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Academic
Mobility, Logistics and Automotive Technology Research Centre
Electrical Engineering and Power Electronics
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Qualifications

PhD in Engineering Sciences and Technology (F.R.I.A. Grant)
1 Oct 2012 → 20 Jan 2017
Master in Electrical Engineering (Energy), Université libre de Bruxelles
Sep 2010 → Jun 2012
Bachelor in Electromechanical Engineering, Université libre de Bruxelles
Sep 2007 → Jun 2010

Employment

Mobility, Logistics and Automotive Technology Research Centre
Vrije Universiteit Brussel
Brussels, Belgium
4 May 2020 → present

Academic

Electrical Engineering and Power Electronics
Vrije Universiteit Brussel
Brussels, Belgium
1 Jan 2019 → 31 Dec 2021

Project Engineer

GreenWatch
Belgium
17 Oct 2017 → 31 Dec 2018

Researcher

University of Nottingham
Nottingham, United Kingdom
1 Aug 2015 → 30 Sep 2015

Trainee

ESTEC
Netherlands
1 Aug 2011 → 28 Oct 2011

Researcher

Instituto Superior Técnico
Lissabon, Portugal
1 Oct 2010 → 20 Jan 2017

Research outputs

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. p. 1-19 19 p.

Evaluation of Model Predictive Control for IPMSM using High-Fidelity Electro-thermal Model of Inverter for Electric Vehicle Applications

Zhaksylyk, A., Rauf, A. M., Chakraborty, S., El Baghdadi, M., Geury, T., Ciglaric, S. & Hegazy, O., 6 Apr 2021, *SAE WCX Digital Summit*. 2021 ed. SAE International, p. 1-8 (SAE Technical Papers).

Small Signal Average Switch Modeling and Dual Loop Control of Bidirectional Integrated Converter for G2V and V2G Applications in Battery EVs

Jaman, S., Chakraborty, S., Geury, T., El Baghdadi, M. & Hegazy, O., 2021, (Accepted/In press) *23rd European Conference on Power Electronics and Applications* .

A Review of Modular Multilevel Converters for Stationary Applications

Wang, Y., Aksoz, A., Geury, T., Ozturk, S. B., Kivanc, O. C. & Hegazy, O., Nov 2020, In : Applied Sciences. 10, 21, p. 1-36 36 p., 7719.

Indirect Matrix Converter-Based Grid-Tied Photovoltaics System for Smart Grids

Geury, T., Pinto, S., Gyselinck, J. & Wheeler, P., 16 Oct 2020, In : Energies. 13, 20, p. 5405-5423 18 p., 5405.

Dual-loop Control Scheme with Optimized Type-III Controller based on Genetic Algorithm for 6-phase Interleaved Converter in Electric Vehicle Drivetrains

Tran, D-D., Chakraborty, S., Geury, T., Van Mierlo, J., El Baghdadi, M. & Hegazy, O., 11 Sep 2020, *EPE'20 ECCE EUROPE*. 9215809. (2020 22nd European Conference on Power Electronics and Applications, EPE 2020 ECCE Europe).

Comparative Analysis of Single-Input Multi-Output Inverter Topologies for Multi-motor Drive Systems

Al Sakka, M., Geury, T., Chakraborty, S., El Baghdadi, M., Hegazy, O., Al Sakka, M. & Dhaens, M., 10 Sep 2020, *proceedings of 2020 Fifteenth International Conference on Ecological Vehicles and Renewable Energies (EVER)*. IEEE, 12 p. 9243097

Fast Active Balancing System using Multi-level DC Converter for Efficient AC-coupled Battery Systems in Stationary Applications

Rauf, A. M., Abdel Monem, M., Geury, T., El Baghdadi, M. & Hegazy, O., 10 Sep 2020, *2020 15th International Conference on Ecological Vehicles and Renewable Energies, EVER 2020*. Institute of Electrical and Electronics Engineers Inc., p. 1-8 8 p. 9243137. (2020 15th International Conference on Ecological Vehicles and Renewable Energies, EVER 2020).

Masterless Control of Parallel Modular Active front-end (AFE) Systems for Vehicles and Stationary Applications

Zhaksylyk, A., Rasool, H., Geury, T., El Baghdadi, M. & Hegazy, O., 10 Sep 2020, *2020 15th International Conference on Ecological Vehicles and Renewable Energies, EVER 2020*. EVER , p. 1-6 6 p. 9242540. (2020 15th International Conference on Ecological Vehicles and Renewable Energies, EVER 2020).

Design and Implementation of FPGA-based Digital Controllers for SiC Multiport Converter in Electric Vehicle Drivetrains

Tran, D-D., Geury, T., El Baghdadi, M., Van Mierlo, J. & Hegazy, O., 28 Nov 2019, *2019 21st European Conference on Power Electronics and Applications, EPE 2019 ECCE Europe*. IEEE, p. 1-7 7 p. 8914795. (2019 21st European Conference on Power Electronics and Applications, EPE 2019 ECCE Europe).

