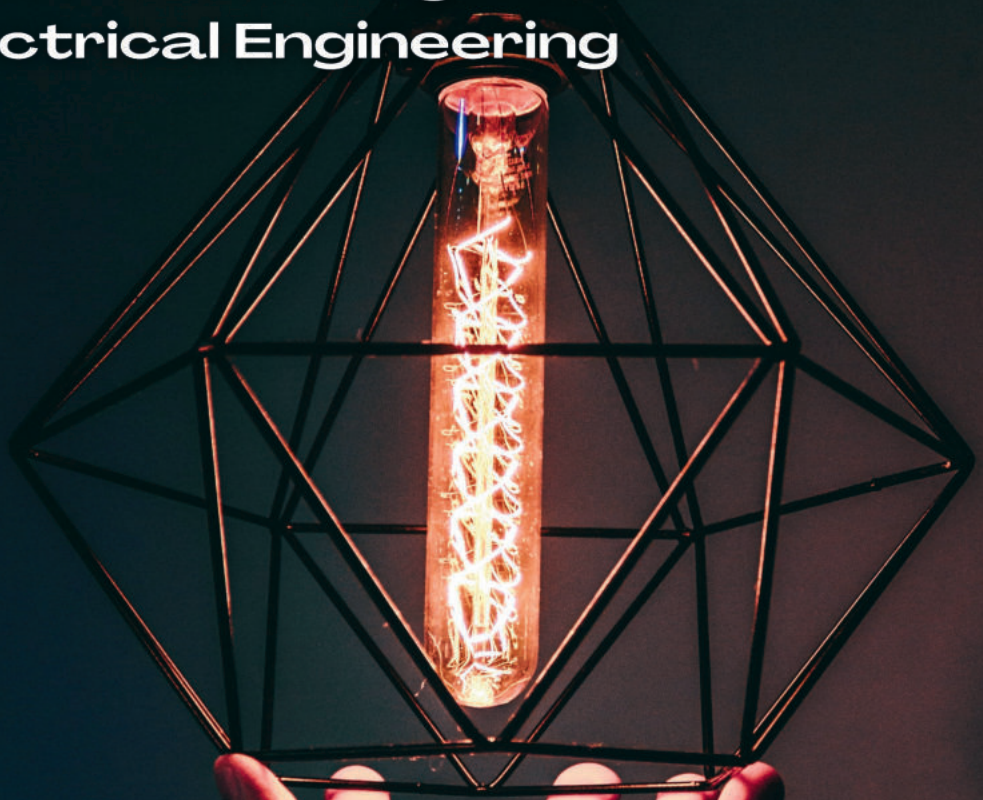
TECH-WIRED

A Semester Magazine of
Electrical Engineering



Vol. 4 Issue 2

2022-2023

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FROM THE CHAIRMAN'S DESK

Shri Anil Kumar Agarwal
Chairman

Congratulations to the Electrical Engineering Department on the successful publication of the latest issue of our Magazine! This edition is a true reflection of the department's dedication to excellence and cutting-edge research. I extend my heartfelt appreciation to our brilliant students and faculty members for their outstanding contributions to the field. Enjoy this inspiring read, and keep up the great work!

FROM THE DIRECTOR'S DESK

(Prof. (Dr.) Surya Prakash Tripathi)
Director

Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning. -Albert Einstein

It is a great pleasure for me that Department of Electrical Engineering is publishing its even semester magazine “TECH-WIRED” of session 2022-2023. Also glad pen few words exclusively meant for churning out latent writing skills on the different recent technical fields of research. This is a productive technical material and subsidiary skill developing tool for the students.

This even semester 2022-2023 issue of Magazine will be milestone of department of Electrical Engineering as the previous issue was. It will also give an opportunity to students to strengthen their knowledge, creativity and to work in a team. This magazine wills also full-fill the dreams of the great visionary, philosopher and role model of youngster's, which I am quoting:

Education is the most powerful weapon which you can change the world.
-Nelson Mandela

With my good wishes and great success for the future.

FROM THE HEAD OF DEPARTMENTS'S DESK

Mr. K.P.YADAV
Assistant Professor and Head
Dept. of Electrical Engineering

On behalf of our esteemed students and faculty, it is my utmost pleasure to extend a warm welcome to each and every one of you to the renowned Department of Electrical Engineering at RRIMT. We take immense pride in our exceptional faculty, comprising a team of highly skilled and devoted professionals, the majority of whom possess academic and industrial expertise along with degrees from prestigious universities across India. We strive to provide abundant opportunities for growth and development to both our faculty and students, offering in-house trainings, workshops, and external programs that enhance their expertise in respective fields.

