

National Conference on High Penetration of Renewable Energy in the Indian Power Grid – Challenges & Mitigation

Focus on Protection and Related Issues

Under the aegis of CIGRE NSC B5 on Protection and Automation

Date: 26th – 27th November 2026

Venue: CBIP CENTRE OF EXCELLENCE (CoE), Gurugram



ORGANIZED BY



IN ASSOCIATION WITH



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ANNOUNCEMENT

CIGRE India, in association with the Central Board of Irrigation & Power (CBIP), is organising a National Conference on “High Penetration of Renewable Energy in the Indian Power Grid – Challenges & Mitigation” (Focus on Protection and Related Issues) on 26-27 November 2026 at CBIP CENTRE OF EXCELLENCE (CoE), Gurugram. The Conference is supported by the Central Electricity Authority and is organised under the aegis of CIGRE National Study Committee B5 – Protection and Automation.

BACKGROUND

Protection and automation systems are central to the safe, secure and reliable operation of the power system. Protection must detect faults promptly and isolate only the faulted element, keeping the rest of the grid in service. This depends on two basic attributes: dependability, that is, operating correctly when required and security, that is, not operating when operation is not intended. Backup protection and breaker failure schemes are provided on critical elements so that faults are cleared even if the main protection or circuit breaker fails.

India's electricity system is changing quickly. The country is working towards 500 GW of non-fossil generation capacity by 2030, with solar and wind as the largest contributors, supported by hydro, storage and new inter-regional transmission corridors, including HVDC. Much of this capacity is concentrated in large RE complexes connected through pooling stations and long EHV lines, often in areas of low system strength.

Inverter-based resources behave very differently from synchronous generators during faults. Their fault current is limited and shaped by control software, system inertia is reduced, power flows change rapidly and weak-grid conditions become more common. These factors directly affect the performance and coordination of conventional protection schemes. Grid events in which large blocks of RE generation have disconnected during transmission faults have shown that protection settings, ride-through capability and grid code compliance must be addressed together.

Meeting these challenges requires a review of existing protection philosophies, adoption of advanced protection, monitoring and communication technologies, and close coordination among utilities, system operators, regulators, equipment manufacturers and RE developers.

ABOUT THE CONFERENCE

CIGRE India and CBIP have organised conferences, seminars and technical programmes on power system protection and automation for many years, with strong participation from utilities, manufacturers, consultants, researchers and academia in India and abroad. This Conference continues that series, with a specific focus on the protection challenges of a renewable-rich grid.

Objectives

- Review the impact of high RE penetration on the performance of protection and automation systems
- Share field experience, event analyses and lessons learnt from Indian and international grids
- Discuss proven and emerging technologies and their suitability for Indian conditions
- Identify practical recommendations for protection philosophy, settings, testing and grid code compliance

CALL FOR PAPERS, PRESENTATIONS & CASE STUDIES

CIGRE India and CBIP invite technical papers, presentations and field-based case studies from power utilities, system operators, RE developers, manufacturers, protection and automation specialists, consultants and academic and research institutions. Contributions are invited in the following areas:

1. Integration of Renewable Energy Sources in Power Systems

- Grid code compliance: fault ride-through, reactive and negative-sequence current injection
- System strength, short-circuit ratio and weak-grid operation of RE pooling stations
- Grid-forming inverters, synchronous condensers, STATCOMs and battery energy storage
- EMT modelling, model validation and connection studies

2. Advanced Protection Technologies for Renewable-Rich Grids

- Line differential, traveling-wave and incremental-quantity based protection
- Adaptive protection and dynamic setting groups
- Protection of series-compensated lines and lines near HVDC and FACTS devices
- IEC 61850 digital substations, process bus and virtualised protection

3. Cybersecurity Challenges in Renewable-Rich Grids

- Application of IEC 62351, IEC 62443 and CEA cybersecurity guidelines
- Secure remote access to RE plants, inverters and IEDs
- OT network monitoring, incident response and supply-chain security

4. Fault Detection, Classification and Location in Renewable-Rich Grids

- Traveling-wave and PMU-based fault location
- Faults in RE collector systems and pooling substations
- Disturbance recorder data analytics and AI/ML-based fault classification

5. Protection Coordination and Selectivity Challenges

- Performance of distance, directional and phase-selection elements with IBR infeed
- Coordination of RE plant protection with ride-through requirements
- Voltage, frequency and loss-of-mains protection settings
- Special protection schemes / system integrity protection schemes for RE corridors

6. Case Studies and Lessons Learnt from Protection System Failures

- Grid events involving tripping of large blocks of RE generation
- Relay maloperations and failures to operate: root-cause analysis
- Post-event analysis, corrective actions and compliance monitoring

7. Emerging Trends in Protection and Automation

- Wide-area monitoring, protection and control (WAMPAC)
- Protection for HVDC, multi-terminal DC and hybrid AC/DC systems
- Digital twins, hardware-in-the-loop testing and automated setting management
- Precision time synchronisation and communication for protection

Preference will be given to practical field experience, real-life case studies, innovative solutions and emerging technologies that improve the reliability, security and resilience of the Indian grid as RE penetration increases.

