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

Dr. Cedric De Cauwer obtained his Master's Degree in Engineering at the Vrije Universiteit Brussel in 2011, with a specialization in vehicle and transport technology. He immediately joined the MOBI research group to work on electric and hybrid vehicle technology. Since 2013, Cedric's PhD research was funded by an IWT scholarship and focused on the prediction of energy consumption and driving range of electric vehicles, and energy-efficient routing. He obtained his PhD in 2017, and has since continued to apply his expertise in national and international projects. He is currently focused on the integration of mobility solutions (electric vehicles, autonomous vehicles) into the electricity grid (charging infrastructure, vehicle-to-grid).

Employment

postdoctoral researcher

MOBI - Electromobility Research Centre
Vrije Universiteit Brussel
Brussels, Belgium
1 Jan 2024 → 31 Dec 2025

MOBI - Electromobility Research Centre

Vrije Universiteit Brussel
Brussels, Belgium
1 Jan 2024 → 31 Aug 2026

Electrical Engineering and Power Electronics

Vrije Universiteit Brussel
Brussels, Belgium
1 Sep 2023 → 31 Aug 2026

MOBI - Electromobility Research Centre

Vrije Universiteit Brussel
Brussels, Belgium
1 Jan 2023 → present

postdoctoral researcher

Electrical Engineering and Power Electronics
Vrije Universiteit Brussel
Brussels, Belgium
8 Apr 2019 → 31 Dec 2025

Research outputs

Real-world validation of safe reinforcement learning, model predictive control and decision tree-based home energy management systems

Ruddick, J., Ceusters, G., Van Kriekinghe, G., Genov, E., De Cauwer, C., Coosemans, T. & Messagie, M., Dec 2024, In: Energy and AI. 18, 19 p., 100448.

The barriers to widespread adoption of vehicle-to-grid: A comprehensive review

Goncearuc, A., De Cauwer, C., Sapountzoglou, N., Van Kriekinghe, G., Huber, D., Messagie, M. & Coosemans, T., Dec 2024, In: Energy Reports. 12, p. 27-41 15 p.

Forecasting flexibility of charging of electric vehicles: Tree and cluster-based methods

Genov, E., Cauwer, C. D., Kriekinghe, G. V., Coosemans, T. & Messagie, M., 1 Jan 2024, In: Applied Energy. 353, 10 p., 121969.

Incremental Profitability Evaluation of Vehicle-to-Grid-Enabled Automated Frequency Restoration Reserve Services for Semi-Public Charging Infrastructure: A Case Study in Belgium

Goncearuc, A., Sapountzoglou, N., De Cauwer, C., Coosemans, T., Messagie, M. & Crispeels, T., 6 Dec 2023, In: World Electric Vehicle Journal. 14, 12, 13 p., 339.

Dynamic Pro-Active Eco-Driving Control Framework for Energy-Efficient Autonomous Electric Mobility

Hesami, S., Vafaeipour, M., De Cauwer, C., Rombaut, E., Vanhaverbeke, L. & Coosemans, T., 8 Sep 2023, In: Energies. 16, 18, 19 p., 6495.

Locating charging stations for shared autonomous electric vehicles with V2G operations in Brussels

Van den bergh, O., De Cauwer, C. & Vanhaverbeke, L., 14 Jun 2023, *Proceedings of the 36th International Electric Vehicle Symposium and Exhibition*. EVS36, 12 p.

One charging station is not the other: spatial-temporal analysis of public charging stations

Weekx, S., De Cauwer, C. & Vanhaverbeke, L., 14 Jun 2023, *36th International Electric Vehicle Symposium and Exhibition (EVS36)*. EVS36, 10 p.

Locating Charging Infrastructure for Shared Autonomous Electric Vehicles and for Vehicle-to-Grid Strategy: A Systematic Review and Research Agenda from an Energy and Mobility Perspective

Van den bergh, O., Weekx, S., De Cauwer, C. & Vanhaverbeke, L., Mar 2023, In: World Electric Vehicle Journal. 14, 3, 16 p., 56.

