NEW HORIZON COLLEGE OF ENGINEERING

SILVER HORIZONS 25 YEARS OF GLOBAL LEARNING

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

AUTUMN TRONICALS

JULY - DECEMBER 2025

INDEX

Message from Chairman

Dr. Mohan Manghnani

Chairman
New Horizon Educational Institution

It is a privilege to share my reflections for the Autumn Edition of our biannual EEE magazine. The Department of Electrical and Electronics Engineering remains a pillar of excellence within the Institute, marked by its spirit of innovation, adaptability, and dedication to nurturing future professionals.

Our Institute is undergoing significant advancements in curriculum design and teaching methodologies, and the EEE Department has been at the forefront of these initiatives. The revised course frameworks introduced for both senior undergraduate and first-year students demonstrate our commitment to keeping pace with the rapidly evolving engineering landscape.

We look forward to receiving valuable feedback from stakeholders to further refine and strengthen these academic enhancements. This magazine serves as a vibrant forum for students and faculty to showcase their creativity, technical expertise, and research contributions.

The wide range of articles and ideas presented reflects the passion, talent, and collaborative spirit that define our EEE community. I extend my heartfelt congratulations to the editorial team and contributors for curating another impactful edition. May this magazine inspire innovation, foster curiosity, and celebrate the dynamic ethos of the EEE Department.

Message from Principal

Dr. Manjunatha

Principal
New Horizon College of Engineering

At New Horizon College of Engineering, we are deeply committed to shaping engineers who possess not only strong technical foundations but also the essential professional skills needed to thrive in today's rapidly changing industrial landscape.

Through continuous interaction and feedback from industry professionals, we recognise the importance of narrowing the gap between academic knowledge and real-world employability. To meet this need, the institution actively promotes innovative teaching practices, focused skill-development initiatives, and a holistic approach to student growth.

It gives me great pleasure to present the latest edition of the EEE Department's in-house magazine, "Autumn Tronicals." This well-curated publication offers a glimpse into the dynamic environment of the Department, showcasing technical articles, notable achievements, and key events. The content reflects the dedication, creativity, and enthusiasm of both students and faculty members.

I warmly congratulate the Editorial Team and all contributors for their sincere efforts in making this edition a success. May this magazine motivate, inform, and captivate its readers while embodying the innovation and excellence that are hallmarks of the EEE Department. I wish everyone an enriching and enjoyable reading experience.

Message from HoD-EEE

Dr. S. Sujitha

Professor and HoD EEE, NHCE

I am delighted to share my reflections for the biannual edition of the EEE magazine, “Autumn Tronicals 2025.” The Department of Electrical and Electronics Engineering has consistently stood out as a dynamic and progressive pillar of our Institute, earning appreciation for its forward-looking approach and academic excellence. Responding to the changing demands of industry and academia, our institution has introduced significant updates in curriculum design and course frameworks.

The EEE Department has embraced these initiatives with enthusiasm, recognising their potential to enrich student learning and enhance future career opportunities. These revised syllabi are now guiding the academic progress of both first-year students and senior undergraduates, and we welcome constructive feedback to further strengthen their impact. This magazine distinguishes itself as a vibrant forum for creativity and knowledge sharing.

It highlights the wide-ranging abilities of our students through technical contributions, innovative ideas, and creative expressions, while also providing a space for faculty and students to share research insights and foster a collaborative learning environment. I extend my sincere appreciation to the Editorial Team and all contributors for their dedication in producing this edition. May this publication serve to inspire, educate, and showcase the standards of excellence that define the EEE Department. I wish everyone continued success in this initiative and in all future endeavours.

NEW HORIZON COLLEGE OF ENGINEERING

VISION

To emerge as an institute of eminence in the fields of Engineering, Technology and Management in serving the industry and the nation by empowering students with a high degree of technical, managerial and practical competence.

MISSION

To strengthen the theoretical, practical and ethical dimensions of the learning process by fostering a culture of research and innovation among faculty members and students.

To encourage long-term interaction between the academia and industry through their involvement in the design of curriculum and its hands-on implementation.

To strengthen and mould students in professional, ethical, social and environmental dimensions by encouraging participation in co-curricular and extracurricular activities.

QUALITY POLICY

To provide educational services of the highest quality both curricular and co-curricular to enable students integrate skills and serve the industry and society equally well at global level.

VALUES:

- Academic Freedom
- Inclusiveness
- Professionalism
- Integrity
- Innovation
- Social Responsibility

ABOUT THE DEPARTMENT

Welcome to the Department of Electrical & Electronics Engineering (EEE) at New Horizon College of Engineering (NHCE), Bangalore. EEE is one of the prestigious branches of Engineering and one among the oldest departments of NHCE-Bangalore started in 2001. The EEE Department has been playing a vital role in producing Engineers and Technologists of high caliber ever since it was established in the year 2001. The Department is accredited by NAAC with 'A' Grade and accredited by NBA. The vision of EEE Department is to create contemporary Engineers, Innovators and Entrepreneurs to make a better nation and in turn, a better world. A critical investigation and innovation into the modern state-of-art and cutting edge technology lead to the fact that an electrical graduate fits better in today's competitive world.

The strength of the department are highly qualified faculty members with expertise in various fields of Electrical Engineering, state - of - the - art laboratory facilities. The department is inclined towards bridging the gap between Industry and academia by collaborating with Multinational Companies in the field of Electrical Engineering.

Indo-French Center of Excellence in Electricity, Automation and Energy (IFCEEAE) is one such initiative evolved through "MoU" with French Ministry of National Education and Schneider Electric India Pvt. Ltd., The main objectives of IFCEEAE are

- To train the students of all streams of Engineering in Automation field.
- To facilitate interdisciplinary and applied research with a focus on innovative product development.
- To provide excellent career opportunities to students through exchange programmes with French Universities, industrial training, innovative learning and R & D activities especially in the areas like Smart Grid, Internet of Things (IoT), Energy Management Systems, Embedded Systems, Supervisory Control and Data Acquisition (SCADA) and Industrial automation.

- IEEE Power Electronics Society (PELS) Student Branch Chapter (Geo-Code: SBC66131)
- IEEE Industrial Electronics Society (IES) Student Branch Chapter (Geo-Code: SBC66131B)
- IEEE Power and Energy Society (PES) Student Branch Chapter (Geo-Code: SBC66131D)
- IEEE Dielectrics and Electrical Insulation Society (DEIS) Student Branch Chapter (Geo-Code: SBC66131F)
- IEEE Transportation Electrification Council (TEC) Student Branch Chapter (Geo-Code: SBC66131G)

These chapters provide students with enhanced exposure, skill development, and increased opportunities for campus placements in core industries, IT sectors, and Public Sector Units (PSUs).

VISION

To evolve into a centre of excellence in Electrical and Electronics Engineering for bringing out contemporary Engineers, Innovators, Researchers and Entrepreneurs for serving nation and society.

MISSION

- To provide suitable forums to enhance the teaching-learning, research and development activities.
- Framing and continuously updating the curriculum to bridge the gap between industry and academia in the contemporary world and serve society.
- To inculcate awareness and responsibility towards the environment and ethical values.

PROGRAM OUTCOMES (POS)

PO1: Engineering Knowledge: Apply knowledge of Mathematics, Natural Science, Computing, Engineering Fundamentals and an engineering specialisation as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature and analyse complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4).

PO3: Design/Development of Solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to

meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5).

PO4: Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis and interpretation of data to provide valid conclusions. (WK8).

PO5: Engineering Tool Usage: Create, select and apply appropriate techniques, resources and Modern Engineering and IT tools, including prediction and modelling recognising their limitations to solve complex engineering problems. (WK2 and WK6).

PO6: The Engineer and The World: Analyse and evaluate societal and environmental aspects while solving complex Engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).

PO7: Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national and international laws. (WK9).

