

Title: Optimization and Simulation of RES-integrated Electric Mobility Systems

Keywords:

- Electric Vehicles
- Sustainable Charging Hub
- Vehicle-to-X (V2X)
- Smart Charging
- Smart Warehouses
- Prosumer Buildings
- Energy Management System
- Active and Reactive Power Control
- Smart Mobility
- Automated Robots

Objective:

Electric mobility systems play a crucial role towards a sustainable and low-carbon future. The integration of Renewable Energy Sources (RESs) into these systems is essential to reduce greenhouse gas emissions and increase energy efficiency, presenting exciting challenges and opportunities. To fully exploit the potential of RES-integrated electric mobility systems, optimization and simulation models are required to ensure the efficient operation, planning and management of various components involved in these complex systems. Emphasis will be placed on sustainable charging infrastructure, Vehicle-to-X technologies, smart energy management and the interaction of electric mobility with smart warehouses, prosumer buildings and automated robots.

Topics of Interest:

1. Electric Vehicles (EVs) and Sustainable Charging Hubs:
 - a. Innovative charging technologies
 - b. Sustainable charging infrastructure optimal design and management
 - c. Integration of EVs into urban environments
2. Vehicle-to-X Technologies
 - a. Vehicle-to-Grid (V2G) and Vehicle-to-Home (V2H) applications
 - b. Bidirectional energy flow and grid support
 - c. Communication protocols for seamless integration
3. Smart Charging and Energy Management Systems:
 - a. Advanced charging algorithms
 - b. Real-time energy management strategies
 - c. Demand response in electric mobility
4. Smart Warehouses and Prosumer Buildings
 - a. Integration of electric mobility in warehouse logistics
 - b. Prosumer-oriented building design
 - c. Energy-efficient architectures for commercial spaces
5. Active and Reactive Power Control in Electric Mobility Systems:
 - a. Power control strategies for EVs
 - b. Grid stability and power quality considerations
 - c. Reactive power management in smart mobility networks
6. Smart Mobility and Automated Robots
 - a. Integration of autonomous vehicles and robots
 - b. Synergies between smart mobility and automation

- c. Role of artificial intelligence in optimizing mobility systems

Special Session Organizers:

- Stefano Bracco, DITEN - Department of Electrical, Electronic, Telecommunications Engineering and Naval Architecture, University of Genoa (email: stefano.bracco@unige.it)
- Matteo Fresia, DITEN - Department of Electrical, Electronic, Telecommunications Engineering and Naval Architecture, University of Genoa (email: matteo.fresia@edu.unige.it)