

International Conference on Future Power Network and Smart Energy Systems: Issues and Challenges (FPNSES-2023)

HYBRID MODE

28-30 DECEMBER 2023



In collaboration with



NIT Delhi



NPTI Faridabad

Co-Sponsored by



BPE (I) Pvt. Ltd.

Organized by



NIT Kurukshetra
(Institution of National Importance)

Proceedings of Int. Conf. FPNSES-2023 will be published by IEEE Xplore Digital Library

About International Conference (FPNSES-2023):

An International Conference on Future Power Network and Smart Energy Systems: Issues and Challenges is being organised by Department of Electrical Engineering, National Institute of Technology, Kurukshetra. This conference shall provide a useful forum to the Academicians, Technologist, Entrepreneurs and Research scholars in the respective domain for further benefit of the mankind at large. Today, the power network is very vast, complex, and evolving with increasing penetration of renewable energy sources (RES), energy storage devices, electric vehicles, and smart technologies. This brings in associated challenges. The operation of the power system should be secure, interoperable, and cost-effective while the technology and innovation continue to modernize electric power system with the integration of RES, smart devices, communication for perfect coordination among devices and integration of hardware and software to take decisions like human making the electric infrastructure called a "smart grid". With advanced sensing technologies and control techniques, it can capture and analyse data regarding power usage, delivery, and generation in near real-time. The information technologies with bi-directional communication and electricity flow have enabled both utilities and customers to monitor, predict, and manage energy usage and environmental sustainability.

This conference is envisioned to provide platform to the academia and industry participants to explore into latest emerging technology trends on the thematic areas and update on research directions for collaborative work.

About NIT Kurukshetra

NIT Kurukshetra, formerly known as Regional Engineering College, Kurukshetra was founded in 1963. It was conferred upon the NIT status, with Deemed University on June 26, 2002. The Institute offers several courses, in various disciplines of B.Tech, M.Tech, MBA and MCA and Ph.D. with an annual intake of about 1500 students. Institute also provides excellent facilities for advanced research in the emerging areas of Engineering, Science, and Technology. The institute has well qualified and dedicated faculty along with supporting staff, laboratories and other infrastructure. The infrastructure is geared to enable the institute to produce technical personnel of high quality.



About Electrical Engineering Department

The Department offers B.Tech, M.Tech and Ph.D. Degrees. The B.Tech course in Electrical Engineering provides is run with a number of electives, which enables the students to specialize in one of the fields i.e. Power Apparatus and Systems; High Voltage Engineering; Electronics and Instrumentation; Computer Applications; Information and Control. Presently, the department has three post graduate programs, M.Tech, in Control Systems; Power Systems; Power Electronics and Drives and offers Ph.D. in different areas to keep synergy with the evolving innovations and developments in all disciplines of Electrical Engineering.

About Place:

Kurukshetra is described as DHARAMKSHETRA, with historical and religious importance. Here, the battle of Mahabharata was fought, and Lord Shree Krishna preached the philosophy of "KARMA" as enshrined in the holy book "Shrimad Bhagwad Gita." It is one of the premier pilgrimage centers attracting devotees all round the year. Kurukshetra is very well connected by Rail, Delhi-Ambala section, by Road (NH1, connecting Delhi-Chandigarh-Amritsar-Jammu) and by Air (Delhi 160 km and Chandigarh 80km). The NIT Kurukshetra campus is situated about 10 km from Pipli, Bus stand located on NH1 and about 4 km from Kurukshetra railway station.



Call for Papers:

Original contributions are sought in the wide and multi-disciplinary areas of Smart Grids, Renewable Energy Systems, micro grids operation energy management, Control, Instrumentation, Power electronics & drives, Electrical Vehicle, Renewable Energy Sources, Smart devices and materials in High voltage Engineering, Artificial Intelligence & soft computing, Signal & Systems, Communication, Networks, Information Theory, Circuits & Systems etc. All submissions will be reviewed by the Technical Committee on the basis of technical quality, relevance to conference topics of interest, originality, significance, and clarity. By submitting your manuscript to the conference, it is understood that it is an original manuscript, is an unpublished work and is not under consideration elsewhere.