PO8: Individual and Collaborative Team Work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

PO9: Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences.

PO10: Project Management and Finance: Apply knowledge and understanding of Engineering Management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

PO11: Life-Long Learning: Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8).

KNOWLEDGE AND ATTITUDE PROFILE (WK)

WK1: A systematic, theory-based understanding of the Natural Sciences applicable to the discipline and awareness of relevant social sciences.

WK2: Conceptually-based Mathematics, Numerical Analysis, Data Analysis, Statistics and formal aspects of Computer and Information Science to support detailed analysis and modelling applicable to the discipline.

WK3: A systematic, theory-based formulation of Engineering fundamentals required in the Engineering discipline.

WK4: Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the Engineering discipline; much is at the forefront of the discipline.

WK5: Knowledge, including efficient resource use, environmental impacts, whole-life cost, reuse of resources, net zero carbon, and similar concepts, that supports Engineering design and operations in a practice area.

WK6: Knowledge of engineering practice (technology) in the practice areas in the engineering discipline.

WK7: Knowledge of the role of engineering in society and identifying issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development.

WK8: Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues.

WK9: Ethics, inclusive behavior and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: To provide good learning environment to develop entrepreneurship capabilities in various areas of Electrical and Electronics Engineering with enhanced efficiency, productivity, cost effectiveness and technological empowerment of human resource.

PEO2: To inculcate research capabilities in the areas of Electrical and Electronics Engineering to identify, comprehend and solve problems and adopt themselves

to rapidly evolving technology.

PEO3: To create high standards of moral and ethical values among the graduates to transform them as responsible citizens of the nation.

PROGRAMME SPECIFIC OUTCOME (PSOs)

PSO1: Apply knowledge of electrical machines, circuit analysis, electronics, power systems, control, instrumentation, power electronics, signal processing, and embedded systems to analyse, design, and implement solutions for real-world applications using modern hardware and software tools.

PSO2: Design and develop innovative solutions in renewable energy, electric vehicles, smart grids, and automation with focus on environmental sustainability and societal needs.

EDITORIAL TEAM

SATISHKUMAR D
Senior Assistant Professor EEE, NHCE

STUDENT COORDINATORS

Varsha
1NH24EE114

Sneha S
1NH24EE097

Dhanyashree A V
1NH24EE032

Varsha K
1NH24EE115

N Nandeesh kumar
1NH24EE062

Aman kumar
1NH24EE015

Sinchana
1NH24EE096

Aden Godly
1NH24EE005

S CHARAN DEERAJ
1NH24EEE085

Pritam Choudhary
1NH24EE078

Vivek
1NH24EE119

Mohammed Saqib
Junaid Khan
1NH24EE056

ALUMNI TALK

Wired for Success: Crack PSU Interviews and Thrive as an Electrical Engineer

19.09.2025

The Department of EEE, in association with the NHCE Alumni Association, organised an Alumni Talk on 19th September 2025 titled “Wired for Success: Crack PSU Interviews and Thrive as an Electrical Engineer.” The session was delivered by Mr. M. Rohith Kumar Reddy (2019–2023 batch), Electrical Engineer at Schneider Electric. He shared his journey, PSU interview strategies, industry expectations, and emerging trends like renewable energy, smart grids, and Automation, followed by an interactive Q&A with students.

Beyond the Syllabus: Future Skills for Engineers

13.10.2025

The Department of EEE, in association with the NHCE Alumni Association, organised an Alumni Talk titled “Beyond the Syllabus: Future Skills for Engineers” on 13th October 2025. The session, led by Dr. S. Sujitha (HoD–EEE) and coordinated by Dr. B. Gunapriya, featured alumnus Mr. Arunanshu, who highlighted

the importance of continuous learning, emerging technologies, and skill development beyond academics. He shared career guidance, transition pathways from EEE to IT domains, and interacted with students through an engaging Q&A session.

Engineering Your Future: Skills, Tech and Opportunities
15.10.2025

The Department of EEE, in association with the NHCE Alumni Association, organised an Alumni Talk titled "Engineering Your Future: Skills, Tech and Opportunities" on 15th October 2025. The session was delivered by alumna Ms. Tantapureddi Haritha, Senior Engineer – Network and Security at Microland, Bangalore, who shared her journey from EEE to the IT industry, discussed the evolving technology landscape, and guided students on effective skill-building and career opportunities.

INDUSTRIAL VISITS

Karnataka Hybrid Micro Devices Limited (KHMDL), Bengaluru
04.11.2025 and 05.11.2025

The Department of Electrical and Electronics Engineering, NHCE, organised an industrial visit to Karnataka Hybrid Micro Devices Limited (KHMDL), Bengaluru, on 4th and 5th November 2025 for 7th Semester B.E. students of Sections A and B.

The visit aimed to bridge the gap between theory and practical application. Conducted under the IEEE NHCE Student Branch along with IES, PELS, and IAS Bangalore Chapter, the visit offered insights into hybrid microcircuit fabrication, sensor calibration, testing processes, and power electronics applications. Students gained exposure to industrial standards, safety practices, emerging technologies, and career opportunities in electronics manufacturing, effectively connecting academic learning with real-world industry practices.

Dynalektric Equipment
29.11.2025

The Department of Electrical and Electronics Engineering organised an industrial visit to Dynalektric Equipment, Bengaluru, on 29 November 2025 for III Year B.E. students. The visit aimed to provide hands-on exposure to electrical equipment manufacturing, panel assembly, safety standards, and quality control processes. Students attended an introductory session followed by guided tours of panel assembly, insulation, testing, and inspection units. Experts explained wiring practices, protection devices, earthing methods, and standard operating procedures. The visit helped students relate theoretical concepts to real-time industrial applications, enhanced their practical understanding, and created awareness of career opportunities in the electrical manufacturing sector.

Vijay Electric, Bengaluru
01.12.2025

The Department of Electrical and Electronics Engineering organised an industrial visit to Vijay Electric, Bengaluru, on 01 December 2025, in association with the IEEE NHCE Student Branch and IEEE TEC Student Branch Chapter, for second-year EEE students. The visit aimed to provide practical exposure to power systems, transformers, and industrial electrical installations. Students attended an introductory session followed by a guided tour of transformer assembly, testing, and quality assurance units. Experts explained transformer construction, cooling, insulation, safety practices, and maintenance procedures. The visit helped students relate theoretical concepts to real-time applications, enhanced their technical understanding, and created awareness about career opportunities in the electrical power sector.

Dynalektric Equipment, Bengaluru
02.12.2025

The Department of Electrical and Electronics Engineering organised an industrial visit to Vijay Electric, Bengaluru, on 01 December 2025, in association with the IEEE NHCE Student Branch and IEEE TEC Student Branch Chapter, for second-year EEE students. The visit aimed to provide practical exposure to power systems, transformers, and industrial electrical installations. Students attended an introductory session followed by a guided tour of transformer assembly, testing, and quality assurance units. Experts explained transformer construction, cooling, insulation, safety practices, and maintenance procedures. The visit helped students relate theoretical concepts to real-time applications, enhanced their technical understanding, and created awareness about career opportunities in the electrical power sector.

Industrial Visit – Vijay Electric
03.12.2025

The Department of Electrical and Electronics Engineering organised an industrial visit to Vijay Electric, Bengaluru, on 03 December 2025 for II Year B.E. Section A students. The visit aimed to provide practical exposure to power systems, transformers, switchgear, and industrial installations. Students attended an introductory session followed by a guided tour of transformer assembly, inspection, testing, and quality assurance units. Experts explained transformer construction, cooling and insulation methods, safety practices, and maintenance procedures. The visit enabled students to relate theoretical concepts to real-time applications, enhanced their technical understanding, and created awareness about career opportunities in the electrical power sector.

