

Pr. Alexandre De Bernardinis

Full Professor in Electrical engineering (French CNU 63)

French nationality

- Affiliation: Professor at University of Lorraine, IUT de Thionville-Yutz and LMOPS (EA4423) laboratory, France.
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Short biography:

Pr. Alexandre De Bernardinis received the Electrical Engineering degree from the Polytech'School of University of Nantes, France, in 1995, Master of Science (MSc) degree (*French DEA diploma*) in 1996 from the University Henri Poincaré of Nancy and the Ph.D. doctoral degree from the Institut national polytechnique de Lorraine (INPL) in 2000. In 2015 he succeeded in the *Habilitation a Diriger des Recherches* (Accreditation to supervise research) qualification diploma, from ENS Cachan / Paris Saclay University. Since 2001, he is researcher scientist at IFSTTAR (French institute of science and technology for transport, spatial planning, development and networks), and SATIE Laboratory. His current research interests and fields of expertise in electrical engineering include reliability conception and availability of power electronic architectures, mechatronic systems, fault-tolerant aspects of electrical drives and energy management for transport and renewable smart-grids applications. He has supervised more than 15 Ph.D, M.Sc and Postdoctoral students, and teaches energy storage management at the Cnam engineer school, and ESIEE Engineer school in Paris. He is author and co-author of 20 international journals, and more than 60 conference papers. From September 1st 2021, he is nominated as Full Professor at the University of Lorraine - IUT de Thionville-Yutz, and LMOPS (EA4423) laboratory, on Photovoltaics converters and systems.

Diplomas – Academic Qualifications:

- 2015: HDR: French Diploma for Accreditation to supervise research. Post-doctoral Degree in Electrical Engineering, defended April 10th 2015, at ENS Cachan School, University of Paris Saclay. "Power converter Architectures and associated control-command for fuel cells and mechatronic systems: Application to electric vehicles".
- 2000: Ph.D Doctorate thesis from INPL in Nancy (National Polytechnic Institute of Lorraine / University of Lorraine), specialization in Electrical engineering « Study and Optimization of an assembly PM Generator/Controlled Rectifier. Application to a Hybrid Electric Vehicle: in French », Ph.D thesis defended 12/19/2000 (with highest distinction).
- 1996: Master of Science (M.Sc) in Electrical Engineering (French Diploma DEA *Procédés et Traitements de l'Energie Electrique*) – University of Lorraine (Nancy I Henri-Poincaré)
- 1995: Engineer in Electrical Engineering from Polytech'Nantes School, St-Nazaire, France.

Languages: French (native), English (classical & scientific language high level), Italian (fluency), Polish (fluency), German, Greek (basic knowledge), Russian (basic knowledge).

Experiences:

- Research Expertise: Power architectures and interfaces for mechatronic systems linked with control, operation in degraded modes, fault-tolerance; Fuel cell systems for transportation and stationary applications, energy storage and management, urban Micro-grids.
- Reviewing activities for IEEE *Trans. on Vehicular Technology* since 2009 (IEEE TVT), IEEE *Trans. on Industrial Electronics* (IEEE TIE), IEEE *Trans. on Transportation Electrification* (IEEE TTE), *Energy Conversion and management*, *Applied Energy*, Elsevier
- Assistant teacher at Cnam (*Formation ingénieurs en alternance Saint-Denis-Paris*); ESIEE School of

Paris; EUROSAE: Electrical energy storage for transport applications, Fuel cell systems.

- Session Chairman for international conferences : Oral session IEEE REVET 2012, Poster session ITEC 2015, Oral session IEEE VPPC 2017, Oral sessions ATINER Electrical Engineering, Athens,
- 4 Special sessions organizer: Electrimacs'2019, VPPC'2017, FDFC2015, and IEEE IECON2015.
- 7 Ph.D students supervised (6 thesis defended), 1 Ph.D supervision, 3 Postdoctoral students, up to 15 M.Sc students' supervisions.
- **Collaborations, Networks of Excellence, Projects:**
 - **Collaborations:** with French laboratories: GeePs Paris-Sud XI, FCLAB (Fuel Cell lab), L2S Supélec, IFSTTAR COSYS/LIVIC and LISIS laboratories
 - **International:** Lebanese university (Lebanon), Cnam Lebanon, regular cooperation since 2014
 - **Networks of Excellence:** FCTESTNET, FP7 EU projects (HYCON 2)
 - **National and European Projects:** French national projects (ANR, FUI, Ademe: SPACT, SPACT80, PLATHEE, SOFRACI, REGENEO, VIVE).
- **Coordinator of French/Lebanese cooperation project on regenerative braking for EV's.**

Publications: 20 publications in international high standard journals, more than 60 publications in international conferences, 2 contributions for book's chapters.

