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Power Electronics and Motion Control Conference

PEMC

Special Session on

"Megawatt Charging Stations (MCSs) for Heavy-Duty Vehicles (HDVs): advanced control architectures and power conversion topologies"

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Call for Papers

The electrification of Heavy-Duty Vehicles (HDVs) is crucial to achieve the zero-emission transport targets set around the globe. The deployment of Megawatt Charging Systems (MCSs) is necessary in that regard; however, significant challenges remain in terms of optimal system architecture, grid integration, cost, communication, standardization, availability, connectivity, smart charging strategies, booking system and reliability of the charging infrastructure.

This Special Session focuses on advanced research- and industry-oriented solutions for the efficient, cost-effective, and rapid deployment of multi-port MCSs. In particular, contributions are expected to address high-power and medium-voltage power conversion topologies, high-efficiency wide-bandgap (WBG) power modules, grid interaction and power quality aspects, advanced control, protection, and communication architectures, including Hardware-in-the-Loop (HiL) and digital validation. Furthermore, scalable multi-MW power cabinet designs, energy storage integration, and thermal management and reliability considerations are within the scope of the session.

Submissions Procedure:

All the instructions for paper submission are given at the conference website:
https://taltech.ee/en/PEMC2026/paper-submission

Topics of interest include but are not limited to

1	High-power and medium-voltage power converter topologies
2	Grid integration and power quality of ultra-fast charging systems
3	Wide-bandgap power modules for megawatt applications
4	Control, protection, and system stability of MCS infrastructures
5	Thermal management, reliability, and safety at MW charging levels
6	Energy storage and hybrid architectures for MCSs