TRACK 1: Future Energy Systems and Technologies

- ❖ Future Smart Computing Paradigms,
- ❖ Algorithms for Smart Energy Management and Analytics,
- ❖ Smart Grid Technologies and Infrastructures
- ❖ Sensor Networks for Smart Grids,
- ❖ Industrial Applications of Smart Energy Systems,
- ❖ Home Automation Technologies,
- ❖ Safety and Security
- ❖ Smart Devices & Metering
- ❖ IoT Applications in Grid
- ❖ Reliability and Maintenance
- ❖ Grid Integration of distributed energy sources
- ❖ Power quality event detection, classification and mitigation with signal processing techniques
- ❖ Control of shunt, series and active filters
- ❖ Etc.

TRACK 2: Sustainable Energy Systems

- ❖ New Trends and Technologies for Renewable Energy Sources (RES)
- ❖ Control Techniques for Renewable Energy Systems
- ❖ Control Techniques for RES
- ❖ RES for Electrical Vehicles and Components
- ❖ Hybrid RES
- ❖ Renewable Energy Research and Applications for Industries
- ❖ Policies in Renewable Energy Integration
- ❖ Advanced Green Energy Technologies,
- ❖ Energy Efficient Designs and Standards,
- ❖ Green Energy in Transport & Sustainable Cities,
- ❖ Rural Development through Green Energy.
- ❖ Etc.

TRACK 3: Distributed Energy Systems

- ❖ Electrical Power quality
- ❖ Active and reactive Power Management
- ❖ Control and energy management system
- ❖ Distributed energy and Microgrid systems
- ❖ DC & AC Microgrids
- ❖ Microgrid energy management
- ❖ Power Generation and Distribution
- ❖ Energy Storage Systems and Applications
- ❖ Etc.

TRACK 4: Power Electronics and Drive System

- ❖ Power converter topologies: Modelling, Analysis and Control
- ❖ Power Semiconductor Devices and their applications
- ❖ Control techniques in Power Electronics
- ❖ Simulation of Power Electronics
- ❖ Electric Drives and their control
- ❖ Electric Drives for Renewable and Transportation
- ❖ Thermal Management, Packaging, and Optimization.
- ❖ Fault Diagnosis, Condition monitoring, and Reliability of Electric Drives.
- ❖ Electrical Vehicle and related areas
- ❖ FACTS, PFC, STATCOM,
- ❖ Harmonic analysis and compensations
- ❖ Etc.

TRACK 5: Instrumentation & Control

- ❖ Advances in Theoretical Aspects of Measurement, Instrumentation, Control and Automation(MICA)
- ❖ Adaptive, Robust, Distributed, Intelligent, and Digital control
- ❖ Process Control and Automation
- ❖ Estimation, Modelling and Identification
- ❖ Novel Instrumentation for Process Measurement
- ❖ Optimization and optimal control
- ❖ Artificial Intelligent and Expert System
- ❖ Fuzzy Logic and Neural Network
- ❖ Recent developments in automation and control
- ❖ Etc.

