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BANGALORE · INDIA

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Department of Electrical and Electronics Engineering
School of Engineering and Technology

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ORIENTATION 22-23'

The department conducted its academic orientation for the year 2022-23 on 11th July. The program began with a silent prayer. Further, the Head of Department, Dr Joseph Rodrigues welcomed the students and teachers and briefed the freshers about the department and the various activities conducted to improve the quality of learning of the students. Later, Prof. Haneesh K M introduced all to the E-Mobility research and development centre. Prof. Dr Manikandan P., briefed about the centre of excellence for automation.

Prof. Dr Varaprasad Janamala introduced the concept of energy auditing and its scope as a career field. He also spoke about how to publish research papers with the guidance of professors. Later, Prof. Devika Menon briefed about the placement statistics for the past years and shared how to improve oneself for the campus placements through placement training.

Also, one of the alumni of the department from 2018 batch, Mr. Arka Pramanik, currently working at Stevens institute of Technology, New Jersey, shared his experience till date and encouraged each of us to work hard and graduate while setting goals for future.

The evening session was dedicated to welcome the freshers to the department. There was an ice breaking session including all the juniors, seniors and super seniors of the department. It was fun to invite new members to the department family. The day ended pleasantly.

IEEE TECH-TALK BY AMOL KOWALKAR

The Department of Electrical and Electronics Engineering organized a talk on 'Protection and Control of Inverters Interfaced Renewable Generations: Experience and Trends' at Kengeri Campus in association with IEEE Student Branch and IEEE PES Student Branch, Christ (Deemed to be University). The prayer hymn signalled the beginning of the event. Prof. Dr Usha Surendra, extended a warm welcome to the students. Prof. Dr Vijaya Margaret gave a welcome address and introduced the guest speaker- Mr. Amol Kowalkar, Senior engineer, GE Global research, Bangalore. The program proceeded with a power point presentation by our guest speaker which was mostly focused on the fundamentals of power system, real-world case studies and upcoming opportunities which will in turn benefit the students. This helped to get an overview of the dynamics of power system and get a fair idea on the various root causes to problem cases. There was also a QnA round during which the speaker gave alternatives to the questions put forth. Following the motivational and educational speech,

Maria Juliana David, from 5BTEE, thanked the guest speaker on behalf of the IEEE students chapter and Department of EEE. The event came to an end with a vote of thanks along with the IEEE students taking home a big chunk of facts.

RESEARCH ACTIVITIES

AN ADAPTIVE INERTIA WEIGHT TEACHING–LEARNING-BASED OPTIMIZATION FOR OPTIMAL ENERGY BALANCE IN MICROGRID CONSIDERING ISLANDED CONDITIONS

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ABSTRACT:

The energy balance in islanded microgrids is a complex task due to various operational constraints. This paper proposes a new approach to multi-objective optimization for achieving energy balance in a Microgrid (MG) in both islanded and normal modes. Optimal load control (OLC) is a challenge, due to a lack of capacity to generate the global optimum after each run. The latest variant of Teaching Learning Based Optimization (TLBO), known as Adaptive-TLBO, includes both modifications during exploitation and exploration stages (ATLBO). The results achieved with the proposed method are exceptional on a modified IEEE 33-bus system. In addition to the improvement of the voltage profile and the decrease of the distribution losses, the energy balance improves with the method. The proposed ATLBO algorithm overrides any proposed other algorithm, as shown by comparison with PSO, base TLBO, Backtracking search algorithm (BSA) and cuckoo search algorithms, etc. (CSA).

Keywords: Microgrid, Islanding mode, Optimal load control, Renewable energy, Adaptive teaching-learning-based optimization, Multi-objective optimization.

https://link.springer.com/article/10.1007/s12667-022-00526-3

AQUILA OPTIMIZER BASED OPTIMAL ALLOCATION OF SOFT OPEN POINTS FOR MULTI-OBJECTIVE OPERATION IN ELECTRIC VEHICLES INTEGRATED ACTIVE DISTRIBUTION NETWORKS

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ABSTRACT:

