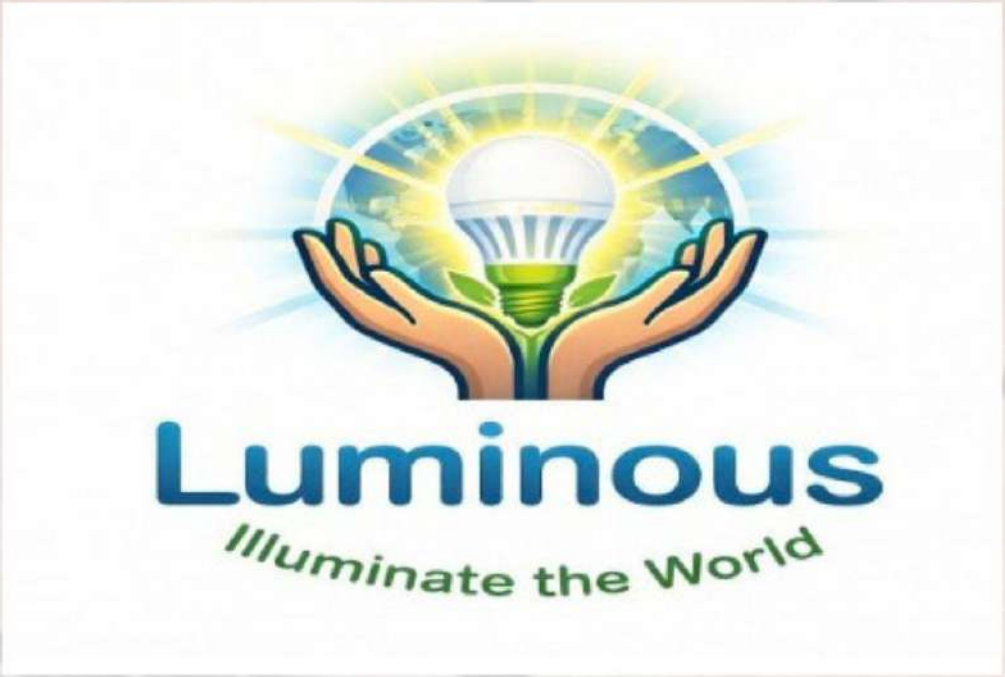


A MAGAZINE PUBLISHED BY DEPARTMENT OF ELECTRICAL ENGINEERING

DR. BAPUJI SALUNKHE INSTITUTE OF ENGINEERING & TECHNOLOGY, KOLHAPUR.

BSIET

ACADEMIC YEAR 2023-24

LUMINOUS VOL. 3

1. **Institute Vision**

To develop competent technocrats by providing quality education for the betterment of society.

2. **Institute Mission**

M1 – To inculcate theoretical as well as practical knowledge in students.

M2 – Foster relationship between industry and institute for the benefit of all stakeholders..

M3 – Facilitating and encouraging students for continuous education and moulding them for lifelong learning.

3. **Department Vision**

To develop competent electrical tchnocrats by providing quality education for the betterment of society.

4. **Department Mission**

M1 – To provide a solid foundation to solve electrical engineering problems**.**

M2 – To create awareness about safety environment for working in electrical domain

M3 – To strengthen industry institute interaction for the benefit of all stake holdes.

5. **Program Educational Objectives (PEOs)**

PEO-1 –Apply technical knowledge in industry and diverse fields of electrical engineering.

PEO-2 –Be ethical and professional about environmental and social responsibilities.

PEO-3 –Entrepreneur or self- employable along with life-long learning.

6. **Committee**

a. **Chief Editor (HoD) – Mr. Bhat P.P.**

b. **Executive Editor – Mr. Naik S.I.**

c. **Faculty Member – 1. Mr. Narke K.B.**
2.Mr. Berlekar P.P.

d. **Student Members- 1. Pranavi Sathe (TY Electrical)**
2. Srushti Jadhav (SY Electrical)

Chief Editor's Desk:-

It gives me immense pleasure to present this edition of our department magazine. This publication is a reflection of the creativity, technical knowledge, and enthusiasm of our diploma students, guided by the dedicated efforts of our faculty members. At the diploma level, education is not only about acquiring technical skills but also about developing discipline, innovation, teamwork, and professional ethics.