COMMITTEE

PATRONS

Prof. B.V. Ramana Reddy

Director, NIT Kurukshetra

Prof. Ajay K. Sharma

Director, NIT Delhi

Prof. Tripta Thakur

DG, NPTI Faridabad

CO-PATRON

Dr. Jyoti Ohri

Professor and Head, EED, NIT Kurukshetra

GENERAL CHAIR

Dr. Sathans

Professor, EED, NIT Kurukshetra

CO-CHAIRS

Dr. Manju Mam

Principal Director,
NPTI Faridabad

Dr. Anmol Ratna Saxena

Assoc. Prof. & Head, EED,
NIT Delhi

ORGANISING SECRETARIES

Dr. Rahul Sharma

Assistant Professor, EED,
NIT Kurukshetra

Dr. Amit Kumar

Assistant Professor, EED,
NIT Kurukshetra

Dr. Mahendra Singh

Dy. Director, NPTI Faridabad

Dr. Obbu Chandra Sekhar

Assoc. Prof., EED, NIT Delhi

PUBLICITY CHAIRS

Dr. M.P.R. Prasad

Assistant Professor, EED,
NIT Kurukshetra

Dr. Anshul Agarwal

Assistant Professor, EED,
NIT Delhi

Sh. Amit Mishra

Assistant Director,
NPTI Faridabad

Dr. Manish Kumar

Assistant Professor, EED,
CUH Haryana

COMMITTEE

PUBLICATION CHAIRS

Dr. K. P. S Parmar

Dy. Director, NPTI Faridabad

Dr. Pankaj Mukhija

Assistant Professor, EED, NIT Delhi

Dr. Muralidhar Nayak Bhukya

Assistant Professor, EED, CUH Haryana

TECHNICAL CHAIRS

Dr. Bhanu Pratap

Assistant Professor, EED, NIT Kurukshetra

Dr. Vatsala Sharma

Dy. Director, NPTI Faridabad

Dr. Kumari Namrata

Ass. Prof., EED, NIT Jamshedpur

FINANCE CHAIRS

Dr. Sandeep Kakran

Assistant Professor, EED,
NIT Kurukshetra

Dr. Rajesh Kumar

Assistant Professor, EED,
NIT Kurukshetra

INTERNAL ADVISORY COMMITTEE

Dr. L. Dewan

Prof., EED, NIT Kurukshetra

Dr. G. L. Pahuja

Prof., EED, NIT Kurukshetra

Dr. R. Dahiya

Prof., EED, NIT Kurukshetra

Dr. L. M. Saini

Prof., EED, NIT Kurukshetra

Dr. Ashwani Kumar

Prof., EED, NIT Kurukshetra

Dr. J. Ohri

Prof. EED, NIT Kurukshetra

Dr. J. S. Lather

Prof., EED, NIT Kurukshetra

Dr. Yashpal

Prof., EED, NIT Kurukshetra

EXTERNAL ADVISORY COMMITTEE

Prof. Manoj Singh Gaur

Director, IIT Jammu

Prof. Laxmidhar Behera

Director, IIT Mandi

Prof. Shreepad Karmalkar

Director, IIT Bhubaneswar

Prof. Tankeshwar Kumar

VC, CUH Mahendergarh

Prof. Lalit Awasthi

Director, NIT Uttarakhand

Prof. M. C. Govil

Director, NIT Sikkim

Prof. P. K. Jain

Director, NIT Patna

Prof. N. P. Padhy

Director, MNIT Jaipur

EXTERNAL ADVISORY COMMITTEE

Prof. H.M. Suryawanshi

Director, NIT Hamirpur

Prof. Binod Kumar Kanaujia

Director, NIT Jalandhar

Prof. Bidyadhar Subudhi

Director, NIT Warangal

Prof. S.N. Singh

Prof., Director IIITM, Gwalior

Prof. Shailendra Jain

Director SLIET, Longowal

Prof. C.C. Tripathi

Director, NITTTR Bhopal

Prof. Tek Tjing Lie

Prof., Auckland University of Technology, Newzeland

Prof. Petr Musilek

Professor, University of Alberta, Canada

Prof. S. Hassan Hosseinia

Professor, TU Delft University of Technology, Netherland

Prof. Lalit Goel

Professor, NTU Singapore

Prof. Akhtar Kalam

Prof., Victoria University, Australia

Prof. R. Bansal

Prof., University of Sharjah

Prof. Kankar Bhattacharya

Professor, University of Waterloo, Canada

Prof. Wenzhong Gao

Professor, Denver University, USA

Prof. N.C. Shiva Prakash

Professor, IISc Bangalore

Prof. S.A. Soman

Professor, IIT Bombay

Prof. Sukumar Mishra

Professor, IIT Delhi

Prof. K. Shanti Swarup

Professor, IIT Madras

Prof. Vivek Agarwal

Professor, IIT Bombay

Prof. G N Pillai

Professor, IIT Roorkee

Prof. Barjeev Tyagi

Professor, IIT Roorkee

Prof. Chandan Chakraborty

Professor, IIT Kharagpur

Prof. Siddartha Mukhopadhyay

Professor, IIT Kharagpur

Prof. Sivaji Chakravorti

Professor, Jadavpur

University

Prof. Chitralekha Mahanta

Professor, IIT Guwahati

Prof. Harish Pillai

Professor, IIT Bombay

Prof. B. K. Panigrahi

Professor, IIT Delhi

Prof. Ranjit Mahanty

Professor, IIT BHU, Banaras

Prof. Madhusudan Singh

Professor, DTU, Delhi

AUTHORS

Submission

Plagiarism, including duplicate publication of the author's own work, in whole or in part without proper citation, data fabrication and image manipulation are not tolerated by the symposium. If plagiarism is detected during the peer review process, the manuscript may be rejected. If plagiarism is detected after publication, we may publish a correction or retract the paper.

