

Driving decarbonization and digitalization. Together.



Master Thesis: System Analysis of Wide Bandgap Motor Drives (f/m/div)

Job description

Do you have an affinity for power electronics and programming and are close to finishing your studies in Electrical Engineering, Robotics or a related field? Infineon Power & Sensor Systems (PSS) delivers future-oriented solutions to provide cutting-edge data transport and to make tools and systems smarter, smaller, lighter and more energy-efficient. Curious? Do not hesitate and apply now!

During your thesis project, we expect you to become a growing expert for motor drive systems for the fast-growing market of **autonomous robotics**. The overall goal of this thesis is the **investigation of system losses of a motor drive system consisting** of a wide bandgap inverter stage as well as a motor and control unit. This means you will need to acquire some special knowledge and perform dedicated tasks:

- Knowledge gathering about **state-of-the-art motor loss** and **inverter loss models** as well as **control strategies** for **motor drives**
- Development of a **loss model based on co-simulation techniques**, i.e. coupling **Finite Element Method (FEM)** simulations with system simulations
- **Implementation** of the **loss model** into an **existing simulation framework**
- Validation of the simulation results with **real-world experiments**
- Document your results by writing and submitting your Master Thesis

Special focus will be on the **analysis of harmonic losses** on a **low-inductance motor**, which is excited by **high-frequency pulse** width modulation techniques. The loss model should then be used as an **adaptation** to an **already existing motor** and **inverter model** and **validated by real-world measurements** in a **lab environment**.

This thesis has to be written in cooperation with an university.

Further Information

Type of employment: Temporary / Full-time (flexible working hours from Monday to Friday between 6 a.m. and 7 p.m.)
Duration: min. 8 months

Profile

You successfully meet the requirements, if you are a motivated and committed student from the field of **Electrical Engineering, Electronics, Robotics, Mechatronics** or similar. You are best equipped for this task if your profile matches the following criteria:

- Completed all of your exams

At a glance

Location:

Job ID: **HRC0436537**

Start date: **as soon as possible**

Entry level: **0-1 year**

Type: **Full time**

Contract: **Temporary**

Apply to this position online by following the URL and entering the Job ID in our job search. Alternatively, you can also scan the QR code with your smartphone:

Job ID: **HRC0436537**
www.infineon.com/jobs



Contact

Lisa Derhaschnig
Recruiter



- Knowledge and experience in **power electronics** (SPICE), **system simulation** (Simulink, FEM) and **programming** (MATLAB, C/C++)
- Knowledge and experience in **practical lab work**
- Communicate well with our international team in English and German
- Good **communication** and **organizational** skills

This position is subject to the collective agreement for workers and employees in the electrical and electronics industry (full-time), employment group D for master students (<https://www.feei.at/wp-content/uploads/2023/05/minimum-salaries-white-collar-workers-2024.pdf>).

Please attach the following documents (German or English) to your application:

- Motivation letter
- CV
- Certificate of matriculation at a university
- Latest Transcript of records (not older than 6 months)
- Highest completed educational certificate (Matura certificate for Bachelor students, Bachelor certificate for Master students)
- Reference letter (optional)

Benefits

- **Villach:** 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; Child care in Villach & Klagenfurt; On-site social counselling and works doctor; Health promotion programs; On-site canteen; Private insurance offers; Wage payment in case of sick leave; Corporate pension benefits; Flexible transition into retirement; Performance bonus; Accessibility, access for wheelchairs

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.

– Power & Sensor Systems (PSS) drives leading-edge power management, sensing and data transfer capabilities –

Infineon PSS semiconductors play a vital role in enabling intelligent power management, smart sensitivity as well as fast and reliable data processing in an increasingly digitalized world. Our leading-edge power devices make chargers, adapters, power tools and lighting systems smarter, smaller, lighter and more energy-efficient. Our trusted sensors increase the context sensitivity of “things” and systems such as HMI, and our RF chips power fast and reliable data communication.

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.

Infineon Hub - Connect. Create. Challenge.

The iHub at TU Wien represents an inspiring tech platform, networking area and event location, connecting Infineon Austria with tech experts, science specialists and young professionals.

Check out our upcoming events:

[Infineon iHub](#)