The appropriate position and sizing of soft open points (SOPs) for reducing the detrimental impact of electric vehicle (EV) load penetration and renewable energy (RE) variation on active distribution networks (ADNs) are provided in this study. Soft open points (SOPs) have been used to create a multi-objective framework that considers loss minimization and voltage profile enhancement. The non-linear multi-variable complicated SOP allocation problem is solved for the first time using a modern meta-heuristic Aquila optimizer (AO). The modified IEEE 33-bus benchmark and IEEE 69-bus ADNs are used in the simulations. Before SOPs, the average real power loss in IEEE 33-bus AND was 370.329 kW, but after SOPs, it was reduced to 259.356 kW (i.e., 29.96 percent reduction). Similarly, effective SOPs integration in the IEEE 69-bus resulted in a loss reduction of 81.07 percent. AO's computational efficiency is also compared to that of multiobjective particle swarm optimization (MOPSO), particle swarm optimization (PSO), and cuckoo search algorithm (CSA). The AO has produced better results in terms of lower losses, improved voltage profile despite variations in EV load penetration, and RE and load volatility in ADNs, according to the results.

Keywords: Active distribution networks, Aquila optimizer, Electric vehicles, Loss reduction, Renewable energy, Soft open points, Voltage profile improvement.

https://inass.org/wp-content/uploads/2022/04/2022083125-2.pdf

Artificial Ecosystem-Based Optimization for Optimal Location and Sizing of Solar Photovoltaic Distribution Generation in Agriculture Feeders

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ABSTRACT:

In this paper, an efficient nature-inspired meta-heuristic algorithm called artificial ecosystem-based optimization (AEO) is proposed for solving optimal locations and sizes of solar photovoltaic (SPV) systems problem in radial distribution system (RDS) towards minimization of grid dependency and greenhouse gas (GHG) emission. Considering loss minimization as main objective function, the location and size of solar photovoltaic systems (SPV) are optimized using AEO algorithm. The results on Indian practical 22-bus agriculture feeder and 28-bus rural feeders are highlighted the need of optimally distributed SPV systems for maintaining minimal grid dependency and reduced GHG emission from conventional energy (CE) sources. Moreover, the results of AEO have been compared with different heuristic approaches and highlighted its superiority in terms of convergence characteristics and redundancy features in solving the complex, nonlinear, multi-variable optimization problems in real time.

Keywords: Solar photovoltaic system, Radial distribution system, Composite load modeling, Artificial ecosystem-based optimization, Distribution generation, Optimization.

https://link.springer.com/chapter/10.1007/978-981-16-9416-5_55

Political Optimizer-Based Optimal Integration of Soft Open Points and Renewable Sources for Improving Resilience in Radial Distribution System

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ABSTRACT:

A novel and simple meta-heuristic optimization technique viz., political optimizer (PO) is proposed in this paper to identify the size and optimal location of solar photovoltaic (SPV) system. The main objective is to minimize the distribution loss and is solved using proposed PO. The computational efficiency of PO is compared with the literature, and its superiority is highlighted in terms of global solution at initial stage. The physical requirements of SPV system via soft open points (SOPs) among multiple laterals are solved considering radiality constraints in second stage. The proposed concept of interoperable-photovoltaic (I-PV) system has been applied on standard IEEE 69-bus system and has shown the effectiveness in performance enhancement of the system.

Keywords: Interoperable-photovoltaic system, Political optimizer, Resilience, Soft open points, Loss minimization, Radial distribution system.

https://link.springer.com/chapter/10.1007/978-981-16-9416-5_31

Optimal DG Planning and Operation for Enhancing Cost Effectiveness of Reactive Power Purchase

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ABSTRACT:

The demand for reactive power support from distributed generation (DG) sources has become increasingly necessary due to the growing penetration of DG in the distribution network. Photovoltaic (PV) systems, fuel cells, micro-turbines, and other inverter-based devices can generate reactive power. While maximizing profits by selling as much electricity as possible to the distribution companies (DisCos) is the main motive for the DG owners, technical parameters like voltage stability, voltage profile and distribution losses are of primary concern to the (DisCos). Local voltage regulation can reduce system losses, improve voltage stability and thereby improve efficiency and reliability of the system. Participating in reactive power compensation reduces the revenue generating active power from DG, thereby reducing DG owner's profits. Payment for reactive power is therefore being looked at as a possibility in recent times. Optimal power factor (pf) of operation of DG becomes significant in this scenario. The study in this paper is presented in two parts. The first part proposes a novel method for determining optimal sizes and locations of distributed generation in a radial distribution network. The method proposed is based on the recent optimization algorithm, Teaching-Learning-Based Optimization with Learning Enthusiasm Mechanism (LebTLBO). The effectiveness of the method has been compared with existing methods in the literature. The second part deals with the determination of optimal pf of operation of DG sources to minimize reactive power cost, reduce distribution losses and improve voltage stability. The approach's effectiveness has been tested with IEEE 33 and 69 bus radial distribution systems.