This magazine provides a platform for students to express their ideas, share technical knowledge, showcase talents, and enhance their communication skills beyond the classroom. I appreciate the sincere efforts of the editorial team, contributors, and faculty coordinators who have worked tirelessly to make this magazine a reality. Such initiatives encourage students to think creatively and stay motivated towards academic and professional excellence. I hope this magazine inspires our students to continuously learn, innovate, and contribute positively to society and the engineering profession. I wish the editorial team great success in their future endeavors.

Best Wishes,
Mr. P. P. Bhat
Head- Department of Electrical Engg.

Academic Achievements

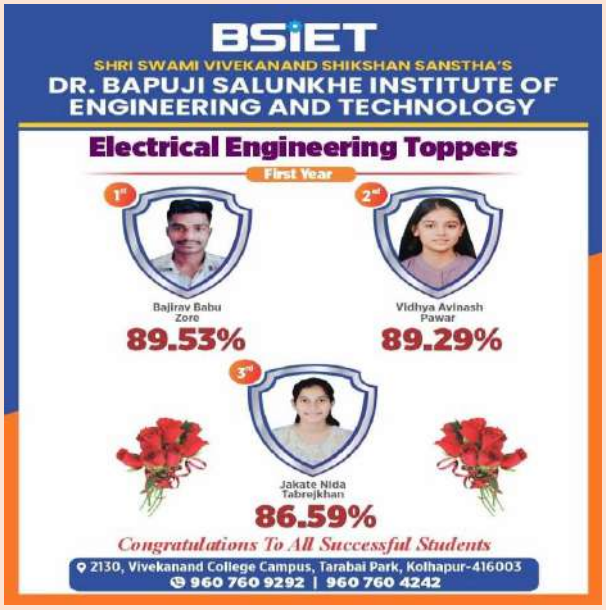
Winter 2023

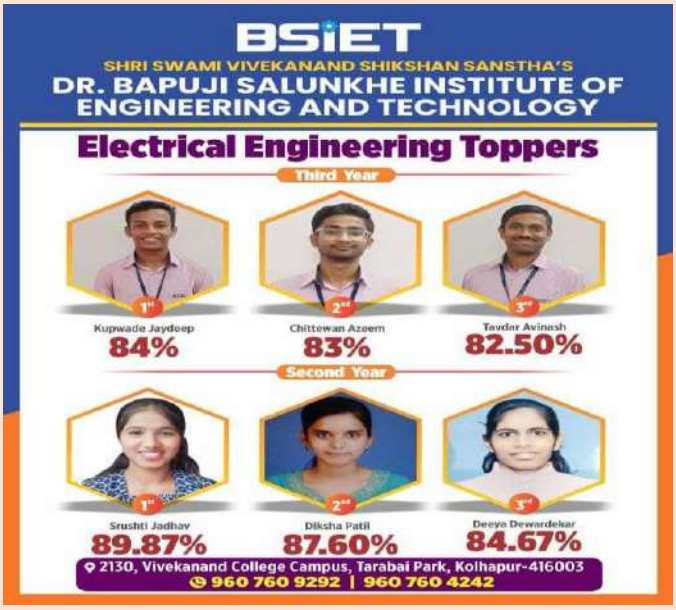
CONGRATULATION TO ALL THE STUDENT!!!!!!!

Class	Rank	Name	Percentage
FY	FIRST	PAWAR VIDHYA AVINASH	85.88
	SECOND	ZORE BAJIRAV BABU	84.24
	THIRD	JAKATE NIDA TABAREJKHAN	84.12
SY	FIRST	JADHAV SRUSHTI CHANDRAKANT	91.25
	SECOND	PATIL DIKSHA SUDAM	85.88
	THIRD	MUNAGEKAR SWARA SANJAYKUMAR	84.38
TY	FIRST	KUPWADE JAYDEEP DIPAK	87.90
	SECOND	CHAVAN OM CHANDRAKANT	84.40
	THIRD	RANAGE ANIKET SHIVAJI	83.80

Summer 2024

HEARTFELT CONGRATULATION TO ALL THE STUDENT!!!!!!!





