PERSONAL INFORMATION

Ionel VECHIU

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Sex Male | Date of birth 17/12/1977 | Nationality French/Romanian

EDUCATION

Dec 2013	**«Habilitation à Diriger des Recherches» (HDR) in Electrical Engineering Grenoble INP, France**
	Title: Modelling, Control and Integration of Distributed Generation in MicroGrids
Dec 2002 - Dec 2005	**PhD degree in Electrical Engineering University of Le Havre, France / University of the Basque Country UPV / EHU, Spain / ESTIA Institute of Technology, France**
	Title: Modelling and analysis of the integration of renewable energy in an autonomous grid
Oct 2001 – Sep 2002	**Master's degree in Electrical Engineering University of Le Havre, France**
	Title: Optimization of wind energy recovery. Real-time simulation of a wind turbine under Matlab / Simulink Environment
Oct 1996 – Jul 2001	**Engineer's Degree, University of Galati, Romania**
	2001: Erasmus Exchange student at University of Le Havre, France

WORK EXPERIENCE

Since April 2014	**Professor, ESTIA Institute of Technology, Bidart, France**
2006 – 2014	**Associate Professor, ESTIA Institute of Technology, Bidart, France**
Research	**Integration of Renewable Energy Sources into weak grids and MicroGrids (ESTIA-Research Laboratory)**:
	Sizing Modelling and control of Distributed Generation
	Power converters and associated control for the integration of Distributed Generation into MicroGrids under disturbed operation
	Wind turbines mechanical stress reduction
	Power quality and grid stability (voltage and frequency regulation, islanding operation)
	Control and management of hybrid energy storage systems (Power/Energy)
Teaching	**More 2000h taught at ESTIA and University of Pau and Pays de l'Adour in**:
	Electrical Engineering, Electronics, Automation
	Renewable Energy Sources (RES)
	Energy Storage Systems (ESS)
	Power Electronics for RES and ESS weak grids integration
	Supervision of student projects
	Implementation of a TEMPUS MSc project "Joint Master in Electrical Engineering", collaboration with USAL, UK and BZU, PPU, PTU, Palestine
	Contribution to the design and implementation of a MSc on "Smart grids and renewable energy sources" collaboration with the University of the Basque Country (UPV / EHU)

ADVISING

Pst Doc (3)

Oct 2016 – Oct 2018	Edis POURESMAEIL
	Title: *Energy management of a power plant with high renewable energy penetration for island grids*
Mar 2015 – Sept 2015	Itsaso MARTINEZ
	Title : *Real-time simulation, analysis and optimization of the operation of a virtual power plant with high rate of renewable energy for island power grids*

Janv 2013 – Dec 2015 Aitor ETXEBERRIA

Title : *Multilevel Converter for Hybrid Storage Systems*

PhD (7)

Dec 2008 – Avr 2012 Said Nourdine (50%), "*Optimal control of wind turbines to alleviate fatigue loads and primary frequency grid regulation*", Electrical Engineering. Co-advisors: Haritza Camblong and Gerardo Tapia (UPV/EHU, Spain).

Sep 2009 – Dec 2012 Aitor Etxeberria (70%), "*Microgrid Hybrid Energy Storage Integration and Control using a Three-Level NPC Converter*", Electrical Engineering. Co-advisors: Jean Michel Vinassa (IMS, Bordeaux 1, France) and Haritza Camblong (UPV/EHU, Spain).

Oct 2012 – Dec 2015 Sylvain Baudoin (70%), "*Hybrid SOFC/MT control for rural area MicroGrid application*", Electrical Engineering, European thesis. Co-advisors: Jean Michel Vinassa (IMS, Bordeaux 1, France) et Haritza Camblong (UPV/EHU, Spain).

Apr 2012 – Jul 2012 Ciprian Balanuta "*Research and contributions to the power quality improvement in electric power systems*", Electrical Engineering, European PhD internship (4 months).