I am elated to share that our department has recently embarked on a remarkable endeavor by launching the semester magazine "TECH-WIRED." This initiative is expected to ignite a sense of enthusiasm and inspiration among our students and staff, fostering a spirit of innovation and knowledge sharing in the days to come.

"क्षणशः कणशश्चैव विद्यामर्थं च साधयेत् ।
क्षणे नष्टे कुतो विद्या कणे नष्टे कुतो धनम् ॥"

<u>अर्थात</u>

एक एक क्षण गवाये बिना विद्या ग्रहण करनी चाहिए और एक एक कण बचा करके धन ईकट्ठा करना चाहिए। क्षण गवाने वाले को विद्या कहाँ और कण को क्षुद्र समझने वाले को धन कहाँ ?

DEPARTMENT VISION

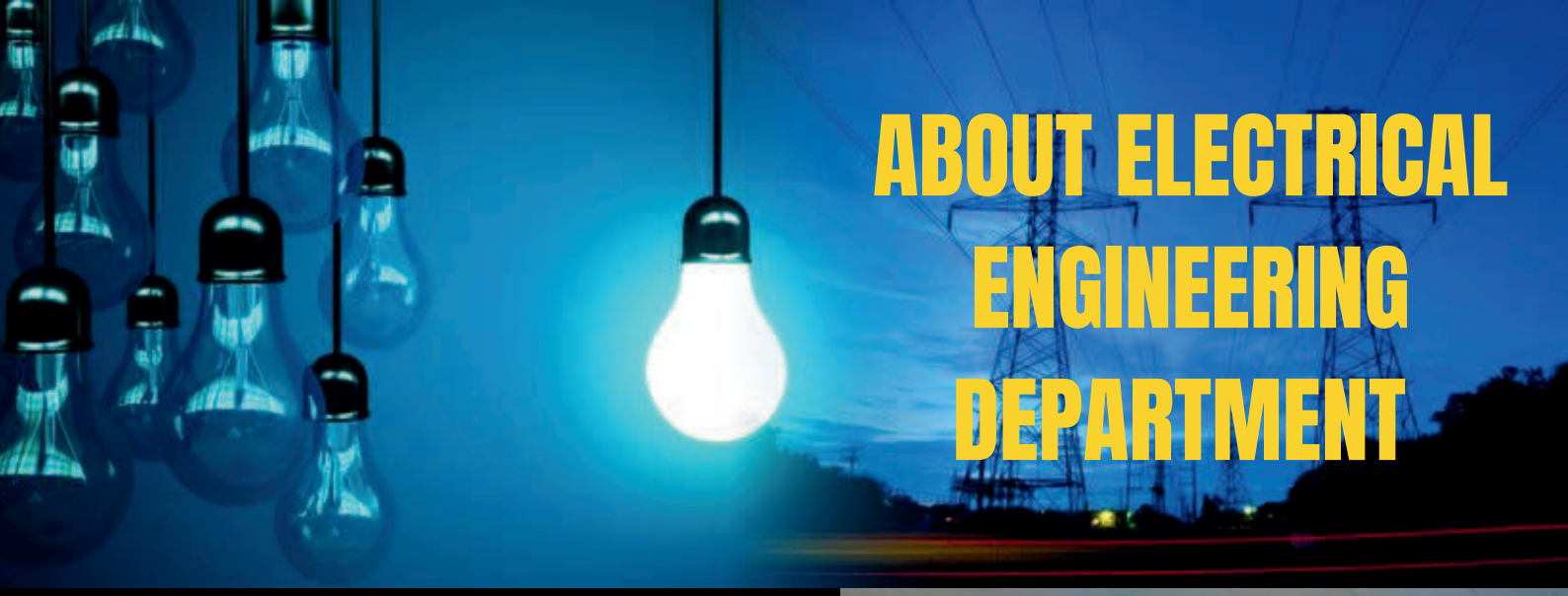
To emerge as centre of excellence in the field of electrical engineering to enhance the technical and professional skills of the students and make them competent enough to cater the multidisciplinary needs of the academia, industry and society with strong moral and ethical values.

DEPARTMENT MISSION

M1- To provide an environment for effective teaching-learning process with incorporation of multidisciplinary approach to develop competent electrical engineers.

M2- To strengthen the students technically & professionally using state of art technology which leads to successful employability, higher education and entrepreneurship.

