CEPSI
HONG KONG 2027
Transforming Energy with Intelligence

CALL FOR ABSTRACTS Manual

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1. Introduction

Transforming Energy with Intelligence

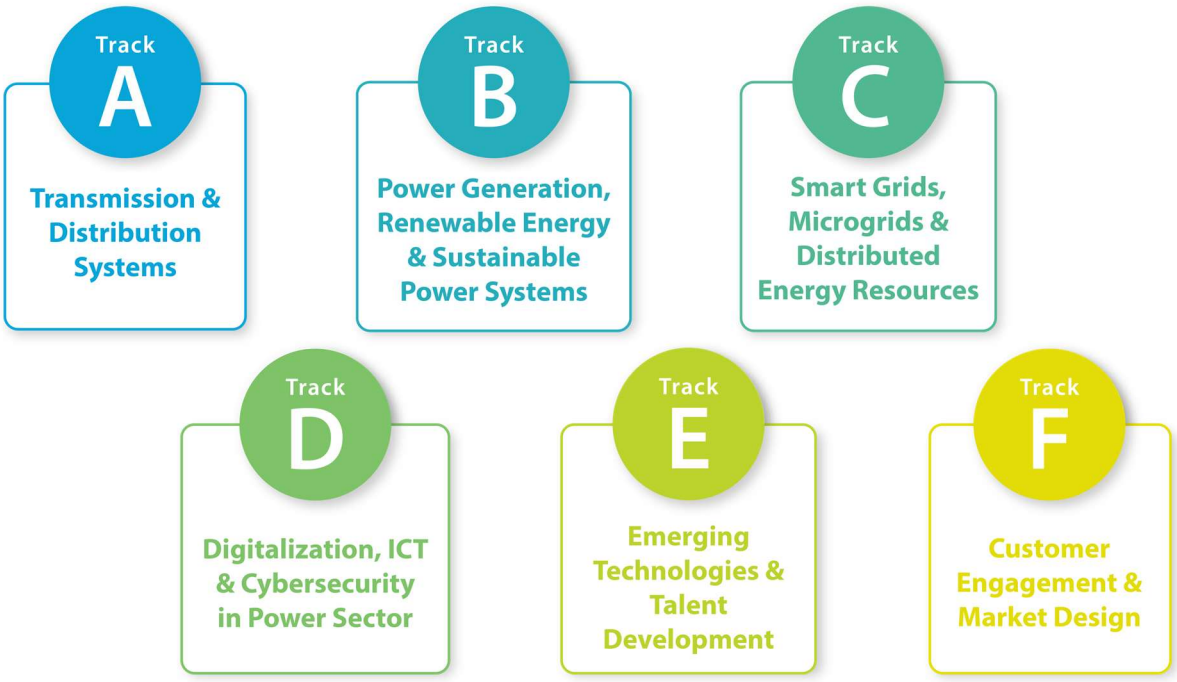
CEPSI 2027 will bring together energy professionals, industry leaders, policymakers, researchers and technology providers from across the Asia-Pacific region to exchange knowledge and shape a cleaner, smarter and more resilient energy future.

We invite original and practice-oriented abstracts that demonstrate how intelligent technologies, innovative approaches and cross-sector collaboration can address challenges and create value across the power and energy sector.

Selected authors will be invited to submit a full paper and present at the CEPSI 2027 Technical Sessions in Hong Kong, with the full papers published in the official conference proceedings in IEEE Xplore. Supported by IEEE Power & Energy Society, these sessions will serve as a premier platform for showcasing innovative research, exchanging practical insights, and exploring solutions to key challenges facing the evolving energy sector.

2. CEPSI 2027 Technical Tracks

Authors should select the technical track that best reflects the paper's primary focus. A corresponding topic code should also be selected from the detailed CEPSI 2027 technical track categories.



3. Technical Track Categories

The detailed topics under each technical track are listed below. Authors may select up to two tracks that most closely match the focus of their proposed paper. The following descriptions outline the intended scope of each topic to help guide your selection.

Track A

Transmission & Distribution Systems

A.1 Advanced Monitoring, Diagnostics, and Predictive Maintenance for Power Equipment

- Advanced monitoring, diagnostics, and predictive maintenance of power equipment, focusing on innovative technologies, remote monitoring, and data-driven approaches to enhance asset reliability across conventional and renewable systems.

A.2 High Voltage Direct Current (HVDC) and Multi-Terminal HVDC Systems

- Topics on HVDC engineering, planning, operation, and implementation, including advancements in multi-terminal HVDC systems and submarine cable technologies, highlighting their role in efficient long-distance power transmission.

