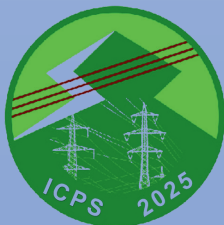




భారతీయ సాంకేతిక విజ్ఞాన సంస్థ హైదరాబాద్
भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad



ग्रिड-इंडिया
GRID-INDIA



11th International Conference on Power Systems

07-09 Dec 2025

*“Leveraging Smart Technologies for Clean, Resilient, and
Secure Power Systems”*

**Program
Booklet**

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About ICPS 2025

The International Conference on Power Systems (ICPS) 2025, themed “Leveraging Smart Technologies for Clean, Resilient, and Secure Power Systems”, aims to explore the transformative role of emerging technologies in shaping the future of global power systems. As the power sector enters a new era driven by the need for enhanced sustainability, resilience, and security, ICPS will provide a unique forum for researchers, engineers, and policymakers from academia, industry, and practice to engage in thought-provoking discussions and collaborative efforts. The 11th edition of ICPS, jointly organized by Indian Institute of Technology (IIT) Hyderabad and SRLDC Grid-India, will be held from December 7–9, 2025, at IIT Hyderabad, India. It will focus on the integration of renewable energy sources, smart grid innovations, and AI-driven solutions for grid management.

ICPS serves as a leading biennial forum for experts to exchange knowledge and explore the latest developments across a wide range of power systems domains, with key tracks including Smart Grid and Power Systems, Smart Generation, Transmission & Distribution, Renewable Energy Systems, and Artificial Intelligence and Data Analytics. As part of its mission to advance global collaboration, the conference will address critical issues such as grid resilience, protection, stability, optimization, and the role of emerging technologies like electric vehicles and power electronics in future power systems.

The conference is technically co-sponsored by the IEEE Hyderabad Section, IEEE Uttar Pradesh Section, and the IEEE PES/IAS/PELS Joint Chapter of the Hyderabad Section (CH10103). Additionally, ICPS 2025 is financially co-sponsored by the IEEE Uttar Pradesh Section. All accepted, registered and presented papers will be submitted to IEEE Xplore for possible publication subject to fulfilling the IEEE eligibility criteria.

On behalf of the Steering Committee and the Organizing Committee, we cordially invite you to join us in Hyderabad for ICPS 2025. With a mix of technical sessions, interactive panel discussions, and tutorials by leading experts, this conference will provide valuable opportunities for networking, learning, and collaboration. We look forward to welcoming you to this exciting event as we work together to shape the future of power systems.

About IIT Hyderabad

Indian Institute of Technology Hyderabad (IITH) is a premier institute of science and technology established in 2008. IITH has been consistently ranked in the top 10 institutes in India for Engineering according to NIRF, making it one of the most coveted institutes for science and technology in the country. The very foundation of IIT Hyderabad is based on research and innovation. The vibrant research culture is evident from the number of patents, technologies and publications that IITH produces consistently every year.

IITH's campus is equipped with modern facilities and has developed meaningful partnerships with industry and academic institutions around the world, supporting advancements in various technological areas.



About Department of Electrical Engineering

The Department of Electrical Engineering (EE) at IIT Hyderabad offers a vibrant environment for undergraduate and postgraduate education and research in many areas of Electrical Engineering. We are a team of 38 faculty, 621 students (320 BTech, 145 MTech, and 156 PhD) and 16 staff members engaged in cutting-edge research and teaching in several frontier areas of Electrical Engineering.

We are delighted to host ICPS 2025 at IITH and invite you to discover the campus. The Department of Electrical Engineering (EE) is central to the institute's academic and research initiatives, offering a variety of undergraduate and postgraduate programs. The department is engaged in cutting-edge research across several specialized fields, including Power Systems, Power Electronics, Smart Grids, Microelectronics, VLSI, Communications, Signal Processing, as well as emerging areas like Artificial Intelligence (AI) and Machine Learning (ML).

We look forward to welcoming you to IITH for ICPS 2025 and invite you to explore the campus, where you can experience the vibrant academic atmosphere that supports innovation and practical approaches in electrical engineering.



About Power Electronics and Power Systems (PEPS) Group

The Power Electronics and Power Systems (PEPS) Group is dedicated to advanced research in power conversion, electric drives and control, multilevel inverters, and smart grids. The group focuses on a broad range of applications ranging from consumer electronics and household appliances to traction drives, microgrids, renewable energy integration, and electric vehicle (EV) charging infrastructure. The group comprises a vibrant research team of 7 Faculty members, 21 Ph.D. scholars, 25 M.Tech. students, 2 Junior Research Fellows, 1 B.Tech. Intern, and 3 Technical Staff members.

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Day 1: Sunday, 7th Dec 2025

| Time | Activity | |
|---------------|--|--|
| 08:00 – 09:00 | Registration & Breakfast | |
| 09:00 – 10:30 | Tutorial 1: Dr. Kaliappan Perumal, Additional Director, CPRI | Tutorial 2: Prof. Gurunath Gurralla, IISC |
| 10:30 – 10:45 | Tea Break | |
| 10:45 – 12:15 | Tutorial 3: Prof. Abhijit Abhyankar, IITD | Tutorial 4: Prof. Gurunath Gurralla, IISC |
| 12:15 – 13:15 | Lunch | |
| 13:15 – 14:45 | Tutorial 5: Dr. Mital Kanabar (Canada) | Tutorial 6: Prof. Sarasij Das, IISC |
| 14:45 – 15:00 | Tea Break | |
| 15:00 – 16:30 | Tutorial 7: Dr. Pamulaparthi, Balakrishna (GE Vernova) | Tutorial 8: Prof. Ramakrishnan Maheswari, IMEE, University of Southern Denmark |
| 16:30 – 16:45 | Buffer | |
| 16:45 – 17:45 | Inagural Function of the 11th International Conference of Power Systems (ICPS) 2025 @ LHC - 05 | |
| 17:45 – 18:45 | Inaugural Keynote (Keynote 1): Shri. Samir Saxena, CMD Grid Controller of India | |
| 18:45 – 19:00 | Welcome Drinks | |
| 19:00 – 20:00 | Awards Ceremony Hingorani Awards + GIPSA Awards @ LHC - 05 | |
| 20:00 – 21:00 | Inaugural Dinner | |

Day 2: Monday, 8th Dec 2025

| Time | Activity | | | | | |
|---------------|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| 08:00 – 09:00 | Registration & Breakfast | | | | | |
| 09:00 – 10:30 | Paper Session 1 | Paper Session 2 | Paper Session 3 | Paper Session 4 | Paper Session 5 | Paper Session 6 |
| 10:30 – 10:45 | Tea Break | | | | | |
| 10:45 – 11:45 | Keynote Session 2: Shri. Vinoth Kumar K., Principal R&D Engineer, Hitachi Energy Technology Services Private Limited | | | | | |
| 11:45 – 12:00 | Buffer | | | | | |
| 12:00 – 13:00 | Keynote Session 3: Prof. Mohammad Rihan, Director General of NISE, MNRE | | | | | |
| 13:00 – 14:00 | Lunch | | | | | |
| 14:00 – 15:00 | Keynote Session 4: Dr. Rahul Walawalkar, President, Netzero Energy Transition Association (NETRA) | | | | | |
| 15:00 – 16:00 | Keynote Session 5: Dr. Soonee Sushil Kumar, Former CEO POSOCO | | | | | |
| 16:00 – 16:15 | Tea Break | | | | | |
| 16:15 – 17:45 | Poster Session | | | | | |
| 17:45 – 18:45 | Special Session: Bringing Together Perspective from India and neighbouring countries on the future of system operation and cross-border cooperation Chairman: Shri S. K. Soonee, Ex-CEO, POSOCO | | | | | |
| 18:45 – 19:00 | Buffer | | | | | |
| 19:00 – 20:00 | Cultural Event @ LHC - 05 | | | | | |
| 20:00 – 21:00 | Gala Dinner | | | | | |

Day 3: Tuesday, 9th Dec 2025

| Time | Activity | | | | | |
|---------------|--|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| 08:00 – 09:00 | Registration & Breakfast | | | | | |
| 09:00 – 10:30 | Paper Session 7 | Paper Session 8 | Paper Session 9 | Paper Session 10 | Paper Session 11 | Paper Session 12 |
| 10:30 – 10:45 | Tea Break | | | | | |
| 10:45 – 11:45 | Keynote Session 6: Dr. Palak Parikh Kanabar, GE Grid Solutions (Canada) | | | | | |
| 11:45 – 12:00 | Tea Break | | | | | |
| 12:00 – 13:00 | Special Session: Woman in Engineering (WIE). Chairman: Dr. Sriidevi, Director General, Central Power Research Institute | | | | | |
| 13:00 – 14:00 | Lunch | | | | | |
| 14:00 – 15:00 | Keynote Session 7: Shri Dillip Kumar Guru, Sify Technologies Limited, Singapore | | | | | |
| 15:00 – 16:00 | Special Session: Industrial Panel Discussion (IPD). Chairman: Dr. Ramakrishna Kappagantu, Chief Technology Advisor, Eficaa EnSmart Solutions Pvt. Ltd. | | | | | |
| 16:00 – 16:15 | Tea Break | | | | | |
| 16:15 – 17:45 | Paper Session 13 | Paper Session 14 | Paper Session 15 | Paper Session 16 | Paper Session 17 | Paper Session 18 |
| 17:45 – 18:30 | Valedictory Keynote (Keynote 8): Shri M. K. Ramesh, Chief General Manager (CGM), SRLDC, Grid India. | | | | | |
| 18:30 – 19:00 | Valedictory Function (Awards) @ LHC - 05 | | | | | |
| 19:00 – 19:30 | High Tea | | | | | |