Keywords: Optimal DG deployment, LebTLBO, Reactive power cost, Voltage stability.

https://link.springer.com/chapter/10.1007/978-981-16-9113-3_35

IMPORTANT HEADLINES

- Digital Polar Radio Approach Shrinks Power for Wi-Fi IoT Devices.
- Sony Balances Data and Detail with Latest Security Camera CMOS Image Sensor.
- BHEL commissions solar PV plant in Madhya Pradesh for Indian Railways.
- Researchers learn to control electron spin at room temperature to make devices more efficient and faster.
- Pioneering recycling turns mixed waste into premium plastics with no climate impact.
- Solar-powered chemistry uses carbon dioxide and water to make feedstock for fuels, chemicals.
- Super-fast electric car charging, with a tailor-made touch.
- Researchers invent self-charging, ultra-thin device that generates electricity from air moisture.
- Global EV powertrain systems market to reach $107 bn by 2029.

DATES TO REMEMBER

- 1st August – Friendship Day
- 6th August – Hiroshima Day
- 8th August – Quit India Movement Day
- 9th August – Nagasaki Day
- 12th August – International Youth Day
- 13th August – World Organ Donation Day
- 15th August – Independence Day
- 19th August – World Photography Day
- 23rd August – International Day for the Remembrance of the Slave Trade and its Abolition
- 26th August – Women's Equality Day
- 29th August – National Sports Day

ARTICLES

THE FIERY LAPWINGS

NIRMALA JOHN

The pariah kites flew about the open grassland. They looked majestically big and their sudden swoops were frightening as I sat on the rocky edge of the open grassland. The sun birds and the bulbuls seemed unperturbed as they flitted about the short shrubs. The tiny squirrel moved by my side; its tail brushing my hand. Far off a few dogs ran about playfully. The big kites swooped down again. They seemed to be targeting a meal by the side of the little waterhole at the far end of the open land. The recent rains had filled the waterhole. The croaking of the frogs had been incessant in the nights. The ground around the waterhole was wet and slushy. Pools of water still remained after the night rains. The injured frog tried to sink in a little deeper into the wet mud. The kites swooped down again and one almost had it in its claws. The frog had its luck. Maybe it had prayed. The lapwings flew in together shrieking loudly. They landed on the wet grass and rose again. Like soldiers of war they flew wildly; their black flight wings spread out. The white patch on their wings looked beautiful in flight. Their shrieks became louder and shriller. The kites tried to swoop down again. The two warriors took them on. Slowly the birds of prey vanished into higher skies and away. The frog was safe for the time. Little by little it moved to the waterhole. The lapwings settled down. The frog moved into the water. The ripples slowly faded away.

CREATIVITY CORNER

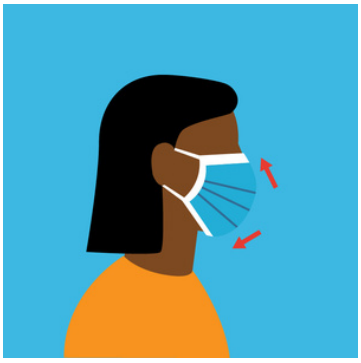
ART NOOK

ROSHNI CHERIAN
7BTEE

ALLEN GEORGE
5BTEE

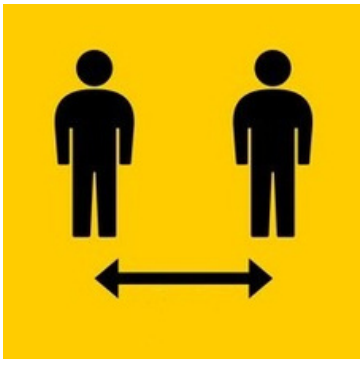
THREE GOLDEN RULES

WE EXPECT YOU TO FOLLOW ALWAYS



Always wear a face-cover/Mask

Wash Hands frequently and Sanitize



Maintain Distance from others

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