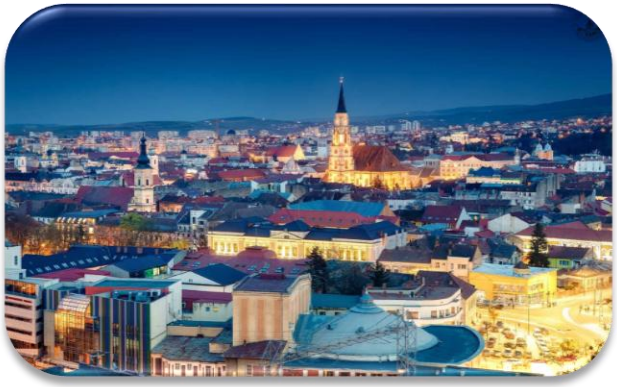
IFAC Symposium on Control of Power and Energy Systems

CPES 2027

June 10-12, 2027

Cluj-Napoca, Romania

FIRST CALL FOR PAPERS



ORGANIZED BY:

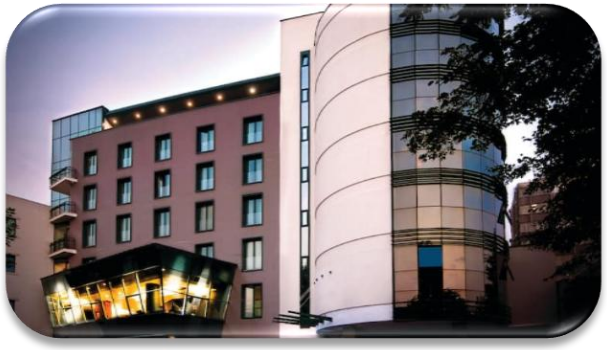
IFAC
INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL

SRAIT

TECHNICAL UNIVERSITY OF CLUJ-NAPOCA ROMANIA

VENUE

The IFAC Symposium on Control of Power and Energy Systems (CPES 2027) will be hosted at the **DoubleTree by Hilton Hotel Cluj – City Plaza**, a modern five-star conference venue located in the historic center of Cluj-Napoca, Romania.



Positioned within walking distance of the city's main cultural and academic landmarks, the hotel provides an ideal environment for international scientific meetings and networking activities. The venue offers modern conference facilities, elegant accommodation, wellness services, and excellent accessibility for guests travelling from abroad.

IMPORTANT DATES

Special Sessions Proposal:	15 December 2026
Abstract Registration:	26 January 2027
Draft Papers Submission:	2 February 2027
Notification of Acceptance:	6 April 2027
Camera-Ready Submission:	20 April 2027
Early Registration:	27 April 2027
Conference Days:	**10-12 June 2027**

DESCRIPTION

The IFAC Symposium on Control of Power and Energy Systems (CPES) is part of a well-established series of scientific events dedicated to the advancement of modeling, analysis, and control of modern energy systems. Organized under the auspices of IFAC, the CPES series has progressively evolved to reflect the rapid transformation of the energy sector. Previous editions of the symposium have successfully brought together researchers and practitioners working on power system modeling, control, and optimization. Its scope has been further expanded to include emerging topics such as smart grids, distributed energy resources, renewable energy integration, and cyber-physical energy systems. The rapid transformation of the energy sector, driven by the large-scale integration of renewable energy sources, electrification of transportation, digitalization, and the development of smart grids and smart cities, requires advanced control, optimization, and data-driven approaches.

The IFAC Symposium on Control of Power and Energy Systems (CPES 2027) will bring together researchers, engineers, practitioners, and industry experts working on modeling, analysis, optimization, and control of modern power and energy systems. CPES 2027 aims to provide a forum for presenting recent advances in theory, methods, tools, and applications for the control and management of complex energy systems. The symposium welcomes contributions addressing theoretical developments, computational methods, and industrial applications related to the monitoring, control, and maintenance of power and energy systems.

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TOPICS

✓ **Modeling, Analysis and Simulation of Power and Energy Systems** *(modeling and identification of power and energy systems •modeling of power networks and energy infrastructures •stability analysis and dynamic performance assessment •real-time simulation and digital twins for energy systems •uncertainty modeling and probabilistic energy system analysis)*

✓ **Control of Power Systems and Energy Networks** *(frequency and voltage control in modern power systems •wide-area monitoring, protection and control •distributed and hierarchical control architectures •robust, adaptive, and nonlinear control for power systems •control of inverter-dominated power systems)*

✓ **Smart Grids and Intelligent Energy Networks** *(smart grid architectures and control strategies •advanced monitoring and fault detection in smart grids •integration and coordination of DERs •self-healing and resilient smart grid architectures)*

✓ **Renewable Energy Systems and Microgrids** *(control of wind, solar, hydro and hybrid renewable systems •hybrid AC/DC power systems •microgrid operation, control, and optimization •stability and control of renewable-rich grids •integration of storage in smart microgrids)*

✓ **Energy Storage and Multi-Energy Systems** *(control and management of energy storage systems •battery management systems and lifecycle optimization •hydrogen systems and technologies •hybrid storage architectures)*

✓ **Optimization and Energy Management** *(optimal power flow and optimal scheduling •distributed optimization for energy systems •demand response and flexible load control •energy management systems •economic dispatch and market-based operation •stochastic and multi-objective optimization)*

✓ **Cyber-Physical Energy Systems** *(cyber-physical architectures for power systems •ICT integration and IoT-enabled energy systems •cybersecurity and resilience of smart grids •data platforms and digital infrastructures for energy networks)*

✓ **Artificial Intelligence and Data-Driven Energy Systems** *(machine learning for power system operation and forecasting •reinforcement learning for control and optimization •data-driven modeling and predictive maintenance • AI-based fault detection and diagnosis)*

✓ **Energy Systems for Smart Cities** *(urban energy systems and integrated infrastructures •energy communities and prosumer-based systems •integration of buildings, transportation and energy networks •smart city energy management platforms)*

✓ **Electrification of Transportation and Energy-Mobility Integration** *(electric vehicle integration in power systems •V2G/V2H/V2X technologies •optimization and control of charging infrastructures •power management in electrical vehicles)*

✓ **Emerging Technologies and Applications** *(multi-energy systems and sector coupling •edge computing and IoT in smart grids •digitalization and automation of energy infrastructures •AI based platforms for energy systems control)*