Keynote Speakers

Steering towards Green and Resilient Grid: Insights from Power System operations

Speaker: Shri. Samir Saxena

Chairman & Managing Director, Grid Controller of India

Venue: Lecture Hall Complex - 05

Biography: Shri. Samir Chandra Saxena is the Chairman and Managing Director (CMD) of Grid Controller of India Limited (GRID-INDIA), Since 1 st May 2025, formerly known as Power System Operation Corporation Limited (POSOCO). Prior to this assignment, he was Director (Market Operation), in the same company from July 2024. He is a Fellow of the Institution of Engineers (India), Senior Member IEEE and Distinguished Member CIGRE. He obtained his Bachelor's Degree in Electrical Engineering from Aligarh Muslim University and MBA from Indian Institute of Technology, Delhi and has also completed a Certificate Course in "Regulation of Power Sector" from the Florence School of Regulation, Italy. Shri Saxena has about 30 years of experience in diverse areas comprising of Power Market Operations, Power System Operations, Power Exchange Operations, Electricity Market Design, Regulatory Affairs, Integration of Renewables, REC markets design & operations, and SCADA-IT system and has also served as the head of National Load Despatch Centre (NLDC). Shri Saxena has been actively associated with the development of the regulatory framework for integration of Renewables, implementation & development of Ancillary Services, Fast Response Ancillary Services and Market Based Ancillary Services. He was responsible for the implementation of the Real Time Market (RTM) and Integrated Day Ahead Market (including Green Day Ahead Market). He has been associated with the implementation of Security Constrained Economic Despatch (SCED) at inter-state level in India. He also led a pilot study for intra-state SCED implementation with multiple states. He has led the team for implementation of the National Open Access Registry (NOAR), a one stop portal for administration of the Short Term Electricity Market in India. In 2023, as Head of the National Load Despatch Centre, he has led the implementation of Market Based Ancillary Services and the implementation of IEGC 2023. He has also been associated with the capacity building of Power System Operators and the System Operator Certification Programs. He represents India in the CIGRE Study Committee C5 on Electricity Markets and Regulation and has many publications related to his work areas in various national and international journals & conferences.



Keynote Speakers

VSC HVDC- A Game Changer for Integration of Renewables

Speaker: Shri. Vinoth Kumar K.
Principal R&D Engineer,
Hitachi Energy Technology Services Private Limited
Venue: Lecture Hall Complex - 05

Biography: Shri Vinoth Kumar K. is the global technical lead for future MTDC Grids and DC Breakers. He has wealthy experience in the area of future HVDC technologies like DC GRIDS, DC BREAKER, AC to DC Transmission refurbishment, Hybrid DC grids with a mix of VSC and LCC HVDC terminals and their series configurations, line fault locators. He also has the additional role of a project manager playing the leadership role towards implementation of organizational strategies to achieve the business goals. He was a working group member for preparing IEEE P2800.2, IEEE P3105, and CIGRE B4.96 Standards. He holds two patents that have already been granted. Eight more patent applications have been filed on his name. He also has around 42 publications in reputed journals and conferences proceedings. He is one of the recipients of the IEEE PES Narain G Hingorani Award for HVDC Systems in 2025.



Keynote Speakers

**Transitioning to a Low-Carbon Solar Dominated Indian Power Grid:
Initiatives, challenges and opportunities ahead**

Speaker: Prof. Mohammad Rihan

Director General of National Institute of Solar Energy (NISE),
Ministry of New and Renewable Energy (MNRE), Government of
India.

Venue: Lecture Hall Complex - 05

Biography: Dr. Mohammad Rihan is a Professor of Electrical Engineering presently serving as Director General, National Institute of Solar Energy, an autonomous institute of Ministry of New and Renewable Energy, Government of India. As DG, NISE he is leading R&D, consultancy, testing and standardisation, and capacity building for the Solar and Green Hydrogen sectors in line with the National policies and requirements. He is serving as Chairperson of the sectional committee of BIS on Solar Energy also. He has written a textbook on 'Green Energy and Sustainable Development' published by Cambridge University Press (UK) and another book on Green Energy Transition in India-Including the success story of AMU. He had led the integration of 6.5MWp solar PV plants in the AMU campus distribution grid; the largest such installation in any academic institution in the country. He is an Elected Fellow of the IET(UK), IE(India), and IETE. He is also a Senior Member of IEEE and Chair-Elect of executive committee of IEEE UP Section and Vice Chair of executive committee of Delhi local network of IET(UK).



Keynote Speakers

Connecting the Dots: Partnership to Scale Smart, Clean and Secure Power Systems

Speaker: Dr. Rahul Walawalkar,
President, Netzero Energy Transition Association (NETRA)

Venue: Lecture Hall Complex - 05

Biography: Dr. Rahul Walawalkar is a global clean-tech strategist with over 25 years of experience across energy storage, smart grids, e-mobility, and power system flexibility. He serves as President of the Netzero Energy Transition Association (NETRA), a global industry association focused on accelerating the commercialization and large-scale deployment of net-zero technologies through cross-border collaboration. He is also President of Walawalkar Enterprise LLP, a strategy and advisory firm working with utilities, regulators, investors, and technology providers on grid modernization and clean energy integration. Dr. Walawalkar has contributed to pioneering policies and roadmaps for energy storage and flexible resources in India and internationally, and has advised on multiple gigawatt-scale projects spanning storage, renewable integration, and industrial decarbonization. He has been recognized with several honors, including the IEEE PES Hingorani Award, for his leadership in advancing clean, reliable, and economically viable power systems.



Keynote Speakers

From Intra-State SCED to National-Level Optimization: A Roadmap for India's Power System Economy

(Followed by an interactive session entitled “Resource Adequacy Planning to Real-Time SCED: Building India's Optimized Power System”)

Speaker: Dr. Soonee Sushil Kumar

Former and founding CEO POSOCO, now Grid-India; Retd

Venue: Lecture Hall Complex - 05

Biography: Dr. S.K. Soonee, former and founding CEO of POSOCO (now Grid-India), has over four decades of experience in power system operations across India's regional grids. He played a pivotal role in grid integration, leading to the formation of the National and SAARC Grids. Soonee is an expert in power system operations, planning, commercial aspects, and governance, with a focus on electricity markets, renewable energy integration, transmission pricing, and SCED. A Fellow of IEEE, INAE, and a Distinguished Alumnus of IIT Kharagpur, he has represented India on CIGRE Committees and is recognized internationally for his contributions.



Keynote Speakers

Strain to Synergy : Powering the NextGen Data Centers

Speaker: Dr. Palak Parikh

Senior Engineer-Power System, Vernova Research Center, GE Vernova, Canada

Venue: Lecture Hall Complex - 05

Biography: Dr. Palak P. Parikh is a Senior engineer at GE Vernova Advanced Research Center, specializing in electrical engineering with over 13 years of industry R&D experience in grid automation and emerging energy technologies. She has worked with GE Vernova renewable energy and grid automation businesses, leading application design and technology partnerships for advanced grid modernization programs. Her recent work focuses on data center power systems, AI-ready energy architectures, and digital automation infrastructure, bridging the convergence of IT and OT domains. Her expertise includes renewable and DER integration compliance studies, distribution automation system design, and IEC 61850-based intelligent electronic devices. Dr. Parikh earned her Ph.D. in electrical engineering from the university of western Ontario, Canada, and has authored over 20 international journal and conference publications. She also holds several patent applications in energy and automation technologies.



Keynote Speakers

Managing the rapid growth of AI while ensuring reliability, resilience, and sustainable infrastructure planning

Speaker: Shri Dillip Kumar Guru

EVP (Energy and ESG), Sify Technologies Limited., Singapore (Data Centre)

Venue: Lecture Hall Complex - 05

Biography: Shri Dillip Kumar Guru is a power systems professional with extensive experience in grid planning, operational strategy, and digital transformation initiatives across India and APAC. His work spans the integration of AI, large-scale renewable energy, and emerging technologies into utility operations. Dillip has been closely involved in advising utilities and data-centre developers on grid readiness, demand forecasting, and AI adoption . At this conference, he brings his perspective on how the power sector can proactively manage the rapid growth of AI while ensuring reliability, resilience, and sustainable infrastructure planning.