Sep 2014 – Sep 2017 Quentin Tabart (70%), "*Real-time simulation, analysis and optimization of a power plant operation with a high penetration of renewable energy for island grids*", Electrical Engineering. Co-advisors: Seddik Bacha (G2ELab, Grenoble INP, France), Aitor Etxeberria (ESTIA, France).

Oct 2015 – Oct 2018 Ruben LOPEZ RODRIGUEZ (70%), "*Modelling, simulation and analysis of the operation of a smart virtual power plant*", Electrical Engineering. Co-advisor: Seddik Bacha (G2ELab, Grenoble INP, France), Aitor Etxeberria (ESTIA, France).

Oct 2016 – Oct 2019 Samuel JUPIN, "*Advanced control of multilevel converters for weak grid application*", Electrical Engineering, European thesis. Cotutelle: ESTIA/Bordeaux – UPV/EHU.

MSc (8)

2016 David Marcos Guerrero "Operation of a multi-topology multilevel inverter", UPV/EHU (Spain), 6 month.

2014 Quentin Tabart "Research and development for hybrid energy storage systems and renewable energy integration", Grenoble INP, 8 month.

2013 Andrei Jiglau "*Simulations and experimental tests on a micro-network based on renewable energy sources and a hybrid storage system*", University of Galati, Romania, 4 month.

2012 Bogdan Ionut Lupu "*Dynamic simulation and analysis of Bayonne harbour electrical grid using EUROSTAG*", University of Galati, Romania, 4 month.

2011 Sylvain Baudoin "*Control of the DC-DC converters for energy storage in a micro-grid based on renewable energy systems*", ESME Sudria, 8 month.

2010 Mihai Liviu Oanca *"Acquisition, Monitoring and data Recording for ESTIA Micro-grid",* University of Galati, Romania, 6 month.

2009 Josselin Fajfar *"Design and construction of a bidirectional DC-DC converter for the energy storage management in a hybrid energy system",* Grenoble INP, 6 month.

2009 Sylvain Baudon *"Design, modeling and simulation of a small wind conversion system",* Grenoble INP, 6 month.

SUMMARY OF PUBLICATION RECORD

Author of 17 international journals and 35 international conference papers. Hereafter a selection of 5 representative papers (detailed list of the papers in the **annex**):

Vechiu I., Camblong H., Tapia G., Dakyo B., Curea O., "Control of a Four-Leg Inverter for Hybrid Power System Applications with Unbalanced Load", *Elsevier, Energy Conversion and Management*, vol. 48, pp. 2119-2128, (2007). Impact Factor 2012: 2.775. 5-Year Impact Factor 2012: 3.075. Thomson Reuters Journal Citation Reports 2013

Vechiu I., Curea O., Camblong H.,"Transient Operation of a Four-Leg Inverter for Autonomous Applications With Unbalanced Load", *IEEE Transactions on Power Electronics*, vol. 25, n° 2, pp. 1591 - 1596, (2010). Impact Factor 2012: 4.08. Thomson Reuters Journal Citation Reports 2013

Etxeberria A., **Vechiu I.**, Camblong H., Vinassa J.-M., "Comparison of three topologies and controls of a hybrid energy storage system for microgrids" *Elsevier, Energy Conversion and Management*, vol. 54, n° 1, pp. 113-121, (2012). Impact Factor 2012: 2.775. 5-Year Impact Factor 2012: 3.075. Thomson Reuters Journal Citation Reports 2013

Camblong H., **Vechiu I.**, Guillaud X., Kreckelbergh S., Etxeberria A., "Wind turbine controller comparison on an island grid in terms of frequency control and mechanical stress," *ELSEVIER International Journal of Renewable Energy*, Vol. 63, pp. 37–45, (Mars 2014). Impact Factor 2012:

2.989. 5-Year Impact Factor 2012: 3.456. Thomson Reuters Journal Citation Reports 2013