Class	Rank	Name	Percentage
FY	FIRST	ZORE BAJIRAV BABU	89.53
	SECOND	PAWAR VIDHYA AVINASH	89.29
	THIRD	JAKATE NIDA TABAREJKHAN	86.59
SY	FIRST	JADHAV SRUSHTI CHANDRAKANT	89.87
	SECOND	PATIL DIKSHA SUDAM	87.60
	THIRD	DEWARDEKAR DEEYA NAGESH	84.67
TY	FIRST	KUPWADE JAYDEEP DIPAK	84.00
	SECOND	CHITTEWAN AZEEM MUBARAK	83.00
	THIRD	TAVDAR AVINASH SAMBHAJI	82.25

- **Co-Curricular Achievements**

1) More than 06 students from SY and TY Electrical has participated in national level technical event" Pioneer 24" at KIT, Kolhapur and won various prizes as well.
2) More than 8 students from SY and TY Electrical have participated in National level technical event "Impulse 2K24" at our BSIET.
3) Mr Rishi Dulhani & Azeem Chittewan from TY Electrical won First prize in Paper presentation about Smart Grid.
4) Mr Tejas Kamble & Omkar Nakil from SY Electrical won third rank in paper presentation about E-vehicle
5) More than 9 students from SY and TY Electrical have participated in National level technical event "Technova 2K24" at GP, Kolhapur and won various prizes as well. Mr Harshad Jamble & team from TY Electrical won Second prize in Gaming competition.

Extra-Curricular Achievements

1) Aaditya Chougule from TY Electrical participated in Zonal Cricket tournament at Sanjay Ghodawat Institute, Atigre.
2) Sankalp Patil from TY Electrical participated in Zonal Cricket tournament at Sanjay Ghodawat Institute, Atigre.
3) Aayush Udagatti from FY Electrical participated in Zonal Wrestling tournament at Shree Warana Shikshan Mandal, Amrutnagar, Warana. and won First Prize
4) Harshad Jambhale from SY Electrical participated in Zonal Volleyball tournament at Hollywood's academy, Sanjivan Polytechnic,Panhala
5) Gururaj Maskar from SY Electrical participated in Zonal Volleyball tournament at Hollywood's academy, Sanjivan Polytechnic,Panhala
6) Team Electrical winner- Cricket tournament in Annual Sports 2023.


Dr. Bapuji Salunkhe Institute of Engineering & Technology
2130, Tarabai Park, Kolhapur - 416 003
RUNNERUP
IEDSSA ZONAL TOURNAMENT
CONGRATULATIONS
BSIET BASKETBALL TEAM
BSIET


Dr. Bapuji Salunkhe Institute of Engineering & Technology
BSIET
INTER-ZONAL GIRLS SPORTS
KHO KHO
RUNNER UP
Congratulations!

Industrial Visit

1) Industrial Visit is arranged for Second Year electrical engineering student at R. M. Mohite Powerhouse, Radhanagri for detail study of medium head hydro power plant with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mrs. N. S. Konnur- Faculty member, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us

2) Industrial Visit is arranged for Third Year electrical engineering student at Suzlon Energy, Chalkewadi, Satara for awareness of Renewable Energy system also this wind power plant is a training center of the Suzlon compony & we accumulate the detail knowledge of the wind plant, with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

3) Industrial Visit is arranged for Third Year electrical engineering student at Kolhapur zilha dudh utpadak sangh,Kolhapur (GOKUL Project) for awareness of Recent automation & electrical system use in food industry with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mrs. N. S. Konnur- Faculty member Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

4) Industrial Visit is arranged for Third Year electrical engineering student at Tilari hydro power project, dodamarg for study high head hydro power plant also on the same day the student visited to Tervan medhe small hydro power plant to understand the all about the hydropower with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mrs. S. P. Relekar- Faculty Member, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

5) Industrial Visit is arranged for Second Year electrical engineering student at 400 KV Receiving Substation for awareness of Electrical power distribution system with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mrs. S. P. Relekar- Faculty Member, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

Industrial Visit to R. M. Mohite Power House, Radhanagri

Industrial Visit to Suzlon Knowledge Center, Chalkewadi, Satara.

Industrial Visit to Gokul Dudh Sangh, Gokul shirgaon

Industrial Visit to 66 MW Tilari Hydro Project, Tilari

Industrial Visit to 400 KV, Receiving Substation,Kagal

Expert Lecture

1) Expert lecture is arranged for Second -Year electrical engineering student on the topic of Skill development and Career opportunities in boiler industry. He had shared such a wonderful experience & knowledge with our students regarding Career opportunities in boiler industry, this lecture is arranged with the under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

2) Expert lecture is arranged for Third-Year electrical engineering student on the topic of Opportunities for Electrical engineers in IT industry. He had shared such a wonderful experience & knowledge with our students. this lecture is arranged under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us