Keynote Speakers

Challenges in SR Grid Operation

Speaker: Shri M. K. Ramesh
Chief General Manager (CGM), SRLDC, Grid India
Venue: Lecture Hall Complex - 05

Biography: Shri M. K. Ramesh received his B-Tech degree in Electronics & Communication from GCT Coimbatore, Tamil Nadu. Later, he completed his M-tech in Data Science Engineering from BITS Pilani. He also earned an MBA (Finance) degree from Bangalore University. Shri.M.K.Ramesh started his career in Power Grid Corporation of India Ltd, LD & C Department New Delhi in the Engineering Design of Load Dispatch and Communication Project. He played a major role in the implementation of various projects like SCADA/EMS, Wide Area Measurement (URTDSM) and REMC Renewable Energy Management Centre. As the Head of Department for Real time system Operation at SRLDC, he handled the operation of SR GRID, Renewable Energy. During 2018-2021, when he was the Head of Department for System Logistics in the Northeastern Regional Load Despatch Centre, Shillong, he successfully completed WAMS Project and Introduced VSAT technology for real Time SCADA in Arunachal Pradesh, Meghalaya SLDC. After completing 33years service in the Power Sector, he is, presently, Heading the Southern Regional Load Despatch Centre, where he leads the team of Grid Operation, Scheduling ,Transmission Constraints, Market Operations, and Regulatory Management in line with MOP, CEA and CERC guidelines.



Tutorial Sessions

Synchrophasors for Real Time Monitoring of Smart Grids

Speaker: Dr. Kaliappan Perumal
Additional Director,
Central Power Research Institute, Bangalore

Venue: Lecture Hall Complex - 04

Abstract: India is the world's third largest carbon emitter and has committed to achieve net zero emissions by 2070. India is aiming to achieve installation of renewable energy of 500 GW by 2030 and over 600 GW by 2032. There are plans for expanding the existing transmission network, integration of energy storage solutions and supporting green hydrogen hubs which are identified in different states of India. The modern power system is highly interconnected with various generation sources. Monitoring, protection and control actions play very important role to help the system operator to reliably operate the grid. The system operator experiences different challenging scenarios in the contemporary power grid. The existing power system grid is well operated and controlled by well-known supervisory control and data acquisition (SCADA) system. The drawbacks of the SCADA systems are poor visualization, lack of time stamping, unable to provide accurate estimate of the system states, and poor situational awareness. Therefore, the existing monitoring system is not adequate to monitor the modern power grid. On the other hand, synchrophasors are intelligent electronic devices, which normally provide synchronized voltage phasor, current phasor, frequency and rate of change of frequency measurements. Synchrophasors, also known as phasor measurement units (PMUs), are an integral part of smart grid implementation plan. Synchrophasors are installed in the generating station, HVDC system, intertie line, and interstate transmission system. Those are also installed at the renewable energy collection substations. PMU data are used for wide area monitoring, protection and control (WAMPAC).



Biography: Dr. Kaliappan Perumal is, presently, holding the post of Additional Director and Group Head for Metering and Utility Automation Division of Central Power Research Institute (CPRI), Bangalore, Ministry of Power, A Govt. of India Society. He has more than 31 years of experience working in the field of Power System Protection, Numerical Protection IEDs, Smart Grid Technology and Applications, Synchrophasor, Wide Area Mea-

surement System (WAMs), Wide Area Monitoring, Protection and Control (WAMPAC) and Renewable Energies: Wind Farm-Solar Plant. His areas of researches are Adaptive Relaying, Computer Relaying, Protection issues in Distributed Generation and DERs, MicroGrid Protection, Assessment of compliance of both M class & P class Synchrophasor, Synchrophasor for Power System Protection and Control applications, Internet of Things (IoT) Enabled Smart Grid, Renewable Energies: Wind Farm, Solar Power and Hybrid Wind Farm-Solar Plant with storage. He has organized more than 130 events including Smart Grid and Cyber Security domain. He has also delivered around 470 expert lectures in PSU, Central, IISc, IITs, NITs and reputed academia colleges/Universities. He is a IEEE Senior member, ISA Senior Member, Fellow IE, DLMS UA Member/DLMS Security Force Member, TC57/WG15 Data & Communication Security Member, BIS LTD 35 Power System Relays Member, BIS LTD 10 Power System Control and Associated Communication Member.

Tutorial Sessions

Parallel programming for Large Power system studies

Speaker: Prof. Gurunath Gurralla, IISc Bangalore
Indian Institute of Science, Bangalore

Venue: Lecture Hall Complex - 07

Abstract: Introduction to parallel computing, Different memory models in parallel programming, Introduction to shared memory paradigm using OpenMp, Matrix-Matrix multiplication using OpenMp, Load flow studies in power system, Parallel load flow using OpenMP.

Note: Should bring your own laptop with minimum 8GB RAM. Windows or Linux.



Biography: Gurunath Gurralla received B.Tech from S.V.H. College of Engineering, Machilipatnam, in 2001, M.Tech from J.N.T.U. College of Engineering, Anantapur, in 2003 and Ph.D from Indian Institute of Science, Bangalore, India, in 2010. He was an assistant professor in SSN college of engineering (2001-2002) and ANITS, Visakhapatnam (2003-2005). He was a research engineer in GE Global research, Bangalore (2010-2012). He was a post doctoral fellow at Texas A&M university (2012-2013) and Oak ridge national lab (2014-2015), USA. He received Prof DJ Badkas medal for best PhD thesis from Electrical Engineering Department, IISc, Bangalore. He received IEEE PES Outstanding Engineer Award 2018, INAE Young Engineer Award 2015. His papers received best paper award in IEEE General meeting 2015, best poster awards in IEEE industrial society annual meeting 2015 and IEEE PES T&D Conference and Exposition 2016. Two of his master students received POSOCO Power System Awards. He is senior member of IEEE and INAE young associate. His research interests include smart grids, power system stability, grid integration of renewables, Microgrid control, high performance computing applications to power systems, nonlinear and adaptive control of power systems.

Tutorial Sessions

Features and Future of Transmission Pricing

Speaker: Prof. Abhijit Abhyankar
NTPC Chair Professor,
Electrical Engineering Department, IIT Delhi

Venue: Lecture Hall Complex - 04

Abstract: Electricity transmission pricing is fundamental to ensuring efficient, reliable, and equitable use of the power grid. Sound transmission pricing frameworks generally follow a set of core principles such as: cost recovery for transmission licensees, cost-causation-based allocation of charges, non-discriminatory open access, and transparent regulatory oversight. Over time, systems worldwide have evolved from simple energy-based charges to more sophisticated approaches that reflect actual network usage, distance, direction of flows, congestion, and losses. These changes aim to allocate costs fairly, send efficient economic signals, and support grid sustainability—especially as transmission networks expand and integrate large volumes of renewable energy with variable, bidirectional flows. In India, the transmission pricing regime has undergone a significant transformation. In the earlier decades, charges were allocated largely on simple energy-based formulas or fixed shares of central generating station outputs. The Electricity Act, 2003 catalyzed reform by promoting open access and regulatory oversight, leading to more transparent and cost-reflective pricing. The introduction of the Point of Connection (PoC) mechanism in 2011 marked a major shift toward usage- and flow-based tariff allocation for inter-state systems. Subsequent refinements in the CERC Sharing Regulations (2020) further aligned charges with grid utilization patterns. As India's grid continues to expand and integrate high levels of renewable generation, future transmission pricing is expected to become more dynamic and granular, potentially incorporating locational signals, congestion components, and marginal-cost-based principles to ensure economic efficiency and long-term grid resilience.



Biography: Prof. Abhijit Abhyankar, Fellow of INAE, is NTPC Chair Professor at the Electrical Engineering Department of IIT Delhi. He received his PhD from the Electrical Engineering Department of IIT Bombay in 2007. He has contributed immensely to the field

of power systems over the last 20 years. He is the recipient of the “Teaching Excellence Award” of IIT Delhi. A web-based course under NPTEL, co developed by him – “Restructured Power systems” is a very popular course, which is used by teachers and students of the institutes (including IITs, NITs) as a main resource. Prof Abhyankar was a member of the Global Future Council for Clean Electrification of the World Economic Forum, the only Indian academic in the council. Prof Abhyankar also has handled multiple high value research projects with international collaborations with US, UK and Netherlands. He has played a key role in preparing a white paper on ‘Reforms in Power Sector through Distribution System Operations (DSOs)’, which is highly appreciated by the power fraternity. Prof Abhyankar is the lead of a team that is developing indigenous software for power supply simulation for the National High Speed Railway corporation (Bullet Train). He has worked as an expert on various advisory committees set up by various bodies of the Ministry of Power, Government of India, like CEA and CERC. Currently, his area of research interest is in the development of models of Distribution System Operators (DSOs) in India and policy and regulatory matters in general in the Indian power sector.

