

BiWPT - Bidirectional Wireless Power Transfer for Next-Generation Electric Mobility

MSCA Doctoral Network



Doctoral Candidate 1 (DC1)

Parity-time symmetry for dynamic bidirectional wireless power transfer



Funded by
the European Union

HOST INSTITUTION University of Antwerp, Belgium



CONTRACT
36 months

START DATE
From 1 January 2027

APPLICATION DEADLINE
1 October 2026

ABOUT BiWPT

The BiWPT Doctoral Network on **Bidirectional Wireless Power Transfer for Next-Generation Electric Mobility** has a clear mission: to train a new generation of experts who possess the skills and fundamental knowledge required to effectively address the challenges of bidirectional WPT systems for electric mobility, enabling vehicle-grid integration in support of Europe's energy transition. The network will advance fundamental understanding and practical implementation of efficient, compact, and misalignment-tolerant bidirectional WPT technologies. Expected innovations include novel electromagnetic coupling and converter designs, integrated shielding concepts and real-world demonstrators that enable seamless, efficient, and high-power electric vehicle charging and discharging. The network delivers a training programme to 15 Doctoral Candidates (DC), providing capabilities to become leaders of tomorrow's R&I in Europe.

ABOUT THE UNIVERSITY OF ANTWERP

The University of Antwerp is a young, dynamic and forward-thinking university, formed by a merger in 2003 of three Antwerp university institutions. It ranks 18th in the QS Top 50 Under 50 (2020) and hosts ca. 1,850 PhD students, 680 tenured professors, and over 3,400 staff members. It produces over 3,600 peer-reviewed publications per year and holds the European Commission's "HR Excellence in Research" quality label.

SKILLS & OBJECTIVES

Required profile: Electrical Engineering, Physics or equivalent.

Desirable skills/interests: Simulation engineering and modelling; Energy systems; Electrical and electronic engineering; Mathematical physics; Embedded systems; Systems engineering.

Objectives: Extending the concept of parity-time symmetry to bidirectional and dynamic capacitive WPT systems. The DC will develop an equivalent circuit model of the PT-symmetric capacitive WPT system enabling bidirectional energy flow. Analytical criteria will be derived to maintain exact PT symmetry under varying alignment and load conditions, ensuring constant power and high efficiency. Adaptive control strategies exploiting the self-tuning behaviour of parity-time symmetry will be designed and simulated to eliminate active impedance matching. The concept will be experimentally validated.

The DC will participate in two planned secondments as part of the doctoral training programme: an academic secondment at the co-supervising university abroad and an industrial secondment at the mentor's company.

The DC is expected to submit regular progress reports to the local and network supervisors. In addition, the DC will actively participate in BiWPT's training, dissemination, communication, and exploitation activities. The DC will prepare a doctoral thesis and publish scientific articles related to the research project.

PROFILE & REQUIREMENTS

- Master's degree (or equivalent) in Electrical Engineering, Electronic Engineering, Communication Engineering, Mechatronics, Applied Physics, or equivalent. Master's students in their final year may apply. Transcripts of the master's degree should be obtained before signing the contract.
- Outstanding academic results. Moreover, applicants must have the necessary academic skills and background to make the success of a doctoral degree.
- Applicants must have the ability to understand and express themselves in both written and spoken English to a level that is sufficiently high for them to derive the full benefit from the network training.
- Motivation and commitment to interdisciplinary and intersectoral training.
- Ability to work both individually and in a team with adequate communication skills.
- Eligible to enrol in a PhD program at the host institution.

MSCA Eligibility Criteria

Mobility Rule: Applicants must not have resided or carried out their main activity in the country of the recruiting host institution for more than 12 months in the 3 years prior to the recruitment date. 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 are not taken into account.

Doctoral Candidate Rule: Applicants must not already hold a doctoral degree on the date of recruitment. Researchers who have successfully defended their doctoral thesis but have not yet formally been awarded the doctoral degree will not be considered eligible.

BENEFITS

💰 Competitive MSCA Remuneration

Based on the MSCA allowances in line with the [MSCA WP 2023-2025](#). The [gross monthly amount at UAntwerpen](#) corresponds to the [amount for doctoral scholarship holders](#). Moreover, funding is available for technical and personal skills training and participation in international research events.

⌚ Contract Extension

Following a positive evaluation by the doctoral committee and in line with the University of Antwerp regulations, UAntwerpen may provide additional funding for a maximum of 12 months to complete the doctoral degree.

🏠 Training & Development

Funding for technical and personal skills training and international research events.

🌐 International Network

Secondments and training opportunities within the BiWPT consortium.

HOW TO APPLY

Submit your application via the online application form at www.biwpt.eu/apply **no later than 1 October 2026**. Candidates are encouraged to apply as early as possible, as online pre-interviews may be organized with candidates who meet the profile requirements and have expressed mutual interest for an exploratory conversation. **The selection interviews are planned to take place between 2 and 13 November 2026**. Before applying, candidates are required to carefully read the information on the application and selection process available at www.biwpt.eu/recruitment. The recruitment of Doctoral Candidates (DCs) within BiWPT is conducted in accordance with the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

CONTACT & ADDITIONAL INFORMATION

SUPERVISOR

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CO-SUPERVISORS / MENTORS

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C. Lecluyse (Multipowr, BE)

Questions on the application procedure can be directed to the project manager **D. Ceulemans** (david.ceulemans@uantwerpen.be).

Disclaimer: This offer is subject to the signature of grant agreement nr° 101310414, expected by mid-July 2026.