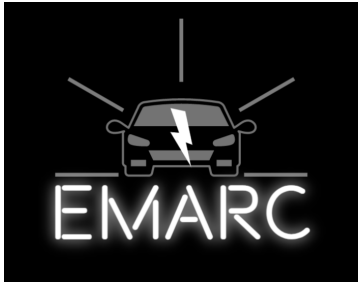
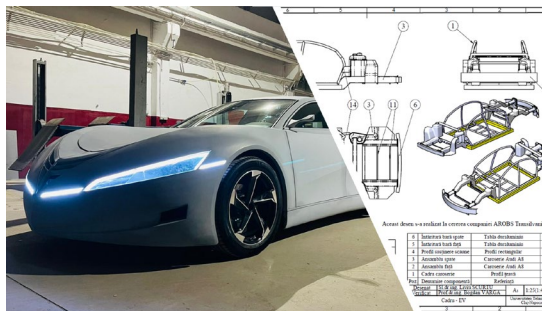


EMARC - Electric Mobility Applied Research Center - Centrul de Cercetare Aplicată pentru Mobilitate Electrică

Contact details

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Areas of expertise

Electric vehicles; Hybrid vehicles; Vehicles with fuel cells; Optimization of high voltage batteries; Thermal management of high voltage batteries; Solutions for the decarbonization of cities; Optimizing urban and extra-urban transport; Optimizing intermodal transport;

Team

Prof. PhD. Habil. Eng. Bogdan VARGA, Prof. PhD. Habil. Eng. Florin MARIAȘIU, Asoc. Prof. PhD. Eng. Călin ICLODEAN, Asoc. Prof. PhD. Eng. Dan MOLDOVANU, Asoc. Prof. PhD. Eng. Nicolae Vlad BURNETE, Asoc. Prof. PhD. Eng. Nicolae CORDOȘ, PhD. Stud. Eng. Irina DUMA, Lect. PhD. Ec. Ioana SECHEL, Lect. PhD. Eng. Adela BORZAN, PhD. Stud. Eng. Thomas BUIDIN, PhD. Stud. Eng. Ioan SZABO, PhD. Stud. Eng. Horațiu CĂRĂUȘAN, PhD. Stud. Eng. Gabriel PRUNEAN, PhD. Stud. Eng. Tudor OARGĂ.

Representative projects

- ✓ **NetZeroCities** - partners along Cluj-Napoca Municipality - assists cities to overcome the current structural, institutional and cultural barriers they face in order to achieve climate neutrality by 2030.
- ✓ **OLGA**, Holistic Green Airport – an opportunity for innovation in smart and sustainable mobility (H2020) – ongoing;
- ✓ Elaboration of **opportunity study for the purchase of articulated electric buses** and buses with **fuel cells (Hydrogen)** in the Municipality of Cluj-Napoca;
- ✓ **Consultancy services** in the elaboration of the specifications for the purchase of **buses with fuel cells** and a **hydrogen production and distribution plant** in the Municipality of Cluj-Napoca;
- ✓ Consultancy services in the elaboration of the specifications for **the purchase of 12m electric buses and minibuses** for Alba Iulia and Ciugud Municipality.
- ✓ Consultancy services in the elaboration of the specifications for the **purchase of 12m electric buses** for Bistrița Municipality.
- ✓ The opportunity study for "Modernization of the local public transport system through the purchase of **ecological vehicles** in the Municipality of Bistrița"
- ✓ Consulting and Elaboration of specifications for the purchase of 18m **electric buses** – ongoing with Cluj-Napoca Municipality;
- ✓ **URBIVEL** - Advanced technologies for intelligent urban electric vehicles POC-A1-A1.2.3-G-2-15 Partnerships for knowledge transfer: **together with Porsche Engineering Romania, a battery of accumulators was**

developed; together with INOVO developed an electric car;

- ✓ Consulting services in the development of specifications for **electric buses, trams and trolleybuses for 24 cities** in Romania, European Investment Bank – Luxembourg
- ✓ Technical assistance for the purchase of 41 electric buses in the Municipality of Cluj-Napoca (15,000 Euros);
- ✓ Technical assistance for the purchase of 50 trolleybuses in the Municipality of Cluj-Napoca (18,870 Euro);
- ✓ Technical assistance for the purchase of 21 trams in the Municipality of Cluj-Napoca (15,000 Euros);
- ✓ Modernization of the Laboratory for testing, research and certification of internal combustion engines operating with biofuels (2.1 Million Euro);
- ✓ Comparative analysis of the performances of 13 fuels from Cluj-Napoca (40,000 Euros)

Significant results

Articles in ISI rated journals, in the past 5 years:

