# PhD Position in Design and Development of Optimized Power Electronic Converter
# Southern Denmark (SDU)



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| **Job Title** | PhD Position in Design and Development of Optimized Power Electronic Converter |
| **Department** | The Faculty of Engineering<br>https://www.sdu.dk/en |
| **Institution** | Southern Denmark (SDU)<br>Odense, , Denmark |
| **Date Posted** | Jun. 4, 2025 |
| **Application Deadline** | Jun. 30, 2025 |
| **Position Start Date** | Sep. 1, 2025 |
| **Job Categories** | Graduate Student |
| **Academic Field(s)** | Engineering - Other<br>Electrical and/or Electronics |
| **Apply Online Here** | https://fa-eosd-saasfaprod1.fa.ocs.oraclecloud.com/hcmUI/CandidateExperience/en/sites/CX_1001/job/2926?la |
| **Apply By Email** | |
| **Job Description** | |

The Faculty of Engineering at the University of Southern Denmark (SDU) invites applications for 1 or

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more 3-year positions as a Ph.D. in **Design and Development of Optimized Power Electronic Converter**. The position is located in the section of Electrical Engineering in Sønderborg within the Centre for Industrial Electronics (CIE). CIE is embedded in a powerhouse in electronics, which includes researchers and developers at universities and industries on both sides of the Danish-German border. The position starts on **September 1, 2025**, or as soon as possible thereafter, depending on the agreement with the successful candidate.

**The application deadline is June 30, 2025,** at 11.59 PM / 23.59 (CET/CEST)

Power Electronics Group at CIE focuses on power conversion systems, e.g. P2X, wind power conversion, solar power conversion, which are essential for green energy transition. One of the main components in such a system is power electronic converter. We focus on the power converter design methodology to improve system efficiency and power density while ensuring cost effectiveness. Our goal is to create next-generation solutions that tackle key challenges in the industry.

We are looking for a motivated candidate for a Ph.D. in the **“Design and Development of Optimized Power Electronic Converter”**. This research-industrial project focuses on Power converter design methodology to address challenges of increasing efficiency, reducing weight, volume and cost. The candidate will prioritize industry requirements in designing these converters. The role involves designing, developing, and demonstration of the power converters in collaboration with our industry partners.

The candidate will have the opportunity to work with state-of-the-art tools for simulation and design power converter and advanced power electronic components including SiC/GaN based devices. The candidate will also have opportunity to work with industry related problems.

## Key Responsibilities

- **Research & Learning:** Develop expertise in advanced power electronics devices.
- **Design methods:** Develop novel design methods for power electronic converters involving advanced optimization methods
- **Simulation:** Learn advanced simulation tools such as Ansys to simulate and analyze the effect of parasitic inductance and capacitance in power converter design
- **Experimental Work:** Develop, demonstrate and test the power electronic converter.
- **International Exchange:** Participate in an international research exchange program (3 months to 1 year) at a partner university or research institute to gain new skills and enhance collaboration.

## Qualifications

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- A master's degree (or nearing completion) in Electrical Engineering, electronics engineering, power electronics, or a related field.
- Basic knowledge of
- Basic knowledge of power converter topologies.
- Basic knowledge of digital control of power converters
- Experience or coursework in device simulation tools (e.g., MATLAB and Ansys) is a plus.
- Strong interest and willingness to learn experimental techniques for device fabrication and characterization.
- Experience with development of experimental setup.
- Proficiency in scientific writing and communication (English).

**What is offered:** The selected candidate will be offered a fully paid fellowship with a very competitive salary (a minimum monthly gross salary of DKK 36,138 including pension) and excellent conditions to excel in their research.

Further information is available Associate Professor Ramkrishan Maheshwari, phone: +45 65 50 16 86, email: ramkrishan@sdu.dk

If you experience technical problems, please contact hcm-support@sdu.dk.