TEDx TALKS
Electric Mobility is the Future
14.10.2025

The Department of Electrical and Electronics Engineering, NHCE, organised a TEDx Talk titled “Electric Mobility is the Future!” on 14th October 2025 at Room B-202 for III semester EEE students. The session was delivered by Mr. Kartikey

Hariyani, TEDxNUV speaker. He discussed the impact of electric vehicles, EV ecosystem, battery and charging technologies, government policies, and career opportunities in electric mobility. The interactive session inspired students to explore sustainable transportation, innovation, and EV-related projects, reinforcing the department's focus on applied learning and future technologies.

How Are Microchips Made
15.10.2025

The Department of Electrical and Electronics Engineering, NHCE, organised a TEDx Talk titled "How Are Microchips Made?" on 15th October 2025 in Room B-203. The session aimed to provide students with practical insights into semiconductor manufacturing and emerging technologies. Science communicators George Zaidan and Sajan Saini explained the evolution and

fabrication of microchips, covering key processes such as wafer preparation, photolithography, doping, and packaging, along with their applications across various industries. The interactive session inspired students to explore careers in VLSI and semiconductor technology, reinforcing the department's focus on industry-relevant and holistic engineering education.

TEDx Talk -What If Engineers Are Copycats
15.10.2025

On 15th October 2025, the Department of Electrical and Electronics Engineering organised a TEDx Talk titled "What If Engineers Are Copycats?" as part of its academic enrichment initiatives. The session was delivered by Mr. Kiran Christopher from TEDxMACE. The talk highlighted the role of Reverse Engineering and creative adaptation in innovation, with examples from biomimicry such as velcro, bullet trains, and lotus-inspired surfaces. The interactive session encouraged interdisciplinary thinking and inspired students to adopt a fresh, curiosity-driven approach to engineering.

SEMINARS AND WORKSHOPS

AI & ML-Driven Power Electronics: Smart Embedded Systems and Next-Gen Batteries for the Future of E-Mobility and Defense Technologies
16.07.2025 to 17.07.2025

The Department of Electrical and Electronics Engineering, New Horizon College of Engineering, Bengaluru, organised a two-day sponsored seminar on 16th and 17th July 2025 with the support of the Anusandhan National Research Foundation (ANRF), Department of Science and Technology (DST), Government of India. Titled "AI & ML-Driven Power Electronics: Smart Embedded Systems and Next-Gen Batteries for the Future of E-Mobility and Defense Technologies," the

seminar focused on emerging technological advancements in power electronics and energy systems. The first day featured sessions on power electronics and smart embedded systems, while the second day emphasised next-generation battery technologies and defense-oriented applications.

Research Potential in Power Electronics Converters for Renewable Energy
17.09.2025 to 18.09.2025

The Department of Electrical and Electronics Engineering, New Horizon College of Engineering, Bengaluru, organised a two-day ANRF-sponsored National Seminar titled “Research Potential in Power Electronics Converters for Renewable Energy” on 17th and 18th September 2025, with support from the Anusandhan National Research Foundation (ANRF), Department of Science and Technology (DST), Government of India. The seminar provided a collaborative platform for researchers, academicians, industry professionals, and students to deliberate on recent advancements in power electronics for renewable energy systems. The sessions focused on emerging research trends, converter topologies for solar, wind, and hybrid applications, integration challenges, and future research directions. The event emphasised interdisciplinary research and academic–industry collaboration, facilitating meaningful knowledge exchange and networking opportunities. Young researchers were encouraged to pursue innovative projects in sustainable energy systems, making the seminar a significant academic initiative that promoted research excellence in renewable energy.

Expert Lecture on Understanding Cloud Practices
25.09.2025

The Department of Electrical and Electronics Engineering, in collaboration with IEEE NHCE Student Branch and its societies, organised an expert lecture titled “Understanding Cloud Practices” on 25th September 2025 at Tejas Seminar Hall. The session was delivered by Mr. Duvvuri Naga Dayakara Reddy, Solution Architect at DXC Technologies, Bengaluru. He discussed key cloud computing concepts, cloud adoption strategies, deployment models, Microsoft Azure services, security best practices, and enterprise applications. The session, attended by 100 students and 5 faculty members, received positive feedback for its practical relevance and industry insights.

Guest Talk on Innovation and Design Thinking
10.10.2025

The Department of Electrical and Electronics Engineering, in collaboration with the New Horizon Council for Innovation Incubation and Entrepreneurship (NHCIIE), organised a guest talk on “Innovation and Design Thinking” on 10th October 2025 at Tejas Seminar Hall. The speaker explained the Design Thinking process and showcased real-world innovations, encouraging creative, user-centered problem solving. The interactive session inspired students to adopt a systematic and entrepreneurial approach to innovation in Engineering.

Expert Talk on Fundamentals of VLSI Design
14.10.2025

The Department of Electrical and Electronics Engineering, in collaboration with the IEEE NHCE Student Branch and its chapters, organised an expert talk on “Fundamentals of VLSI Design” at Tejas Seminar Hall for 5th semester students. The session was delivered by Mr. Rameez Khan, Post Silicon Validation Engineer at Synopsys, Bengaluru. He explained the silicon development life cycle, covering pre-silicon design and verification, post-silicon validation, and testing processes. The interactive session helped students understand VLSI industry practices and career opportunities, and was well received for its practical insights.

Smart Sensors and IoT for Electric Vehicles: A Hands-On Workshop
30.10.2025

The Department of Electrical and Electronics Engineering, supported by IEEE Sensors Council and WiSe, organised a one-day hands-on workshop on “Smart Sensors and IoT for Electric Vehicles” on 30th October 2025. II and III-year EEE students gained practical experience with sensor technologies and IoT integration in EV systems through expert sessions and live demonstrations, enhancing technical skills and fostering innovation in smart mobility.

Workshop on Intellectual Property Rights (IPR) and Significance of Technology Transfer
22.11.2025

The Department of Electrical and Electronics Engineering, in collaboration with IIC, NIPAM, and IEEE DEIS, organised a one-day workshop on “Intellectual Property Rights and Technology Transfer” on 22nd November 2025. Mr. J. E. Moshe Dayan delivered an interactive session covering patents, copyrights, trademarks, industrial designs, and technology commercialisation. The workshop, attended by 60 participants, enhanced IPR awareness and encouraged innovation among students and faculty.

FACULTY DEVELOPMENT PROGRAMME ORGANISED

Digital Twin Technology and its Role in Industrial Automation
18.08.2025 to 23.08.2025

The Department of Electrical and Electronics Engineering conducted a six-day AICTE–ATAL sponsored FDP on “Digital Twin Technology and its Role in Industrial Automation” from August 18–23, 2025. The programme focused on Industry 4.0 concepts, covering Digital Twin fundamentals, architecture, and industrial

industrial applications. Experts discussed real-time integration of physical systems with virtual models for monitoring, predictive maintenance, and smart decision-making. Participants gained hands-on exposure to simulation and analytics tools, while industry professionals shared practical case studies. The FDP strengthened academia–industry collaboration, encouraged research in advanced automation technologies, and successfully bridged the gap between theory and industrial practice.

Research Challenges in Advanced Power Converters for Industrial Electronics Applications
12.11.2025 to 13.11.2025

The Department of Research and Development and the IEEE IES NHCE Student Branch Chapter, Department of Electrical and Electronics Engineering, New Horizon College of Engineering, in association with the IEEE Industrial Electronics Society Bangalore Chapter, organized a two-day STTP on “Research Challenges in Advanced Power Converters for Industrial Electronics Applications” on 12–13 November 2025. The program focused on recent advancements in power converter topologies and industrial applications, encouraging research engagement among students, academicians, and professionals. Sessions covered switching devices, magnetic components, control techniques, DSP/FPGA-based controllers, and applications in renewable energy, automation, transportation, and electric vehicles. Delivered by eminent experts, the STTP provided practical insights through theory, simulations, and lab demonstrations, successfully enhancing the technical knowledge and research motivation of the 55 IEEE participants.