Tutorial Sessions

Industry Experiences in Accelerating Open Innovation and Cyber Resilience for the Digital Power Grid

Speaker: Dr. Mital Kanabar
PowerProfs Inc., Markham, Ontario, Canada

Venue: Lecture Hall Complex - 04

Abstract: Digital transformation of the electric power grid is essential to accelerate open innovation with data-driven AI to support the energy transition. Yet the power grid continues to face slow innovation cycles driven by proprietary vendor ecosystems, hardware-defined grid automations, and restricted access to secure, high-quality operational data. These limitations hinder experimentation, complicate integration of advanced analytics, and reinforce long-term technology lock-in. At the same time, cybersecurity risks are intensifying on the current digital implementations. Recent power-grid cyber attacks demonstrated how power substation components—including protection relays, HMIs, engineering workstations, and remote access channels—can be compromised through structured attack chains. From several years of industry experience, it is proposed to build open-innovation (non-proprietary) and cyber-resilient solutions considering the use-case of IEC 61850-based digital substations. This session provides a focused examination of: (1) why adoption in digital substations remains slow; (2) where cyber vulnerabilities persist today; and (3) how real-world attack scenarios map to known adversarial techniques (explained using MITRE ATT&CK framework). The session then provides a real-world case-study on open innovation demonstration—supported by open-source frameworks (e.g., Linux Foundation Energy) for the virtualized or software-defined substation automation solutions.



Biography: Dr. Mital Kanabar is a President/CEO and founder of PowerProfs Inc., Markham, Ontario, Canada. He has 20+ years of industry experience serving the power & energy domain. Dr. Kanabar holds 25+ international patent applications; and has published 50+ journal/magazine/conference articles. Dr. Kanabar holds Professional Engineer in Ontario, and he is also serving as a Vice-chair of IEEE PES PSRC Relaying Communication, H Sub-committee, and active contributors of CIGRE, IEC and NERC working groups. He has completed his PhD from University of Western Ontario, Canada; and Master's from Indian Institute of Technology (IIT) Bombay, India.

Dr. Kanabar is building PowerProfs platform for empowering electric power professionals to transform the industry through professional development training, co-innovation services, and community networking. In his 14+ years career at GE Vernova, he has led customer-centric innovations and collaborations to accelerate Technology Readiness Levels (TRLs) and validating Cost-Benefit Analysis (CBA) to commercially scale value-driven innovations, protecting intellectual property (IP).

Tutorial Sessions

Cyber Security in Digital Substations

Speaker: Prof. Sarasij Das
Indian Institute of Science (IISc), Bangalore

Venue: Lecture Hall Complex - 07

Abstract: Increasing digitization is making substations more vulnerable to cyber attacks. In this tutorial, at first, I'll discuss the IEC 61850 based architecture of digital substations. Then, various types of cyber attacks possible in a digital substation with some real life experiences will be shared. Finally, cyber security measures suggested by IEC 62351 and IEC 62443 will be discussed.

Biography: Sarasij Das (Senior Member, IEEE) received the Ph.D. degree from the University of Western Ontario, London, Ontario, Canada, in 2014. He worked as a Post Doctoral Fellow at the Ontario Tech University, Canada from 2014 to 2015. Previously, he was with the Schneider Electric India Pvt. Ltd., Bengaluru, India, and Power Research and Development Consultants Pvt. Ltd., Bengaluru. He worked as an assistant professor in the Electrical Engineering Department of Indian Institute of Technology Kharagpur, India in 2015. He is currently working as an associate professor in the Department of Electrical Engineering, Indian Institute of Science, Bengaluru. His research interests include protection and stability of renewable dominated power systems and cybersecurity of power grids.



Tutorial Sessions

AI and the Future Grid: How Power Engineers Can Lead the Next Technological Transformation

Speaker: Dr. Pamulaparthi Balakrishna
GE Vernova

Venue: Lecture Hall Complex - 04

Abstract: The electric power grid is undergoing an unprecedented transformation driven by the convergence of digitalization, decentralization, and decarbonization. Artificial Intelligence (AI) has emerged as a pivotal enabler of this evolution, empowering utilities, and industries to achieve higher levels of reliability, efficiency, and resilience. This talk explores how AI is reshaping the architecture, operation, and management of modern power systems—spanning applications across transmission and distribution of power grids. Beyond technology, it emphasizes the evolving role of power engineers as leaders in data-driven decision-making, system modelling/analysis, and cyber-physical integration with a detailed case study on one of the key problem statements. By blending domain expertise with AI literacy, power engineers can guide the transition toward an intelligent, explainable, and responsible solutions for utilities and industries. Ultimately, it argues that the next technological transformation in the grid sector will succeed not merely through innovation in AI algorithms or technology, but through the adaptability of the power engineers along with domain skillsets who implement them.



Biography: Dr. Balakrishna Pamulaparthi, PhD was born in Hyderabad, India. He received his M.Tech and PhD degrees in Electrical Engineering from Indian Institute of Technology, Madras in 2008 and 2016 respectively. He also received his PG certificate in Cyber Security domain from MIT in 2023. He is currently working as Senior Engineer – Emerging Technologies at Office of Innovation, GENERAL ELECTRIC (GE) Vernova, Hyderabad Technology Center, India in Smart Grid domain. He has overall 15+ years of Industrial R&D experience at GE and 2 years of academic experience working as fulltime Assistant Professor in School of Electrical Sciences/Professor-in-Charge Electrical/Adjunct Faculty at Indian Institute of Technology Bhubaneswar during 2017-20. His research interests include Smart Grid, Substation/Distribution Automation, Grid Monitoring & Data analytics, Transformer/Motor Asset Management, DMS, SCADA and AMI. He has filed

50+ US patents to his credit out of which 20 are granted till date along with 40+ reputed publications in various international journals/conferences. He is the recipient of several global awards including GE Inventor of the Year Award in 2010, GE Silver Award for 10+ Patents, Prestigious Ramanujan Young Achiever Award in 2011, GE Imagination and Courage Award in 2012, Energy Management Innovation Excellence Award in 2014, GE Empower and Inspire Global Award in 2015, VIRA Young Scientist Award in 2019, GE Innovation Excellence Award in 2020, GE ITC Tech Yoda Award in 2021, Grid Innovation Challenge Winner Award in 2022 & 2023, Encore Impact Award for Deliver with Focus in 2023 and Grid Solutions Priority Patent Award in 2024 & 2025.

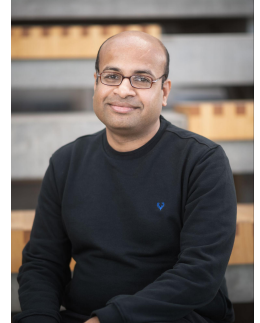
Tutorial Sessions

Small DC-link capacitor-based power converter topologies and related issues

Speaker: Prof. Ramakrishnan Maheswari
IMEE, University of Southern Denmark, Denmark

Venue: Lecture Hall Complex - 07

Abstract: Power electronics converters are essential to the green energy transition. Therefore, the penetration of power converters for various applications is increasing, and they are required to meet regulatory requirements. These requirements affect the size of the active and passive components used in the converter. The first part of the tutorial addresses the requirement for the design of the converter and how it affects the selection of the passive components. These components are the main factor that decides the size, weight, and volume of the drive. They may typically contribute to 75% of the weight and volume of the converter. For these converters, the DC-link capacitor is the major contributor among the passive components. To reduce the size of converters, a reduction in the value of DC-link capacitance is an alternative. Such alternate converters can be classified as small DC-link capacitor-based power converters. The second part of the tutorial focuses on conventional power converter topologies (two-level and three-level converters) with small DC-link capacitors and related issues such as negative impedance instability and mid-point voltage balance in the three-level converter. Furthermore, the tutorial also discusses some small DC-link capacitor-based power converter topologies that utilize current injection circuits for grid-connected applications. These converters have the advantage of high efficiency and high power density. The main target audience for the tutorial is active researchers, PhD students, and working professionals from the industry in power electronics converters for electric drives. However, the topics will be presented in a way that the fundamentals can be applied to other AC-DC power converter applications as well.



Biography: Ramkrishan Maheshwari received the M.E. degree in electrical engineering from the Indian Institute of Science, Bangalore, India, in 2005 and the Ph.D. degree in electrical engineering from Aalborg University, Aalborg, Denmark, in 2012. From 2005 to 2008, he was with Honeywell Technology Solution Lab, Bangalore, India. From 2012 to 2014, he was with the Department of Energy Technology, Aalborg University, Denmark.

From 2014 to 2019, he was with the Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India. He is currently working as an Associate Professor with the Center of Industrial Electronics, University of Southern Denmark, Sønderborg, Denmark. His research interests include modeling and control of power converters.

Women in Engineering (WIE) panel



Dr. Sridevi
Director General, Central Power Research
Institute



Smt. S. Usha
Executive Director, NLDC



Smt. Vaibhavi Kale Mishra
Senior Product Security Leader, GE Vernova



Dr. Palak Parikh
Senior Engineer - Power Systems, Vernova
Research Center, GE Vernova, Canada



Smt. Kavitha C. K
Deputy Chief Engineer (GRID), SLDC,
Kerala State Electricity Board Limited



Dr. A. Hema Latha
Assistant Executive Engineer in
APTRANSCO, Vijayawada, India

Industrial Panel Discussion



Dr. Ramakrishna Kappagantu
Chief Technology Advisor, Eficaa EnSmart
Solutions Pvt. Ltd



Mr. Chandresh Dobariya
Director, Panacean Enterprise Pvt. Ltd.