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.

Optimal Design of Hybrid PV-Battery System in Residential Buildings: End-User Economics, and PV Penetration

Worighi, I., Geury, T., Hegazy, O., El Baghdadi, M., Van Mierlo, J. & Maach, A., 1 Mar 2019, In : Applied Sciences. 9, 5, p. 1022-1032 11 p., 1022.

Direct control method for a PV system integrated in an Indirect Matrix Converter-based UPQC

Geury, T., Pinto, S. & Gyselinck, J., Aug 2016, *2016 IEEE Smart Energy Grid Engineering (SEGE)*. IEEE, p. 117-122

An indirect matrix converter-based unified power quality conditioner for a PV inverter with enhanced power quality functionality

Geury, T., Pinto, S., Gyselinck, J. & Wheeler, P., Nov 2015, *2015 IEEE Innovative Smart Grid Technologies - Asia (ISGT ASIA)*. IEEE, p. 1-8 8 p.

Testing the Enhanced Functionalities of Commercial PV Inverters Under Realistic Atmospheric and Abnormal Grid Conditions

Lopez Erauskin, R., Geury, T., Gonzalez Fernandez De Bobadilla, A., Gyselinck, J., Hervas, M. E. & Fabre, A., 19 Oct 2015, *Testing the Enhanced Functionalities of Commercial PV Inverters Under Realistic Atmospheric and Abnormal Grid Conditions*. 5th Solar Integration Workshop, p. 1-7 7 p.

Current source inverter-based photovoltaic system with enhanced active filtering functionalities

Geury, T., Pinto, S. & Gyselinck, J., 2015, In : *Journal of Power Electronics*. 8, 12, p. 2483-2491

Three-phase power controlled PV current source inverter with incorporated active power filtering

Geury, T., Pinto, S. & Gyselinck, J., Nov 2013, *IECON 2013 - 39th Annual Conference of the IEEE Industrial Electronics Society*. Vienna: IEEE Industrial Electronics Society, p. 1372-1377 10.1109/IECON.2013.6699333

Emulation of Photovoltaic arrays with shading effect for testing of grid-connected inverters

Geury, T. & Gyselinck, J., Sep 2013, *2013 15th European Conference on Power Electronics and Applications (EPE)*. IEEE , p. 1-9 9 p.

Projects

EUAR27: Electric Vehicle Charging Infrastructure for improved User Experience

Hegazy, O., Coosemans, T., Vanhaverbeke, L., De Cauwer, C., Geury, T., El Baghdadi, M., Van Kriekinghe, G., Jaman, S., Nuyttens, J. A. & Mesquita Bordalo Da Costa, D.

1/05/20 → 30/04/24

EU581: ACHILES: Advanced Architectures Chassis/Traction concept for Future Electric vehicles

Hegazy, O., El Baghdadi, M., Van Mierlo, J., Geury, T., Firouz, Y., Heidari Gandoman, F., Rauf, A. M., Youssef, R., Bercibar, M. & De Sutter, L.

European Commission

1/12/18 → 31/05/22

BRGCON15: Connect 2020: iSTORMY : Interoperable, modular and smart hybrid energy storage system for stationary applications

Hegazy, O. & Geury, T.

21/01/20 → 20/04/20

BRGRD45: Experimental Platforms 2020 Preparations: Smart Charging Point

Hegazy, O. & Geury, T.

1/03/20 → 15/09/20

EUAR67: Horizon 2020: Highly EFFICIENT and reliable electric drivetrains based on modular, intelligent and highly integrated wide band gap power electronics modules

Hegazy, O., El Baghdadi, M., Geury, T., Chakraborty, S., Tran, D. & Rasool, H.

1/05/21 → 30/04/24

EUAR41: H2020: Interoperable, modular and Smart hybrid energy STORAGE system for stationarY applications

Hegazy, O., Geury, T., El Baghdadi, M., Chakraborty, S. & Tran, D.

1/12/20 → 31/05/24

EU517: ORCA - Optimised Real-world Cost-Competitive Modular Hybrid Architecture for Heavy Duty Vehicles (ORCA)
Hegazy, O., Van Mierlo, J., Van Mierlo, J., Omar, N., Messagie, M., Van Hoyweghen, S., Rahbari, O., De Sutter, L., Tran, D., Mayet, C., Varga, E. F., Geury, T. & Bercibar, M.
European Commission
1/10/16 → 30/09/21

SOCMAAK18: SBO project: ModulAr - Design and validation of modular drivetrain architectures
Hegazy, O., El Baghdadi, M., Van Mierlo, J., Geury, T. & Zhaksylyk, A.
1/09/19 → 31/08/23