For Review Process

Authors must submit a full length paper of the proposed research for evaluation by the Technical Committee and further reviewing process by the reviewers.

After Acceptance

After receiving the notification of acceptance, the authors of accepted Papers will be asked to modify their Paper according to the Reviewers recommendations and to submit the Camera Ready version of their paper and all source files necessary to produce the final version by the Editor and sign the Copyright Transfer Form.

The final camera-ready copy of the papers must be in IEEE format with a length of maximum 6 pages. Check Author Guidelines in IEEE for formatting the camera-ready article.

For an accepted paper to be published in the IEEE Digital Xplore, at least one of the authors for the accepted paper must have registered and presented the paper in the conference.

REGISTRATION

| S. N. | Category | Fees |
|-------|--------------------------|-------|
| 1. | Research Scholar/Student | 6000 |
| 2. | Faculty | 8000 |
| 3. | Industry | 12000 |
| 4. | Foreign Participants | \$250 |

IMPORTANT DATES

| | |
|-------------------------------------|----------------|
| Paper Submission Deadline | 30th Oct. 2023 |
| Paper Acceptance Notification | 7th Nov. 2023 |
| Camera Ready/Final Paper Submission | 30th Nov. 2023 |
| Registration Open | 7th Nov. 2023 |

Paper Submission Link: <https://cmt3.research.microsoft.com/FPNSES2023/Submission/Index>

All conference materials and services will be delivered to the registrant. Conference registration includes the following materials and services:

- " certificates
- " program
- " symposium proceeding
- " receipt
- " presentation

Mode of Payment (SBI Collect)

Please submit the conference fee through SBI Collect and provide the transaction Receipt during registration (Google Form). If you have any questions related to the conference registration please write to us fpnses@nitkkr.ac.in.

PLACE TO VISIT

BRAHMA SAROVAR:

It is an ancient water pool sacred to Hinduism in Kurukshetra, in the state of Haryana in North India. Hinduism lays emphasis on taking bath for internal and external purity. Most religious sites have water pools or sarovar in or near the temple/gurdwara.



JYOTISAR:

It is place in Kurukshetra where Lord Krishna gave the lesson of karma to Arjun, which is now known as Bhagwad Geeta. There is a temple and old vat tree at the place. The vat tree is believed to be an offshoot of the tree which was present at the time of Mahabharat war.

MAA BHADRAKALI DEVIKOOP TEMPLE:

It is one of the 51 Shakti Peethas of Mata Sati. It is believed that an anklet of Mata Sati fell in the well of Temple. The temple has a ritual that devotees pray for a wish and if the same is accomplished, couples of horses are devoted in the temple. This originates from Mahabharat where Yudhistir devoted couple of horses in



the temple after winning the war. Nowadays people devote horses made of mud or precious metal.

PLACE TO VISIT



STHANESHWAR MAHADEV TEMPLE:

This ancient temple, dedicated to Lord Shiva is situated in Kurukshetra. It is the place where the Pandavas along with Lord Krishna prayed to Lord Shiva and received his blessings for victory in the battle of Mahabharata. The ninth Guru, Shri Tegh Bahadur stayed at a spot near the

Sthaneshwar Tirtha that is marked by a gurdwara just besides this temple.

BHISHMAKUND:

This is the place where it is believed that Pitamaha Bhishma lay watching the famous battle after Arjun, created a bed of arrows for him. The place now has a temple next to a water tank called the Banganga or the Bhishma Kund.



GURDWARA CHEVIN PATSHAHI:

It was built in the loving memory of the sixth Sikh guru, Hargobind, who visited this place along with his armed retinue. Here the guru clarified doubts of people by explaining the relationship between bhakti, prayer and shakti or power.



NIT Kurukshetra (Institution of National Importance)

Contact Details :-

Dr. Rahul Sharma

+91 72062 28032

Dr. Amit Kumar

+91 8950 213417

Email : fpnses@nitkkkr.ac.in

Conference Website : www.fpnses2023.org