Mr. Vishal Pandya
Managing Director, REConnect Energy



Mr. Nobin Mathew
Director Solutions & Product Management
Energy IoT Division, Kalkitech



Mr. Rammohan Rao Vemula
CEO, L S Electricals

Overall Schedule for the Oral & Poster Presentations

| | | | |
|---|-----------------------------|-----------------------------|-----------------------------|
| Day 2 8 th December 2025 09:00 - 10:30 | Session-I Session-IV | Session-II Session-V | Session-III Session-VI |
| Day 2 8 th December 2025 16:15 - 17:45 | Poster Presentations | | |
| Day 3 9 th December 2025 09:00 - 10:30 | Session-VII Session-X | Session-VIII Session-XI | Session-IX Session-XII |
| Day 3 9 th December 2025 16:15 - 17:45 | Session-XIII Session-XVI | Session-XIV Session-XVII | Session-XV Session-XVIII |

| Session - I | | |
|--|---|---|
| Subject Area - Smart Grid and Power Systems | | |
| Venue - Lecture Hall Complex - 01 | | |
| 8th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 63 | An IoT-Enabled Framework for Real-Time Smart Metering with Dynamic Tariff Pricings | S Gayathri, M Monisha, Anant Kumar, K Shanti Swarup |
| 64 | Generative Artificial Intelligence Enabled Smart Metering Framework For Predictive Energy Sharing | M Monisha, S Gayathri, Anant Kumar, K Shanthi Swarup |
| 68 | Assessment of Unbalance in Tata Power Mumbai Network due to Single-Phase Railway Loads | Santosh V. Singh, Prashant V. Navalkar, Anil M. Kulkarni, Girish T. Jawale |
| 123 | Impact of Cyber Vulnerabilities on Automated BESS Mode Transitions in Smart Microgrid | Suhani Baru, Khwrwmdao Basumatary, Anup Shukla |
| 255 | Impact of ToD Charges and Power Factor on Total Energy Costs of BVRIT Campus Distribution Grid | VSB Chaitanya Duvvury, Josna Goud G, G Bhanu Ganesh, Pradeep Kumar Yemula |
| 288 | Data-Driven Fault Classification and Localization in Smart Grids for Accurate Self-Healing Using Multifaceted Machine Learning Techniques | Praneeth N, P Swati Patro, STP Srinivas |

| Session - II Subject Area - Security-Constrained Economic Dispatch Venue - Lecture Hall Complex - 02 | | |
|---|---|---|
| 8th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 26 | SECED Pilot Study - For Emission-Constrained Economic Dispatch for India's ISGS thermal fleet | Debasis De, Sushil K Soonee, Deb Chattopadhyay |
| 54 | SCED in India: The Duals Behind Dispatch | Debasis De, Sushil K Soonee, R S Abhishek, Deb Chattopadhyay, Saumen Majumdar |
| 59 | Addressing Infeasibilities in SCED Optimization | Debasis De, Sushil K Soonee, Abhishek R S, <i>et al.</i> |
| 110 | Ramping in States Power System in India: Harnessing Flexibility through Integrated SCED | Debasis De, Abhishek R S, Sushil K Soonee, Deb Chattopadhyay |
| 118 | Optimizing Regional Power Trade in South Asia: A SECED Based Emission-Constrained Economic Dispatch Framework | Anita Prajapati, Richa Parmar, Khadiza Umme Tahera, Phuntsho Choden, <i>et al.</i> |
| 173 | Scheduling vs Despatch in the Indian Power Sector: The Statutory Role of Load Despatch Centre | S K Soonee, Dr. Deb Chattopadhyay, Dr. Sushanta Chatterjee, Debasis De |

| Session - III | | |
|--|--|---|
| Subject Area - Power Systems Protection, Stability, and Optimization | | |
| Venue - Lecture Hall Complex - 03 | | |
| 8 th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 78 | Modular Open-loop Eigen-sensitivity Analysis for Computation-efficient Stability Assessment | Aditya Pandey, Lokesh Kumar Dewangan |
| 109 | Impact of Droop Control on Impedance Trajectories under Stable Power Swings in Grid-Forming Converter-Integrated Power Systems | Sreenath B, Balabhaskar S S, Manas Kumar Jena |
| 171 | Transient Response Analysis in IBR-Dominated Power Systems Based on Short Circuit Ratio | Koduri Gowtham, Kiran Teeparthi, Pavan Kumar Yadala |
| 225 | Loss of Synchronism during Grid Disturbances in India | Mithila Aithagani, Anil M. Kulkarni |
| 229 | Virtual Inertia vs Physical Inertia for Improving the Stability of a Heavily Renewable Driven Power System | Ravi Reddi, Deepak Kumar Soni, Vaskar Sarkar |
| 273 | Modal Controllability and Observability Estimation of Critical Power System Modes From MIMO Frequency Scans | Kaustav Dey, Anil M. Kulkarni |

| Session - IV | | |
|--|--|---|
| Subject Area - Grid Resilience and Security | | |
| Venue - Lecture Hall Complex - 04 | | |
| 8th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 56 | A Novel Image-Based Watermarking Method for Detecting False Data Injection in Line Current Differential Relays | Swati Agarwal, Kondety Tony, Manish Pandit, Ranjana Sodhi |
| 83 | Hybrid IWSOA-ANN Approach for Load Stability During Cyber-Attack Blocking Controller Access | Arti Singhal, Ashu Verma, Rabindra Mohanty |
| 88 | Effective Graph Resistance based Vulnerability Assessment Framework for Cyber Resilient CPPS | Jigyasa Singhai, K Shanti Swarup |
| 217 | Reduced effective voltage control by shunt reactors in renewable rich grid – Experience of Western Region of India | Naresh Mhalas, Vishal Balram Puppala, Raj Shailendra Mudliar, <i>et al.</i> |
| 274 | Analyzing Risk in Power Substations through an Automated Vulnerability Assessment Tool | Shashank S, Nayan Aahladh, Sridevi P Rao, Gurunath Gurralla, <i>et al.</i> |

| Session - V | | |
|--|--|---|
| Subject Area - Renewable Energy Systems | | |
| Venue - Lecture Hall Complex - 07 | | |
| 8th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 75 | Hydrogen-Based Offshore Wind Farm Energy Storage: Simulation and Sensitivity Analysis | Sree Vyshanvi Mamilla, K Shanti Swarup |
| 85 | A Data-Driven Framework of PV Hosting Capacity Assessment for a Military Garrison | Ujjawal Srivastava, P Amritansh Naidu, Ankit Singhal |
| 135 | Wind Power Forecasting using Auto-Regressive QRF for Operational Reserve Management | Girraj Raigar, Naveen Kumar Thokala, Swathi Battula, Abheejeet Mohapatra |
| 167 | Comparative Assessment of Feedforward and Sequence-Based Neural Networks for Solar Radiation Prediction Model | Bongoni Naresh, Amit Kumar Yadav, Ch Vineeth |
| 177 | Hybrid Energy Storage-Based Power Management Strategy for Stand-alone DC Microgrid | Krishnakant, Chuskit Dolma, Pravin Kumar, Prabodh Bajpai |
| 222 | Sector Coupling between Green Hydrogen and Steel: Machine Learning-based Estimation of Levelized Cost of Steel | Pratham Goel, Naran Pindoriya |

| Session - VI | | |
|--|---|--|
| Subject Area - Power System Planning and Operations | | |
| Venue - Lecture Hall Complex - 08 | | |
| 8th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 94 | Tariff Impact Analysis on Peer-to-Peer Energy Sharing in Residential Communities | Gopalji S. Kalojiya, Anupama S. Kowli |
| 117 | A Comprehensive Design Framework for AT-Fed Railway Traction Power Systems | Archita Vijayvargia, Abhijit Abhayankar |
| 120 | Fast Jacobian Evaluation for Islanded Microgrid Load Flow Using Compact Matrix Operations for Composite Load Models | Rasmita Muduli, Debapriya Das |
| 125 | Deep Analysis for Selective Control and CO2 Emission in Power Systems | Suresh Varwandkar |
| 130 | Insights and Analysis from Black Start Mock Drill Case Studies using Synchrophasor Technology | Praveen Tripathy, Subhash Kumar, Sachin Singh, <i>et al.</i> |
| 202 | Impact Analysis of Zero-Sum False Data Injection Attacks on Peer-to-Peer Energy Trading | V.V.N Prasad Thota, Kiran Teeparthi, Sri Phani Krishna Karri |

| Session - VII | | |
|--|--|--|
| Subject Area - Electric Vehicles and Drives | | |
| Venue - Lecture Hall Complex - 01 | | |
| 9th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 93 | Decentralized Smart EV Charging with Multi-Agent System Communication and Energy Coordination | Priyansh Dwivedi, Himanshu Tiwari, Pradhyumna Yadav, Murari Kumar, K Shanthi Swarup |
| 128 | Electric vehicle battery charger based on DC-001 charging standard | Vaishnavvignesh G Iyer, Cilaveni Satish Chandra, Ravindranath Adda, Sreenath J G, Praveen Tripathy |
| 223 | Light Load Efficiency improvement of Dual Active Bridge Converter for EV Fast Charging Application | Nagasai G, Ravikumar Bhimasingu |
| 261 | High-Efficiency SIDO-SEPIC with Improved Cross-Regulation for EV Charging Systems | Kamalesh MS, Prabha S Umapathy, Bharatiraja Chokkalingam, Sanal Kumar S, <i>et al.</i> |
| 266 | Electrifying Mobility : Dynamic Charging for Next-Generation Electric Vehicles | Mahendar Reddy Peddolla, Sanjeeva Reddy B R |