3) Expert lecture is arranged for Third-Year electrical engineering student on the topic of Switchgear & Protection. He had shared such a wonderful experience & knowledge with our students. this lecture is arranged under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

4) Expert lecture is arranged for Second & Third-Year electrical engineering student under Emerging trends of Electrical Engg. course by Mr. Akash Dongale sir. He had shared such a wonderful experience & knowledge with our students regarding PLC & SCADA, this lecture is arranged with the under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

5) Expert lecture is arranged for Second & Third-Year electrical engineering student under Electrical Substation Practices course by Mr. Nitin Jadhav sir- Assistant Professor,SGI Kolhapur. He had shared such a wonderful experience & knowledge with our students regarding Electrical Substation, Gas Insulated substation this lecture is arranged under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. S. I. Naik- Faculty Member, Mr. P. P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

Expert lecture by Mr. N. S. Jadhav Sir.

❖ALUMNI LECTURE

Alumni Guest Lecture on “Career opportunities in power sector” by Mr. Shahrukh Desai.

Purpose: Guest Lecture on “Career opportunities in power sector” was arranged for second & third year electrical engineering students. Objective of that lecture was known the future opportunities in power sector as an electrical engineer.

Highlights

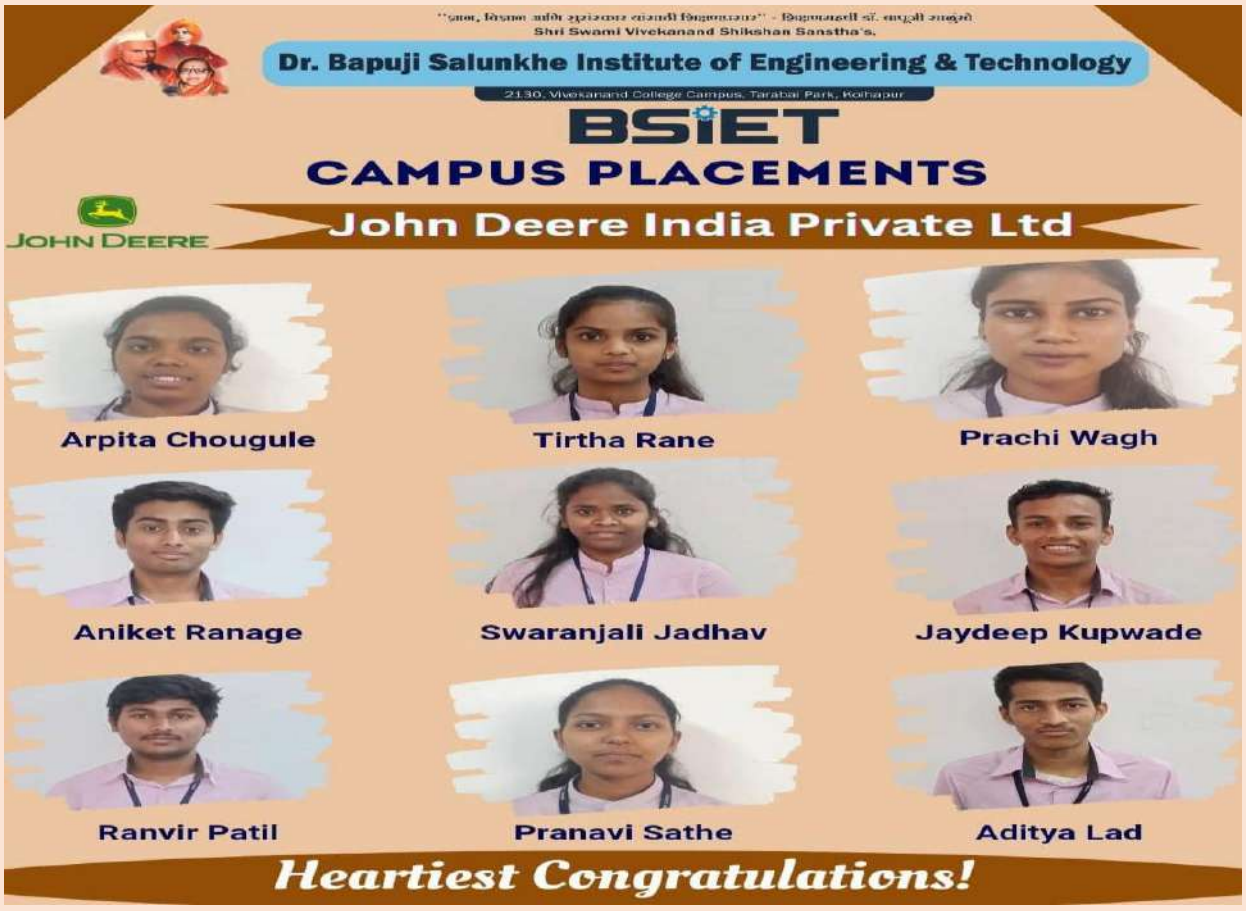
- Life skill Development program is organized by our placement cell on the date of 23rd august to 25th august 2025. During this program Ms. Pradnya Durgai, Ms. Shamli Pawar & Mr. Santosh Nalawade sir has share such a wonderful experience also training on the topic of Personality development also have share importance of effective communication and leadership in technical field. All the program organized under guidance TNP cell, all the hod's of our institute & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