M3- To foster an inspiring atmosphere which induces a passion for lifelong learning with incorporation of human values and ethics.



ABOUT ELECTRICAL ENGINEERING DEPARTMENT

The Electrical Engineering Department at R.R. Institute of Modern Technology, Lucknow stands out with its exceptional offerings:

01. Highly qualified and motivated faculty members: Our department boasts a team of dedicated professors who are experts in their fields. Their vast knowledge and passion for teaching ensure that students receive a top-notch education and guidance.

02. State-of-the-art laboratories and classrooms equipped with projectors: We provide students with modern facilities, including advanced laboratories and classrooms equipped with projectors. These spaces enhance the learning experience by promoting interactive and immersive teaching methods.

03. Latest simulation tools available: Keeping up with technological advancements, our department offers access to cutting-edge simulation tools. Students can utilize these tools to simulate and analyze complex electrical systems, gaining practical experience and problem-solving skills.

04. Updated course curriculum: Our department regularly updates the course curriculum to align with industry trends and emerging technologies. This ensures that students receive a relevant and comprehensive education, preparing them for the challenges of the electrical engineering field.

05. Research-driven opportunities: We encourage research initiatives within our department. Students have the opportunity to engage in research projects, working alongside faculty members on innovative technologies and contributing to the advancement of knowledge in electrical engineering.

06.

Regular workshops, guest lectures, and industrial visits: To enrich the learning experience, we organize workshops, invite guest lecturers from academia and industry, and arrange industrial visits. These activities expose students to real-world applications, provide networking opportunities, and broaden their horizons. At the Electrical Engineering

Department of R.R. Institute of Modern Technology, we are committed to nurturing the next generation of electrical engineers by providing them with a holistic educational experience and empowering them to excel in their chosen field.

WORKSHOP & ACTIVITIES

Workshop, Industrial visits, guest lectures, and industrial training offer invaluable benefits to electrical engineering students. Industrial visits expose students to real-world applications of theoretical concepts, enhancing their practical understanding. Guest lectures by industry experts provide insights into cutting-edge technologies and trends. Industrial training equips students with hands-on experience, boosting their employability and fostering industry-relevant skills. These experiences bridge the gap between academia and industry, preparing students for successful careers in electrical engineering.

UPPCL SUBSTATION VISIT

On Dated 04/04/2023, ELECTRIX Society of EED organized the industrial visit to the 33/11 KV UPPCL substation in Ahibaranpur, Lucknow, offers an enriching experience for students. Witnessing the operations of a real substation provides practical insights into power distribution, transformer functioning, and safety protocols. It enhances their understanding of electrical systems and fosters a deeper appreciation for the power sector's importance in daily life. Great Thanks to Prof. Dr. Malik Rafi and Mr. Aditya Yadar sir for mentoring the students. The visit proved highly beneficial as it allowed students to bridge the gap between theory and practice, while also igniting their enthusiasm for the subject.

About UPPCL

Uttar Pradesh Power Corporation Limited (UPPCL) is the company responsible for electricity transmission and distribution within the Indian state of Uttar Pradesh. UPPCL procures power from state government owned power generators (Uttar Pradesh Rajya Vidyut Utpadan Nigam & Uttar Pradesh Jal Vidyut Nigam Limited), central government owned power generators (NTPC Limited & THDC Ltd) and independent power producers - IPP (mostly private power companies) through power purchase agreement for lowest per unit cost of electricity.

GUEST LECTURE ON "SMART GRID TECHNOLOGY"

The one-day guest lecture on Smart Grid Technology by Mr. Adeeb Ahmed, Assistant Professor from IET, Lucknow, held on 25/04/2023, was a highly enriching experience for 2nd, 3rd, and 4th-year students of electrical engineering. Mr. Ahmed's profound knowledge and passion for the subject resonated with the audience, as he delved into the intricacies of smart grid systems, renewable energy integration, and grid management. The interactive session allowed students to clarify their doubts and gain practical insights into the industry's latest trends. The event provided a valuable platform for aspiring electrical engineers to broaden their horizons and envision their roles in shaping the future of sustainable energy.

The Guest Lecture was organized by ELECTRIX SOCIETY and students were highly satisfied with the lecture series.

