

Robin Roche

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1 Education

Habilitation à Diriger des Recherches in Electrical Engineering, UBFC, 2019

Ph.D. in Electrical Engineering, UTBM, 2012

Visiting scholar at Colorado State University (U.S.A., 2012 and 2013)

Diplôme d'Ingénieur (M.Eng.) in Electrical Engineering, UTBM, 2009

Double minor in Innovation strategies and International careers

Internships at TRUMPF (Switzerland, 2007) and AUDI (Germany, 2009), exchange semester at KAIST (South Korea, 2008)

2 Current position

Maître de Conférences (Associate Professor, tenured, CNU section 63), UTBM, since 2013

- Research laboratory: FEMTO-ST Institute (UMR CNRS 6174), Energy department, SHARPAC group
- Member of the FCLAB CNRS unit (USR CNRS 2007)
- Courses taught: electric power systems, microgrids
- Ph.D. co-supervision: 6 graduated, 2 in progress
- Awarded the Prime d'Encadrement Doctoral et de Recherche (PEDR) since 2017

3 Research activities

Research interests

- Microgrids, electric power systems, cyber-physical energy systems
- Energy management, renewable energy and storage integration, system resilience, sizing
- Hydrogen energy, fuel cells and electrolyzers integration, diagnostics and prognostics
- Agent-based control systems, optimization, co-simulation

Selected responsibilities

- Deputy director of the Energy department of FEMTO-ST
- Member of the boards of Club EEA and of GdR CNRS SEEDS in charge of Ph.D. student activities
- Chair of the microgrids group at FEMTO-ST
- Former appointed member of the Conseil National des Universités (CNU) in section 63
- Associate Editor of the Journal of Modern Power System and Clean Energy

Selected projects

- HyDATA: Decarbonizing datacenters with hydrogen – Région BFC / BPI France project, 2020-2021
- DATAZERO2: Renewable energy-powered datacenter – ANR project, 2020-2023
- HYCAUNAIS: Wind-based power-to-gas plant – ADEME project, 2019-2025
- RECIF: Design of an insular microgrid with cogeneration of electricity and cold – ANR project, 2018-2022
- HAEOLUS: Hydrogen-aeolic energy with optimised electrolyzers upstream of substation – H2020 project, 2018-2021

Selected publications

1. JCO. Cepeda, G. Osma-Pinto, **R. Roche**, C. Duarte, J. Solano, and D. Hissel, "Design of a Methodology to Evaluate the Impact of Demand-Side Management in the Planning of Isolated/Islanded Microgrids." *Energies*, vol. 13, no. 13, pp. 3459, July 2020. DOI: 10.3390/en13133459.
2. B. Celik, S. Suryanarayanan, **R. Roche** and T. M. Hansen, "Quantifying the Impact of Solar Photovoltaic and Energy Storage Assets on the Performance of a Residential Energy Aggregator." *IEEE Transactions on Sustainable Energy*, vol. 11, no. 1, pp. 405–414, January 2020. DOI: 10.1109/TSTE.2019.2892603.
3. JM. Pierson, G. Baudic, S. Caux, et al., "DATAZERO: Datacenter With Zero Emission and Robust Management Using Renewable Energy." *IEEE Access*, vol. 7, pp. 103209-103230, July 2019. DOI: 10.1109/ACCESS.2019.2930368.
4. B. Celik, **R. Roche**, D. Bouquain, and A. Miraoui, "Decentralized neighborhood energy management with coordinated smart home energy sharing." *IEEE Transactions on Smart Grid*, vol. 9, no. 6, pp. 6387–6397, November 2018. DOI: 10.1109/TSG.2017.2710358.
5. B. Li, **R. Roche**, D. Paire, A. Miraoui, "Sizing of a stand-alone microgrid considering electric power, cooling/heating, hydrogen loads and hydrogen storage degradation." *Applied Energy*, vol. 205, pp. 1244–1259, November 2017. DOI: 10.1016/j.apenergy.2017.08.142.
6. S. Suryanarayanan, **R. Roche**, and T. Hansen (eds.), *Cyber-Physical-Social Systems and Constructs in Electric Power Engineering*, The Institution of Engineering and Technology (IET) Press, October 2016. ISBN: 978-1-84919-936-0.