CPE-POWERENG 2023

Conference Participation Report

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In June 2023, I had the pleasure of presenting my research at the CPE-POWERENG 2023 conference on Compatibility, Power Electronics, and Power Engineering. The conference was organized by Tallinn University of Technology, IEEE Industrial Electronics Society, and IEEE Estonia Section. It took place at the Nordic Hotel Forum in the beautiful city of Tallinn, Estonia.

I am grateful to the Israeli Smart Transportation Research Center (ISTRC) for fully funding my participation in this conference. It was an amazing opportunity to share my research and learn from other experts in the field.

CPE-POWERENG stands as a prominent conference organized by the IEEE Industrial Electronics Society, dedicated to sharing new concepts, research, and ongoing projects in the domains of power electronics, renewable energy integration, power generation, transmission and distribution, power systems, electro-mechanical energy conversion, automation, and addressing EMC/EMI challenges. This conference serves as a platform for fostering high-quality research and facilitating fruitful exchanges between industry and academia, promoting scientific advancement, technological innovation, and professional collaboration. The

conference comprises notable elements such as Invited Talks, Regular Sessions, and Special Sessions.

In this report, I would like to highlight several noteworthy presentations delivered during the conference:

- Johann W. Kolar, "Materializing the Vision of "Flying Carpets" — Ultra-Lightweight/Efficient Power Electronics Enabling Future Urban Transport".

The presentation highlighted Urban Air Mobility (UAM) through electric vertical take-off and landing (eVTOL) aircraft. It discussed different eVTOL designs, essential enabling technologies like high-energy-density batteries and fuel cells, and the advantages of hybrid battery/fuel cell power supplies for high peak power and long-range operations. Additionally, it presented comparisons between eVTOLs and ground-based vehicles in terms of energy efficiency and greenhouse gas emissions, suggesting the potential for eVTOLs to play a niche role in sustainable urban transportation.

A significant focus was placed on smart EV chargers in the various presentations, among them:

- "A Comparison between Three-Phase Conventional Two-Stage AC-DC and Single-Stage Matrix Converter Approaches", Parham Mohseni et al.

Additionally, the subject of self-driving vehicles was also presented during the conference. For instance:

- "ISEAUTO Self-Driving Vehicle Dynamic Model Verification", Viktor Rjabtšikov et al.

Unfortunately, it is impossible to mention many other commendable presentations in this brief report.

I highly recommend the annual CPE-POWERENG conference to anyone interested in power electronics, particularly for innovative electric vehicle applications.

Finally, I thank the ISTRC for funding my participation in these necessary proceedings and look forward to fostering more collaborations.