STUDENTS ACHIEVEMENTS

SRUJANA 2025 – National Innovation Showcase

13.09.2025 to 15.09.2025

Nishanth M (1NH24EE406) and Veeresh Wadawadagi (1NH24EE411), 5th semester EEE students, won 3rd place at the national-level SRUJANA 2025 innovation and project exhibition held at Chanakya University, Bengaluru (13–15 September 2025). Their project “Logic Loop” demonstrated technical skill and creativity, reflecting the department’s focus on experiential learning and innovation.

State Level Ideathon 2025
21.11.2025

Dwiraj S, a 3rd-semester EEE student, secured 2nd place at the State-Level Ideathon 2025 organised by AICTE IDEA Lab, NHCE, as part of the team “Potato Rangers”. The achievement highlights his creativity, innovation, and problem-solving skills.

IISc x Qiskit Fall Fest 2025 – Superpose’24 Hackathon
25.11.2025

Dwiraj S (1NH24EE036), a 3rd-semester EEE student, secured 1st place at the IISc x Qiskit Fall Fest 2025 – Superpose’24 Hackathon. Representing the NHCE team “Potato Rangers”, he excelled in the IBM BB84 Quantum Key Distribution challenge, showcasing expertise in quantum technologies, analytical skills, and innovative problem-solving.

Proud Moment for NHCE: 2nd Prize at Milagro 2K25 Robo Race
27.11.2025

Apeksh Singh (1NH23EE007) and Shashank S (1NH23EE095) from the Department of Electrical and Electronics Engineering, NHCE participated in Milagro 2K25 (Robo Race), a National Level Tech Symposium held at Sai Ram College of Engineering. We are proud to announce that they have secured the 2nd Prize in the Robo Race competition!

NHCE EEE Student Achievement – 1st Prize at IDEATHON-2025
05.12.2025

Ms. Nayana S (1NH24EE064), from the EEE Department, NHCE won 1st prize at IDEATHON-2025 organised by ISTE at Chennabasaveshwara Institute of Technology, Tumkur, bringing pride to the department.

PLACEMENT DETAILS - AY: 2025-2026

Sl No	USN	Name	Company Placed
1	1NH22EE088	Raj Singh	Gilbarco
2	1NH22EE125	Yashaswini BS	Nokia
3	1NH22EE119	Thavanya Maria Singh	Merck
4	1NH22EE063	Lalith Narayan	Temenos
5	1NH22EE099	Shatakshi Pattanaik	Temenos
6	1NH22EE091	Renuka R Ramakrishnan	Plivo
7	1NH22EE015	Ashitha Subbaiah	Plivo
8	1NH22EE070	Muhammed Sinan K V	Netradyne
9	1NH22EE122	Veeresh Doddamani	Infosys
10	1NH22EE028	Chaudhary Manas Ray	Infosys
11	1NH22EE005	Achutha E B	Infosys
12	1NH22EE045	G R Yashwanth	Infosys
13	1NH22EE108	Sudeep Kumar Dutta	Infosys
14	1NH22EE002	Abhishek A Gowda	Capgemini-VLSI
15	1NH22EE003	Abhishek J	Capgemini-VLSI
16	1NH22EE009	Aishwarya C S	Capgemini-VLSI
17	1NH22EE072	Nishant Gupta	Capgemini-VLSI
18	1NH22EE090	Rani Gupta	Capgemini-VLSI
19	1NH22EE094	S Bindushree	Capgemini-VLSI
20	1NH22EE095	Sahana Pattar	Capgemini-VLSI
21	1NH22EE115	SYED ROSHAN A	Capgemini
22	1NH22EE040	Dhanya Shree S	Siemens Global Service
23	1NH23EE408	Kiran Kumar R	Siemens Global Service
24	1NH22EE097	Sakshi S M	Manjushree Technopack
25	1NH22EE101	Shreya N	Manjushree Technopack
26	1NH22EE025	Chandini N	Manjushree Technopack
27	1NH22EE112	Supritha.K	LTI Mindtree
28	1NH22EE105	Subhashree M M	TCS (VLSI)
29	1NH22EE092	Reshma Raj K R	Amazon
30	1NH22EE082	Preety Gupta	Amazon
31	1NH22EE112	Supritha K	Ericsson
32	1NH22EE120	Tirotaman K	Amazon
33	1NH22EE001	Aashish Thomas Oommen	Amazon
34	1NH22EE107	Sudeep J	Amazon
35	1NH22EE034	Deepu T	Amazon
36	1NH22EE077	Prajwal M R	Amazon
37	1NH22EE093	Roshan P	Solar Square Energy
38	1NH22EE081	Preethamraj	Solar Square Energy
39	1NH22EE077	Prajwal B	Solar Square Energy
40	1NH22EE058	Kavin N	Solar Square Energy

Research Publications for the Academic Year 2025-26

Sl No	Faculty Name	Paper Title	Month Year	Journal / Conference Title	Source (Scopus / WoS)	Publication Type (Mention Journal / Conference)	DOI
1	D. Satish Kumar	Deep learning enabled real time parking monitoring using YOLOv7 for intelligent and secure critical infrastructure	December, 2025	Discover Computing	Scopus	Journal	https://doi.org/10.1007/s10791-025-09789-7
2	Surat Pyari Atti	Signal detection in optical orthogonal time space modulation for efficient VLC application	October, 2025	Journal of Optical Communications	Scopus	Journal	https://doi.org/10.1515/joc-2025-0381
3	Arangarajan Vinayagam	State of Health Aware Adaptive Scheduling of Battery Energy Storage System Charging and Discharging in Rural Microgrids Using Long Short-Term Memory and Convolutional Neural Networks	October, 2025	Energies	Scopus	Journal	https://doi.org/10.3390/en18215641
4	Dr. Mohan Das R	Modelling and optimization of hybrid renewable energy system using SBLA-MAT algorithm	September, 2025	International Journal of Power Electronics and Drive System (IJPEDS)	Scopus	Journal	10.11591/ijpeds.v16.i3.pp1897-1913
5	Dr. B. Gunapriya	Cost-efficient energy management between electric vehicle charging stations and distribution systems using intelligent scheduling	September, 2025	Energy	Scopus	Journal	https://doi.org/10.1016/j.energy.2025.138687
6	Arangarajan Vinayagam	Drilling performance, open-hole tensile properties, and ANN-based prediction of PALF/banana hybrid composites	August, 2025	Journal of Reinforced Plastics and Composites	Scopus	Journal	https://doi.org/10.1177/07316844251368455

Patent Publication Details for the AY 2025-26

Sl. No.	Name of the Inventor	Application No.	Date of Application Submitted	Title of Patent	Published/Granted	Publication Volume No	Publication Date
1	Dr. Vinoth Kumar K	202541104790A	30/10/2025	DESIGN OF BLUETOOTH BASED REMOTE VOLTAGE MONITORING FOR OFF-GRID BATTERY	Published	48/2025	28/11/2025
2	Dr. M Karthika	202541088542 A	17/9/2025	A NOVEL CONTROL SYSTEM FOR ADAPTIVE MPPT CONTROLLER	Published	42/2025	17/10/2025
3	Anitha.A	202541088545 A	17/9/2025	DESIGN OF PORTABLE FIXTURE FOR SOLAR POWERED SYSTEM	Published	42/2025	17/10/2025
4	Ch.kavitha	202541088498 A	17/9/2025	ATOMIZER BASED TOOTHBRUSH STERILIZATION STAND	Published	42/2025	17/10/2025
5	Dr. Vinoth Kumar K	202541088341 A	17/9/2025	DESIGN OF STABLE BATTERY SYSTEM	Published	42/2025	17/10/2025
6	Dr Agalya V	462636-001	17/10/2025	TOP-LOCKING CARABINER HOOK	Published	42/2025	17/10/2025