SUBMISSION GUIDELINES

- Send the title of the paper / presentation with a brief abstract at the earliest
- Submission of full-length paper / presentation: 15 November 2026
- Papers must be written in English
- Selected contributions will be presented in the technical sessions of the Conference

WHO SHOULD PARTICIPATE

Engineers and managers from transmission and distribution utilities, system operators (national, regional and state load despatch centres), RE and storage developers, protection and automation specialists, equipment manufacturers and system integrators, consultants, regulators, and researchers and faculty working in power systems.

WHY ATTEND

- Hear from utilities, system operators, CEA and industry experts on the latest protection challenges in RE-rich grids
- Learn from real grid events, case studies and field experience
- Understand international practices and emerging technologies and their application in India
- Present your work to a focused technical audience and interact with peers and decision makers

SPECIAL ATTRACTION

Specialised Tutorials: A dedicated 45-minute tutorial session on each day of the Conference will be conducted by experts, focusing on emerging technical issues in RE-rich grids. The tutorials will cover topics such as Protection Aspects in RE-Rich Grids and Impact of FACTS Devices on RE-Rich Grids, along with other contemporary and relevant technical areas.

CALL FOR PARTICIPATION

The transition to a renewable-rich power system calls for shared technical understanding and close collaboration among all stakeholders. CIGRE India and CBIP invite all concerned professionals and organisations to participate in the Conference, share their expertise and field experience, and contribute to practical solutions for a secure and resilient grid.

LANGUAGE

The papers and presentations should be in English.

REGISTRATION FEE

All those who wish to participate or present paper in the conference are expected to register in advance by sending the details through email to the organizers along with payment of registration fee as indicated under:

Details	Fees (per participant) (Indian Rs.)*
Non – Member fee	14,000
Discounted fee for members of CBIP / CIGRE	12,500

***GST @ 18% shall be charged extra.**

Please arrange to furnish the details like UTR, Organization name, etc. to CIGRE-India / CBIP Sectt. after making the online payment at the earliest possible.

The Registration fee covers the registration kit, tea/coffee/lunch during the conference. The Conference is non-residential. Participants will have to make their own arrangement for travel, boarding and lodging, etc.

PAYMENTS

GST @ 18% shall be charged extra. GST No. 07AAAZ0260A1Z1

All payments be made through DD/ cheque at par in favour of “THE COMM FOR INTL CONF ON LHVES”, Bank Name & Branch : Canara Bank, Delhi Diplomatic Enclave, Branch Address :7/48, Malcha Marg, Chanakyapuri, New Delhi-110021

Account No. : 0157101031491; IFSC code of branch : CNRB0000157;

Swift Code : CNRBINBBFD; MICR No. : 110015007

VENUE and Date

The conference will be held on 26-27 November, 2026 at CBIP CENTRE OF EXCELLENCE (CoE), Plot No. 21, Institutional Area, Sector 32, Gurugram, Haryana - 122001 (Thursday and Friday). The conference timings will be 10.00 AM to 5.30 PM on both the days. The registration will start at 9.00 AM on 26th November 2026.

SPONSORSHIP OPPORTUNITIES

The Conference provides an effective opportunity for sponsoring companies to promote their products/services to a focused audience, besides networking with engineers of utility, manufacturers and academic institutions during tea/coffee and lunch intervals. Sponsors are assured of full visibility with printing of their names on proceedings, banners and other publicity material related to Conference and will have the privilege of distribution of their product's pamphlets/catalogues during the Conference. Sponsors will also have the privilege of sending delegates exempted from payment of registration fee as indicated hereunder:

Platinum Sponsor : Rs. 3,50,000/-	Gold Sponsor : Rs. 2,50,000/-	Silver sponsor : Rs. 1,50,000/-
• 10 delegate passes for participation in the Conference • Speaking Opportunity • Invitation to the key person of the organization as special invitee during Inaugural session • Circulation of Company Literature during the event • Company logo on main backdrop and other banners • Complimentary Advertisement in the Key Journal Published immediately after the event covering report of the event. • Announcement -Thanking sponsor	• 05 delegate passes for participation in the Conference • Company logo on main backdrop and other banners • Circulation of Company Literature during the event • Announcement - Thanking sponsor • Complimentary Advertisement in the Key Journal Published immediately after the event covering report of the event.	• 03 delegate passes for participation in the Conference • Company logo on main Backdrop • Announcement – Thanking sponsor

KEY CBIP OFFICIALS

Dr. Deepak Saigal, Secretary, CBIP

Shri Anoop Singh, Director (Energy), CBIP

Shri Sanjeev Singh, Principal Advisor (Energy), CBIP

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26–27 November 2026
CBIP Centre of Excellence (CoE)
Gurugram, Haryana

REGISTRATION FORM

(To be filled in block letters preferably)

Delegate _____
(Surname) (First Name)

Designation _____

Name of Organisation _____

Mailing Address

City _____

State _____ PIN _____

Phone

E-mail

Dated _____

Signature

For more details please contact Event Secretariat

Address for Correspondence: Central Board of Irrigation and Power,
Malcha Marg, Chanakyapuri, New Delhi – 110021, Phone: 011-26115984/2687 6229/2688 0557
Website : www.cbip.org

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Note:

- Photocopies of the registration form can be used for additional requirements, if any.
- Spot registration facilities will also be available, provided the prior information is received.