IN-HOUSE INDUSTRIAL TRAINING

In this semester, The Electrical Department has taken a commendable initiative by organizing in-house industrial training sessions tailored to the needs of different student cohorts. For 2nd-year students specializing in Embedded Systems, these sessions offer a unique opportunity to translate classroom knowledge into tangible skills. Meanwhile, for 3rd and 4th-year students pursuing proficiency in Advanced Industrial Automation, the training serves as a platform to delve deeper into complex industry practices. These hands-on experiences not only enrich students' practical capabilities but also instill a sense of confidence and preparedness as they approach the professional realm

This in-house Industrial training Conducted by Mr. Mahfooz Ahmad, who gives the wide Theoritical and Practical knowledge about Embedded System, PLC & Scada . This session Help the student in the Industries

Participating in this in-house industrial training has a transformative effect on students. It equips them with the practical dexterity required in the ever-evolving field of electrical engineering. By immersing themselves in real-world scenarios, students grasp intricate concepts more profoundly and cultivate problem-solving acumen. This exposure not only heightens their academic prowess but also enhances their employability, making them well-rounded graduates capable of seamlessly integrating theory with practice in the dynamic landscape of modern industries.

WORKSHOP ON "TECHNICAL TRAINING ON ACVANCED TECHNOLOGY "

ELECTRIX Society of EED has organized One day Workshop - “Technical Training on Advanced Technology” on 30/06/2023 . Technical Training programs works like bridge between student and fast growing industry. its come up with the challenge to meet the requirement of rapid growing industries by providing excellent training. This training is to fulfill the current industry in the field of IOT, Machine learning , A.I., Embedded Systems, Matlab, etc. Students are hand on experience of Industrial Automation with proper hardware and software.

With the zest to have industry academic alliance and to bridge the gap between academics and industry it is necessary to introduce such demanded topics for students as a looking beyond syllabus programs. 2nd year students have attended the workshop. .

BLOOD DONATION CAMP

Electrical Engineering Department Participates in the "Blood Donation Camp" organised by the institute on dated 24th May 2023 for Welfare of the society and motivating the students to become a responsible citizen and blood donor as well as spreading the message of peace and harmony through humanitarian approaches. Blood donation is one of the most significant contribution that a person can make towards the society. It is not harmful for an adult person to donate blood. The body of the donor can regenerate the blood within few days. It poses no threat to the metabolism of the body.

PRAGYAN 2023

PLANTATION DAY

On dated July 22, 2023 Electrical Engineering Department actively engaged under the joint aegis of Government of Uttar Pradesh , Dr. A.P.J. Adbul Kalam Technical University and Social Welfare Department "PLANTATION DAY" was organised in our R.R. Institute of Modern Technology . Enthusiastic participation saw students and faculty planting trees to enhance the campus environment. This event underscored the department's commitment to sustainability and community engagement, fostering a greener future while promoting a sense of environmental responsibility among its members.

TECHNICAL WRITING

Preliminary Design of Electric Vehicle

Attruba Fatima
2203610200012

Based on the crucial information analysed from the above table, we can find that HEVs have relatively less advantage than PHEVs or FEVs. Also the biggest disadvantage is tailpipe emissions which need to be minimized as much as possible keeping in mind the current scenario of the city as discussed in previous report. It is a bit tough to decide between PHEVs and FEVs as the advantages of FEVs over PHEVs may be offset by relative disadvantages but there are many solutions which will be discussed later to minimize the impact of disadvantages. So, overall, FEVs are better due to strong reason of no tail pipe emissions and very high efficiency.

Table 1 Comparison of different battery powered electric vehicle (BEVs)

Car type	Advantages	Disadvantages	Remarks
HEV	Range not limited by battery	Tail pipe emissions	Basic advantage with at least one very high impact disadvantage
	Higher efficiency than ICE		
	Relatively less maintenance compared ICE counterparts	Specific energy density of battery low	
	No additional infrastructure required	Lot of moving parts	
PHEV	Range not limited by battery	Cost and Life of battery	Moderate advantage with moderate disadvantage
	Relatively less maintenance compared ICE counterparts	Cost of charging infrastructure	
	Higher efficiency than ICE	Tail pipe emissions	
		Load on power grid	
		Specific energy density of battery low	
FEV	No tailpipe emissions	Range anxiety	High advantage with some high disadvantage But there are solutions to curb the disadvantage which will be discussed later.
	Less maintenance comparatively	Cost of charging infrastructure	
	Cheap and relatively sustainable energy source	Cost and Life of battery	
	Highest well to wheel efficiency	Specific energy density of battery low	