Faculty participants in Faculty Development/ Training/STTPs for the academic year 2025-2026

Sl No	Name of the Faculty	STTP/FDP/Workshop/Training Activities	No. of days/weeks	Dates	Organization
1	Dr. Vinoth Kumar K	Digital Twin Technology and its role in Industrial Automation	6 days	18/08/2025 to 23/08/2025	New Horizon College of Engineering, Bengaluru
2	Dr. Sujoy Das	Digital Twin Technology and its role in Industrial Automation	6 days	18/08/2025 to 23/08/2025	New Horizon College of Engineering, Bengaluru
3	Dr. B. Gunapriya	Digital Twin Technology and its role in Industrial Automation	6 days	18/08/2025 to 23/08/2025	New Horizon College of Engineering, Bengaluru
4	Mr. Satish Kumar D	Digital Twin Technology and its role in Industrial Automation	6 days	18/08/2025 to 23/08/2025	New Horizon College of Engineering, Bengaluru
5	Ms. Veena Hunagund	Digital Twin Technology and its role in Industrial Automation	6 days	18/08/2025 to 23/08/2025	New Horizon College of Engineering, Bengaluru

6	Ms. Anitha Nair	Digital Twin Technology and its role in Industrial Automation	6 days	18/08/2025 to 23/08/2025	New Horizon College of Engineering, Bengaluru
7	Mr. Satish Kumar D	Digital Twin Technology and its role in Industrial Automation	6 days	18/08/2025 to 23/08/2025	New Horizon College of Engineering, Bengaluru
8	Mr. Megha Sandesh B P	Digital Twin Technology and its role in Industrial Automation	6 days	18/08/2025 to 23/08/2025	New Horizon College of Engineering, Bengaluru
9	Dr. Sujoy Das	Sustainable Development through Renewable Energy Integration	6 days	24/11/25 to 29/11/2025	Engineering College Bikanar
10	Mrs. Sangeetha CN	Next Generation Semiconductor Technologies: Design, Materials and Applications	6 days	27/10/2025 to 01/11/2025	Vimal Jyothi Engineering College Chemperi Kannur Kerala
11	Mrs. Soumya K V	Sustainable Semiconductor Technologies: Designing Energy-Efficient Devices for Green Electronics	6 days	24/11/2025 to 29/11/2025	Anil Neerukonda Institute of Technology & Sciences
12	Mrs. Soumya K V	Next Generation Semiconductor Technologies: Design, Materials and Applications	6 days	27/10/2025 to 01/11/2025	Vimal Jyothi Engineering College Chemperi Kannur Kerala
13	Mrs. Pooja Jose	AI In Action	6 days	15/09/2025 to 20/09/2025	AWH Engineering College

Research Publications for the Academic Year 2025-26 (Conference)

Sl No	Faculty Name	Paper Title	Month Year	Journal / Conference Title	Source (Scopus / WoS)	Publication Type (Mention Journal / Conference)	DOI
1	Dr. Sujitha S	HYPER RAIL: Partial Vacuum-Powered Railway with Dynamic Demand Response Solar Energy Management	October, 2025	Proceedings of the 2nd International Conference on Electronic Circuits and Signaling Technologies (ICECST-2025)	Scopus	Conference	
2	Dr. Sujitha S	HYPER RAIL: Partial Vacuum-Powered Railway w	October, 2025	Procesedings of the 9th International Conference on I-SMAC-2025	Scopus	Conference	
3	Surat Pyari Atti	Energy-Efficient Beamforming for 6G mmWave Networks Using Deep Swarm Intelligence	October, 2025	4th International Conference on Innovative Mechanisms for Industry Applications (ICIMIA)	Scopus	Conference	10.1109/ICIMIA67127.2025.11200559
4	Satish Kumar D	Grid connected Single Stage PV system by UsingSuper Twisting Sliding Mode Controllers	September, 2025	2025 International Conference on Computing Technologies & Data Communication (ICCTDC)	Scopus	Conference	10.1109/ICCTDC64446.2025.11158998
5	Dr. Sujoy Das	Application of Crayfish Optimization Algorithm for Addressing Combined Heat and Power Dispatch Problem	September, 2025	7th International Conference on Energy, Power and Environment (ICEPE)	Scopus	Conference	10.1109/ICEPE65965.2025.11139726
6	Anitha Nair	Smart Fuse - A GSM and Bluetooth Enabled Safety System	August, 2025	2025 11th International Conference on Electrical Energy Systems (ICEES)	Scopus	Conference	10.1109/ICEES67011.2025.11213158
7	Anitha Nair	Solar Cell-Based Energy Management System For Real-time Control and Optimization Of Electricity	August, 2025	2025 11th International Conference on Electrical Energy Systems (ICEES)	Scopus	Conference	10.1109/ICEES67011.2025.11212959
8	Anitha Nair	Speed Regulation using MRAC based FOPID Controller In Current-Controlled DC Motor based on Integral Time Absolute Error Reduction	August, 2025	2025 11th International Conference on Electrical Energy Systems (ICEES)	Scopus	Conference	10.1109/ICEES67011.2025.11213207

Faculty Competencies in Correlation to the MOOC Courses

Sl. No	Name of the Faculty	Title of the Course	No. of days/weeks	Dates	Platform
1	Soumya K V	Teaching and Learning in General Programs: TALG	4 week	Jul to August , 2025	NPTEL
2	Sangeetha C N	Teaching and Learning in General Programs: TALG	4 week	Jul to August , 2025	NPTEL
3	Kavitha Chenna Reddy	Fundamentals of Artificial Intelligence	12 week	Jul to October , 2025	NPTEL