- On Gandhi Jaynti our NSS committee organized "Swachata Abhiyan" on the date 1st October 2025

DETAILS OF THE PLACEMENTS IN THIS YEAR

"The Academic Year 2023–24 marked a successful phase in campus placements, with students securing opportunities in reputed organizations."

Sr. No.	Name of Industry	No of Students placed	Salary offered
1	Cummins India PVT. LTD.	1	2.4 LPA
2	Motherson Automotive Technologies & Engineering	2	2.7 LPA
3	John Deere PVT. LTD.	10	1.7 LPA
4	Bharat Forge	1	2.4 LPA



NATIONAL LEVEL TECHNICAL COMPETITION "IMPULSE 2024".

"By successfully organizing *Impulse 2024*, the institute reinforced its commitment to promoting national-level academic and research activities. Under the coordination of Mr. P. P. Bhat and the guidance of our Principal, Mr. V. D. Bhirdi, we extend our sincere gratitude to our Chairman, Shri Abhaykumarji Salunkhe; Secretary, Mrs. Shubhangi Gavade; and CEO, Mr. Koustubh Gavade, for granting permission and continuous support to successfully conduct this event."

Faculty Development Programs Attended by Our Faculty

Sr. No.	Resource Person/Organized Institute	Date	Topic	Attended By
1	SPM Polytechnic Solapur	23rd & 24th Feb 2024	Design Thinking, innovation and Startups for society 5.0	Mr.S.I.Naik
2	BSIET	12th -17th Feb. 2024	Data analytics using Python	Mr.S.I.Naik
3	BSIET	12th -17th Feb. 2024	Data analytics using Python	Mr P.P. Bhat
4	SGI, Atigre	23rd Dec. 2023	Content Updating	Mr.P.P.Berlekar
5	Sinhgad COE Pune	9th – 14th Oct. 2023	Content Updating	Mr P.P. Bhat
6	Ashokrao Mane Poly, Vathar	18th – 20th Dec. 2023	Content Updating	Mrs. N.S.Konnur
7	Ashokrao Mane Poly, Vathar	18th – 20th Dec. 2023	Content Updating	Mr.P.P.Berlekar

Faculty Article

ADVANCED PROTECTION SYSTEM FOR MEDIUM VOLTAGE SYSTEM

By Mr. K. B. Narke

This article aimed at the development of an advanced adaptive protection scheme that can provide protection for both medium-voltage distribution networks and their included low-voltage microgrids with high penetration of photovoltaic systems in a thorough manner. On the one hand, the scheme can address those issues related to the protection coordination between medium-voltage and low-voltage protection systems while still be able to prevent the low-voltage microgrids from unwanted tripping for disturbances on adjacent medium-voltage feeders. Moreover, the safe operation of low-voltage microgrids in different operation modes as well as their reliable transition between these modes can be guaranteed.

Recently, with the increasing penetration of Electronically Coupled Distributed Energy Resources (EC-DERs) into distribution networks, many countries have revised their grid codes with regard to the connection requirements applicable for such new kind of power generation. In fact, EC-DERs are now required, in case of external faults, not only to remain connected to the grid in terms of Fault Ride Through (FRT) but also to inject reactive power to support the grid fault voltage in terms of Dynamic Voltage Support (DVS). As various studies have shown, the fault behaviour of EC-DERs is different from that of conventional synchronous generators. In addition, fault currents in distribution networks have become bidirectional due to the fault contribution of EC-DERs downstream connected, rendering the protection systems of traditional passive distribution networks, which have been generally designed to deal with unidirectional faultcurrents, inappropriate.