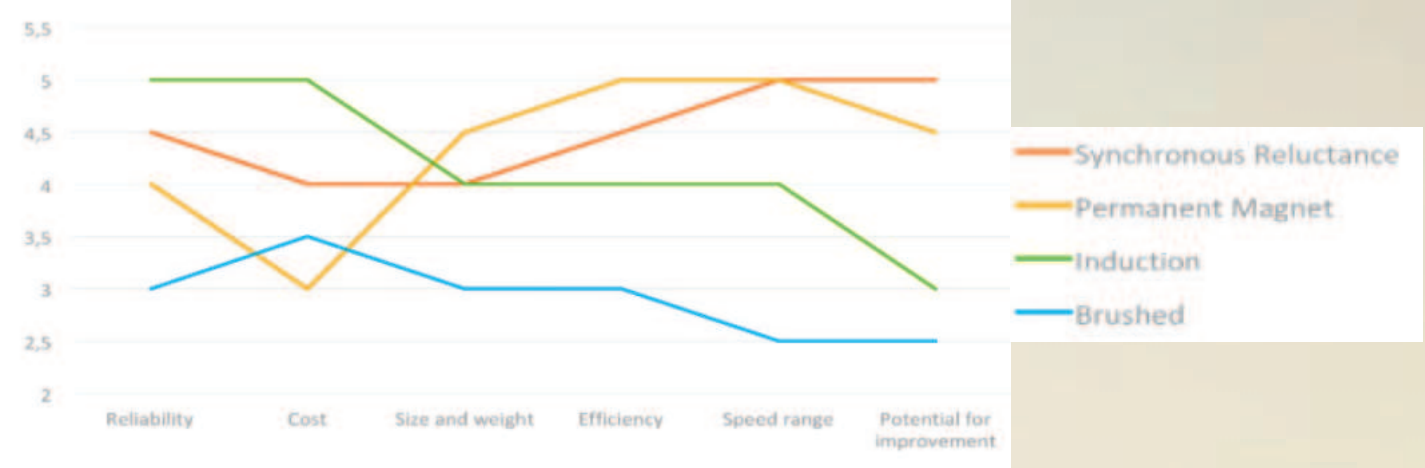


Figure 1 Comparison of different Electric Motors

The above comparison suggests that permanent magnet motor suits best for the EVs in the region as the main factor cost is much less compared to other types and is highly reliable and efficient.

Battery Type:

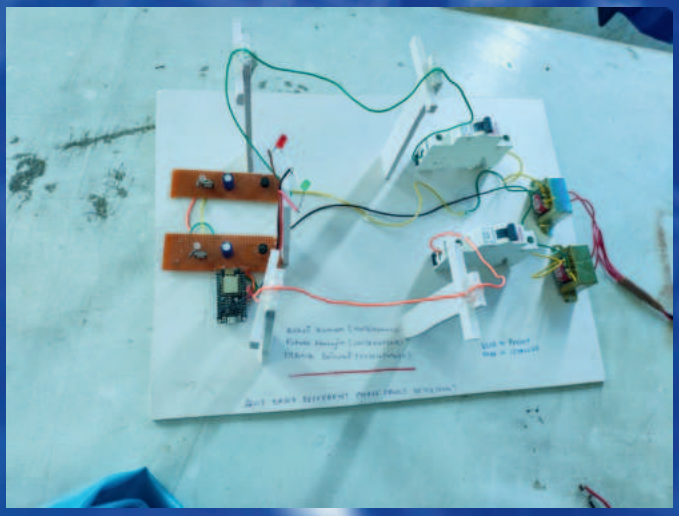
Following table present comparison of the various battery technology used in EVs.

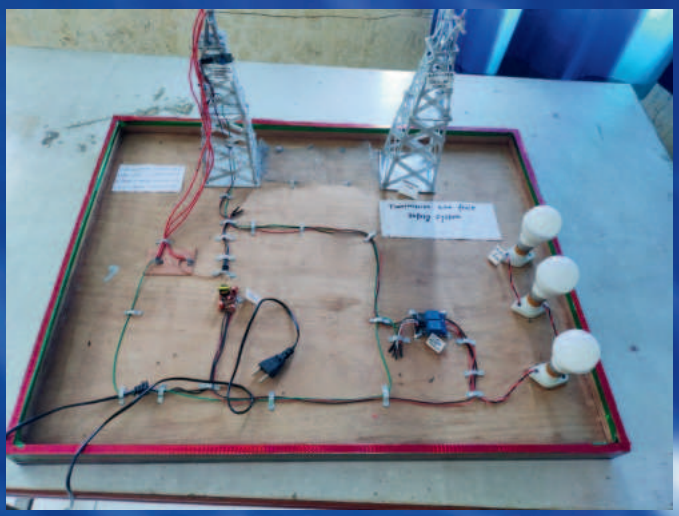
Table 2 Comparison of Battery for selectioN 1-poor 2-fair 3-good

