



Doctoral Thesis: Multi-charging-mode DC-DC converter in fast EV-charging (E2GO DC9) (f/m/div)*

Job description

Research Programme Description: “E2GO– Cost-reduction of EV fast-charging station to enable large-scale electrification of mobility” is hiring 9 Doctorate Candidates (DCs)” to be funded by the Marie Skłodowska-Curie Actions (MSCA) Doctoral Networks-Industrial Doctorates (DN-ID), 2021, within the European Union's EU Framework Programme for Research and Innovation Europe Horizon under Grant Agreement No. 101072414. The E2GO consortium contains Eindhoven University of Technology, Delta Electronics (Poland) Ltd., Heliox BV, University of Minho, Efacec Electric Mobility SA, Aalborg University, Silicon Austria Labs GMBH, Infineon Technologies Austria AG, Shell Global Solutions International BV, Kema Lab BV, University of Innsbruck, which brings together the stakeholders that cover the complete value chain of high-power fast-charging stations for EV creating an in-depth training programme that covers the spectrum from hardware design and electronics, to modelling and control algorithms. The multidisciplinary and intersectoral collaboration described here provides the unique opportunity to achieve the ambitious goal of E2GO to develop innovations to reduce the cost of fast-charging stations for electric vehicles (EV) for massive deployment. Hence the DCs involved in this project will not only be highly sought-after individuals due to their gained experience at the interface of industrial and academic collaboration, but additionally they will be highly attractive for the automotive industry as experts in the strongly growing field of fast-charging, a frontier research area that will help to address the infrastructural needs and sustainability goals of the 21st century. This constellation will significantly further their individual career paths in industry and academia. E2GO will hire 9 DCs in total, which will multiply the immediate impact of their own training and experience by sharing not only the newly acquired technical expertise but also the “soft knowledge” concerning the different ways of thinking between industry and academia. By this, these fellows will gain a high level of employability and become real translational researchers capable of integrating both worlds of academia and industry. The 9 DCs will be enrolled as PhDs earning experience in the industry.

- **Research field:** Electrical Engineering, Power Electronics
- **Research Objectives:** Design and optimization of isolated DC-DC converters for multi-charging-mode EV fast chargers
- **Research Activities:** DC9 will first survey and investigate the optimal fast charging modes for EVs that can balance the charging speed and battery degradation. Based on the outcome, DC9 will define, design and optimize the isolated DC-DC converter in fast charger modules according to the selected charging modes, to optimize efficiency across the operating points and reduce manufacturing cost. A strong focus will be placed on the isolated DC-DC topologies studies and their planar magnetic implementations
- **Employment and Secondment:** The selected DC will be enrolled as Ph.D. student at University of Innsbruck (AT). The DC will be hired for 18 months with his/her

At a glance

Location: **Villach (Austria)**
Job ID: **356587**
Start date: **Mar 01, 2023**
Entry level: **0-1 year**
Type: **Full time**
Contract: **Temporary**

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Contact

Melanie Happerger, MSc
Talent Attraction Manager



Profile

We are looking for a candidate who meets the following requirements:

- **Creative and ambitious**, hard-working, and persistent
- **MSc degree in electrical engineering** or any other relevant program.
- Theoretical and applied **knowledge of power electronics**.
- **Hands-on experimental experience in power converter circuit design** and implementation. Experience with high frequency power magnetics is a big plus.
- **Good communication skills** and the attitude to participate successfully in the work of a research team
- **Fluent English language skills** (both spoken and written)

For your application please consider the following:

Eligibility and mobility criteria (mandatory requirements EU rules)

- Supported researchers must be doctoral candidates, i.e. not already in possession of a doctoral degree at the date of the recruitment.
- Recruited researchers can be of any nationality and must comply with the following mobility rule: they must not have resided or carried out their main activity (work, studies, etc.) in the country of the recruiting beneficiary for more than 12 months in the 36 months immediately before their recruitment date. For 'International European Research Organisations' (IERO), 'international organisations', or entities created under Union law, the researchers must not have spent more than 12 months in the 36 months immediately before their recruitment in the same appointing organisation. Compulsory national service, short stays such as holidays and time spent by the researcher as part of a procedure for obtaining refugee status under the Geneva Convention (1) are not considered. (1) 1951 Refugee Convention and the 1967 Protocol.

