

## 2026 11th International Conference on Power Electronics Systems and Applications



### Important Dates

Submission Deadline	June 25, 2026
Notification Deadline	July 25, 2026
Registration Deadline	August 30, 2026

## Tutorial 2: Harnessing and Monetizing the Residual Capacities of Community IBRs for Coordinated Power Quality Management

The rapid proliferation of inverter-based resources (IBRs) in distribution systems has fundamentally transformed both the physical and economic landscape of power quality management. Traditionally, voltage quality issues such as voltage unbalance (VU) have been mitigated through dedicated compensation devices, which incur significant capital and operational costs. Recent research demonstrates that substantial residual capacity exists within community IBRs—capacity that remains underutilized during normal operation. Leveraging this latent flexibility enables a paradigm shift from hardware-intensive solutions toward software-defined, coordinated control strategies. In particular, network-wide optimization frameworks can unlock this residual capacity to mitigate power quality issues effectively, while respecting inverter constraints such as current limits and apparent power boundaries.

This tutorial presents a comprehensive framework for harnessing and monetizing the residual capacities of community inverter-based resources (IBRs) for coordinated power quality management in modern distribution systems. It first introduces network-level optimization methods that exploit unused inverter capacity to mitigate voltage quality issues such as voltage unbalance, while satisfying operational constraints. It then addresses dynamic performance challenges by presenting advanced current trajectory optimization techniques that ensure fast and stable control without exciting oscillatory modes. Finally, the tutorial explores market-based mechanisms, including Stackelberg game models, to enable economically efficient pricing and participation of distributed resources in voltage quality services. By integrating control, optimization, and economic coordination, this tutorial provides a holistic pathway for transforming latent IBR flexibility into both technical and financial value in future power systems.



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### Publication

**IEEE** The accepted and presented papers will be published in the **PESA Conference Proceedings**. Conference content will be submitted for inclusion into **IEEE Xplore** and indexed by **Ei Compendex** and **Scopus**, etc.

- ★ **PESA 2026 has been included in IEEE event list! (Read More)**
- ★ **All past PESA proceedings are archived in IEEE Xplore and indexed by Ei Compendex and Scopus.**



#### SCI Journal

Up to 20% of the outstanding PESA 2026 papers will be selected and recommended for review and potential publication in IAS Transactions and IAS Magazines (JCR-Q2).

### Submission Guidelines

Submission Link: <https://www.easychair.org/my/conference?conf=pesa2026>

Please select **Tutorial 2** after accessing the submission system.

Full Paper Template

Abstract Template

#### Note:

- ~Full Paper (**No less than 4 pages normally, 10 pages maximum. 5-6 pages are recommended**, including all figures, tables, and references)
- ~Abstract (Within 300 words)
- ~Official language is **English** in paper/abstract writing and presenting
- ~Download the Full Paper/Abstract Template for proceedings and read **guidelines**.

### Publication History

Accepted and presented papers of **10-year PESA** have been successfully published and indexed by **Ei Compendex & Scopus**.

**PESA 2024:** Hong Kong, China - ISBN: 979-8-3503-6580-1

**PESA 2022:** Hong Kong, China - ISBN: 978-1-6654-8668-2

**PESA 2020:** Hong Kong, China - ISBN: 978-1-7281-8890-4

**PESA 2017:** Hong Kong, China - ISBN: 978-1-5386-1387-0

**PESA 2015:** Hong Kong, China - ISBN: 978-1-5090-0063-0

**PESA 2013:** Hong Kong, China - ISBN: 978-1-4799-3491-1

More info, please visit: <https://www.icpesa.net/history.html>

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Conference Website: [www.icpesa.net](http://www.icpesa.net)

Special Session Page: <https://www.icpesa.net/tutorial-2.html>

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