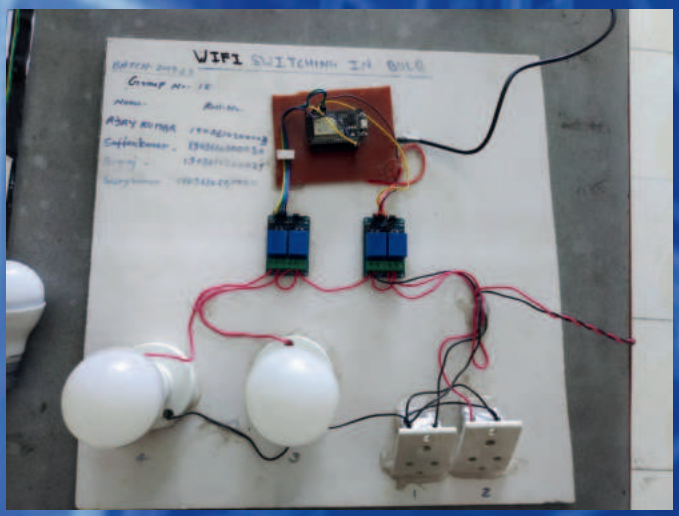
Attribute (Color represent relative importance for selection purpose)	Lead-acid	Ni-MH	ZEBRA	Metal-air	Li-ion
Specific energy (kWhkg−1)	1	2	3	3	3
Specific power (kWkg−1)	1	3	1	1	3
Capacity (kWh)	1	2	3	3	3
Discharge power (kW)	3	2	2	1	3
Charge power (kW)	1	2	2	1	3
Cold temperature performance (kW and kWh)	3	2	3	2	1
Shallow cycle life	2	3	1	1	3
Deep cycle life	1	3	1	1	2
Cost (€kW−1 or €kWh−1)	3	1	1	1	1
Abuse tolerance	3	3	2	2	2
Maturity technology	3	3	2	2	2
Maturity manufacturing	3	1	2	2	1
Recyclability [70]	1	1	3	2	2

it is found that lithium ion batteries performs best for most of the important attributes required for selection except cost but with increasing battery technology , the cost will be comparable to other types, so Li-ion battery is selected for our design purpose.