A.3 Flexible AC Transmission Systems (FACTS) and Dynamic Line Rating Technologies

- Discuss the design, implementation, and benefits of FACTS and dynamic line rating technologies in enhancing grid stability, efficiency, and flexibility under varying load and power flow conditions.

A.4 Underground and Submarine Transmission and Distribution Networks

- Technical insights into the design, operation, and maintenance of underground and submarine transmission and distribution networks, including associated substations and integration challenges.

A.5 Managing Ageing Infrastructure and Asset Life Extension

- Technical strategies for the management of ageing transmission and distribution infrastructure, emphasising asset condition assessment, life extension methodologies, reliability enhancement, and cost-effective modernisation techniques.

A.6 Power System Resilience, Power Flow Control, Grid Stability, and Dynamic Equipment Ratings

- Innovative approaches to power flow control, grid stability, and dynamic equipment ratings, focusing on technologies and methodologies that enhance system reliability, operational flexibility, and efficient asset utilisation under varying network conditions.

A.7 Network Congestion Management and Grid Reinforcement Strategies

- Strategies for network congestion management and grid reinforcement, emphasising technologies and methodologies that enhance system reliability, operational flexibility, and efficient utilisation of transmission networks under evolving power system conditions.

Track B

Power Generation, Renewable Energy & Sustainable Power Systems

B.1 Conventional Generation Technologies and Modernization

- Advancements in conventional generation technologies and modernization, focusing on approaches that improve efficiency, reliability, and environmental performance of thermal, hydro, and other established power generation systems.

B.2 Generation Planning, Operation, and System Integration

- Approaches to generation planning, operation, and system integration, focusing on methodologies and tools that enhance system reliability, flexibility, and efficient coordination of diverse energy resources.

B.3 Low-Carbon Energy Production, Carbon Capture, Utilization, and Storage (CCUS)

- Technologies and strategies for low-carbon energy production and carbon capture, utilization, and storage, emphasising approaches that reduce emissions and improve the sustainability of power generation systems.

B.4 Energy Efficiency, Conservation, and Demand-Side Management Technologies

- Technologies and strategies for energy efficiency, conservation, and demand-side management, focusing on approaches that optimise energy use and enhance system efficiency and flexibility.

B.5 Circular Economy, Sustainable Materials, and Recycling in Power Equipment

- Approaches to circular economy, sustainable materials, and recycling in power equipment, emphasising methodologies that improve resource efficiency and reduce environmental impact.

B.6 Green Hydrogen, Fuel Cells, and Integration with Renewable Systems

- Advancements in green energy technologies, focusing on innovative solutions that support sustainable, low-emission power generation and system transformation.

B.7 Renewable Energy (Wind, Solar, Wave, Tidal, etc.) Technologies and Converter-Interfaced / Inverter-Based Resources

- Technologies for renewable energy generation and converter-interfaced / inverter-based resources, focusing on integration, control, and performance in modern power systems.

B.8 Large-Scale and Distributed Renewable Generation

- Technologies for large-scale and distributed renewable energy generation, focusing on approaches that enhance scalability, integration, and reliable operation within power systems.

B.9 Nuclear Energy Technologies

- Advancements in nuclear energy technologies, emphasising approaches that enhance safety, efficiency, reliability, and integration within low-carbon power systems.

Track C

Smart Grids, Microgrids & Distributed Energy Resources

C.1 Smart Grid and Microgrid Design, Operation, and Control

- Approaches to smart grid and microgrid design, operation, and control, focusing on technologies and methodologies that enhance system flexibility, reliability, and efficient energy management.

C.2 Microgrid Business Models, Community Energy Systems, and Peer-to-Peer Trading

- Strategies for microgrid business models, community energy systems, and peer-to-peer trading, emphasising approaches that enhance market efficiency, user participation, and local energy optimisation.

C.3 Energy Management Systems (EMS), Distribution Management Systems (DMS), and SCADA

- Technologies for EMS, DMS, and SCADA systems, focusing on advanced monitoring, control, and optimisation of power system operations.

C.4 Integrated, Self-Healing, and Resilient Grid Architectures

- Approaches to integrated, self-healing, and resilient grid architectures, emphasising technologies that enhance system reliability, adaptability, and rapid fault recovery.

C.5 Advanced Metering Infrastructure (AMI) and Smart Metering Technologies

- Technologies for advanced metering infrastructure and smart metering, focusing on data acquisition, system visibility, and improved operational efficiency.

C.6 Demand Response, Flexible Load Management, and Virtual Power Plants (VPPs)

- Strategies for demand response, flexible load management, and virtual power plants, focusing on approaches that enhance system flexibility and optimise resource utilisation.

