



## Project's main outcomes

---

### Journals

- [1] Y. NaitMalek, M. Najib, M. Bakhouya, J. Gaber, HELECAR-D: A Dataset for Urban Electromobility in Moroccan Context, Data in Brief 48, 109080, 2023.
- [2] S. Boulmrharj, M. Bakhouya, M. Khaidar, "Green Hydrogen for Public Transportation Fueling and Street Lighting Electrification: Towards more Sustainable Moroccan cities", Sustainable Production and Consumption, 36, 2023, 217-232. <https://doi.org/10.1016/j.spc.2022.12.018>
- [3] S. Boulmrharj, M. Bakhouya, M. Khaidar, "Performance Evaluation of Grid-connected Silicon-based PV Systems Integrated into Institutional Buildings: An Experimental and Simulation Comparative Study" Sustainable Energy Technologies and Assessments, 53, 2022, 102632. <https://doi.org/10.1016/j.seta.2022.102632>
- [4] Y. NaitMalek, M. Najib, M. Bakhouya, J. Gaber, & M. Essaaidi. "Embedded Real-time Speed Forecasting for Electric Vehicles: A Case Study on RSK Urban Roads". IEEE Access, 10, 2022. DOI: 10.1109/ACCESS.2022.3225643
- [5] A. Kharbouch, A. Berouine, H. Elkhokhi, S. Berrabah, M. Bakhouya, D. El Ouadghiri, J. Gaber, "Internet-of-Things Based Hardware-in-the-Loop Framework for Model-Predictive-Control of Smart Building Ventilation". Sensors 2022, 22, 7978. <https://doi.org/10.3390/s22207978>
- [6] A. Berouine, R. Ouladsine, M. Bakhouya, M. Essaaidi, 2022. "A Predictive Control Approach for Thermal Energy Management in Buildings". Energy Reports, 8, pp.9127-9141. <https://doi.org/10.1016/j.egy.2022.07.037>.
- [7] S. Berrabah, Z. Bouhssine, A. El Maakoul, A. Degiovanni, M. Bakhouya. "Towards a quadrupole-based method for buildings simulation: Validation with ASHRAE 140 standard", Thermal science and engineering progress, Volume 28, 1 February 2022, 101069, <https://doi.org/10.1016/j.tsep.2021.101069>
- [8] Y. Alidrissi, R. Ouladsine, A. Elmouatamid, M. Bakhouya, "An Energy Management Strategy for DC Microgrids with PV/Battery Systems", Journal of Electrical Engineering & Technology, Springer 16, pages 1285-1296, 2021, <https://doi.org/10.1007/s42835-021-00675-y>
- [9] Y. NaitMalek, M. Najib, A. Lahlou, M. Bakhouya, J. Gaber, M. Essaaidi, "A Hybrid Approach for State-of-Charge Forecasting in Battery-Powered Electric Vehicles", Sustainability, 14(16), 2022.
- [10] H. Elkhokhi, M. Bakhouya, D. El Ouadghiri, M. Hanifi, "Using Stream Data Processing for Real-Time Occupancy Detection in Smart Buildings", Sensors, 202, 2022, <https://doi.org/10.3390/s22062371>
- [11] A. Kharbouch, S. Berrabah, M. Bakhouya, J. Gaber, D. El Ouadghiri, S. Idrissi Kaitouni, "Experimental and Co-Simulation Performance Evaluation of an Earth-to-Air Heat Exchanger System Integrated into a Smart Building", Energies, 15, 5407, 2022, <https://doi.org/10.3390/en15155407>
- [12] Y. Alidrissi, R. Ouladsine, A. Elmouatamid, R. Errouissi, M. Bakhouya, "Constant Power Load Stabilization in DC Microgrids Using Continuous-Time Model Predictive Control", Electronics, Vol. 11, Issue 9, pp. 1481, 2022, <https://doi.org/10.3390/electronics11091481>
- [13] A. Elmouatamid, R. Ouladsine, M. Bakhouya, N. El Kamoun, M. Khaidar and K. Zine-Dine, "Review of Control and Energy Management Approaches in Micro-Grid Systems", Energies 2021, 14, 168, <https://doi.org/10.3390/en14010168>
- [14] S. Berrabah, M. Ould Moussa, M. Bakhouya, "3D Modeling of Thermal Transfer through Precast Buildings Envelopes", Energies 2021, 14, 3751, <https://doi.org/10.3390/en14133751>
- [15] A. Elmouatamid, R. Ouladsine, M. Bakhouya, N. El kamoun, & K. Zine-Dine, "A Predictive Control Strategy for Energy Management in Micro-Grid Systems", Electronics 2021, 10, <https://doi.org/10.3390/electronics10141666>
- [16] Y. NaitMalek, M. Najib, M. Bakhouya, & M. Essaaidi, "Embedded Real-time Battery State-of-Charge Forecasting in Micro-Grid Systems", Ecological Complexity, 2021, 45, 100903, <https://doi.org/10.1016/j.ecocom.2020.100903>
- [17] S. Hadri, M. Najib, M. Bakhouya, Y. Fakhri, M. Elaroussi, "Performance Evaluation of Forecasting Strategies for Electricity Consumption in Buildings", Energies journal, 2021, <https://doi.org/10.3390/en14185831>