BEST PROJECT

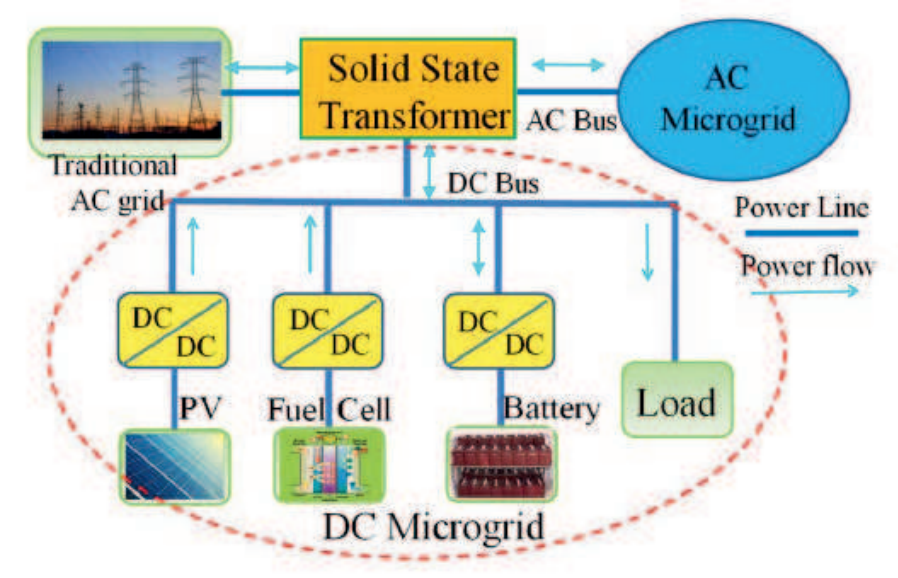




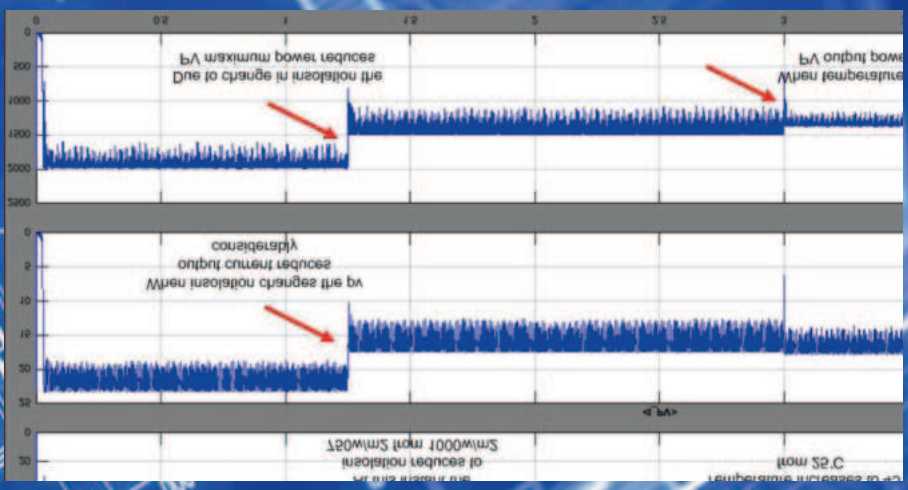


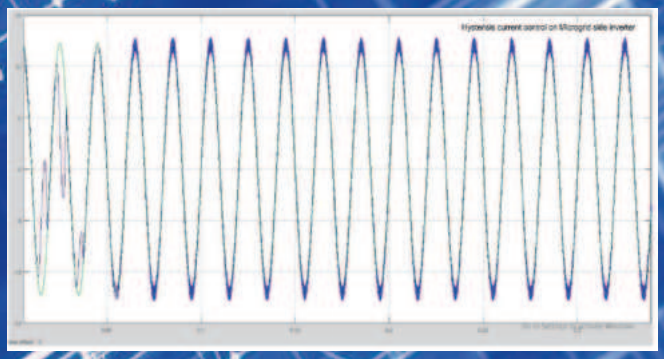
RESEARCH BASED PROJECT

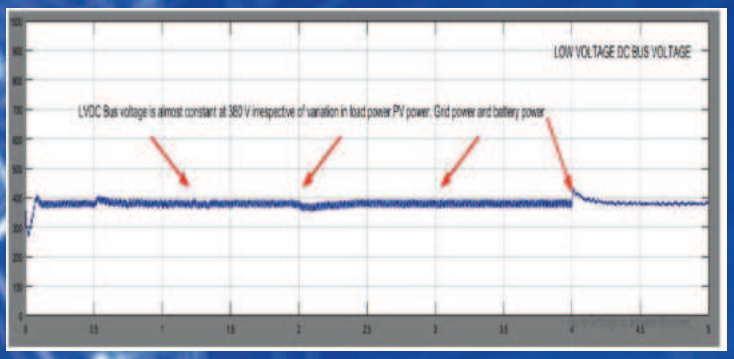
Power Management for DC Microgrid Enabled by Solid-State Transformer

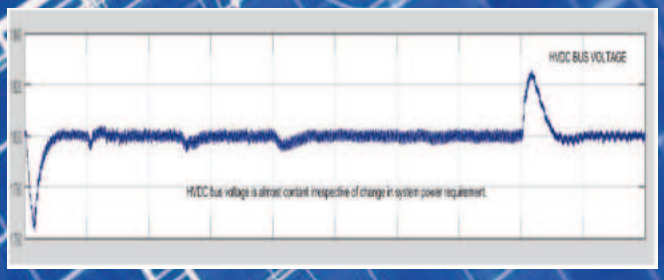


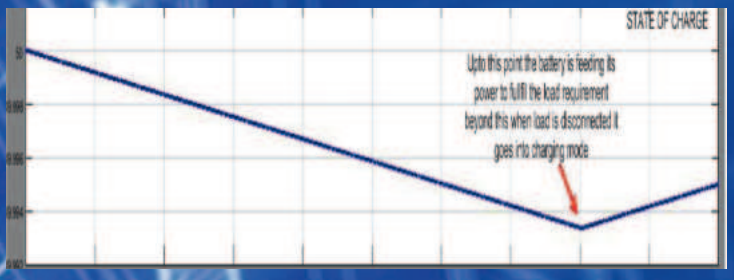
A novel distributed power management scheme is proposed in this paper for a DCmicrogrid system, which is enabled by Solid-State transformer (SST). The proposed system includes distributed renewable energy resource (DRER) and distributed energy storage device (DESD). The proposed distributed control algorithm, which only relies on the local information and guarantees full utilization of each module in the system based on their characteristics, is applied to both SST and DC microgrid. To this end, a simulation platform is developed in MATLAB/Simulink, in which Photovoltaic (PV), fuel cell and battery are selected as the typical DRERs and DESD, respectively. Lastly, several typical case studies are carried out and the simulation results verify the proposed distributed power management.











