

# Dr. Alexandre De Bernardinis

Researcher scientist in Electrical engineering; *IEEE Member M'12 France Section*

French nationality 



- Affiliation: Researcher scientist at SATIE (Cnrs UMR 8029) / IFSTTAR in Versailles, France.
- Contact: [alexandre.de-bernardinis@ifsttar.fr](mailto:alexandre.de-bernardinis@ifsttar.fr) / Office: (+33)(0)1 30 84 39 75
- Spoken and written languages: **French** (native), **English** (classical & scientific language high level), **German, Italian** (fluency), **Polish** (fluency), **Russian** (basic knowledge), and **Greek** (basic knowledge; member of the Hellenic Association of Versailles, France, for the diffusion of culture and exchanges with Greece: Γαλλο-Ελληνικός Σύλλογος των Βερσαλλιών για την πολιτιστική διάχυση μέσω ανταλλαγών, με την Ελλάδα).

## Short biography:

Dr. Alexandre De Bernardinis (IEEE M12) was born in 1972. He received the Electrical Engineering degree from the Polytech'School of University of Nantes, France, in 1995, Master of Science (MSc) degree (*French DEA*) in 1996 from the University Henri Poincare 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 power electronic architectures for fuel cells systems, mechatronic systems, fault-tolerant aspects of electrical drives and energy management for transport applications. Alexandre De Bernardinis supervised more than 15 Ph.D, Master and Postdoctoral students, and teaches energy storage management at the Cnam engineer school, and ESIEE Paris. He is author and co-author of 17 international journal, and 60 conference papers.

## Diplomas – Academic Qualifications:

- 2015: HDR: French Diploma for Accreditation to supervise research. Post-doctoral Degree in Electrical Engineering, defended April 10<sup>th</sup> 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.

## 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 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 ELE Conferences,
- 2 Special sessions organizer: FDFC2015 in Toulouse, France, and IEEE IECON2015 in Yokohama, Japan.
- 7 Ph.D students supervised (5 thesis defended), 2 Ph.D supervision, 3 Postdoctoral students, up to 10 MSc students' supervisions.
- **Collaborations, Networks of Excellence, Projects:**
  - **Collaborations:** with French laboratories: GeePs Paris-Sud XI, FCLAB (Fuel Cell lab), L2S Supélec, IFSTTAR COSYS/LIVIC
  - **International:** Lebanese university (Lebanon), Cnam Lebanon, regular cooperation
  - **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).

**Publications:** 17 publications in international high standard journals, 1 French journal, 60 publications in international conferences, 2 contributions for book's chapters.

❖ Selection of journal publications (2006-2017):

[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.Galai-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.Lallemant, 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. PEM fuel cell fault detection and identification using differential method: simulation and experimental validation. *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, Experiments of a 20 cell PEFC operating under fault conditions with diode by-pass circuit for uninterrupted power delivery, *Energy Conversion and Management*, Volume 51, Issue 5, May 2010, Pages 1044-1054; **(2015 Impact Factor: 4.801)**

[ACL\_5] A.De Bernardinis, M.C.Péra, J.Garnier, D.Hissel, G.Coquery, J-M.Kauffmann, Fuel cells multi-stack power architectures and experimental validation of a 1kW parallel twin stack PEFC generator based on high frequency magnetic coupling dedicated to on-board power unit. *Energy Conversion and Management*, Volume 49, Issue 8, August 2008, Pages 2367-2383; **(2015 Impact Factor: 4.801)**

[ACL\_4] D.Candusso, A.De Bernardinis, M.C.Péra, F.Harel, X.François, D.Hissel, G.Coquery, J-M.Kauffmann, Fuel cell operation under degraded working modes and study of a diode by-pass circuit dedicated to multi-stack association. *Energy Conversion and Management*, Volume 49, Issue 4, April 2008, Pages 880-895;

**(2015 Impact Factor: 4.801)**

**[ACL\_3] B.Wahdame, D.Candusso, X.François, F.Harel, A.De Bernardinis, J-M.Kauffmann, G.Coquery**, Study of a 5kW PEMFC using experimental design and statistical analysis techniques, *Fuel Cells -From Fundamentals to Systems*, Wiley-VCH, Vol.7, Issue 1, February 2007, p. 47-62; **(2015 Impact Factor: 3.273)**

**[ACL\_2] D.Candusso, F.Harel, A.De Bernardinis, X.François, M.C.Péra, D.Hissel, P.Schott, G.Coquery, J-M.Kauffmann**, Characterisation and modelling of a 5kW PEMFC for transportation applications, *International Journal of Hydrogen Energy*, Volume 31, Issue 8, July 2006, Pages 1019-1030; **(2015 Impact Factor: 3.205)**

**[ACL\_1] J.Garnier, A.De Bernardinis, M.C.Péra, D.Hissel, D.Candusso, J-M.Kauffmann, G.Coquery** Study of a PEFC Power Generator Modular Architecture based on a Multi-stacks association, *Journal of Power Sources*, Volume 156, Issue 1, 19 May 2006, Pages 108-113. **(2015 Impact Factor: 6.333).**