

# Driving decarbonization and digitalization. Together.



## Doctoral Thesis: Advanced Switching Strategies for EV On-Board Chargers to Leverage Electro-Magnetic Compliance and Efficiency (f/m/div)

### Job description

The industrial doctorate at Infineon: Pursue a doctoral degree at a university and gain professional experience simultaneously - an ideal start for your career. Advance your research with us and profit from our vast network of doctoral candidates and the expertise of a university. Mentorship is handled by both professors and dedicated Infineon employees. We are offering a doctoral thesis dealing with advanced switching strategies and digital twin approaches for automotive EV components to leverage electro-magnetic compliance (EMC) and efficiency. Digital twins are an essential technology to evaluate switching behavior in complex power systems. Specifically, they are essential to implement advanced switching methods in the most prominent EV power-train components such as the On-Board-Charger, Motor Inverter or DC/DC converters. The mentioned power converters need for robustness, efficiency and high-power density, for which advanced switching concepts bear a major potential of leverage. To evaluate robustness of the models, verification by hardware demonstrators is essential. Therefore, we want to explore and develop approaches that leverage the power electronic components for the implementation in digital twins and verify the approaches by prototype hardware testing. The PhD candidate will decide on which approaches to investigate and will setup the hardware and software for the evaluation of the implemented approaches. The thesis will be written in cooperation with Technical University Dortmund and under the supervision of Prof. Dr. Martin Pfof.

The tasks within the thesis will consist of:

- Exploration of the **state-of-the-art of EV On-Board Chargers (OBC)**
- Specification and implementation of at least one **approach of concept** to enhance EMC and efficiency
- Optimization and integration of the **approaches into the automotive power module**
- **Setup of the test environment** and **evaluation** of the developed approach

The learnings out of the thesis will lead to

- Scientific research studies regarding advanced switching strategies in the OBC with focus on EV safety and efficiency
- Collaboration with University researchers and PhDs at Infineon performing their research in the area of system application engineering and hardware simulation and collaboration in collaborative projects with industrial and academic partners of the automotive sector
- Set up of demonstrations and implementation of automotive applications

### At a glance

Location: **Munich (Germany)**  
Job ID: **HRC0566123**  
Start date: **as soon as possible**  
Entry level: **0-1 year**  
Type: **Full time**  
Contract: **Temporary**

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Job ID: **HRC0566123**  
[www.infineon.com/jobs](http://www.infineon.com/jobs)



### Contact

**Silke Jaschik**  
Recruiter



# Profile

A doctoral student is a research enthusiast,

- > whose interests are scientific research combined with the passion for Infineon's innovative products and applications.
- > who enjoys working in an industrial environment in combination with an Infineon partner university.
- > who appreciates open communication and the contribution of an international environment.
- > and is thus an excellent candidate for a further academic or industrial career after completion of their thesis.

As the ideal candidate you:

- Are **eligible for full-time PhD studies** and have a master's degree in **electrical engineering or equivalent** preferably with **focus on power converters, power electronics and/ or automotive applications**
- Bring knowledge of **modelling and designing power electronics** and usage of **corresponding tools** and want to **deepen your expertise in the field of power electronics**
- Are familiar with **automotive applications**
- Bring knowledge of **microcontroller programming** and usage of **corresponding tools, and EMCs as a plus**
- Are preferably already experienced in **prototyping and soldering** for creation of hardware setups for demonstration
- Show **good English and/ or German** language skills

# Benefits

- **Munich:** Coaching, mentoring networking possibilities; Wide range of training offers & planning of career development; International assignments; Different career paths: Project Management, Technical Ladder, Management & Individual Contributor; Flexible working conditions; Home office options; Part-time work possible (also during parental leave); Sabbatical; On-site creche and kindergarden with 220 spots, open until 5:30pm; Holiday child care; On-site social counselling and works doctor; Health promotion programs; On-site gym, jogging paths, beachvolleyball, tennis & soccer court; On-site canteen; Private insurance offers; Wage payment in case of sick leave; Corporate pension benefits; Flexible transition into retirement ; Performance bonus; Reduced price for public transport and very own S-Bahn station; Access for wheelchairs; Possibility to work remotely from abroad (EU)

# Why Us

**Driving decarbonization and digitalization. Together.**

Infineon designs, develops, manufactures, and markets a broad range of semiconductors and semiconductor-based solutions, focusing on key markets in the automotive, industrial, and consumer sectors. Its products range from standard components to special components for digital, analog, and mixed-signal applications to customer-specific solutions together with the appropriate software.

The **Business Excellence** Department (BEX) drives digital transformation and innovation at Infineon. It coordinates Infineon's overarching Digital Agenda and supports the Divisions and Functions in achieving profitable growth. The broad spectrum of BEX teams includes Artificial Intelligence, Agile Ways of Working, Innovation Ecosystems and Startup Co-Innovation, R&D Excellence, Corporate Regulations Management as well as Digitalization, Data & Processes.

**We are on a journey to create the best Infineon for everyone.**



This means we embrace diversity and inclusion and welcome everyone for who they are. At Infineon, we offer a working environment characterized by trust, openness, respect and tolerance and are committed to give all applicants and employees equal opportunities. We base our recruiting decisions on the applicant´s experience and skills.

We look forward to receiving your resume, even if you do not entirely meet all the requirements of the job posting.

Please let your recruiter know if they need to pay special attention to something in order to enable your participation in the interview process.

[Click here](#) for more information about Diversity & Inclusion at Infineon.

