

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

MSCA Doctoral Network



Doctoral Candidate 8 (DC8)



Funded by
the European Union

Nonlinear design and optimization of bidirectional circuits capable of operating both as power oscillators and as rectifiers

HOST INSTITUTION University of Bologna, Italy



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 BOLOGNA

UniBo stands among the most important institutions of higher education in EU with 96,945 enrolled students in 2024/25, 9,826 of which are international students. According to QS World University Rankings 2025 by subject UNIBO ranks 133rd, 3rd in Italy and 48th in Europe. According to THE Times Higher Education UNIBO ranks 146th worldwide and 1st in Italy. Research activities are supported by the 31 Scientific Departments and the Research Division, with its European Research Development and Projects & Programmes Sectors with > 20 years' experience in European projects.

SKILLS & OBJECTIVES

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

Objectives: Design of GaN-HEMT-based circuits acting as power sources and power rectifiers up to the MHz range. The DC will extract accurate empirical models of the nonlinear FET-like devices in the III quadrant of the DC characteristics for nonlinear operation with negative drain-source voltages. Design guidelines for bidirectional WPT systems will be designed, adopting analytical and numerical tools in the MHz range. Realization and experimental validation of the most promising topologies in the MHz range and assessment of the main performance indexes (such as the conversion efficiency in both operating regimes) will be performed.

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

The successful candidates will receive an attractive salary in accordance with the [MSCA WP 2023-2025](#). The **gross salary** includes a living allowance (+/- € 4000 per month, dependent on the applicable EU Country Coefficient), a mobility allowance of +/- € 700 per month and, if applicable, a family allowance of +/- € 495 per month. **These amounts are nominal (gross) amounts and certain deductions will apply for social security contributions and/or taxes according to the applicable national laws of the country where the recruiting beneficiary is located.** The exact (net) salary will be confirmed upon appointment and is dependent on local tax regulations and on the country correction factor (to allow for the difference in cost of living in different EU Member States).

Contract Extension

PhD funding is guaranteed for 36 months. Depending on the local Supervisor and conform the regular PhD time in the country of origin, **additional funding might be available**. In countries where PhDs typically last longer than 36 months, beneficiaries may provide additional funding for the remaining period to finish the PhD if the DC fulfils all requirements at the end of month 36.

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

V. Cirimele (UniBo, IT), A. Babaki & R. Maheshwari (SDU, DK), N.C. Sebastian (RFI, IT)

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.