## Book Chapters

- [18] S. Boulmrharj, S. Berrabah, M. Bakhouya, Z. Bouhssine, R. Ouladsine, M. Khaidar, "Towards a Holistic Approach for Energy Efficient Buildings", Hybrid Energy System Models, Elsevier, pp. 129-193, 2021, <https://doi.org/10.1016/B978-0-12-821403-9.00002-0>
- [19] A. Elmouatamid, A., Naitmalek, Y., Ouladsine, R., Bakhouya, M., Khaidar, M., & Zine-Dine, K., "A MicroGrid System Infrastructure Implementing IoT/Big-Data Technologies for Efficient Energy Management in Buildings", In: Motahhir S., Eltamaly A.M. (eds), Advanced Technologies for Solar Photovoltaics Energy Systems, Green Energy and Technology, Springer, Cham, 2021, [https://doi.org/10.1007/978-3-030-64565-6\\_20](https://doi.org/10.1007/978-3-030-64565-6_20)

## Conferences

- [1] A. Elmouatamid, A., Alidrissi, Y., Ouladsine, R., Bakhouya, El kamoun, N., M., Zine-Dine, K., & Khaidar, M., "Towards an IoT/Big-Data Platform for Data Measurements, Collection and Processing in Micro-grid Systems", In: Motahhir S., Bossoufi B. (eds) Digital Technologies and Applications, ICDTA 2021, Lecture Notes in Networks and Systems, vol 211, Springer, Cham, [https://doi.org/10.1007/978-3-030-73882-2\\_26](https://doi.org/10.1007/978-3-030-73882-2_26)
- [2] S. I. Kaitouni, M. Bakhouya, J. Brigui, *Comparison Study and Assessment of Thermal Performance and Energy Self-Sufficiency of Nearly Zero Energy Building (nZEB) in two Different climates*, conference paper, REEE2023 proceedings, E3S Web Conf. Volume 433, 2023.
- [3] [14] H. El-Ouadoud, S. Pierfederici, M. Bakhouya, R. Ouladsine, M. Urbain, "Stratégie de Répartition de Puissance Améliorée basée sur une Séparation Fréquentielle dans un Micro-réseau DC", Symposium de Génie Électrique SGE, Lille, 2023.
- [4] [14] Y. Alidrissi, H. El-Ouadoud, S. Pierfederici, M. Urbain, R. Ouladsine, M. Bakhouya, "Cooperative Distributed Droop Gains Adjustment in DC Microgrid", 21st IMACS World Congress, Rome, 2023.
- [5] [15] H. Elouadoud, R. Naji EL idrissi, M. Bakhouya and R. Ouladsine, "Towards an Advanced Approach for Energy Management in Distributed Micro-Grid Systems", to appear in MME 2024, 20-22 May, Rabat.

## Thesis reports with full/partial support

- [1] S. Berrabah, *Towards A Quadrupole-based Hardware-In-the-Loop Co-simulation Platform in Energy Efficient Buildings*, Thesis report, pp. 1-120, 2023.
- [2] A. Kharbouch, *Internet-of-Things based Hardware-in-the-Loop Framework for Smart and Energy Efficient Buildings*, Thesis report, pp. 1-202, 2023.
- [3] H. El Khoukhi, *Real-time Machine Learning Approaches for Occupancy Detection in Smart Buildings*, Thesis report, pp. 1-179, 2022.
- [4] Y. Naitmalek, *Contribution toward a Smart EMS Using IoT and Machine Learning for Electric Vehicles*, Thesis report, pp. 1-166, 2023.
- [5] A. Berouine, *Predictive Control Approaches Using IoT and Big Data Technologies for Smart and Energy-Efficient Buildings: Application to Thermal and Indoor Air Quality Management*, Thesis report, pp. 1-160, 2023.

## Accepted Patents

- [1] S. Hadri, A. Elmouatamid, Y. Naitmalek, M. Bakhouya, M. Najib, T. Zaradach, *Système Intelligent de Surveillance, Traitement, Prédiction et de Contrôle de la Consommation d'Electricité des Bâtiments en Temps Reel*, N° de dépôt de la demande: 56302, date de dépôt : 15/04/2022.

## Platform's prototype

- [1] <https://eeb.uir.ac.ma/index.php/2023/09/27/holsys/>