On the other hand, Low-Voltage (LV) networks with high share of EC-DERS, which are termed as low-voltage microgrid (LV-MG), may be required to provide the capability of operating flexibly in both on-grid and off-grid. To ensure the flexibility of grid operation, EC-DERs need to provide both FRT and DVS capabilities. However, their present interface protection does not allow EC-DERs to meet the requirement. Even with FRT fulfilment, the fuse-based protection scheme of LV networks may not be

able to handle the considerable difference in fault current levels between two operation modes. The fuse of the secondary distribution transformer cannot detect external faults to facilitate the islanding of the LV networks, if required. In additionthe long time delay of the overcurrent elements installed at the beginning of Medium-Voltage (MV) feeder, for instance for 0.5s in France, may lead to unnecessary tripping of EC-DERS on unfaulted feeders. With massive disconnection of EC-DERS, the post-fault voltage recovery may be degraded, causing further disconnection of other EC-DERs and exaggerating the post-fault active power imbalance.

Regarding MV protection, the article in [20] provided a comprehensive review of protection schemes for looped distribution networks with the increasing penetration of electric vehicles. Other studies in [21], [22], [23], [24] developed adaptive protection systems incorporating different setting groups. The FRT requirements of the connected EC-DERs were also taken into consideration. Adaptive calculation of pick-up values for overcurrent relays can be found in [25], [26], [27]. Several studies relying on Phasor Measurement Units (PMUs) to implement adaptive protection systems were reported in [28], [29], [30]. PMUs were used to provide real-time measurements for estimating the actual topology of the protected network. Any change in network configuration would result in the recalculation of the settings of the inverse-time relays by using optimization techniques. Papers in proposed differential protection systems by using communication assisted digital relays on each line segment. Multi-agent system-based protection schemes were also developed in. The networks were divided into different segments and protected by corresponding agents. In spite of high effectiveness and reliability, the high implementation cost is drawback of these ideas. Similar issues can be seen in plug-and-play protection scheme for meshed distribution networks presented. Finally, admittance-based approach which was studied in did not consider various important factors such as time delays of protection elements, selectivity between EC-DER and feeder protections.

The extensive review of the state-of-the-art literature revealed that some did not consider the interface protection of EC-DERS, while others focused mainly on their FRT capability. Several papers proposed expensive communication-based approaches that appeared unconvincing in the context of large in number but small in scale LV networks. Meanwhile, a majority of studies regarded MV and LV networks as independent entities without investigation on their coordination and selectivity. Unwanted disconnection or successful islanding, if achieved, of incorporated LV-MGs due to external disturbances were not examined and presented comprehensively.

Therefore, in this paper, the authors were determined to develop an advanced protection scheme ensuring not only the selective operation between MV and LV protection elements but also the EC-DER FRT requirement. Moreover, the smooth islanding of incorporated LV-MGs could be achieved and described in detail. Compared to recent developments, the proposed protection scheme is more cost-effective since it relies mainly on the commonly available overcurrent, undervoltage, and underfrequency elements and requires only a low-bandwidth low-cost communication network for changing the setting group according to changesin network configuration. A simple directional algorithm was also deployed to provide fault direction determination, if required. However, the scope of the study was limited to the networks with high penetration of PV systems. As the PV fault behavior is dictated by their inverter control strategies and introduces potential impacts on the protection scheme, a comprehensive PV fault model with appropriate control algorithm for achieving FRT and DVS requirements was thoroughly evaluated and utilized. The islanding transition due to faults and the operation in islanded mode of LV-MGs was responsible by Battery Energy Storage Systems (BESS), whose model was also simulated in detail. It should be stated that, high impedance faults which are characterized by fault current levels similar to normal load currents and unrecognizable voltage drop, are beyond the study scope. The effectiveness of the developed protection scheme was validated by numerous simulations on a real MV network incorporating various LV-MGs within the Dig SILENT/Power-Factory software environment.

Students Article

Trends in Electric Vehicle Industry

By Ms. Pranavi Sathe
T. Y. Electrical

Since 2019, the stocks of EV companies including vehicle and battery manufacturers and companies involved in the extraction or processing of battery metals have consistently outperformed general stock markets, major traditional carmakers, and other segments of clean technology. Return on investment has increased more over the 2019-2023 period for these companies than it has for others, in relative terms. The combined market capitalization of pure play EV makers boomed from USD 100 billion in 2020 to USD 1 trillion at the end of 2023, with a peak over USD 1.6 trillion at the end of 2021, though this trend was primarily driven by Tesla. The market capitalization of battery makers and battery metal companies also increased significantly over the same period.