- ✓ Cărauşan, Horaţiu, Bogdan Ovidiu Varga, Dan Moldovanu, Florin Mariasiu, Gabriel Prunean, Ioan-Tudor Oargă, and Dan Doru Micu. **"Energy Efficiency Assessment of Sustainable Public Transport Solutions: a Comparative Analysis Fuel Cell vs Battery in Real Life Scenarios."** In 2023 58th International Universities Power Engineering Conference (UPEC), pp. 1-6. IEEE, 2023.
- ✓ Moldovanu, Dan, Florin Mariaşiu, Bogdan Ovidiu Varga, Adela Ioana Borzan, Horaţiu Cărauşan, and Dan Doru Micu. **"Analysis of the modes of operation of an electric vehicle on energy consumption."** In 2023 10th International Conference on Modern Power Systems (MPS), pp. 1-5. IEEE, 2023.
- ✓ Mariasiu, Florin, and Edmond A. Kelemen. **"Analysis of the Energy Efficiency of a Hybrid Energy Storage System for an Electric Vehicle."** Batteries 9, no. 8 (2023): 419.
- ✓ Mariasiu, Florin, Ioan Aurel Chereches, and Horia Raboca. **"Statistical Analysis of the Interdependence between the Technical and Functional Parameters of Electric Vehicles in the European Market."** Energies 16, no. 7 (2023): 2974.
- ✓ Szabo, Ioan, Liviu I. Scurtu, Horia Raboca, and Florin Mariasiu. **"Topographical Optimization of a Battery Module Case That Equips an Electric Vehicle."** Batteries 9, no. 2 (2023): 77.
- ✓ Oarga, Tudor, Bogdan Ovidiu Varga, István Barabás, and Gabriel Prunean. **"Review of Connected Autonomous Vehicles Platooning: Technologies, Challenges, and Future Directions."** Scientific Books of Abstracts 2 (2023): 83-83.
- ✓ Iclodean, Calin, Bogdan Ovidiu Varga, and Felix Pfister. **"Autonomous Vehicles Technological Trends."** Electronics 12, no. 5 (2023): 1149.
- ✓ Buidin, Thomas Imre Cyrille, and Florin Mariasiu. **"Parametric Evaluation of Thermal Behavior for Different Li-Ion Battery Chemistries."** Batteries 8, no. 12 (2022): 291.
- ✓ Cărauşan, H., B. O. Varga, D. Moldovanu, and A. A. Sirca. **"Comparative analysis of fuel cell and electric public for transport busses."** In IOP Conference Series: Materials Science and Engineering, vol. 1256, no. 1, p. 012041. IOP Publishing, 2022.
- ✓ **Energy Consumption Prediction of Electric Vehicle Air Conditioning System Using Artificial Intelligence** A Sagoian, BO Varga, S Solodushkin 2021 Ural Symposium on Biomedical Engineering, Radioelectronics
- ✓ **Battery thermal management systems: Current status and design approach of cooling technologies.**, Buidin, Thomas Imre Cyrille, and Florin Mariasiu. Energies 14, no. 16 (2021): 4879.
- ✓ Significant solutions:
- ✓ **Products and technologies: Tender books for electric buses; Tender books for trams; Tender books for trolleybuses; Opportunity studies regarding green transport and decarbonization if cities.**
- ✓ **Books:**
 - Iclodean, Călin, Bogdan Ovidiu Varga, and Nicolae Cordoş. **Autonomous Vehicles for Public Transportation.** Springer Nature, 2022.
 - Varga, Bogdan Ovidiu, Florin Mariasiu, Dan Moldovanu, and Calin Iclodean. **"Electric and Plug-In Hybrid Vehicles."** Cham: Springer International Publishing, (2015).
 - Varga, Bogdan Ovidiu, Calin Iclodean, and Florin Mariasiu. **Electric and hybrid buses for urban transport: energy efficiency strategies.** Cham, Switzerland: Springer International Publishing, (2016).

The offer addressed to the economic environment

Research & development	The team members also coordinate the ART TU Cluj-Napoca Association representing the Formula Student team of UTCN, currently being the only electric single-seater team in Romania (https://arttu-formulastudent.ro/). Research on electric buses, hydrogen buses, trams, trolleybuses (with papers and books to support this activity).
Consulting	The team members fully support the local Municipality and other Municipalities, and help with consulting on tender books, evaluation and reception of hydrogen production facility, electric buses, hydrogen buses, trams and trolleybuses.
Training	The team members support the Postgraduate Training Program: Specialist in the diagnosis, evaluation and operation of electric and hybrid vehicles, taught in Romanian (Specialist în diagnosticarea, evaluarea și exploatarea autovehiculelor electrice și hibride), within UTCN, the Department for Continuing Education, Distance and Low-Frequency Education.

Last update on February 2024