Electric Vehicle Charging Sessions Generator Based on Clustered Driver Behaviors

Van Kriekinghe, G., De Cauwer, C., Sapountzoglou, N., Coosemans, T. & Messagie, M., 2 Feb 2023, In: World Electric Vehicle Journal. 14, 2, p. 1-14 14 p., 37.

Energy-Optimal Speed Control for Autonomous Electric Vehicles Up- and Downstream of a Signalized Intersection

Hesami, S., De Cauwer, C., Rombaut, E., Vanhaverbeke, L. & Coosemans, T., Feb 2023, In: World Electric Vehicle Journal. 14, 2, p. 1-13 13 p., 55.

Profitability Evaluation of Vehicle-to-Grid-Enabled Frequency Containment Reserve Services into the Business Models of the Core Participants of Electric Vehicle Charging Business Ecosystem

Goncearuc, A., Sapountzoglou, N., De Cauwer, C., Coosemans, T., Messagie, M. & Crispeels, T., 31 Jan 2023, In: World Electric Vehicle Journal. 14, 1, p. 1-17 17 p., 18.

Proactive Eco-Driving Control of an Autonomous Electric Vehicle in Presence of Signalized Intersections and Preceding Vehicles

Hesami, S., Vafaeipour, M., De Cauwer, C., Rombaut, E., Vanhaverbeke, L. & Coosemans, T., 2023, *2023 IEEE Vehicle Power and Propulsion Conference, VPPC 2023 - Proceedings*. Institute of Electrical and Electronics Engineers Inc., p. 1-6 6 p. VPPC60535.2023.10403167. (2023 IEEE Vehicle Power and Propulsion Conference, VPPC 2023 - Proceedings).

Self-Adaptive Ageing Models for Optimal Management and Planning of Assets in Microgrids

Coosemans, T., Parys, W., De Cauwer, C., Berecibar, M. & Messagie, M., 2023, *Future Energy: Challenge, Opportunity and Sustainability*. Wang, X. (ed.). Springer Cham, p. 141-151 11 p. (Green Energy and Technology).

What Are The Drivers And Barriers For Smart Charging Acceptance And Willingness To Pay In Belgium?

De Clerck, Q., Nuyttens, J. A., Sapountzoglou, N., De Cauwer, C., Coosemans, T. & Vanhaverbeke, L., 15 Jun 2022, *Proceedings of the 35th International Electric Vehicle Symposium and Exhibition (EVS35)*. EVS35, p. 1-12

Profitability evaluation of introduction of Vehicle-to-grid – enabled Frequency Containment Reserve services into the business model of electric vehicle Charge Point Operator.

Goncearuc, A., Sapountzoglou, N., De Cauwer, C., Coosemans, T., Messagie, M. & Crispeels, T., 14 Jun 2022, (Unpublished) *35th International Electric Vehicle Symposium and Exhibition (EVS35)*. EVS35

Vehicle-to-grid strategy for shared autonomous electric vehicles: A review of the charging infrastructure's impacts on energy and mobility

Van den bergh, O., De Cauwer, C. & Vanhaverbeke, L., 11 Jun 2022, *Proceedings of the 35th International Electric Vehicle Symposium and Exhibition (EVS35)*. EVS35, p. 1-25 25 p.

An integrative approach for business modelling: Application to the EV charging market

Goncearuc, A., Sapountzoglou, N. (ed.), De Cauwer, C. (ed.), Messagie, M. (ed.), Coosemans, T. (ed.) & Crispeels, T. (ed.), Apr 2022, In: *Journal of Business Research*. 143, p. 184-200 17 p.

Parameterized Cloud-Connected Electro-Thermal Modelling of a Battery Electric Vehicle

Chakraborty, S., El Baghdadi, M., Jaguemont, J., De Cauwer, C., Chen, B., Wahl, A., Manns, P., Ngo, C., Sciarretta, A. & Hegazy, O., 7 Dec 2021, *IEEE Vehicular Power and Propulsion 2021*. IEEE, p. 1-8 8 p. (2021 IEEE Vehicle Power and Propulsion Conference, VPPC 2021 - ProceedingS).