| Session - VIII | | |
|--|---|--|
| Subject Area - Power System Planning and Operations | | |
| Venue - Lecture Hall Complex - 02 | | |
| 9 th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 126 | Co-optimized Flexibility Market Framework for DSO Enabled Market Operations | Manu Ranjan Sharan, Abhijit R. Abhyankar, Ankit Singhal |
| 142 | Cost Allocation Mechanism for Shared Battery Storage Systems: A Game-Theoretic Approach | Anchal Maurya, Harshit Dhiman, Agam Jain, <i>et al.</i> |
| 191 | BIBC-Based Distribution Network Reconfiguration with Optimal Placement and Sizing of Renewable DGs under a 24-Hour Load Profile | Astamita Mishra, Manish Tripathy, Papia Ray |
| 228 | A Hybrid Clustering-PSO Framework for Reliable Islanded Microgrid Expansion Planning | Rasmita Muduli, Debapriya Das |
| 230 | Operational Strategies for Enhancing RE Integration into the Grid using Existing Transmission System | Minnakuri Venkateswara Rao, Priyam Jain, Vishal Puppala, <i>et al.</i> |
| 262 | Primary Frequency Response by Renewable Energy Plants: Regulatory Framework and Compliance Analysis in India | Mohit Kumar Gupta, Aman Gautam, Rahul Shukla, <i>et al.</i> |

| Session - IX | | |
|--|--|--|
| Subject Area - Smart Grid and Power Systems | | |
| Venue - Lecture Hall Complex - 03 | | |
| 9th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 106 | Digitizing Electrical Panels with MQTT and Multi-Network Raspberry Pi Gateways | Anmol Sardhalia, Sheraza Bashir, Ayush Yadav, <i>et al.</i> |
| 131 | Impacts of fast voltage boosters with current limiters of droop controlled grid forming inverters during delayed voltage recovery events | Upendran Mukundarajan, K. Shanti Swarup |
| 195 | Performance Assessment of Inverter-Fed Autonomous Microgrid with Uniform and Non-Uniform Delay Utilizing Internal Model Controller | Sneha Goneguntla, Gnana SaiSree Boppudi, Naresh Kumar Vemula, Pratikanta Mishra, Kiran Kumar N |
| 200 | Improving Stability of GFL Inverter in Weak Grid using Paralleled GFM Inverter: Hardware Validation | H R Sai Kiran Pandit, Sarasij Das |
| 258 | An Improved Differential Admittance Based Fault Detection Algorithm for Low Voltage AC Microgrid | Joy Narayan Das, Dr. Biswajit Sahoo, Sandeep Banik |
| 286 | Short-Term Load Forecasting for Energy and Cost Savings: A Case Study | T. Praneeth, Gajangi Arun Kumar, P. Ram Kishore Kumar Reddy, Pradeep Kumar Yemula |

| Session - X | | |
|--|---|---|
| Subject Area - Power Systems Protection, Stability, and Optimization | | |
| Venue - Lecture Hall Complex - 04 | | |
| 9th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 61 | Advanced Power Grid Feeder Protection and Control Functions for Wildfire Mitigation and Control | Srujana Yenigalla, Nagarjuna Koppakula, Sai Pramod Tati, Priya Kumari, Balakrishna Pamulaparthi |
| 70 | An Integrated Approach for Fault Diagnosis and Localization in DC Microgrid | Anu Bhalla, Bhaves R. Bhalja |
| 136 | Sequence Component-Based Protection Strategies for Fully Inverter-Dominated Microgrids | Arjita Pal, Rabindra Mohanty, Bijaya Ketan Panigrahi |
| 170 | Transmission Networks Connected With GFM Inverters: Protection Challenges and Opportunities | OD Naidu, Aarthi V, Neethu George, Vedanta Pradhan |
| 236 | Analysis of Grid Protection in the North-East Regional Network of India Using Actual Fault Data Under High Solar PV Penetration | Subhash Kumar, Karan Katariya, Sachin Singh, Subhra Ghosh, <i>et al.</i> |
| 237 | A New Facile Time-Voltage-Current Characteristics for Numerical Distance Relay Coordination in Modern Power Grids and FPGA Implementation | Praneeth N, STP Srinivas, Alivelu Manga Parimi |

| Session - XI Subject Area - Artificial Intelligence and Data Analytics in Power Grids Venue - Lecture Hall Complex - 07 | | |
|---|--|---|
| 9th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 102 | Optimized Hybrid CNN-Transformer-LSTM Architecture for Accurate Solar Irradiance Forecasting under Variable Weather Conditions | Shanker M, Vikram Kulkarni |
| 124 | Efficient Wide Area Data Compression- A Ramanujan's Sum-Based Approach | Manish Pandit, Ranjana Sodhi |
| 144 | Sectoral Disaggregation of India's Peak Day Load Curve: A Pathway to Demand Flexibility | Pallavi Buwa, Anupama Kowli |
| 172 | OTC Platforms in Indian Power Markets – Driving Digitalization and Data Analytics for Economy, Efficiency, and Transparency | Vinod Kumar Agrawal, Kapil Dev, Ashish Shrivastav, <i>et al.</i> |
| 183 | Cybersecure Line Differential Relay Based on Transient Signatures and Decision Tree Classification | Suryanarayana Gangolu, Rakesh Kumar Panda, Suman M, CH Venkateswarlu |
| 187 | Constrained Loss Function Optimization based Short-Term Load Forecasting | Murari Jha, Ankit Singhal |

| Session - XII | | |
|--|--|--|
| Subject Area - Control in Power Systems/Power Electronics | | |
| Venue - Lecture Hall Complex - 08 | | |
| 9th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 82 | Cyber-Physical Vulnerabilities of Distributed Secondary Control in DC Microgrids: The Role of DoS Attacks and CPLs | Bazila Rashid, K. Shanti Swarup |
| 129 | Controller design for Three level boost converter with single-phase inverter load | Vaishnavvignesh G Iyer, Cilaveni Satish Chandra, Ravindranath Adda, Sreenath J G, Praveen Tripathy |
| 193 | LVRT-Enabled Virtual Synchronous Generator Control for Grid-Forming Inverter-Based Resources | Supriya Sharma, Yashasvi Bansal |
| 198 | A 3-phase 2-level inverter with AC side boost and CMV mitigation scheme | S S Phaniram Musti, Ravikumar Bhimasingu |
| 220 | Modified Control Strategy to Improve the CC-CV Mode Transition Performance in Variable DC-Link Voltage On-Board Chargers | Cilaveni Satish Chandra, Vaishnavvignesh G Iyer, Ravindranath Adda, Sreenath J G, Praveen Tripathy |
| 226 | Controller Output Dynamic Limiting Technique for Overshoot Suppression in Current-Controlled Grid-Following PV Systems | Ajay Jena, Arun Rahul S |

| Session - XIII | | |
|--|--|--|
| Subject Area - Power System Planning and Operations | | |
| Venue - Lecture Hall Complex - 01 | | |
| 9 th December 2025 & 04:15 pm to 05:45 pm | | |
| Paper ID | Paper Title | Authors |
| 185 | Decentralized Energy Exchange: A Blockchain-Based Smart contract Pricing Model for Sustainable Distributed Energy Markets | Tharun Tejavath, Surendra Srinivas |
| 207 | Utilization of Spinning Reserves in Largest Hydro Electric Power Plant in India-A Base Case | Rajesh Kumar, Absar Ahmad, Pavitra Malik, B. Raviteja |
| 224 | Simulation Analysis of Fault-Induced Delayed Voltage Recovery and 16000 MW Load Reduction Event in India | Priyam Jain, Gaurab Dash, Raj Kishan, <i>et al.</i> |
| 233 | Optimal reliability planning of radial distribution network considering hourly energy availability with renewables integration | Dharmendra Trivedi, Naveen Jain, Umesh Agarwal, Manoj Kumawat |
| 259 | Real-Time Oscillation Analytics for Power Grids: A Wavelet-Assisted Matrix Pencil Approach in SLDC Operations | Raja Shekar Nalluri, Bhanu Ganesh Ganta, Pradeep Kumar Yemula, <i>et al.</i> |
| 287 | Markov Modeling Based Reliability Evaluation of Compressed Air Energy Storage in Grid Operations | Abhishek Harit, Purna Jain, Satish Sharma |

| Session - XIV Subject Area - Control in Power Systems/Power Electronics Venue - Lecture Hall Complex - 02 | | |
|--|--|---|
| 9th December 2025 & 04:15 pm to 05:45 pm | | |
| Paper ID | Paper Title | Authors |
| 127 | A Soft-Switched Dual Active Push-Pull Converter | Jabi Ali, Mandeep Singh Rana |
| 252 | Remaining Useful Life Prediction of Boiler Feed Pump Motor: A Statistical and Condition Monitoring Approach for Industry 5.0 | Koti Reddy Butukuri, Hari Preetham Golla, Pradeep Kumar Yemula, Gali Sridhar, Tadiparti Koti Reddy |
| 253 | Multilevel Inverter for Grid Connected and Standalone applications | Shoubhik Mukherjee, Dr. Rupesh Wandhare, Deepak Gehlot, A.S Krishnapriya |
| 269 | Unbalanced Reference Voltage generation for Grid Forming Inverter Control During Asymmetrical Faults | Sunil Gajula, Ravikumar Bhimasingu |
| 271 | Modified Direct Power Control of Photovoltaic to Grid tied Voltage Source Converter with Active Filtering Capability | Praveen Vankadari, Korivi Yogananda Reddy, Sree Hari J B, Akshay Chabukswar, Avinash Naramu, Rupesh Wandhare |

