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**Special Issue on**

**ADVANCES IN AUTOMATION AND OPTIMIZATION FOR SUSTAINABLE TRANSPORTATION AND ENERGY SYSTEMS**

The need to attain a significant reduction in the emissions of greenhouse gas (and pollutants in general) has led to the necessity of introducing more clean and efficient technologies for the energy needs in different sectors such as transportation, smart grids and sustainable buildings. This creates new challenges for the development of models, methods and ICT based technologies. For example, sustainable transportation has posed attention on new possible combustibles (like biofuels, hydrogen, power for Electric Vehicles (EVs)) that in turn require a re-design of the overall supply chain and a new planning framework based on the integration with energy systems and smart grids. On the other side, smart grids include renewables, microgrids, Charging Stations (CSs) and distributed generation that require a careful management of the grid and the development of demand response programs. In a not so futuristic vision, EVs (private cars, buses, trucks, ships, etc.) will be widely used and new technologies will be present for charging stations, batteries and vehicles. Moreover, EVs will act as distributed energy resources, since they can provide regulation services and power supply, thus enabling the V2G (Vehicle-to-Grid) or the V2B (Vehicle-to-Building) operations. In this way, they would also absorb excess production of electricity from renewable sources, and return it to the grid in periods of peak loads. The number of EVs and CSs is increasing in the last years, but, unfortunately, wide usage of EVs may cause technical problems to the electrical grid (i.e., instability due to intermittent distributed loads), inefficiencies in the charging process (i.e., lower power capacity and longer recharging times), long queues and/or a bad use of CSs. Moreover, it is necessary to integrate the transportation and the electrical networks in order to plan the CSs installation over the territory, the schedule of vehicles and the optimal use of CSs.

In this framework, new models and methods, technologies and ICT platforms are needed for the integration of sustainable transportation and energy systems, as well as for users' management and involvement. In the recent literature, there is an increasing and significant interest on the use of optimization models for location of charging stations, charging operations (considering centralized and decentralized approaches), business models and EVs integration in smart grids, microgrids, biomass supply chain design for biodiesel production, hydrogen production management, harbors' electrification and electrical public buses management. Distribution Systems Operators, managers of cities and communities, companies in the transportation sector, providers of charging stations and energy services are now investing in the sustainable mobility through the development of new ICT platforms, tools and technologies for the integrated optimal management of transportation and energy systems.

The main aim of the proposed Special Issue is to bring together emerging models, methods and technologies for the optimal planning and management of sustainable transportation and energy systems, and on the integration of their related networks, with a specific focus on optimization and control methods within Energy Management Systems and ICT-based platforms. Interdisciplinary approaches related to smart grids,

scheduling, and transportation systems are encouraged. This Special Issue will also provide a forum of experts to disseminate their recent advances and views on future perspectives in the field.

Both methodological and application-oriented papers are welcomed. Submissions of scientific results from experts in academia and industry worldwide are strongly encouraged, as well as real case studies in cities. The specific topics of the Special Issue include (but not limited to):

- Optimal planning of charging stations in smart cities
- Sustainable transportation and mobility in smart cities
- Advanced ICT technologies for the communication between vehicles and charging stations
- ICT platforms for the management of electric vehicles in cities
- Electric vehicles integration in smart grids
- Smart Charging, Vehicle to grid (V2G) and vehicle to building (V2B)
- Demand response in the energy market
- Power management in charging stations
- Biofuels and biomass supply chain
- Hydrogen for sustainable vehicles
- Modelling and identification of batteries' state of charge and health
- Optimal scheduling of EVs in smart grids
- EVs fleets' optimal management
- Discrete event optimization for sustainable mobility
- Optimal traffic assignment in presence of electric vehicles
- Optimal routing and charging of green vehicles
- Satellite navigators for electric vehicles
- Electric vehicles' demand assessment
- Modelling and simulation of green vehicles's consumes
- Advanced control of vehicles and autonomous guide
- Emerging technologies for the reduction of costs in green vehicles
- Joint design of electrical and transportation networks
- Shared electric vehicles.

### **Important Dates**

- Paper submission deadline: April 30 2020
- Completion of the first round review: August 31 2020
- Completion of the second round review: November 30 2020
- Final submission due: January 2021
- Tentative publication date: April 30 2021

### **Guest Editors**

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### **Paper Submission**

All papers are to be submitted through the IEEE's Manuscript Central for Transactions on Automation Science and Engineering <http://mc.manuscriptcentral.com/t-ase>. Please select "Special Issue" under Manuscript Category of your submission. All manuscripts must be prepared according to the IEEE Transactions on Automation Science and Engineering publication guidelines <http://www.ieee-ras.org/publications/t-ase>. Please address inquiries to the Lead Guest Editor at [michela.robba@unige.it](mailto:michela.robba@unige.it)