- Selection of international high ranking journal publications (2010-2019) Extract :

[ACL_19] O.Béthoux, E.Labouré, E.Berthelot, A.Kolli, A.De Bernardinis, "An advanced control for a PM synchronous motor drive in power degraded mode", Mathematics and Computers in Simulation, MATCOM, Elsevier (Accepted 02/02/2019); (2017 Impact Factor: 1.476);

[ACL_18] M. Aguado-Rojas, W. Pasillas-Lépine, A. Loria, A.De Bernardinis, "Acceleration estimation using imperfect incremental encoders in automotive applications", *IEEE Transactions on Control Systems Technology* (Accepted 21/01/2019) (Impact Factor: 2.818);

[ACL_17] K.Itani, A.De Bernardinis, Z.Khatir, A. Jammal, Comparative analysis of two hybrid energy storage systems used in a two front wheel driven electric vehicle during extreme start-up and regenerative braking operations, *Energy Conversion and Management*, Vol. 144, 15 July 2017, Pages 69-87; (2015 Impact Factor: 4.801)

[ACL_16] K.Itani, A.De Bernardinis, Z.Khatir, A. Jammal, M.Ouiedat, Regenerative Braking Modeling, Control, and Simulation of a Hybrid Energy Storage System for an Electric Vehicle in Extreme Conditions, *Transportation Electrification, IEEE Transactions on*, Vol.: 2, Issue:4, December 2016, pp. 465-479;

[ACL_15] K.Itani, A.De Bernardinis, Z.Khatir, A. Jammal, Comparison between two braking control methods integrating energy recovery for a two-wheel front driven electric vehicle, *Energy Conversion and Management*, Volume 122, 15 August 2016, Pages 330-343; (2015 Impact Factor: 4.801)

[ACL_14] L.Galaï-Dol, A.De Bernardinis, A.Nassiopoulos, A.Pény, F.Bourquin, "On the Use of Train Braking Energy Regarding the Electrical Consumption Optimization in the Railway Station", *Transportation Research Procedia*, Vol. 14, 2016, Pages 655-664; (Special Issue TRA 2016)

[ACL_13] A.Kolli, A.Gaillard, A.De Bernardinis, O.Béthoux, D.Hissel, Z.Khatir, A Review on Power Converter Interfaces for Multi – Stack PEM Fuel Cell Architectures, *Energy Conversion and Management*, Vol. 105, 15 Nov. 2015, pp. 716-730; (2015 Impact Factor: 4.801)

[ACL_12] A.De Bernardinis, Synthesis on power electronics for large fuel cells: From power conditioning to potentiodynamic analysis technique, *Energy Conversion and Management*, Vol. 84, August 2014, pp. 174-185; (2015 Impact Factor: 4.801)

[ACL_11] T.-B. Hoang, W. Pasillas-Lepine, A.De Bernardinis, M.Netto, Extended Braking Stiffness Estimation Based on a Switched Observer, With an Application to Wheel-Acceleration Control, *Control Systems Technology, IEEE Transactions on*, March 2014, Volume: 22 Issue: 6, pp. 2384-2392; (Impact Factor: 2.818)

[ACL_10] A.Kolli, O.Béthoux, A.De Bernardinis, E.Labouré, G.Coquery, Space Vector PWM Control Synthesis for H-Bridge Drive in Electric Vehicles, *Vehicular Technology, IEEE Transactions on*, July 2013, Volume: 62 Issue: 6, pp.2441-2452; (Impact Factor: 2.243)

[ACL_9] A.De Bernardinis, S.Butterbach, R.Lallemand, A.Jeunesse, G.Coquery, Ph.Aubin, Double resonant isolated converter for battery charger with fast switching semiconductors used in hybrid electric shunting locomotive, *Electric Power Systems Research*, June 2012, Vol. 92, pp. 43-49; (2015 Impact Factor: 1.809)

[ACL_8] A.De Bernardinis, E. Frappé, O. Béthoux, C. Marchand, G. Coquery, Multi-port power converter for segmented PEM fuel cell in transport application: Simulation with fault tolerant strategy, *European Physical J. Applied Physics. (EPJ-AP)* Ed.EDP Sciences, Vol. 58, Issue 2, May 2012, pp.20901; (2015 Impact Factor: 0.667)

[ACL_7] E. Frappé, A. De Bernardinis, O. Bethoux, D. Candusso, F. Harel, C. Marchand, G. Coquery, *European Physical J. Applied Physics. (EPJ-AP)* Ed.EDP Sciences, Vol. 54, Issue 2, May 2011; (2015 Impact Factor: 0.667)

[ACL_6] A.De Bernardinis, D.Candusso, F.Harel, X.François, G.Coquery, *Energy Conversion and Management*, Volume 51, Issue 5, May 2010, Pages 1044-1054; (2015 Impact Factor: 4.801).