Business model quantification framework for the core participants of the EV charging market

Goncearuc, A., Sapountzoglou, N., De Cauwer, C., Messagie, M., Coosemans, T. & Crispeels, T., Dec 2021, In: *World Electric Vehicle Journal*. 12, 4, 18 p., 229.

Vehicle to Grid Impacts on the Total Cost of Ownership for Electric Vehicle Drivers

Huber, D., De Clerck, Q., De Cauwer, C., Sapountzoglou, N., Coosemans, T. & Messagie, M., Dec 2021, In: *World Electric Vehicle Journal*. 12, 4, p. 236 39 p., 236.

Peak Shaving and Cost Minimization using Model Predictive Control for Uni- and Bi-directional Charging of Electric Vehicles

Van Krieking, G., De Cauwer, C., Sapountzoglou, N., Coosemans, T. & Messagie, M., 27 Nov 2021, In: *Energy Reports*. 7, p. 8760-8771 11 p.

Day-Ahead Forecast of Electric Vehicle Charging Demand with Deep Neural Networks

Van Krieking, G., De Cauwer, C., Sapountzoglou, N., Coosemans, T. & Messagie, M., 3 Oct 2021, In: *World Electric Vehicle Journal*. 12, 4, 14 p., 178.

Beyond the State of the Art of Electric Vehicles: A Fact-Based Paper of the Current and Prospective Electric Vehicle Technologies

Van Mierlo, J., Berecibar, M., El Baghdadi, M., De Cauwer, C., Messagie, M., Coosemans, T., Jacobs, V. A. & Hegazy, O., 3 Feb 2021, In: *World Electric Vehicle Journal*. 12, 1, p. 1-26 26 p., 20.

Integration of Vehicle-to-Grid in Local Energy Systems: Concepts and Specific Requirements

De Cauwer, C., Van Krieking, G., Van Mierlo, J., Coosemans, T. & Messagie, M., 12 Sep 2020, *33rd World Electric Vehicle Symposium & Exposition (EVS33) Peer Reviewed Conference Papers*. Zenodo, p. 1-11 11 p.

Techno-economical assessment of vehicle-to-grid in a microgrid: Case study

Van Krieking, G., De Cauwer, C., Van Mierlo, J., Coosemans, T. & Messagie, M., 12 Sep 2020, *33rd World Electric Vehicle Symposium & Exposition (EVS33) Peer Reviewed Conference Papers*. Zenodo, p. 1-12 12 p.

A Model for Range Estimation and Energy-Efficient Routing of Electric Vehicles in Real-World Conditions

De Cauwer, C., Coosemans, T. & Van Mierlo, J., Jul 2020, In: *IEEE Transactions on Intelligent Transportation Systems*. 21, 7, p. 2787-2800 14 p., 8732460.

Towards EU-wide Interoperability of charging infrastructure for electric vehicles

De Cauwer, C., Guillemot, A., Cragues, G., Van Mierlo, J., Coosemans, T. & Messagie, M., 2018, *Towards EU-wide Interoperability of charging infrastructure for electric vehicles*. EVS31, p. 1-7 7 p.

User-centric vision for mobility and transport in Europe for 2030 based on a participatory approach: the role of electrification

Coosemans, T., Keserü, I., Van Mierlo, J., De Cauwer, C., Macharis, C., Müller, B. & Meyer, G., 2018, *Proceedings of the 31st International Electric Vehicle Symposium & Exhibition and International Electric Vehicle Technology Conference*. Red Hook, NY: Curran Associates, Inc., Vol. 2. p. 1687-1691 20189378

A Data-Driven Method for Energy Consumption Prediction and Energy-Efficient Routing of Electric Vehicles in Real-World Conditions

De Cauwer, C., Verbeke, W., Coosemans, T., Faid, S. & Van Mierlo, J., 1 Jan 2017, In: *Energies*. 10, 5, 18 p., 608.

Energy Consumption Prediction for Electric Vehicles Based on Real-World Data

De Cauwer, C., Van Mierlo, J. & Coosemans, T., Aug 2015, In: *Energies*. 8, 8, p. 8573-8593 21 p.

