

## ICACER 2024 - Keynote proposal

### ELECTROMOBILITY: EXPERIENCE OF THE CUMIN PROGRAMME FOR A MORE SUSTAINABLE CAMPUS



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#### ABSTRACT

The transport sector is nowadays the only sector in Europe with an increase of the green houses gases (GHG). Electrification of transportation systems is thus a the key challenge to face the global warning. Since 2010, the University of Lille regularly estimates its green houses gases, and the commuting (home-university travels) are responsible of more than 50% of the total GHG of its 85,000 users (students and staff). To significantly cut the GHG of the daily mobility, the University of Lille has developed an interdisciplinary programme, CUMIN (Campus of University with Mobility based on Innovation and carbon Neutrality), with the aims to develop its campus “Cité Scientifique” as a demonstrator for electro-mobility. CUMIN is composed on several projects on different aspects of electromobility: energy consumption, economical models of vehicles and infrastructures, driver’s habits and request, charging points with renewable energy, acceptability, public policies, etc. The CUMIN programme is composed of 3 research groups in Science & Technologies and 3 research groups in Social & Human Sciences.

CUMIN has international collaborations with Canada (Univ. Trois Rivières), USA (Rochester Inst. Tech), and Belgium (Univ. Ghent) on some projects. An international associated laboratory has been developed between the University of Lille and the University of Trois-Rivières to extend the experience of Lille on a campus in North America.

The keynote lecture will first introduce the context of the CUMIN programme. Several projects will then be presented such as EVE (Electric Vehicle, Estimation of mobility for an eco-campus), REMUS (Recovery of Energy from Metros in University based on Sustainability of an eco-campus), TESS (Technical-Economical Study of Sustainable campuses) or SARA (Social Acceptance of electric vehicles in Restricted Areas).



#### BIOGRAPHY



**Alain BOUSCAYROL** received Ph.D. degree in Electrical Engineering from Institut National Polytechnique de Toulouse, France, in 1995. From 1996 to 2005, he was Associate Professor at University of Lille, France, where he has been Professor since 2005. From 2004 to 2019, he has managed the national network on Energy Management of Hybrid Electric Vehicles (MEGEVH) France. Since 2015, he has been coordinator of the **CUMIN** (Campus of University with Mobility based on Innovation and carbon Neutrality) interdisciplinary programme of University of Lille (<https://cumin.univ-lille.fr/>). Since

2018, he has been co-director of the international research lab e-CAMPUS on sustainable mobility (France / Canada). From 2018 to 2022, he was coordinator of PANDA a European H2020 project on simulation and testing of electrified vehicles (<https://project-panda.eu/>).

His research interests at the L2EP (Laboratory of Electrical Engineering) include graphical descriptions (Energetic Macroscopic Representation, <http://www.emrwebsite.org/>, etc.) for control of electric drives, wind energy conversion systems, railway traction systems, electric or hybrid electric vehicles and hardware-in-the-loop simulation. His collaborative works with industry on electrified vehicles include PSA Peugeot Citroen, Nexter Systems, Renault TR, Siemens Mobility, Siemens Software, SNCF and Valeo. From 2014 to 2019, he was nominated Chair of the Vehicle Power Propulsion technical committee by IEEE Vehicular Technology Society. From 2014 to 2018 he was appointed Associate Editor of IEEE trans. on Vehicular Technology. Since 2016, has been elected Distinguished Lecturer by IEEE VTS. Since 2019, he has been appointed general chair of the steering committee of IEEE VPPC (Vehicle Power Propulsion Conference).