/ie/research/phd for information about PhD studies at NTNU.

As a PhD candidate, you will have to successfully complete the PhD academic training programme; the training includes mandatory course work and other obligatory activities. Within the first three months of your employment, you must formally qualify for admission to the PhD programme at the Faculty of Information Technology and Electrical Engineering.

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 criterias 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.

The Department of Electric Power Engineering works closely with key players in the Norwegian electricity supply sector, who 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

A good work environment is characterized by diversity. We encourage qualified candidates to apply, regardless of their gender, functional capacity or cultural background. Under the Freedom of Information Act (offentleglova), information about the applicant may be made public even if the applicant has requested not to have their name entered on the list of applicants.

Questions about the position can be directed to Prof. Olav Fosso, olav.fosso@ntnu.no or Head of department Ole-Morten Midtgård: ole-morten.midtgard@ntnu.no.

About the application:

Applications are to be submitted electronically through this page (http://www.jobbnorge.no).

The application must contain:

- A cover letter where the applicant describes personal motivation and relevance with respect to the requirements of this advertisement.
- A draft research proposal (1 or 2 pages) for the PhD study, where the candidate presents her/his own ideas for the PhD-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 including information pertaining to the given qualifications.
- Testimonials and certificates. 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 programme and grading system.
- The required documentation of English language proficiency.
- Names and contact information of at least two references.

Emphasis will be placed on the quality of the cover letter and the ideas and/or originality of the draft research proposal in shortlisting of candidates. Incomplete applications will not be taken into consideration.

In the final assessment of the candidates, strategic considerations at the Department of Electric Power Engineering will also be taken into account. We aim for better gender balance, and when qualifications are approximately equal among qualified candidates, female applicants will be preferred.

Application deadline: 18.03.2020.

NTNU - knowledge for a better world

NTNU - knowledge for a better world

The Norwegian University of Science and Technology (NTNU) creates knowledge for a better world and solutions that can change everyday life.

Department of Electric Power Engineering

The Department of Electric Power Engineering is one of the seven departments at the Faculty of Information Technology and Electrical Engineering. Our department is Norway’s leading in the field, and our vision is to be at the centre of the digital, green shift. We have excellent collaboration with business and industry as well as other universities and research organizations internationally. This gives us outstanding opportunities for interdisciplinary research with high relevance for the society, addressing industrial needs and global challenges.

Additional information

Place of service:

NTNU Campus Gløshaugen 7491 Trondheim (Trondheim Municipality)