

TECHNICAL TOPICS TO BE COVERED

The five-day workshop on “**Operational Requirements and Control Issues of Smart Technology Driven Active Distribution Network**” primarily aims to cover the following fundamental topics.

- ❖ Active Distribution Network (ADN) Planning
- ❖ Power system stability and dynamics
- ❖ Soft Computing Application in Power System
- ❖ Power Quality Issues in ADN.
- ❖ Demand Response and battery sizing
- ❖ Reliability Assessment and system resilience
- ❖ Community microgrid and power trading
- ❖ Grid tied inverter operation and control.
- ❖ Control issue in active distribution network.

The workshop will give ample opportunity to the participants to acquire hardware/software techniques useful in analysis of ADN. To achieve this following hands-on training session will also be conducted:

- ❖ Power converters in ADN using **LTSPICE software**.
- ❖ Control strategies for power converters in ADN using **MATLAB**.
- ❖ **Cloud based control of IoT** enabled power converter in ADN.
- ❖ Simulation and fault studies of ADN using **PSCAD** software.
- ❖ Simulation and analysis of ADN in **Typhoon HIL** platform.

CONTACT DETAILS

Dr. Pankaj Mishra
Convener

Department of Electrical and Electronics Engineering

Contact: 8210525515

E-mail: pankajmishra@bitmesra.ac.in

Support Team for Further Assistance:

Ms. Prity Soni,	Contact: 8339042129
Mrs. Divyangini,	Contact: 9409128820
Mr. Rohit Kumar,	Contact: 9658462291
Mr. Abdullah Umar,	Contact: 9560459784

ELIGIBILITY CRITERIA FOR PARTICIPANTS

- The proposed workshop is meant to support motivated PG and Ph.D. level students, who are having a strong willingness to get excellence in their scientific and engineering research pursuits in the area of power system, active distribution network, renewable energy, and smart technology applied to power system.
- The applicants must produce a letter of authentication from their Supervisor/Head of the Department/Head of the Institute indicating their association with the institute and “No Objection Certificate (NOC)” for allowing their student to undergo training in the workshop, if selected. There is no dedicated format for the same; however, it must be obtained on the institute/university letter head.
- The maximum number of participants is limited to **25**.
- There is no registration charge for attending the course.
- All the selected participants will be given accommodation in Institute hostel with fooding.
- The participants will be eligible for TA reimbursement for their journey to the host institute from their home institute, both ways, as per the norms.
- A certificate regarding successful completion of workshop shall be issued to the participants.
- More details can be found in Accelerate Vigyan website (<https://acceleratevigyan.gov.in/events>).

REGISTRATION GUIDELINES

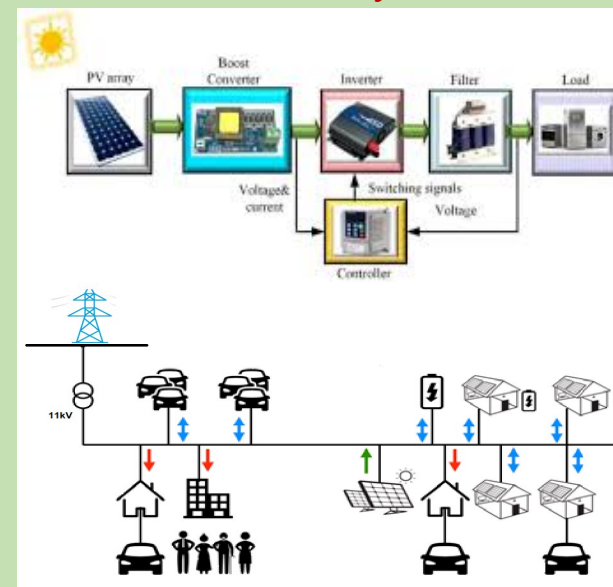
- Participants interested to attend this program should register online in the below mentioned link:

<https://forms.gle/jw3CYWjpajETm2QW7>

- Please fill the Google form along with the requested details, scanned copies of certificates, resume and other supporting documents including the letter of authentication latest by **Sunday, 7th May 2023**.
- Since the number of participants is limited to 25, priority will be given to early application and the purpose cited by the applicant.
- The selected candidates will have to acknowledge and accept the offer for participating in the workshop through return email, failing which the waitlisted candidates may be called for the workshop.



