



Postdoctoral Fellowship in Energy and Power Systems Modelling

DSI/NRF-SASOL Research Chair in Energy and Power System Modelling hosted in the Department of Electrical Engineering, University of Cape Town, South Africa is seeking applications for a Postdoctoral Research Fellow in Energy and Power Systems Modelling. The major focus areas are grid modelling, renewable energy systems and grid integration of distributed generation.

The successful candidate will be nominated for National Research Foundation (NRF) Grantholder-linked Postdoctoral Fellowships and Staff Development Grants 2023.

Research Focus Area

There are growing pressures worldwide for companies and industries to comply with stricter environmental, social and governance targets and sustainability goals with significant financial and reputational impacts for not complying. Several energy intensive industries (e.g., petrochemical, mining industries, etc.) have ambitions of addressing sustainability and growing shared value while accelerating their transition to net zero energy utilisation. It is imperative for these consumers to find ways to decarbonize their operation and to transition to cleaner and greener forms of energy consumption and production. However, globally, electricity networks have faced technical challenges related to grid performance as these networks transition to increased penetration of renewables. A need therefore exists to develop dynamic modelling capacity and to provide flexible dispatchable generation supply and to maintain grid stability and security. In that context, the postdoctoral research will focus on two to three of the following research areas:

- a) Static and dynamic power and energy systems modelling.
- b) Grid integration of renewable distributed generation.
- c) Energy and power system data analytics for obtaining cost-optimal generation mix.
- d) Intelligent and data-driven control and energy management for future power grids.
- e) Impact of generation and energy storage mix on grid operation and control.
- f) Impact of generation and energy storage mix on energy market and environment.

If you are interested in innovative research and development of energy solutions in these areas, please feel free to apply.

Value and Tenure

The value of the Fellowship Award is fixed at R350 000 per annum and does not include any relocation expenses. The Fellowship carries no benefits and are compliant with the South African Revenue Services (SARS) rules for tax exemption.

This Award is tenable for two (2) years, subject to submission of a satisfactory progress report.

The tenure of the Postdoctoral Fellowship is from 1 August 2023 to 31 July 2025.

To be nominated for the NRF Grantholder-linked Postdoctoral Fellowships and Staff Development Grants 2023, the successful candidate must be registered as a Postdoctoral Fellow in Electrical Engineering Department, University of Cape Town before 31 July 2023.

Important Note

Since the tenure of the Postdoctoral Fellowship is from 1 August 2023 to 31 July 2025, the disbursement of the Award will be done as follows:

- The successful candidate will be awarded 5/12th of the Fellowship Award per annum for 2023 (August-December), i.e. 5/12th of R350 000.
- The successful candidate will be awarded the full Fellowship Award per annum for 2024 (January-December), i.e. R350 000.
- The successful candidate will be awarded 7/12th of the Fellowship Award per annum for 2025 (January-July), i.e. 7/12th of R350 000.

Reporting

During the tenure of the Fellowship, the Fellow will directly report to A/Prof. Sunetra Chowdhury (Research Chair), Prof. Komla Folly and A/Prof. David Oyedokun.

The Fellow is expected to work with the Chair on research projects including collaborative projects with Advanced Machines Energy Systems (AMES) research group in Electrical Engineering Department and Energy Systems Research Group (ESRG) in Chemical Engineering Department in the university.

For collaborative projects between the Chair and Advanced Machines Energy Systems (AMES) research group, the Fellow is expected to work closely with the AMES research team led by Prof. Azeem Khan, Prof. Paul Barendse and Dr. Sampath Jayalath.

Conditions of Grant

1. The successful candidate should be registered as Postdoctoral Fellow in Electrical Engineering Department, University of Cape Town during the tenure of the Fellowship.
2. The successful candidate may not hold full-time salaried employment during the tenure of the Fellowship.

3. Applicants may not previously have had full-time permanent, professional or academic posts.
4. The successful candidate may not hold this Award concurrently with any other NRF or South African Government-funded grant scheme or organisations like the CSIR, MRC, etc.
5. The successful candidate will be required to sign and abide by the Agreement for the NRF Grantholder-linked Postdoctoral Fellowships and Staff Development Grants 2023. It is to be noted that notwithstanding the conditions referred to in the clauses of this Agreement, the NRF reserves the right to adjust or cancel the Award, at any point due to unavailability of funds and/or change of priorities by the Government and/or other funders.
6. As a Postdoctoral Research Fellow in the department of Electrical Engineering at the University of Cape Town, the Fellow is also responsible to the Head of Department and to the Dean of EBE.
7. The successful candidate will be required to comply with the University of Cape Town's approved policies, procedures, and practises for the postdoctoral sector.

Eligibility Criteria

- Both South African and foreign candidates are eligible to apply, but preference will be given to African and women applicants.
- Applicants must have completed their doctoral study within four (4) years of applying to this call. For this call, applicants must have graduated with their doctoral degree no later than 31 December 2022.
- The applicants will be expected to have an outstanding educational profile in energy and power systems or related discipline.
- The applicants should have good experience in independent research and publication in high impact journals. In addition, they should also be able to write applications for funding.
- The successful candidate will be expected to publish two to three journal publications in high-impact journals per year during the Fellowship tenure.

Application requirements

Applications must include the following:

- A research proposal
- A letter of motivation explaining the candidate's suitability and experience, as well as his/her availability.
- The applicant's full curriculum vitae and a full list of publications.
- The names and contact details of at least two academics who have taught, supervised, or worked alongside the applicant.
- Copy of identity document and valid passport
- Certified copies of all academic transcripts (undergraduate, Honours (if applicable), Masters (if applicable) and PhD).

- ORCID Unique Identifier (Before applying, the applicant must register for ORCID at www.orcid.org to get this identifier)

All applicants are subject to the policies, procedures, and rules according to the postdoctoral sector at the University of Cape Town and National Research Foundation, South Africa.

Application deadline

The application deadline is 19 May 2023. Applicants are advised to send their applications and queries to A/Prof. Sunetra Chowdhury (sunetra.chowdhury@uct.ac.za). Applicants must email all application documents as a single PDF file. **Please note that late and/or incomplete applications will be disqualified.**

The University of Cape Town reserves the right to make no awards at all, to cancel the award if the conditions are not met, and to effect changes to the conditions of the award. The University of Cape town reserves the right to disqualify ineligible, incomplete and/or inappropriate applications.