



ANNUAL CONFERENCE OF THE IEEE INDUSTRIAL ELECTRONICS SOCIETY

Chicago | Illinois, November 3-6, 2024

Special Session on Sustainable Electrification Technologies For Buildings And Communities

Organized and co-chaired by:

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Call for Papers

Technical Outline of the Session and Topics:

Electrification is the backbone of the future design and renovation of buildings towards the highest energy performance. Intensive research in energy efficiency, energy-saving technologies and sustainable use of renewable energy is needed to enable emerging zero-emission buildings. Also, both old and new buildings benefit from the emergence of heat pumps and heat recovery ventilation, energy-efficient lighting and home appliances, EV charging and energy-efficient control. These technologies make buildings capable of demand-response, providing the flexibility needed for power grid stability. The unfolding paradigm shift to power-electronics-enabled DC residential microgrids will push further the energy performance limits of buildings by reducing residential electricity consumption by up to 30% compared to those with AC distribution. The DC microgrids feature an increased power delivery capacity, perfectly addressing many issues of last-mile electrification. Moreover, they easily adopt V2X technologies via DC charging, thus unlocking the untapped potential of EVs as mobile storage devices. Hence, the application of DC microgrid technology can significantly improve the resilience and demand-side flexibility of residential buildings and energy communities, thus making them future-proof and compatible with energy transition targets. This special session addresses the challenges of sustainable electrification of residential buildings and communities. We invite researchers from Academia and Industry to discuss technical issues, exchange novel ideas, explore enabling technologies, and present the latest R&D results on beneficial electrification, enabling sustainable and resilient building ecosystems with efficient energy generation and use.

Topics of the Session include, but are not limited to:

- Residential power generation and storage technologies
- Energy-efficient HVAC technologies and home appliances
- DC and hybrid AC/DC microgrid architectures for buildings and energy communities
- Power electronic converters for residential and community microgrids
- Residential EV charging, incl. V2G, V2H and V2L technologies
- Energy prosumer buildings and communities, provision of ancillary services for the grid
- Condition monitoring, intelligent protection, fault diagnosis and reliability
- Power management strategies, data acquisition, communication and intelligent control for residential and community microgrids
- Demand-response and energy flexibility
- Modeling of electrified buildings and communities and their components,
- Cyber security issues and security monitoring in residential and community microgrids
- Building electrification case studies, application scenarios and business models

Author's schedule:

Deadline for submission of special session papers	April 15, 2024
Notification of acceptance	June 10, 2024
Deadline for submission of final manuscript	July 01, 2024
Early submission is highly encouraged for early decision notifications!	

All the instructions for paper submission are included in the conference website:

www.iecon-2024.org