C.7 Smart Buildings, Low-Carbon Infrastructure, and Demand Response

- Technologies for smart buildings and low-carbon infrastructure, focusing on energy efficiency, demand response, and integration with modern power systems.

C.8 Renewable Energy Integration, Grid-Forming Technologies and Grid Compatibility Challenges

- Approaches to renewable energy integration, including grid-forming technologies, focusing on system stability, compatibility, and reliable operation in inverter-dominated networks.

C.9 Electric Vehicles (EVs), Charging Infrastructure, and Vehicle-to-Grid (V2G) Technologies

- Technologies for electric vehicles, charging infrastructure, and vehicle-to-grid integration, focusing on grid interaction, flexibility, and efficient energy utilisation.

Track D

Digitalization, Information & Communication Technology (ICT), and Cybersecurity in Power Sector

D.1 Industry 4.0 and Digitalization

- Approaches to Industry 4.0 and digitalisation, focusing on technologies and methodologies that enhance automation, operational efficiency, and data-driven decision-making in power systems.

D.2 Telecommunications Infrastructure and 5G/6G Applications

- Technologies for telecommunications infrastructure and 5G/6G applications, focusing on reliable, high-speed communication to support advanced power system monitoring and control.

D.3 Cybersecurity Strategies, Threat Detection, and Incident Response

- Strategies for cybersecurity in power systems, focusing on threat detection, risk mitigation, and incident response to ensure secure and resilient operations.

D.4 Internet of Things (IoT) and Edge Computing for Power System Monitoring

- Technologies for IoT and edge computing, focusing on real-time monitoring, data processing, and enhanced visibility of power system operations.

D.5 Digital Twins, Simulation, and Virtual Reality (VR) / Augmented Reality (AR) Applications

- Approaches to digital twins, simulation, and VR / AR applications, focusing on modelling, visualisation, and optimisation of power system performance and asset management.

D.6 Blockchain and Decentralised Data Management

- Technologies for blockchain and decentralised data management, focusing on secure, transparent, and efficient data exchange in power systems.

D.7 Cloud Computing, Big Data, Open Data Platforms, and Energy Data Governance

- Approaches to cloud computing, big data, and data governance, focusing on scalable data management, analytics, and secure information sharing in power systems.

Track E

Emerging Technologies & Talent Development

E.1 Data Center and Grid Impact, and Electricity-Computing Collaboration for Data Center Integrated Grids

- Approaches to data centre-grid interactions and electricity–computing collaboration, focusing on technologies and strategies that optimise energy use, grid integration, and system efficiency.

E.2 Advanced Battery Technologies and Second-Life Battery Applications

- Technologies for advanced batteries and second-life applications, focusing on performance, lifecycle optimisation, and integration within power systems.

E.3 Advanced Energy Storage Technologies and Hybrid Systems

- Technologies for advanced energy storage and hybrid systems, focusing on flexibility, reliability, and efficient integration with power networks.

E.4 Artificial Intelligence (AI) and Machine Learning for Grid Optimization

- Applications of AI and machine learning for grid optimisation, focusing on data-driven approaches that enhance system performance, reliability, and operational efficiency.

E.5 Data Analytics, Predictive Maintenance, and Decision Support Systems

- Approaches to data analytics, predictive maintenance, and decision support systems, focusing on methodologies that enhance asset performance and operational reliability.

E.6 Quantum Computing and Its Potential Applications in Power Systems

- Exploration of quantum computing applications in power systems, focusing on optimisation, simulation, and complex problem-solving capabilities.

E.7 Workforce Development and Knowledge Management in Power Sector

- Strategies for workforce development and knowledge management, focusing on skills enhancement, knowledge transfer, and capability building in the power sector.

E.8 Operational Safety in Power Sector

- Approaches to operational safety in the power sector, focusing on methodologies and technologies that enhance risk management, system reliability, and safe work practices.

Track F

Customer Engagement & Market Design

F.1 Customer-Centric Energy Efficiency and Demand-Side Management Solutions

- Strategies for customer-centric energy efficiency and demand-side management, focusing on approaches that enhance energy optimisation, user engagement, and system flexibility.

F.2 Innovative Retail Electricity Models and Customer Engagement Strategies

- Approaches to innovative retail electricity models and customer engagement, focusing on solutions that enhance market participation, customer experience, and service delivery.

F.3 Integrated Customer Energy Management Platforms and Smart Home Technologies

- Technologies for integrated customer energy management platforms and smart home systems, focusing on energy optimisation, automation, and user-centric control.