| Session - XV | | |
|--|---|--|
| Subject Area - Electric Vehicles and Drives | | |
| Venue - Lecture Hall Complex - 03 | | |
| 9 th December 2025 & 04:15 pm to 05:45 pm | | |
| Paper ID | Paper Title | Authors |
| 49 | Implications of induction of Electric Vehicles in India | Goutam Bhaskhar, Saumen Majumdar, Debabrata Chattopadhyay, S.K. Soonee, Debasis De |
| 69 | Swarm-Based EV Fleet with Grid-Aware Charging and Traffic-Adaptive Routing in Urban Networks | Greeshma Potnuru, K Shanti Swarup |
| 256 | Assessing Impact of Dynamic Parameters on Electric Vehicle Energy Consumption using Parameter Perturbation Analysis | Bhanu Ganesh Ganta, Raja Shekhar Nalluri, V S B Chaitanya Duvvury, Pradeep Kumar Yemula |
| 263 | Physics-Guided Indicators with PSO-Tuned Regression for EV Battery SOH Estimation | V.Yashwanth, Y.Likhith, B. Nikhil, C. Priyanka, K. H. Phanishree |
| 267 | Optimal EV Charging under Marginal Emission Factors and Time-of-Use Tariffs: Comparison of Telangana and Karnataka | Aishree Boruah, Gaddam Vardhan, Parmar Aryan Jasvantkumar, Pritha Chatterjee |
| 279 | Real-time Monitoring of Energy Dynamics in Electric Vehicles | Bhanu Ganesh Ganta, Pradeep Kumar Yemula, Koti Reddy B |

| Session - XVI Subject Area - Electric Vehicles and Drives Venue - Lecture Hall Complex - 04 | | |
|--|--|---|
| 9th December 2025 & 04:15 pm to 05:45 pm | | |
| Paper ID | Paper Title | Authors |
| 10 | Real-Time Fault Analysis and System Optimization in EV Controllers with Field-Oriented Control: A Practical Investigation on Monitoring Diagnostics and Enhancements | Suganya R, L.M.I. Leo Joseph, K Sreedhar |
| 181 | Multilayer Winding Configuration for Variable Pole Induction Motor Drives | Monika Jain, B Prathap Reddy |
| 265 | A Constant Switching Controller based DTC Scheme for Speed Control of Five-Phase Open End Winding Induction Motor | C Venkata Subba Reddy, Sabavath Akhila, Nalla Akshitha, Gunji Poojitha, Yadlapalli Ragini |
| 270 | Robust Optimal Non-Linear Control Technique for Efficient EV Drive Applications | Akshay Chabukswar, Sree Hari J B, Ponnaganti Sirisha Devi, Korivi Yogananda Reddy, Chekka Supriya, Rupesh Wandhare |
| 272 | Simulink-Based Modeling of Regenerative Braking with Energy Recovery Optimization for Electric Vehicles | Sadia Begum, Ujwala Gajula, Gouthami Eragamreddy, Swapna Raghunath |

| Session - XVII | | |
|--|---|---|
| Subject Area - Smart Grid and Power Systems | | |
| Venue - Lecture Hall Complex - 07 | | |
| 9 th December 2025 & 04:15 pm to 05:45 pm | | |
| Paper ID | Paper Title | Authors |
| 44 | Design and Implementation of Blockchain-Enabled P2P Energy Trading Testbed | Shweta Arvind Kadam, Debasmita Panda, Ashutosh Yadav |
| 84 | Operational Analysis of Shipboard DC Microgrid Integrated with Advanced Storage Solutions | Ayush Bhatia, Rabindra Mohanty, Avanish Tripathi |
| 86 | Hybrid Islanding Detection in Grid-Connected PV-Battery Microgrid | Suraj Mishra, P Amritansh Naidu, Bijaya Ketan Panigrahi |
| 190 | Identification and Exploitation of Critical Lines through Targeted LR Attacks | V. Bharat Kumar, Satish Sharma |
| 194 | Practicing Advanced Technology Implementation for Indian Transmission Grid | Dr. Amit R. Kulkarni |
| 210 | Experimental Validation of Online Frequency Response Estimation of a Multi-port LTI Apparatus using Power System Ring-down Events | Santosh Singh, Anil Kulkarni |

| Session - XVIII | | |
|--|---|--|
| Subject Area - Renewable Energy Systems | | |
| Venue - Lecture Hall Complex - 08 | | |
| 9th December 2025 & 04:15 pm to 05:45 pm | | |
| Paper ID | Paper Title | Authors |
| 50 | Fault Detection in Unequal-Rated PV Strings Using Normalized Power and Snapshot Median Filtering | Jayakumar J, Justin Salamon M, Aswin Kumar M, <i>et al.</i> |
| 79 | Techno- Economic Modeling of a Renewable Hybrid Energy System | Kavya E M, Monisha M, Pasela Ramtej, K Shanthi Swarup |
| 96 | Next-Gen Offshore Wind Year Ahead Forecasting Aided Modelling for Techno-Economic Feasibility | Nidhi Gummaraju, Shri Varshini C, Sree Vyshnavi Mamilla, <i>et al.</i> |
| 218 | Impact of High Temperature on Wind Turbine Performance in India and Need for Climate-Resilient Design | Abhijeet Prakash, Priyanka Meena, Lav Kumar Khandelwal, <i>et al.</i> |
| 247 | Capacity credits for renewable energy and value of cross-border transmission in South Asian power systems | Suruchi Uppal, Srishty Jain, Puneet Chitkara, Sushil Kumar Soonee |
| 281 | Techno-Economic Feasibility Analysis of a Building Integrated Agrovoltatics Model | Alan Sam, Bhanu Ganta, Pradeep Kumar Yemula, Rayudu Katuri |

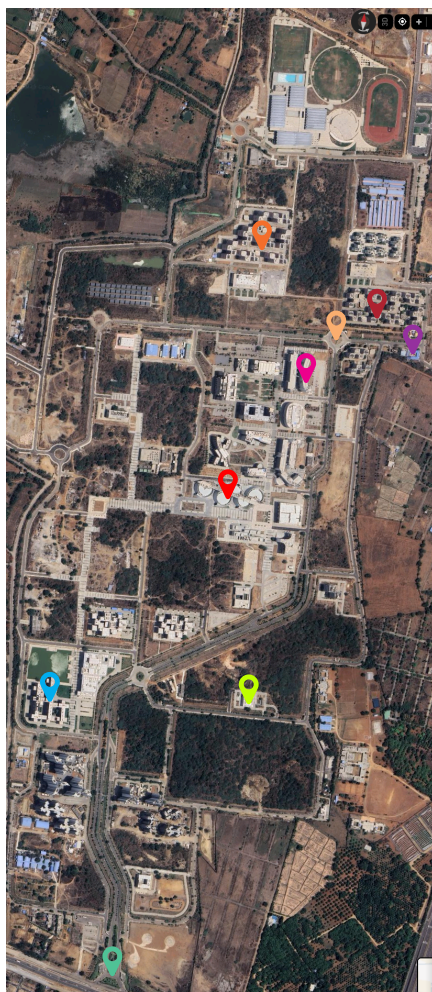
| Poster Presentations | | |
|--|---|--|
| Venue - Corridor Space, Lecture Hall Complex | | |
| 8 th December 2025 & 04:15 pm to 05:45 pm | | |
| Paper ID | Paper Title | Authors |
| 41 | Intra state SCED, dispatch using LP optimization in Maharashtra – A case study | Debasis De, Sushil K Soonee, Prof. Zakir Hussain Rather, Shashank Jewalikar, Akhilesh Panwar, Dr. Deb Chattapadhyay |
| 46 | Dynamic Line Rating Computation and Limit Exchange Methodologies | Pradeep Kumar Manigilla, Mritunjay Aman, Sriker Annangi, <i>et al.</i> |
| 62 | Data-Driven Inertia Estimation using BiLSTM and XGBoost for RES Integrated Power Networks | Magam Vasista Sai, Shahbazuddin Syed, Altaf Q. H. Badar, Prachi Salodkar |
| 65 | Study of Dielectric Performance of Insulating Stand-offs Under Lightning Impulse | Gyanendra Kumar Kurmi, Basanta Kumar Gautam |
| 66 | Experimental study of the surface dielectric strength of insulating tubes on basis of geometry under lightning impulse voltages | Akrit Acharya, Basanta Kumar Gautam |