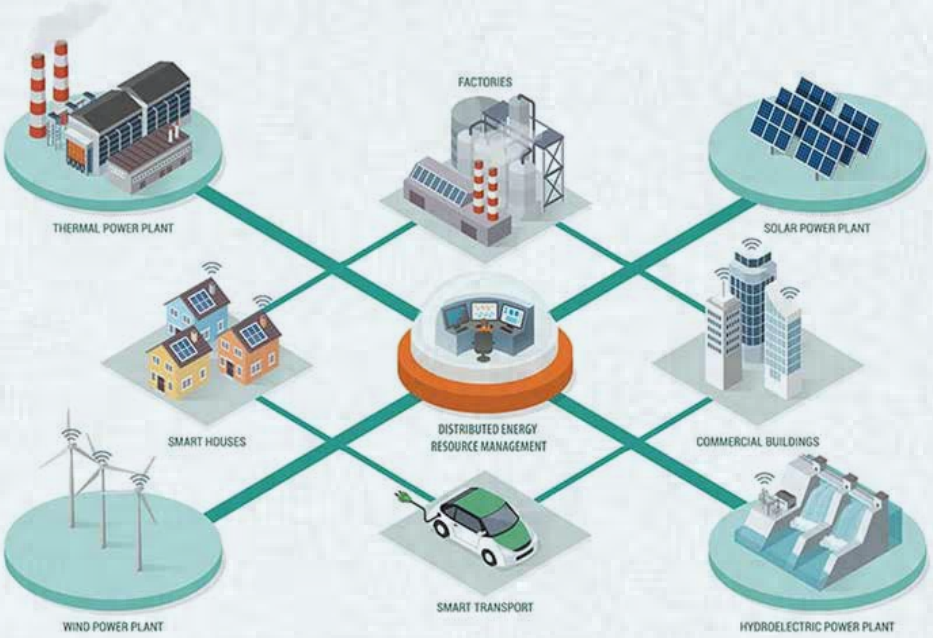
Faculty Achievements

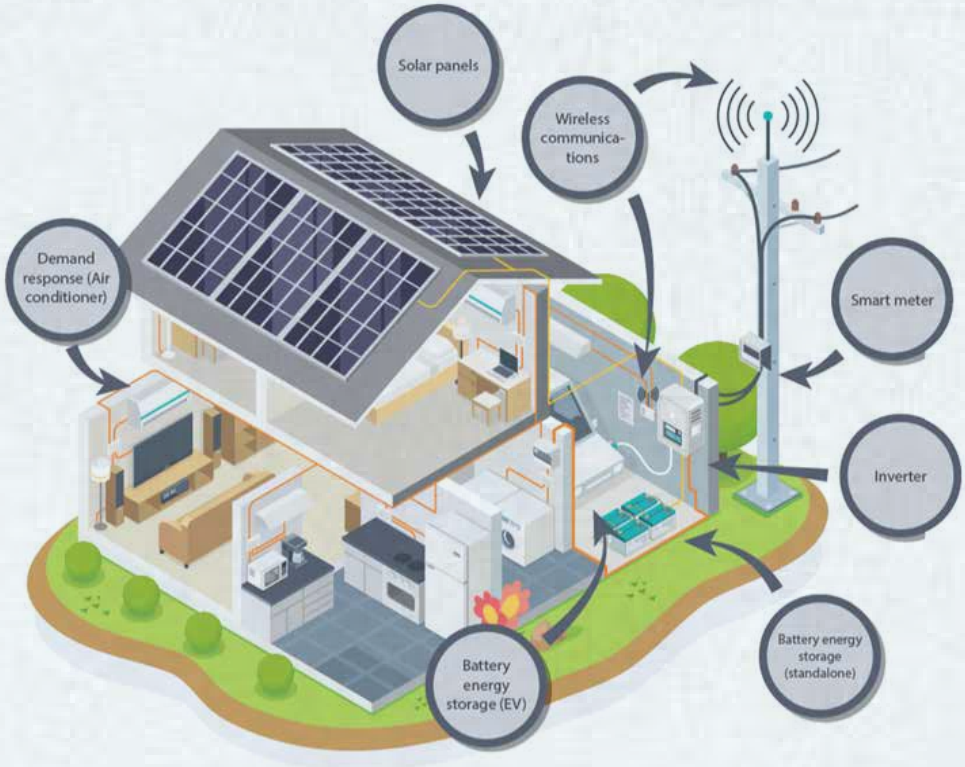
- Dr. Sujitha S, Research Excellence Award 2024 for 11 quality publications held at NHCE, September 25
- Dr. Sujitha S, Research Excellence Award 2024 for Research - Grant Received from Ministry of Electronics and Information Technology (Meity) GOI, held at NHCE, September 25
- Dr. Vinoth Kumar K, Best Innovation Ambassador, Ministry of Educations Innovation Cell, 2nd December, 2025 hosted by M S Ramaiah University of Applied Sciences, Bengaluru
- Dr. Vinoth Kumar K was recognised with the Top 2% Scientist Award by Stanford University for the year 2025.
- Dr. Vinoth Kumar K, Research Excellence Award 2024 for 13 quality publications held at NHCE, September 25
- Dr. Vinoth Kumar K, Research Grant from ANRF, GOI
- Dr. Vinoth Kumar K, International Grants of $540 (Rs. 47,583) from IEEE PES, USA under HPSBC Program Scheme.
- Dr. Vinoth Kumar K, Research Excellence Award 2024 for Research - Grant Received from Ministry of Electronics and Information Technology (Meity) GOI held at NHCE, September 25.
- Dr. Agalya V was honoured as a Keynote Speaker for the Mentor–Mentee Programme of ATL during the Regional Meet for IIC conducted by the Ministry of Education.
- Dr. Agalya V, Keynote Speaker, 2nd Annual Dr. A.P.J Abdul Kalam Innovation Conference, Swalife Biotech, 15/10/205
- Dr. Agalya V, Received Post Graduate Diploma in Intellectual Property Rights Law, Supreme Court of India Bangalore.
- Dr. Agalya V Received The WEI Awards 2025 by Women Entrepreneur India.
- Dr. Gunapriya B, Research Excellence Award for Research - Grant Received from ANRF, GOI, held at NHCE, September 25
- Dr. M Karthika, Research Grant, IEEE Sensor Council WiSe Support
- Dr. Mohan Das R, Research Grant from AICTE- ATAL
- Highest Grant received for KAPILA (5, 44, 000/-), Highest Grant received by NHCE
- Prof. Satish Kumar D, Long Service Award (10 years) held at NHCE, September 25
- Prof. Kavitha Chenna Reddy, Long Service Award (10 years) held at NHCE, September 25
- Prof. Anitha A, Long Service Award (10 years) held at NHCE, September 25

Modern Power System with Artificial Intelligence in DERMS

(DERMS) stands for Distributed Energy Resource Management Systems focusing on how AI enables intelligent, autonomous coordination of decentralised energy resources.

1. What Is DERMS?





Distributed Energy Resource Management Systems (DERMS) are software platforms that monitor, control, and optimise large numbers of distributed energy resources (DERs) such as:

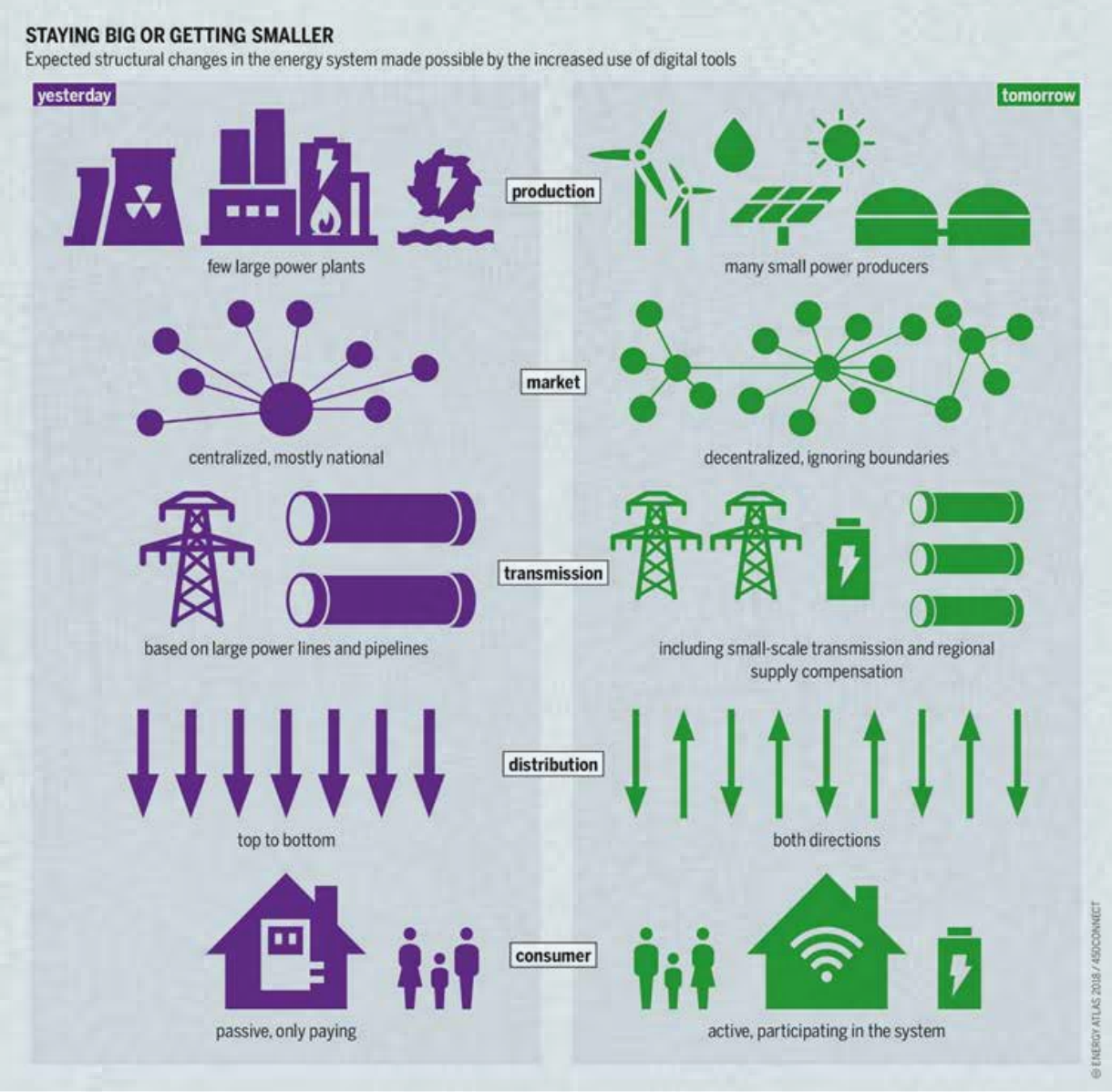
- Solar PV Systems
- Battery Energy Storage
- Electric Vehicles (EVs)
- Smart Thermostats and flexible loads
- Microgrids and demand-response assets