F.4 Digital Platforms for Energy Trading, Flexibility Markets, and Demand Response

- Technologies for digital energy trading platforms and flexibility markets, focusing on enabling demand response, market efficiency, and distributed resource participation.

F.5 Tariff Design, Incentives, and Dynamic Pricing Mechanisms

- Strategies for tariff design, incentives, and dynamic pricing, focusing on approaches that promote efficient energy use and support market responsiveness.

F.6 Social Equity, Energy Access, and Consumer Protection in Power Markets

- Approaches to social equity, energy access, and consumer protection, focusing on inclusive, fair, and sustainable power market development.

F.7 Aggregators and New Market Participants in Power Systems

- Strategies for aggregators and emerging market participants, focusing on their roles in enhancing system flexibility, market integration, and distributed energy resource utilisation.

4. Important Dates

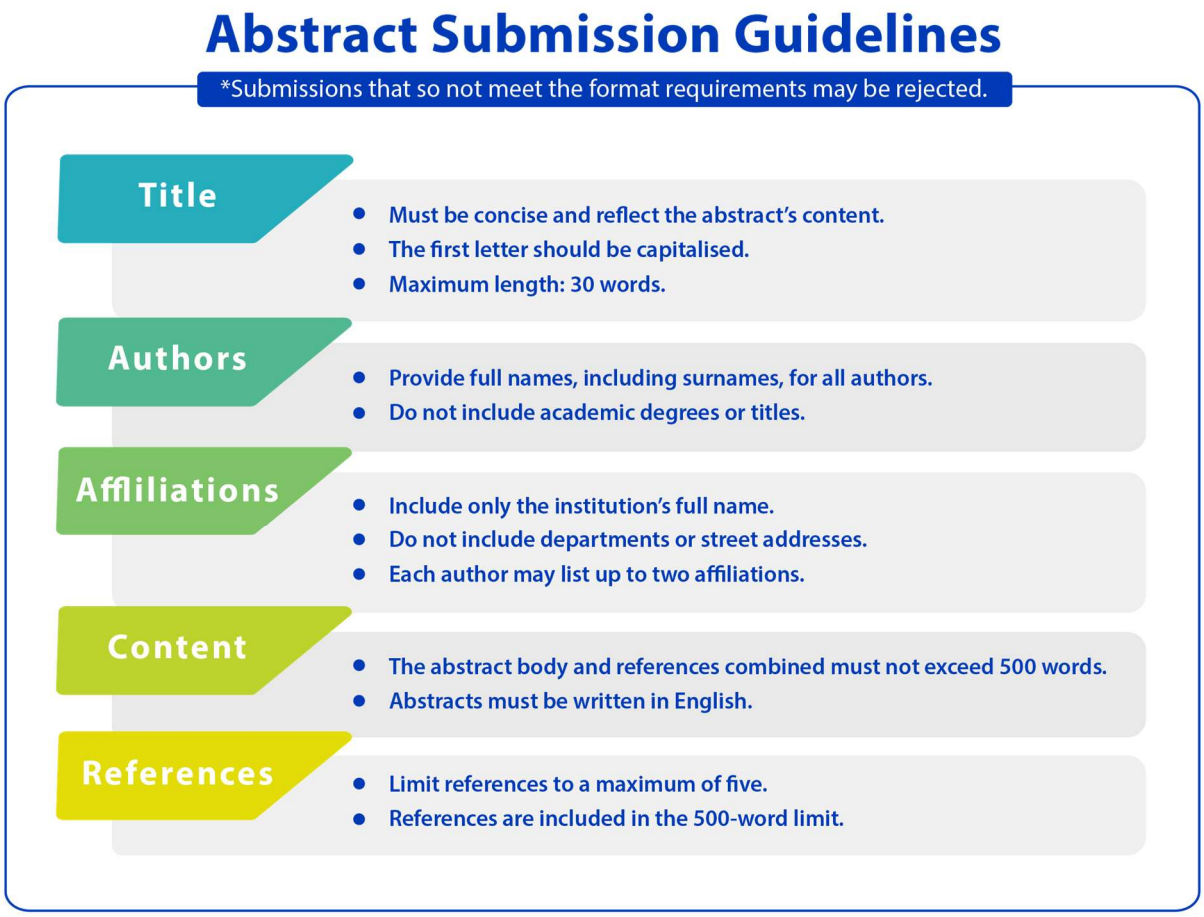
All deadlines are stated in Hong Kong Time (GMT+8). Authors are encouraged to submit in advance of the applicable deadline.



5. Conference Paper Technical Committee

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6. Abstract Submission Guidelines



Information last updated on 30 October 2026. For the latest updates, please visit the AESIEAP website.