Conditions of employment

- The successful candidates will receive from the respective employer an attractive salary in accordance with the MSCA regulations for Doctoral Candidate researchers and will include a mobility allowance.
- The guaranteed PhD funding is for 36 months. In addition to their individual scientific projects, all fellows will benefit from further continuing education, which includes internships and secondments, a variety of training modules as well as transferable skills courses and attractive participation in conferences.

Application Procedure

Documents requested:

- Eligibility Statement: for verifying MSCA requirements, the candidates clearly indicate exact dates of (1) degree entitling to pursue a PhD (typically a Master of Science degree or Engineering degree), (2) positions and country of residence in the last 5 years.
- Complete CV (Europass format obligatory): The candidates are allowed to pursue a maximum of three positions in the E2GO programme. If more than one position is pursued, please clearly indicate all the positions that applied with priorities on the first page of the CV.
- Motivation letter (maximum 1 page per position applied) should state why the applicant wishes to pursue the specific research and why she thinks s/he is an ideal candidate for the position.
- Scan of certificates showing BSc, MSc and other courses followed, with grades and if it is possible a ranking.

- Up to 3 recommendation letters and/or contact e-mail addresses with a brief professional description (title, position, relationship with applicant) of the referring person.
- If possible, up to two selected publications (e.g. MSc thesis, conference paper) in English.
- The applicant must provide and upload a proper project description, which describes the applicant's initial thoughts and ideas related to the specific project applied for. This includes a brief state-of-the-art (including short list of references), a time schedule and how the applicant intends to shed light on the project objectives. The project description should have a length of 4-5 pages.

Selection Process

The selection process contains two phases:

- In the first phase, a pre-selection of possible candidates will be performed by Recruitment Committee. Based on CV, experience, skills, and motivation letter and a few round interviews, the Recruitment Committee will reduce the candidate list to a max of three candidates for each position.
- In the second phase, the selected candidates will be invited to an official recruitment event in TU/e campus (NL) for the final interview. In the recruitment event all the selected candidates for the 9 positions will meet each other with the supervisors.

E2GO deals with a recruitment process based on the European principles of openness, fairness and transparency that guarantee a selection of candidates in respect of merit and gender balance. Please, note that applications that do not follow the announcement's guidelines will not be considered.

- **Deadline for online application: 28 September 2022**
- **Recruitment event in October**
- **Targeted starting date 1 March 2023**
- **Full-time employment: 38.5 hrs/week**

This position is subject to the collective agreement for workers and employees in the electrical and electronics industry. The salary for this position is EUR 3.000,00 gross p. m. (full-time basis).

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

Part of your life. Part of tomorrow.

We make life easier, safer and greener – with technology that achieves more, consumes less and is accessible to everyone. Microelectronics from Infineon is the key to a better future. Efficient use of energy, environmentally-friendly mobility and security in a connected world – we solve some of the most critical challenges that our society faces while taking a conscientious approach to the use of natural resources.

Industrial Power Control (IPC) empowers a world of unlimited energy Power semiconductors play a crucial role in increasing efficiency and reducing energy losses along the whole energy conversion chain. As the global leader in power



semiconductors, Infineon IPC delivers leading products and solutions for smart and efficient energy generation, transmission and consumption. We strive to make this planet a greener place where sufficient energy is accessible to everyone – wherever and whenever they need it.

At **Infineon in Villach** you shape the technologies of tomorrow and work in an international environment with colleagues from more than 60 nations. Your personal contribution will be valued and appreciated as the cornerstones of our success. And all that in beautiful surroundings which guarantee a high quality of life.

The **City of Villach** is located in the center of Carinthia, Austria's southernmost province, in close proximity to the Italian and Slovenian border. Due to its particular geographic location and the outstanding natural beauty of the region, Villach and the whole province of Carinthia have for generations been popular holiday destinations for people from all over the world. Living in Austria also has many social, health-care-related and economic perks. The country's social and health care system is among the best in the world and for decades numerous international surveys have singled out Austria as a particularly safe and wealthy country with a high quality of life. Villach benefits from its status as a "small town", offering everyday living at affordable prices in an outstanding setting.

Find out what you like most about Villach and join us:

<https://www.welcome2villach.at/>

** The term gender in the sense of the General Equal Treatment Act (GETA) or other national legislation refers to the biological assignment to a gender group. At Infineon we are proud to embrace (gender) diversity, including female, male and diverse.*

