

# CALL FOR PAPERS



## IEEE Transactions on Energy Conversion

(EIC – Alberto Tesserolo, Email: [atessarolo@units.it](mailto:atessarolo@units.it))

## IEEE Journal of Emerging and Selected Topics in Power Electronics

(EIC – Joseph Ojo, Email: [jojo@ntech.edu](mailto:jojo@ntech.edu))

# Joint Special Issue/Section on “Modeling and Control of Converter-Based Resources in Modern Power Systems”

Scheduled Publication Time: **August 2022**

- **The Theme:** Power electronics technology has been widely used to convert electrical energy at small and large scales, including grid integration of renewable energy sources and storage systems, power conversion at transmission and distribution levels, and power consumption with electronic loads such as data centers, motor drives, electric traction/propulsion, etc. The solid-state electronic power converters enable a full control of power, which brings the improved efficiency and increased flexibility for modern energy conversion and generation systems. The dynamic modeling of power converters becomes critical for exploiting the flexibility of converter-based resources in modern power systems. In contrast to legacy energy conversion systems based on electric machines, the wide-timescale control dynamics of power converters tend to cause stability and power quality issues across a wide frequency range, and the limited overloading capability of power semiconductor devices imposes constraints on the acceptable transient responses of converters, which may deteriorate the resilience of modern power systems under adverse conditions. Due to a wide range of time scales and frequencies of interactions, a term of electromagnetic transient stability has been recently introduced to analyze such phenomena. The power disruptions have been increasingly reported in field applications of power-electronic-based energy conversion systems, ranging from renewable-energy generation, high-voltage direct-current transmission systems, data centers, electric railway systems, and shipboard power systems. This Special Section/Issue will serve as a forum for reporting the technical challenges and recent advances in the dynamic analysis and control of modern and evolving energy conversion systems based on power electronics technology. Prospective authors are invited to submit original contributions and industry-focused papers on related topics of interest including, but are not limited to, the following:
- Report and analysis of real-world problems with converter-based resources in modern power systems, e.g. renewable energy systems, data centers, high-speed railway systems, and other emerging applications.
- Control-related super- and sub-synchronous interactions with converter-based resources
- Small-signal stability and power quality impacts of converter-based resources
- Grid-fault ride-through capability and transient stability of converter-based resources
- “Black-box” modeling and validation of power converters in the time- and/or frequency-domain
- Grid forming and supporting control technologies for converter-based resources
- Active and passive power filters and damping solutions for converter-based resources
- Standards, codes, best practices and requirements on stability and control of power-electronic-based energy conversion systems

### Manuscript Preparation and Submission

Prior to preparing a full paper, an extended abstract of 500-1000 words should be emailed in PDF form to the Guest Editors-in-Chief, Prof. **Xiongfei Wang** ([xwa@et.aau.dk](mailto:xwa@et.aau.dk)) and Prof. **Juri Jatskevich** ([jatskevich@ece.ubc.ca](mailto:jatskevich@ece.ubc.ca)). The abstract should concisely describe the main idea of the paper, and make a clear case regarding the novelty and technical contribution of the work. The submitted abstract must include the list of all co-authors, and identify the corresponding author and her/his affiliation for the purpose of future communications. The team of Guest Editors will evaluate the submitted abstracts for appropriateness and timeliness. Based on scope and suitability for this special issue, the authors will be invited to submit full papers, which will then undergo a peer review process. This time, the accepted papers will be hosted in IEEE Transactions on Energy Conversion. The full manuscripts will be submitted in electronic format through the Manuscript Central web site: <http://mc.manuscriptcentral.com/tec-pes>. On the submitting page #1, in the drop-down list for Manuscript Type, select: **Modeling and Control of Converter-Based Resources in Modern Power Systems**

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### Timetable

Deadline for submission of abstracts	August 31, 2021
Announcement of selected abstracts	September 30, 2021
Deadline for submission of full manuscripts	December 1, 2021
Completion of first round of review	February 28, 2022
Deadline for submission of revised papers	April 1, 2022
Manuscript final decision	June 1, 2022
Estimated publication date	July 1 (online) September (print), 2022

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