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| 74 | Review of Mathematical Modeling and Scheduling Strategies of an Electric Vehicle Aggregator | SSSR Sarathbabu Duvvuri, Bala Sai Kiran P, Pinnamraju Sadhvik, Kukkala Varshini, Majji Vaishnavi, Jillabathula Pavithra |
| 76 | Adaptive Electric Vehicle EMS with Secure V2G Energy Transactions using Blockchain | C Shri Varshini, Nidhi Gummaraju, K Shanthi Swarup |
| 91 | Power Electronics Converter Topologies and Control Methods for On-Board and Off-Board Electric Vehicle Charging Systems: An Overview | Jajjala Kashyap, E S N Raju P |
| 92 | A Survey on Fault Location, PMU Deployment, and Fault Behavior of Distributed Generators and Active Loads in Medium-Voltage Distribution Networks | Anchal Maurya, E S N Raju P |
| 100 | Multi-part Innovative Tariff Framework for the Renewables for ambitious Net Zero targets | Sushil Kumar Soonee, Dr Amit Kumar Singh Parihar, Ghansham Thakkar, Himanshu Mishra |
| 104 | Improving Wind Energy Forecast Accuracy Using Machine Learning | Tirunagaru V Sarathkumar, T Sanjeeva Rao, Arup Kumar Goswami, T Venkata Prasad |
| 116 | Virtualization of Protection in Distribution Substation: An Object-Oriented Approach | Bhaskar Sahu, K. Shanti Swarup |

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| 119 | Impact of Filters on Grid Connected BESS: Experimental Analysis and Validation | Nivedika Kher, Sonam Gupta, Anup Shukla |
| 137 | Key Insights from Security-Constrained Economic Dispatch: A Case Study for Uttar Pradesh | Nishant Kumar, Abheejeet Mohapatra, Prabodh Bajpai, <i>et al.</i> |
| 143 | Detection and Localization of Low-Frequency Oscillations in North Eastern Region of India in the Presence of Inverter Based Resources | Karan Vasudev Katariya, Subhash Kumar, Palash Jyoti Borah, <i>et al.</i> |
| 192 | Optimising Power Despatch: Security Constrained Economic Despatch Initiative in Gujarat | Divya Sharma, Vatsalkumar Bhatt, Pandya Darshan Dilipkumar, <i>et al.</i> |
| 196 | Directional Overcurrent Relay Coordination in a Microgrid Environment by using Genetic Algorithm, and Breeder Genetic Algorithm | Ravindra Mankar, Pranav Darji |
| 205 | A Novel Development of a Single Switch DC DC Circuit for Fuel Cell Systems | Gurijala Sreedhar, CH Hussaian Basha, Likhitha R, Prathibha E, Muralikrishna Boddu |

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| 212 | Impact of Different Current Limiting Strategies on Stable Power Swing Trajectories in Grid-Forming Converter–Integrated Power System | Balabhaskar S S, Sreenath B, Manas Kumar Jena |
| 219 | Shock-Proofing the Grid: Readiness of Indian Electricity Markets for Futures-Based Hedging Instruments | Ribhu Shankar, Dr. Parminder Kaur Bajaj |
| 250 | An Enhanced VMD-DT-Based Fault Protection Scheme for AC Microgrid | Sandeep Banik, Dr. Biswajit Sahoo, Prof. Jyoti Prakash Mishra |
| 264 | A Hybrid Symmetrical Optimum-Pattern Search tuned PI Based Three-Phase SRF PLL Synchronization System Under Grid Irregularities | Bibhuti Prasad Sahoo, Adityansu Pati, Raseswari Pradhan |
| 278 | Security Constrained Economic Despatch for TGS LDC: Architecture, Data Pipeline, and MOD Benchmarking | Avik Ghosh, Pradeep Kumar Yemula, P. Suresh Babu, B. Raja Thirupathi, L. Sarveswar |
| 280 | Adaptive Distance Relay Protecting Transmission Lines Connecting Inverter Based Resources | Chandra Panda, Deepak Pullaguram, Ashok Kumar Pradhan |
| 285 | Remaining Useful Life Estimation of Aged Power Transformers: A Case Study Using Degree of Polymerisation and Furan Analysis | Koti Reddy B, Pradeep Kumar Yemula, Vishal Devulapalli, Rammohan Rao Vemula, Bhanu Ganesh Ganta |

| Online Presentations | | |
|--|--|---|
| Venue - Lecture Hall Complex - 11 | | |
| 9 th December 2025 & 09:00 am to 10:30 am | | |
| Paper ID | Paper Title | Authors |
| 73 | Evaluating Cascading Failure for Grid Resilience under Extreme Weather Events | Chandan Chaudhary, Alaaeldein Abdelkader, Mohammed Benidris, Joydeep Mitra |
| 81 | Design and Modeling of Campus Microgrid for Future Sustainable Energy Operations | Mahmuda Akter, Jannatul Ferdous, Samiul Hasan Emon, Shah Mohazzem Hossain |
| 138 | Comparative Analysis of Flywheel and Battery Energy Storage Systems for Smoothing Photovoltaic Power Output | Anil Bhatt, Bipin Subedi, Nita Kumari Phuyal, <i>et al.</i> |
| 141 | Space Vector Pulse Width Modulation Inverter Based Indirect Field Oriented Control for Induction Motor | Aayush Bhatta, Sandip Timsina, Ritesh Basnet, <i>et al.</i> |
| 244 | Techno-Economic and Environmental Assessment of On-Grid Rooftop Solar Integration for Diesel-Dependent Urban Markets | Md. Sabbir Alam, Shah Mohazzem Hossain |
| 245 | Exploring a Hybrid Renewable Energy System to Meet Bangladesh's Future Energy Needs | Md. Aminul Hoque, MD. Nahid Billah, Shah Mohazzem Hossain |



- 1-IITH Main Gate
- 2-International Guest House
- 3-EE Department
- 4-Lecture Hall Complex
- 5-Old Hostel
- 6-New Hostel
- 7-Hostel Circle
- 8-Canteen
- 9-IITH Hospital

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| Direction | Bus1 | Bus2 | Bus3 | Bus4 |
|---------------------------------|----------|----------|----------|------|
| Maingate-Hospital-Hostel Circle | - | 07:30:00 | 07:45:00 | |
| Hostel Circle-Hospital-Maingate | - | 7:45:00 | 8:00:00 | |
| Maingate-Hospital-Hostel Circle | 8:00:00 | 8:15:00 | 8:30:00 | |
| Hostel Circle-Hospital-Maingate | 8:15:00 | 8:30:00 | 8:40:00 | |
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| Hostel Circle-Hospital-Maingate | 8:50:00 | 9:00:00 | 9:10:00 | |
| Maingate-Hospital-Hostel Circle | 9:10:00 | 9:20:00 | 9:30:00 | |
| Hostel Circle-Hospital-Maingate | 9:20:00 | 9:30:00 | 9:40:00 | |
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| Hostel Circle-Hospital-Maingate | 9:50:00 | 10:00:00 | 10:15:00 | |
| Maingate-Hospital-Hostel Circle | 10:15:00 | 10:30:00 | 10:45:00 | |
| Hostel Circle-Hospital-Maingate | 10:30:00 | 10:45:00 | 11:00:00 | |
| Maingate-Hospital-Hostel Circle | Break | 11:00:00 | 11:15:00 | |
| Hostel Circle-Hospital-Maingate | | 11:15:00 | 11:30:00 | |
| Maingate-Hospital-Hostel Circle | 11:30:00 | Break | 11:45:00 | |
| Hostel Circle-Hospital-Maingate | 11:45:00 | | 12:00:00 | |
| Maingate-Hospital-Hostel Circle | 12:00:00 | 12:15:00 | Break | |
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| Maingate-Hospital-Hostel Circle | 12:30:00 | 12:45:00 | 13:00:00 | |
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| Hostel Circle-Hospital-Maingate | 14:20:00 | 14:30:00 | 14:45:00 | |
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| Hostel Circle-Hospital-Maingate | 15:00:00 | 15:15:00 | 15:30:00 | |
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| Hostel Circle-Hospital-Maingate | 15:45:00 | 16:00:00 | 16:15:00 | 16:20:00 |
| Maingate-Hospital-Hostel Circle | 16:15:00 | 16:30:00 | 16:45:00 | 16:35:00 |
| Hostel Circle-Hospital-Maingate | 16:30:00 | 16:45:00 | 17:00:00 | 16:50:00 |
| Maingate-Hospital-Hostel Circle | 17:00:00 | 17:15:00 | 17:30:00 | 17:05:00 |
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| Hostel Circle-Hospital-Maingate | 18:50:00 | 19:00:00 | 19:10:00 | 18:50:00 |
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| Maingate-Hospital-Hostel Circle | 21:30:00 | | 21:45:00 | 21:35:00 |
| Hostel Circle-Hospital-Maingate | 21:45:00 | | 22:00:00 | 21:55:00 |
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| Maingate-Hospital-Hostel Circle | | | | 02:05:00 |
| Hostel Circle-Hospital-Maingate | | | | 02:20:00 |
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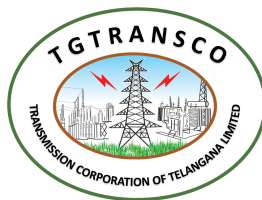
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