Conventional, Hybrid, or Electric Vehicles: Which Technology for an Urban Distribution Centre?

Lebeau, P., De Cauwer, C., Van Mierlo, J., Macharis, C., Verbeke, W. & Coosemans, T. C., 6 Jul 2015, In: *The Scientific World Journal*. 2015, 11 p., 302867.

Electric vehicle use and energy consumption based on real world electric vehicle fleet trip and charge data its impact on existing EV research models

De Cauwer, C., Messagie, M., Heyvaert, S., Coosemans, T. & Van Mierlo, J., 1 Jan 2015, In: *World Electric Vehicle Journal*. 7, 3, p. 436-446 11 p.

Electric vehicle use and energy consumption based on real-world electric vehicle fleet trip and charge data and its impact on existing EV research models

De Cauwer, C., Messagie, M., Heyvaert, S., Coosemans, T. & Van Mierlo, J., 2015, *28th International Electric Vehicle Symposium and Exhibition 2015, EVS 2015*. Korean Society of Automotive Engineers, p. 645-655

Identification of EV use patterns, based on large scale EV monitoring data

De Cauwer, C., Gillis, D., Coosemans, T. & Van Mierlo, J., 1 Oct 2014, *2013 World Electric Vehicle Symposium and Exhibition, EVS 2014*. Institute of Electrical and Electronics Engineers Inc., p. 1-11 6915044

Series-Parallel Hybrid Electric Vehicles

Van Mierlo, J., Hegazy, O., Smekens, J. & De Cauwer, C., 22 Apr 2014, *Encyclopedia of Automotive Engineering*. Crolla, D., Foster, D. E., Kobayashi, T. & Vaughan, N. (eds.). Wiley, 17 p.

SAFEDRIVE – A Full Series Hybrid Vehicle Drivetrain

Crocker, T., Sbirrazzuoli, K., De Cauwer, C., Coosemans, T. C. & Van Mierlo, J., 22 May 2012, *EVS26*.

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 Krieking, G., Jaman, S., Nuytens, J. A., Mesquita Bordalo Da Costa, D. & Vranckx, A.
1/05/20 → 30/04/24

EU578: CEVOLVER : Connected Electric Vehicle Optimized for Life, Value, Efficiency and Range

Coosemans, T., De Cauwer, C., Jaguemont, J., El Baghdadi, M., Arapoglou, S., Hegazy, O. & Vranckx, A.
European Commission
1/11/18 → 31/10/22

NSIS3: DESTINY: DEcarbonisation Solutions and Technology for a New Tomorrow: Societal Impact Network of the Flanders Institute for Decarbonisation Technologies (FIDT)

Message, M., Coosemans, T., De Cauwer, C., Stiens, J., Munteanu, A., Deligiannis, N., da Silva Gomes, B. T., De Cruz, L., Braeken, A., Touhafi, A., Rahier, H., Hauffman, T., Hubin, A., Bellemans, A., Bram, S., De Troyer, T., Runacres, M., Denayer, J., Van Assche, T., Van Mierlo, J., Vanhaverbeke, L., Jacobs, V. A., Rombaut, E., El Baghdadi, M., Hegazy, O. & Berecibar, M.

1/11/24 → 31/10/29

EU566: ENSEMBLE: ENabling Safe Multi-Brand pLatooning for Europe.

Coosemans, T., Van Mierlo, J., Message, M., De Cauwer, C., Arapoglou, S. & Vranckx, A.
European Commission

1/06/18 → 31/03/22

OZR3309: ENSEMBLE: ENabling Safe Multi-Brand pLatooning for Europe. (OZR Bonus EU)

Coosemans, T., Omar, N., Message, M. & De Cauwer, C.

1/06/18 → 31/05/21

IWT559: EVA - Electric Vehicles in Action (Living Labs EV)

Macharis, C., Heyvaert, S., Van Mierlo, J., Coosemans, T. & De Cauwer, C.