SERB Sponsored
One Week High-End Workshop on
Operational Requirements and Control
Issues of Smart Technology Driven Active
Distribution Network
(Physical Mode)
15th – 21st May 2023



Organized by

Department of Electrical & Electronics
Engineering

BIRLA INSTITUTE OF TECHNOLOGY
(A Deemed to be University u/s 3 of UGC Act, 1956)
Mesra, Ranchi – 835 215 (India)
www.bitmesra.ac.in

ABOUT WORKSHOP

The presence of Renewable Energy Sources (RESs) especially grid-tied roof-top solar sources creates a paradigm shift from passive distribution network to active distribution network (ADN). Such power network in MV/LV level is the only solution to reduce the reliance on fossil fuel fired generating units that generates greenhouse gases. However, as the reliance on RESs generation grows, new challenges are being encountered on grid operation, those need to be properly addressed. To address these challenges, the controllability of all the energy sources and loads are incorporated. This extensive control can be achieved through wire/wireless communication and smart metering that play a major role in keeping the network alive even in islanded mode. Power flow analysis, routing of network planning, stability, contingency analysis, resiliency for the active distribution network is required to be reframed.

In operational stage, the control of inverter should target the desirable operation that ensures the criteria of pool operation, following the standards frequency and voltage control of inverter following disturbances. The mathematical modelling of whole system is to be developed to understand the power sharing between different sources.

This workshop encapsulates sessions on various aspects and challenges related to operation and control of active distribution network. Application of some software like PSCAD, LTSPICE and MATLAB for simulation and analysis of active distribution network will be discussed in hands-on training sessions of the workshop. Further, the use of hardware-in-loop software like Typhoon HIL and cloud-based control, and IoT device application will be elaborated in hardware based hands-on sessions in the workshop.

The workshop is open only to research scholars and PG students.

In a nutshell, the fundamental objective of this workshop is to enrich and augment the knowledge of the participants and provide a platform to interact with experts and to strengthen research activities in the fields of active distribution network.

RESOURCE PERSONS

The course content will be delivered from a pool of resource persons on the subject from leading prestigious academic institutions including IITs, NITs and BIT.

ABOUT KARYSHALA SCHEME

SERB has a vision to position science and technology as the fulcrum for social and economic change by supporting competitive, relevant, and quality scientific research and development. As the premier national research funding agency, the mission is to raise the quality and footprint of Indian science and engineering to the highest global levels in an accelerated mode, through calibrated, competitive support of research and development.

‘KARYASHALA’ is an effort to improve research productivity of promising PG and PhD students from universities and colleges through high-end workshops on specific themes. This program aims to provide opportunities to acquire specialized research skills. These workshops will primarily be facilitated at organizations/ institutions/ laboratories of national importance such as IITs, IISc, IISERs, NITs, CSIR, ICAR, ICMR etc.

ABOUT BIT MESRA

The Birla Institute of Technology (BIT) Mesra is one of the oldest technical institutes in independent India. Founded in 1955 by the visionary industrialist and philanthropist Mr. B.M. Birla. BIT Mesra is located in Ranchi, the capital of the State of Jharkhand, the mineral hub and abode of serene beauty of natural forests, mountains and waterfalls. In more than six decades of its glorious existence the Institute is recognized by the University Grants Commission (UGC) as a deemed to be University in 1986 under section 3 of the UGC Act 1956. It emerged as one of the topmost self-financed or private Engineering Institution catering to both traditional engineering disciplines and emerging technological domains with firm foundation in fundamental sciences and orientation toward modern innovations and applications.

ABOUT EEE DEPARTMENT

The Department of Electrical & Electronics Engineering is dedicated to the current needs of industry with the flexibility to tune its programmes according to different requirements. Application of new technology in various fields is one of the main focuses in the activities of the department. Department of EEE has recently received grants amounting to Rs. 3.0 Crore from UGC, DST, SERB, AICTE, TEQIP to strengthen the research facility for the development of lightning protection system, smart grid concept in power system, battery management system for EV, block chain-based power market operation, energy efficient electrical motor drives. The Department of EEE has MoUs with University of Padova, Italy, TATA Motors, ERLDC Grid-India Controller, Central Coal filed Limited, Larsen & Turbo Technical Services Ltd. and other industries.

ORGANIZING COMMITTEE

Chief-Patron

Prof. Indranil Manna

Vice Chancellor

Birla Institute of Technology Mesra

Patron

Prof. C. Jeganathan

Dean, RIE

Birla Institute of Technology Mesra

Chairman

Prof. T. Ghose

Head of the Department, EEE

Birla Institute of Technology Mesra

Convener

Dr. Pankaj Mishra

Assistant Professor, Dept. of EEE

Birla Institute of Technology Mesra