
Guest editorial: Sustainable mobility applications, renewables and technology

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This special issue of the *International Journal for Computation and Mathematics in Electrical and Electronic Engineering (COMPEL)* includes selected papers presented during the 2022 Second International Conference on Sustainable Mobility Applications, Renewables and Technology (SMART) which has been remotely organized during the period: November 23–25, 2022.

The first SMART conference was organized in Kuwait, November 23–25, 2015. It was hosted by the Australian College of Kuwait (ACK), currently Australian University (AU), Kuwait. The SMART conference was launched within the celebration of the 50th anniversary of the IEEE Industry Application Society (IAS). Beyond IAS, SMART2015 was technically cosponsored by the IEEE Power Electronics Society (PELS) and the Power and Energy Society (PES). The sponsorship granted by the three IEEE societies enabled the publication of all presented papers in the IEEE Xplore Digital Library. Selected papers have been published in the IEEE Transactions on Industry Applications. The great success of SMART2015 has been achieved thanks to the commitment of all ACK staff, especially of its Founder and Chairman, Mr Abdullah Al-Sharhan, who passed away on 21st of April 2019. I take this opportunity to express my deepest condolences to his family and the AU one.

The universal aspect of its thematic makes the migration of the SMART conference around the world vital. Many trials have been made by the International Steering Committee to organize the SMART conference in North America and then in Europe. Finally, the Alumni Association of the University of Cassino and Southern Lazio (ALACLAM – Italy) has gratefully accepted to organize SMART2022 in Italy. It was financially cosponsored by ALACLAM and the IEEE Tunisia Section and technically cosponsored by the IEEE IAS, PELS, PES, Italia Section and Industrial Electronics Society Italia Chapter. I want to express my sincere gratitude to my fellow members of the International Steering Committee, led by Professor Zi Qiang Zhu.

Moreover, I would like to thank Professor Alessandro Silvestri, President of ALACLAM and General Chairman of SMART2022, and Professor Fabrizio Marignetti, Organizing Committee Chairman, for their professional management of the administrative and financial aspects, and their valuable contribution to the scientific one. Due to the COVID-19 pandemic, SMART2022 has been remotely organized using the WebEx Webinar Platform, which has been provided by the IEEE Tunisia Section. I take this opportunity to thank Professor Habib Kammoun for his support and valuable supervision in running the WebEx Webinar Platform.

The final program of SMART 2022 includes five plenary sessions. I would like to thank the plenary session speakers who are:

- (1) Professor Zi Q. Zhu, from the University of Sheffield, United Kingdom (UK). The title of his speech is “*Recent Advances in Innovative Field Modulation and Magnetic Geared Permanent Magnet Machines*”;
- (2) Professor Elisabetta Tedeschi from the Norwegian University of Science and Technology, Norway, and the University of Trento, Italy. The title of her speech is “*Offshore Energy Systems: Key Assets Towards Carbon Neutrality*”;
- (3) Professor Ayman El-Refaie, from Marquette University, USA. The title of his speech is “*Energy Conversion for a Sustainable Future Role of Electrical Machines and Drives*”;



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- (4) Professor Nicola Bianchi, from the University of Padova, Italy. The title of his speech is “*Alternative Permanent Magnet Motor in Automotive Applications*”; and
- (5) Doctor Rajesh Deodhar, from IMRA Europe S.A.S. UK Research Centre, UK. The title of his speech is “*Modern Innovations in Electric Machine Design and Applications for Sustainable Mobility*”.

The final program also includes 12 lecture sessions, namely:

- (1) LS1: Machine analysis and control;
- (2) LS2: Power electronic converters for sustainable applications (part 1);
- (3) LS3: Batteries, inductive and conductive charging infrastructures;
- (4) LS4: Sustainable mobility systems and techniques;
- (5) LS5: Sustainable energies harvesting;
- (6) LS6: Distributed energy systems;
- (7) LS7: Power electronic converters for sustainable applications (part 2);
- (8) LS8: Electric machine design;
- (9) LS9: Special machines;
- (10) LS10: National sustainability-oriented programs;
- (11) LS11: Green buildings; and
- (12) LS12: Sustainability in academia and industry.

From the final program, it appears that the major research trend in the area of sustainable mobility, energy and buildings covers the electric vehicles (EVs) drivetrains with emphasis on the electric propeller. Indeed, four among the five plenary sessions dealt with the design of new topologies of electric machines dedicated to sustainable applications, especially EVs. Furthermore, the German Aerospace Center (DLR), the highest contributor to SMART2022 with up to seven papers, has developed projects dealing with different types of light and heavy manned and unmanned road EVs powered by battery packs and fuel cells.

I am grateful to the COMPEL journal editorial staff, especially the editor-in-chief, Professor Jan K. Sykulski. Thanks to his cooperation and patience, my ninth involvement as a guest editor was a successful experience. I could not forget the priceless assistance of Mr Kevin Leslie Dsilva, Doctor Sherry Xu and Ms Summer Wang.

Last but not least, I am thankful to the members of the research laboratory on renewable energies and electric vehicles (RELEV) who were deeply involved in the manipulation of the WebEx Webinar Platform, namely, Prof. Imen Abdennadher, Dr Amal Souissi, Dr Wiem Zouari, Dr Roua Omri and Dr Anis Abdelkafi.

Finally, I want to express my thanks to a key person who managed, with great expertise, to conduct the parallel sessions remotely using the WebEx Webinar Platform, my son Ibrahim.

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