1/10/11 → 31/12/14

IWT586: EVTecLab: Flemish EV Technological Laboratory

Van Mierlo, J., Coosemans, T., Heyvaert, S., Message, M. & De Cauwer, C.

1/01/12 → 30/11/15

IOF3010: GEAR: Transitioning to future sustainable transport systems Supporting a sector in full transition: valorisation of the MOBI expertise

Van Mierlo, J., Macharis, C., Van Mierlo, J., Coosemans, T., Hegazy, O., Vanhaverbeke, L., Crispeels, T., Verbeke, W., Guns, T., Rombaut, E., Berecibar, M., Jacobs, V. A., Van Den Bossche, P., Lataire, P., Vranckx, A., De Geest, C. C. J., Van Hoyweghen, S., De Cauwer, C., El Baghdadi, M., Mohamed, A. H. R., Kaya, A. & Berecibar, M.

1/01/20 → 31/12/24

EUAR2: Horizon 2020: DriveToTheFuture

Vanhaverbeke, L., Macharis, C., Coosemans, T., De Cauwer, C., Rombaut, E. & Vranckx, A.

European Commission

1/05/19 → 31/10/22

EUAR25: H2020: SHOW - SHared automation Operating models for Worldwide adoption

Vanhaverbeke, L., Macharis, C., Coosemans, T., Feys, M., De Cauwer, C., Rombaut, E., Debbaghi, F. & Vranckx, A.

1/01/20 → 30/09/24

VLAFLX3: ICON project OPTIBIDS: Optimized bidirectional & Smart vehicle charging in local energy systems

Coosemans, T., Message, M., Van Mierlo, J., De Cauwer, C., Arapoglou, S., Van Krieking, G., Nuyttens, J. A., Vanhaverbeke, L. & Vranckx, A.

1/02/19 → 31/01/23

IWT553: iMOVE : innovation for electric mobility in Flanders (Living Labs EV)

Macharis, C., Van Mierlo, J., Coosemans, T., Heyvaert, S., Vliegen, J. & De Cauwer, C.

1/07/11 → 31/12/14

BRGRD64: Joint R&D 2022: CLEVER: Combining smart electric vehicle charging with second life electric vehicle stationary storage for sustainable grid support

Message, M., De Cauwer, C., Berecibar, M., Hosen, M. S. & Boursot, I.

1/12/21 → 30/11/24

BRGIMP17: Living Labs 2018: ASSUZB: Automated Shuttle Service on the site of the Universitair Ziekenhuis Brussel

Vanhaverbeke, L., Macharis, C., Coosemans, T., De Cauwer, C., Ballon, P., Arapoglou, S., de Séjournet de Rameignies, A., Rombaut, E., Vanobberghen, W. & Vranckx, A.

1/01/19 → 31/12/20

BRGEOZ413: Policy Advice Low Emission Mobility

Vanhaverbeke, L., Messagie, M., Sallinger, S., De Cauwer, C., Van Hecke, M., De Clerck, Q. & Weekx, S.

15/02/22 → 15/02/26

IWT609: Real-life range estimation for electric vehicles, based on innovative predictive power consumption algorithms

De Cauwer, C., Coosemans, T. & Van Mierlo, J.

1/01/13 → 31/12/16

EU363: SAFEDRIVE: A platform Power Management System and Low Voltage Drive Train for Hybrid and Electric Vehicle.

De Cauwer, C., Hegazy, O., Coosemans, T. & Van Mierlo, J.

1/08/10 → 1/12/13

SRP56: SRP-Onderzoekszwaartepunt: Autonomous Mobility & Logistics

Van Mierlo, J., Macharis, C., Coosemans, T., Hegazy, O., Van Lier, T., Crispeels, T., Guns, T., Vanhaverbeke, L., Rombaut, E., Berecibar, M., Hesami, S., Arapoglou, S., Li, J., De Cauwer, C. & Vranckx, A.

1/03/19 → 29/02/28

EUREG8: SSCH: Super Smart Charging Hubs

Vanhaverbeke, L., De Cauwer, C., Barrera Franco, M. G. & Van den Steen, N.

1/06/24 → 31/05/27