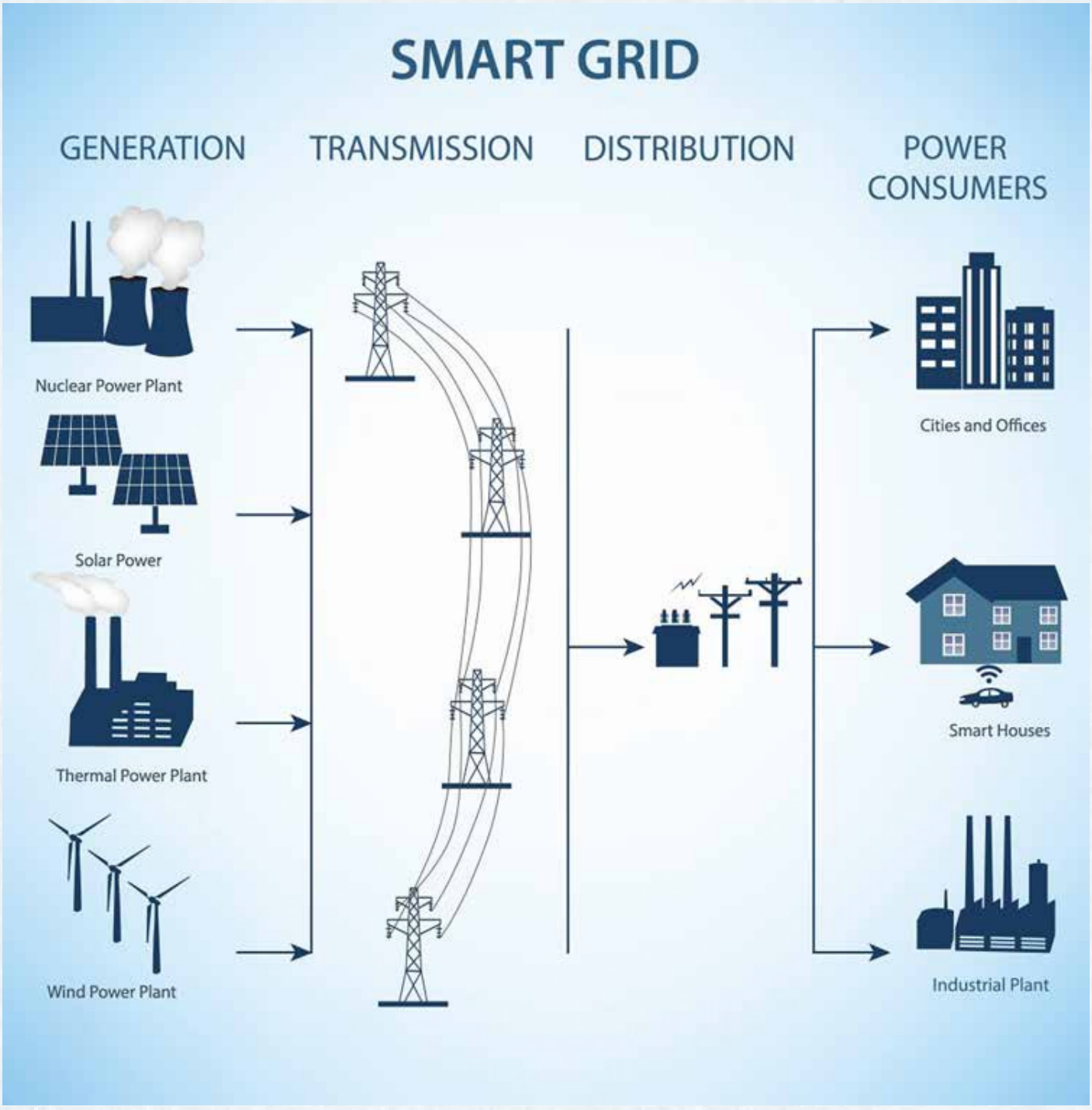
Unlike traditional centralised grid control (large power plants grid consumers), DERMS operates in a bidirectional, decentralised grid, where millions of small assets both consume and produce electricity.

Core Purpose of DERMS:

Maintain grid reliability, minimise costs, and maximise renewable energy usage—despite the variability and scale of DERs.

2. Why Traditional Grid Control Is Not Enough





Traditional Grid

- One-way power flow
- Few large generators
- Predictable supply and demand
- Centralised control logic