**Application procedure**

Applicants are advised to read the SDU information on how to apply and Faculty information for prospective PhD students.

**Assessment of candidates is based on the application material. Please include the following documents in English:**

- Motivation letter stating your specific interest, motivation, and qualifications for the project in question (max. 2 pages)
- Curriculum Vitae, describing research, publication, and teaching experience, computational skills, and including personal contact information.
- Certificates/Diplomas (bachelor's and master's degree) – incl. transcripts of grades in Danish and/or English.
- Completed TEK PhD application form for 5+3 applicants. Find the form at the Faculty website.
- Completed TEK PhD form for calculation grade point average. Find the form at the Faculty website.
- An official document describing the grading scheme of the awarding universities (if not Danish).
- Only for applicants from programmes that evaluate thesis/examination project by approved/not approved:

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Please submit an official and verified written assessment of the thesis or dissertation project from the grade giving institution. The statement must clearly state that the candidate has been among the top 30 pct. in the graduation class for the study programme.
- References may also be includes, you're welcome to use the form for reference letter at the Faculty website.
- List of publications and maximum 2 examples of relevant publications (in case you have any publications).

UPLOAD GUIDE: Motivated application shall be uploaded as ‘Cover letter’ (max. 5 MB), Curriculum Vitae shall be uploaded as ‘Resume’ (max 5 MB). All other documents shall be uploaded as ‘Miscellaneous documents’ (max 10 files of max 50 MB per file).

All documents must be in English and PDF format. CPR number (civil registration no.) must be crossed out. All PDF-files must be unlocked and allow binding and may not be password protected.

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**Assessment and selection process**

Applications will be assessed by an assessment committee. Shortlisting may be applied, and only shortlisted candidates will receive a written assessment. Read about shortlisting at SDU. Interviews and tests may be part of the overall evaluation.

Read about the Assessment and selection process.

**Conditions of enrollment/employment**

Appointment as a PhD fellow is a 3-year salaried position, and the monthly gross salary incl. pension is 36.138DKR. If you have relevant postgraduate experience, you may be placed on a higher salary step.

Applicants must hold a master’s degree (equivalent to a Danish master's degree) at the time of enrollment and employment. Employment is contingent on enrollment approved by the PhD School. Enrollment will be in accordance with Faculty regulations and the Danish Ministerial Order on the PhD Programme at the Universities (PhD order). Employment will be in accordance with the collective agreement between the Ministry of Finance and the Danish Confederation of Professional Associations for academics in the state with the associated circular on the job structure for academic staff at Danish universities and the provisions for PhD fellows as described herein as well as the Protocol on PhD fellows signed by the Danish Ministry of Finance and the Danish Confederation of Professional Associations (AC). Further information about salary and conditions of employment. The person

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employed in the position may, based on a specific individual managerial evaluation, be exempted from time registration, also known as a “self-organizer”.

The University of Southern Denmark wishes our staff to reflect the surrounding community and therefore encourages everyone, regardless of personal background, to apply for the position. SDU conducts research in critical technologies, which, due to the risk of unwanted knowledge transfer, are subject to a number of security measures. Therefore, based on information from open sources, background checks may be conducted on candidates for the position.

Further information for international applicants about entering and working in Denmark. You may also visit WorkinDenmark for additional information.

Further information about The Faculty of Engineering.

**About Us**

The University of Southern Denmark was established to create value for and with society. Whether our contributions come in the form of excellent research, innovative solutions, education or learning, we must make a positive difference to society and contribute to a sustainable future. We do this by cultivating talents and creating the best environments for research and learning. It is therefore crucial that SDU retains, develops and recruits talent. At the same time, we need to ensure consistently high quality in all our activities – and we can only do that with the right people. The University’s researchers, lecturers, students, managers and technical/administrative staff are the foundation of our success.

**Contact Information**

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

**Contact** Associate Professor Ramkrishan Maheshwari
The Faculty of Engineering
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