Etxeberria A., **Vechiu I.**, Baudoin S., Camblong H., Kreckelbergh S., "Control of a Vanadium Redox Battery and supercapacitor using a Three-Level Neutral Point Clamped converter," *Elsevier, Journal of Power Sources*, Vol. 248, pp. 1170–1176, (Fevrier 2014). Impact Factor 2012: 4.675. 5-Year Impact Factor 2012: 4.908. Thomson Reuters Journal Citation Reports 2013

INVITED PRESENTATIONS

2013	Keynote speaker, "*International Conference on Power Science and Engineering (ICPSE 2013)*" conference, Paris, 2013
2012	Organization of a guest session "Sustainable energy" as part of the "*IEEE "16th International Conference on System Theory, Control and Computing*", Sinaia (Romania), 2012
Chairman	IEEE PELS ICRERA 2014, ICPSE 2013, Paris and ICPSE 2012, Hong Kong, IEEE ICSTCC 2012 Sinaia (Romania), IREC 2011 à Hammamet (Tunisia), IEEE ICIT 2009 à Gippsland (Australia)
Paper review	15 Journals and 20 conferences. Journals: IEEE Transactions on Power Electronics, Electrical Power and Energy System, Energy Conversion and Management, The Franklin Institute. Conferences: ICRERA 2014, ISGT 2013 and 2011, IECON 2012, IPEC 2010, ISIE 2009, ICIT 2012 and 2009
Network	IEEE Member for 8 years (Power Electronics Society, Industry Applications Society, IEEE Power & Energy Society and Industrial Electronics Society). Member Number: 90530910
	Member of the GDR SEEDS, MicroGrids community (Electrical Power Systems in their Social Dimension)

RESEARCH PROJECTS

Design, coordination and management of 13 research and industrial transfer projects around the modelling, simulation and analysis of renewable energy sources and their integration into the grid for a total amount of over 1.5 million € (detailed list of the projects in the **annex**).

Project Expertise

2016	ANR project, PROGELEC program.
2013	ANR project, Production and management of renewable energy.
2013	Future Lyon Saint-Etienne program. Emerging projects.

THESIS JURY AND/OR REVIEW

2016	Andoni Saez de Ibarra, "Optimal sizing and control of energy storage systems for the electricity markets participation of intelligent photovoltaic power plants", Grenoble INP, France
2015	Davis Montenegro, "Diakoptics based on actors for the simulation, control and monitoring of smart grid applications", Grenoble INP, France
2015	Mirela Ion "*Improving the electrical protection selectivity of the vessels when shore powered - Increase of short ciruit current*", Grenoble INP, France
2012	Ciprian Balanuta " *Research and contributions to the power quality improvement in electric power systems* ", University "Dunarea de Jos" Galati, Romania
2011	Zaragoza Jordi Bertomeu "*Modulation Strategies for the Neutralpoint-Clamped Converter and control ofa wind turbine system*", Technical University of Catalonia, Spain
2011	Gelu Gurguiatu "*Contributions to the control of active power filters to reduce harmonic content in power systems", University* "Dunarea de Jos" Galati, Romania
2010	Ciprian Vlad "*Contribution to the control of autonomous renewable energy systems*", University "Dunarea de Jos" Galati, Romania

PERSONAL SKILLS

Responsibilities	Since 2013 - responsible of the EEA teaching unit of ESTIA engineer cycle
	Member of the ESTIA-Research laboratory council
	Responsibility of the module "Awareness and Introduction to Research"
	Member of the committee in charge with the recruitment of ESTIA Students
	Responsibility of the ERASMUS program with Romania
	Contribution to the design and installation of a MicroGrid experimental platform
	Responsible for many R&D projects involving ESTIA Research (see Projects)
Computer skills	Simulation tools, prototyping and analysis
	Simulation: Matlab / Simulink, DigSilent, EUROSTAG, Protel DXP
	Rapid Prototyping: dSPACE, OPAL-RT, LabVIEW
	Design and analysis tools: HOMER, RETScreen
Languages	French, English, Romanian