PLACEMENT

S.N	ROLL NUMBER	NAME	NAME OF THE COMPANY
1	1903610200002	Abhishek Pandey	Dhoot Transmission Pvt Ltd
2	1903610200003	Ajay Kumar	Dhoot Transmission Pvt Ltd
3	1903610200004	Alishan	PREMIER ENERGIES
4	1903610200008	Amresh Kumar	MICROMAX
5	1903610200009	Amritesh Kumar Srivastava	MICROMAX
6	1903610200010	Aryan Singh	MANIKARAN POWER
7	1903610200013	Balkishun Yadav	Dhoot Transmission Pvt Ltd
8	1903610200014	Deepu	PREMIER ENERGIES
9	1903610200016	Israr Ahmad	Dhoot Transmission Pvt Ltd
10	1903610200017	Janardan Singh	CHANDAN HOSTEL
11	1903610200018	Pratibha Verma	PREMIER ENERGIES, Dhoot Transmission Pvt Ltd
12	1903610200019	Priyanka	Dhoot Transmission Pvt Ltd
13	1903610200021	Maurya Janardan Brijesh	PREMIER ENERGIES
14	1903610200022	Nitin Pandey	J.MITRA AND CO.
15	1903610200025	Rajiv Kushwaha	Dhoot Transmission Pvt Ltd
16	1903610200026	Rakesh Yadav	Dhoot Transmission Pvt Ltd
17	1903610200027	Ratan Vishwakarma	PREMIER ENERGIES, Dhoot Transmission Pvt Ltd
18	1903610200028	Ritesh Kumar Singh	Dhoot Transmission Pvt Ltd
19	1903610200029	Rohit Singh	Dhoot Transmission Pvt Ltd
20	1903610200031	Sameer Srivastava	SHAKTI ELEVATORS , Dhoot Transmission Pvt Ltd
21	1903610200032	Sanjeet Verma	Dhoot Transmission Pvt Ltd
22	1903610200033	Sanjeev Patel	Dhoot Transmission Pvt Ltd

23	1903610200035	Shivam Singh Yadav	SHAKTI ELEVATORS , Dhoot Transmission Pvt Ltd , MICROMAX
24	1903610200036	Shivnarayan Chauhan	Dhoot Transmission Pvt Ltd
25	1903610200037	Snigdh Yadav	DIMENSION DATA
26	1903610200038	Sujit Kumar Chauhan	Dhoot Transmission Pvt Ltd
27	1903610200039	Suraj	DIMENSION DATA
28	1903610200040	Surya Kumar Maurya	SHAKTI ELEVATORS
29	1903610200041	Tarun Mishra	MANIKARAN POWER
30	1903610200043	Upendra Sahani	Dhoot Transmission Pvt Ltd
31	1903610200044	Vaishnavi Yadav	PREMIER ENERGIES
32	1903610200045	Vimarsh Rai	MICROMAX
33	1903610200047	Vivek Rai	MICROMAX, Dhoot Transmission Pvt Ltd
34	2003610209004	AKSHAT KRISHNA	PREMIER ENERGIES
35	2003610209010	ARTI SHARMA	PREMIER ENERGIES
36	2003610209019	SARVESH KUMAR MAURYA	PREMIER ENERGIES
37	2003610209020	SHUBHAM MISHRA	PREMIER ENERGIES
38	2003610209022	UTKARSH JAISWAL	PREMIER ENERGIES
39	2003610209023	VISHVAMBHAR CHAUHAN	Dhoot Transmission Pvt Ltd

ODD SEMESTER TOPPERS

1st YEAR

Aman Yadav - 87.22%
2203610200006

2nd YEAR

Suraj Chaurasiya - 82.63%
2103610200036

3rd YEAR

Shree Krishna - 89.26%
2003610200033

4th YEAR

Pratibha Verma - 84.70%
1903610200033

LAST DAY OF BATCH 2019-2023

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VICE PRESIDENT

Vaishnavi Yadav — B.Tech Final Year

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JOINT SECRETARY

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