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Electrical Engineering and Power Electronics  
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## Expertise

Electric Vehicles, Energy Management Strategies, Power Electronics

## Employment

### postdoctoral researcher

Electrical Engineering and Power Electronics  
Vrije Universiteit Brussel  
Brussels, Belgium  
1 Nov 2023 → 31 Oct 2024

### MOBI - Electromobility research centre

Vrije Universiteit Brussel  
Brussels, Belgium  
1 Jan 2018 → present

## Research outputs

### Intelligent data-driven condition monitoring of power electronics systems using smart edge-cloud framework

Bhoi, S. K., Chakraborty, S., Verbrugge, B., Helsen, S., Robyns, S., El Baghdadi, M. & Hegazy, O., Jul 2024, In: Internet of Things; Engineering Cyber Physical Human Systems. 26, 101158, 101158.

### Development of Smart Charging Scheduling and Power Management Strategy of a PV-ESS based Scalable EV Charging Station

Jaman, S., Verbrugge, B., Zhaksylyk, A., Geury, T., El Baghdadi, M. & Hegazy, O., 13 Dec 2023, In: Transportation Research Procedia. 72, 1, p. 1240-1247 8 p., TRPRO15962.

### Development of Smart Charging Scheduling and Power Management Strategy of a PV-ESS based Scalable EV Charging Station

Jaman, S., Verbrugge, B., Zhaksylyk, A., Geury, T., El Baghdadi, M. & Hegazy, O., 2023, In: Transportation Research Procedia. 72, p. 1240-1247 8 p.

### Reliability Assessment of SiC-Based Depot Charging Infrastructure with Smart and Bidirectional (V2X) Charging Strategies for Electric Buses

Verbrugge, B., Rasool, H., Hasan, M. M., Chakraborty, S., Geury, T., El Baghdadi, M. & Hegazy, O., 23 Dec 2022, In: Energies. 16, 1, p. 1-15 15 p., 153.

### Development and Validation of V2G Technology for Electric Vehicle Chargers Using Combo CCS Type 2 Connector Standards

Jaman, S., Verbrugge, B., Hernandez Garcia, O., Abdel Monem, M., Oliver, B., Geury, T. & Hegazy, O., 7 Oct 2022, In: Energies. 15, 19, p. 1-24 24 p., 7364.

### Real-Time Charging Scheduling and Optimization of Electric Buses in a Depot

Verbrugge, B., Rauf, A. M., Rasool, H., Abdel-Monem, M., Geury, T., El Baghdadi, M. & Hegazy, O., 9 Jul 2022, In: Energies. 15, 14, p. 1-18 18 p., 5023.

**Impact of Smart Charging on the Reliability of Charging Infrastructure**

Verbrugge, B., Rasool, H., Hasan, M. M., Chakraborty, S., Geury, T., El Baghdadi, M. & Hegazy, O., Jun 2022, *EVS35 Proceedings*. EVS35, p. 1-9 9 p.

**Intelligent Condition Monitoring for Power Electronics System**

Bhoi, S. K., Chakraborty, S., Verbrugge, B., El Baghdadi, M. & Hegazy, O., 30 Mar 2022.

**Two-layer control approach of a V2G capable off-board charger for electric buses**

Verbrugge, B., Rasool, H., El Baghdadi, M., Geury, T. & Hegazy, O., 30 Mar 2022.

**Design and Real-Time Implementation of a Control System for SiC Off-Board Chargers of Battery Electric Buses**

Rasool, H., Verbrugge, B., Jaman, S., Abramushkina, E., Geury, T., El Baghdadi, M. & Hegazy, O., 16 Feb 2022, In: *Energies*. 15, 4, p. 1-19 19 p., 1434.

**Advanced Edge Computing Framework for Grid Power Quality Monitoring of Industrial Motor Drive Applications**

Bhoi, S. K., Chakraborty, S., Verbrugge, B., Helsen, S., Robyns, S., Baghdadi, M. E. & Hegazy, O., 2022, *2022 International Symposium on Power Electronics, Electrical Drives, Automation and Motion, SPEEDAM 2022*. Institute of Electrical and Electronics Engineers Inc., p. 455-459 5 p. (2022 International Symposium on Power Electronics, Electrical Drives, Automation and Motion, SPEEDAM 2022).

**Development of Smart Charging Scheduling and Power Management Strategy of a PV-ESS based Scalable EV Charging Station**

Jaman, S., Verbrugge, B., Zhaksylyk, A., Geury, T., El Baghdadi, M. & Hegazy, O., 2022, *Transportation Research Procedia*. Elsevier, 8 p.

**Smart Integration of Electric Buses in Cities: A Technological Review**

Verbrugge, B., Hasan, M. M., Rasool, H., Geury, T., El Baghdadi, M. & Hegazy, O., 4 Nov 2021, In: *Sustainability*. 13, 21, 23 p., 12189.

**Modelling and bi-level control design of a SiC off-board charging system for battery electric buses with V2G capability**

Verbrugge, B., Rasool, H., El Baghdadi, M., Geury, T. & Hegazy, O., 25 Oct 2021, *EPE'21 Proceedings*. IEEE, 10 p. (2021 23rd European Conference on Power Electronics and Applications, EPE 2021 ECCE Europe).

**Design Optimization and Electro-thermal Modelling of an Off-Board Charging System for Electric Bus Applications**

Rasool, H., Verbrugge, B., Zhaksylyk, A., Tran, M. T., El Baghdadi, M., Geury, T. & Hegazy, O., 4 Jun 2021, In: *IEEE Access*. 9, p. 84501-84519 19 p., 9446870.

**Development of an Energy Management Strategy and Sizing Algorithm for a Nanogrid Parking Lot for Electric Vehicles**

Verbrugge, B., Abdel Monem, M., El Baghdadi, M., Geury, T., Hegazy, O. & Van Mierlo, J., May 2019, *EVS32 Proceedings*. EVS32, 11 p.