Behind this overall upward trend, however, there has been significant volatility. Supply chain disruptions and battery metal price fluctuations notably in the wake of Russia's invasion of Ukraine as well as increasing competition, price wars among OEMs and expectations of slower relative annual growth as major EV markets mature, and of possible consolidation, are having an important downward impact on investor confidence and EV stocks. For example, Tesla's shares were on average 15% lower in 2023 than in 2021-2022; BYD's average stock also fell 15% in 2023 relative to 2022; and the combined market capitalization of pure play EV carmakers fell by nearly 20% on average relative to 2022, while that of major incumbent carmakers remained flat. Many emerging EV players such as Infest from Viet Nam, Polestar from Europe, and Cano, Frisker, Lucid and Nikola from the United States are missing sales targets and trading low. Fiercer competition and shrinking profits also have an impact upstream, among EV battery makers: in the first weeks of 2024, CATL was trading near a three-year low, with a market capitalization at its lowest point since the end of 2020.

In the first quarter of 2024, the combined market capitalization of pure play EV players fell below that of major incumbents, even if their financial stock performance remained robust. Status, Guidelines for procurement of solar power though tariff based competitive bidding process, Standards for deployment of Solar Photovoltaic systems and devices, Provision of roof top solar and Guidelines for development of smart cities, Amendments in building bye-laws for mandatory provision of roof top solar for new construction or higher Floor Area Ratio, Infrastructure status for solar projects, Raising tax free solar bonds, Providing long tenor loans from multi-lateral agencies, etc.

As we reported last year in GEVO-2023, companies and investors are exploring new opportunities upstream in EV supply chains, especially as competition intensifies.

Carmakers are seeking to secure direct deals with battery makers and companies involved in the mining and processing of critical minerals. Investors, including large banks and funds are pouring capital into the metal industry

In 2023, Stellate is announced a partnership in Argentina to secure projected copper demand, investing USD 155 million. Volkswagen, Glencoe and Chrysler each invested USD 100 million in a Special Purpose Acquisition Company operating nickel and copper assets, supported by several global investment banks for an overall USD 1 billion deal. In 2024, Tesla and several Korean battery makers, including LG and SK, met with Chilean government agencies regarding lithium supply, primarily with the aim of supplying the US market with the support of IRA tax credits. Australian Super, Australia's largest pension fund, announced plans to double its exposure to lithium stocks over the next five years, with investments in 2023, such as in Pilbara Minerals, worth AUD 560 million (USD 370 million).

As a result of increasing investor appetite and growing EV markets, the valuation of critical mineral companies has increased significantly in the last few years. Over the 2015-2022 periods, the market capitalization of companies involved in the extraction and processing of lithium increased six fold. The margins for lithium, nickel and copper companies typically outperformed those of the top 100 mining companies over the same period, including relative to gold or iron ore.

However, the picture in 2023 and the first quarter of 2024 is changing. The volatile metal prices seen in the past few years, the increasing competition and pressure to drive down EV and battery prices, and the current overcapacity for several critical minerals (see earlier section on batteries), mean that major mining companies are revisiting growth and performance forecasts. After several years of important cash flows as a result of high prices and increasing volumes, many companies are now starting to struggle to finance both existing and new projects with their own revenues, suggesting external sources will be needed for large-scale capital expenditure.

In Australia, for example, Albemarle, Core Lithium, Lion town Resources and Pilbara Minerals announced project spending reductions, lower dividends, and job cuts in 2024. Albemarle expects capital expenditures to drop by around USD 500 million from USD 2.1 billion in 2023 to USD 1.6-1.8 billion in 2024, and plans to reduce annual costs by nearly USD 100 million. Pilbara Minerals expects annual exploration spending to be cut by up to AUD 100 million (USD 66 million). Nickel and cobalt projects in Australia have also been delayed or halted, involving companies like BHP, First Quantum Minerals and Wyle Metals.

First Quantum Minerals expects a 30% staff cut as a result of reduced operations. In the United States, Piedmont Lithium Inc. is letting go of 25% of staff. Over the 2024-2026 period, we could see progressive consolidation of critical mineral extraction and refining projects and businesses around lowest-cost producers.