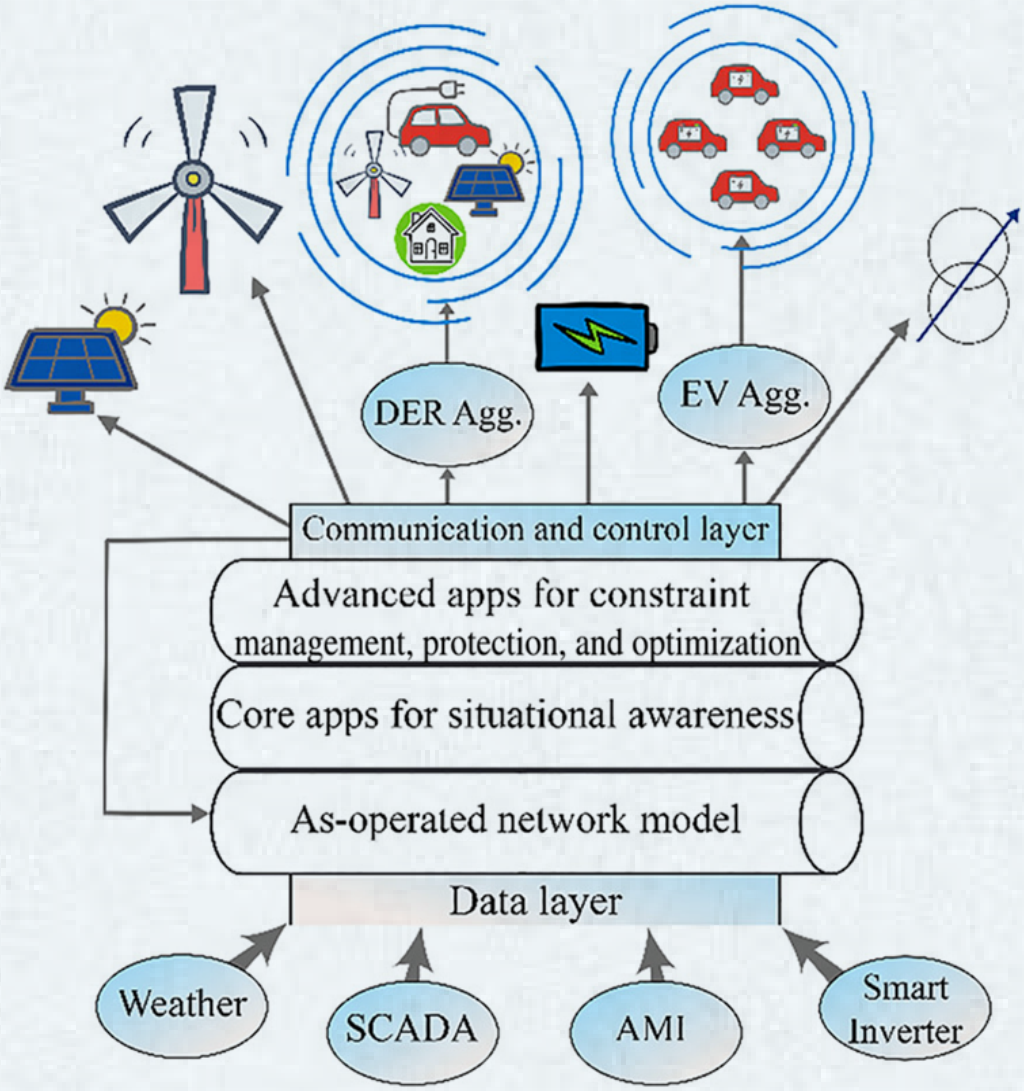
Modern DER-Dominated Grid

- Two-way power flow
- Millions of small, intermittent assets
- High uncertainty (clouds, EV charging, human behaviour)
- Control must be distributed and adaptive

Without DERMS:

- Solar overgeneration can cause voltage spikes
- EV charging can overload transformers
- Grid operators lose visibility and control at the edge

3. Core Functions of DERMS



DERMS typically performs four tightly coupled functions:

3.1 Monitoring and Visibility

- Real-time data from DERs (power, voltage, state of charge)
- Feeder-level and substation-level aggregation
- Forecasting of load and generation

3.2 Coordination and Control

- Dispatch of batteries
- Curtailment or ramping of solar PV
- Smart EV charging schedules
- Demand response activation

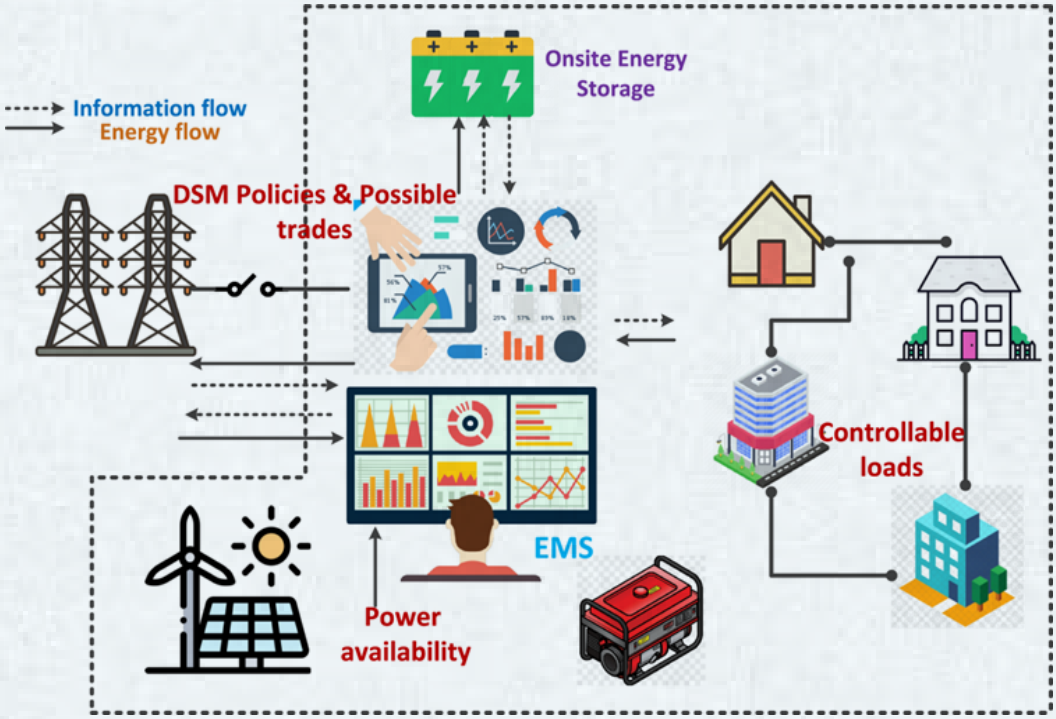
3.3 Optimisation

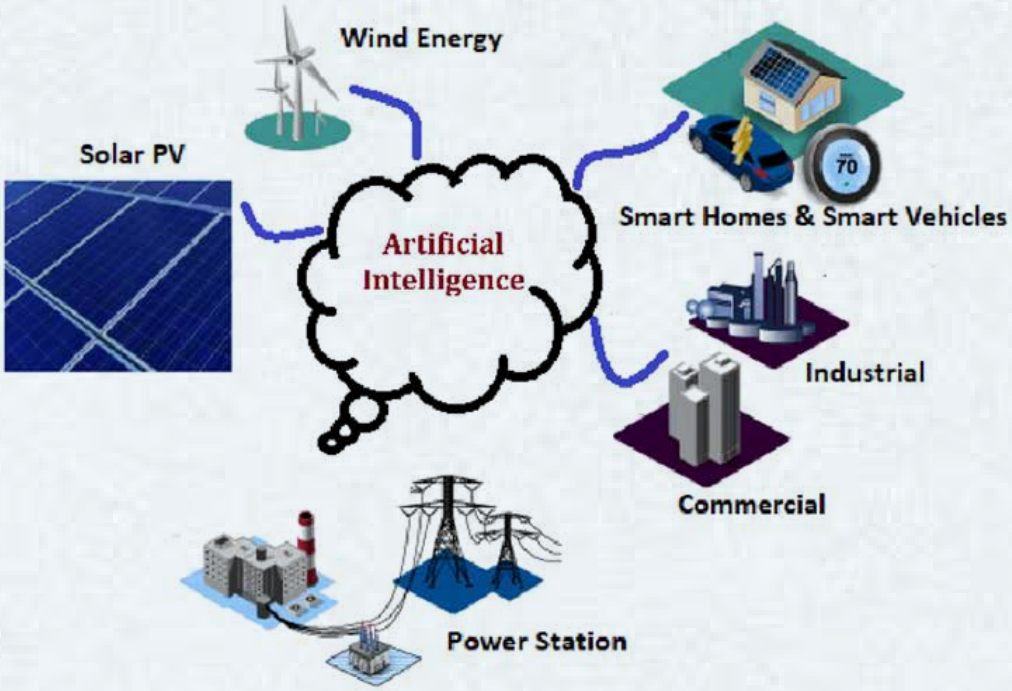
- Minimise peak demand
- Reduce grid congestion
- Maximise renewable utilisation
- Respect physical grid constraints

3.4 Market and Grid Services

- Frequency Regulation
- Voltage Support
- Capacity Deferral (avoid building new substations)
- Participation in Energy Markets

4. Role of AI in DERMS (Why AI Is Essential)





AI enables DERMS to move from rule-based automation to adaptive autonomy.

4.1 Forecasting with Machine Learning

AI models predict:

- Solar output (cloud cover, irradiance)
- EV charging demand
- Consumer load patterns
- Battery availability

Example:
A neural network predicts a 40% solar drop in the next 15 minutes due to incoming cloud cover.

4.2 Optimisation via AI Algorithms

DERMS must solve large-scale, multi-objective optimisation problems:

- Millions of DERs
- Conflicting goals (cost, reliability, emissions)
- Real-time constraints

AI techniques used:

- Reinforcement learning
- Mixed-integer optimisation + ML Heuristics
- Multi-agent systems

Example

An AI agent learns when to discharge community batteries to reduce peak load without harming battery lifespan.

4.3 Autonomous Decision-Making

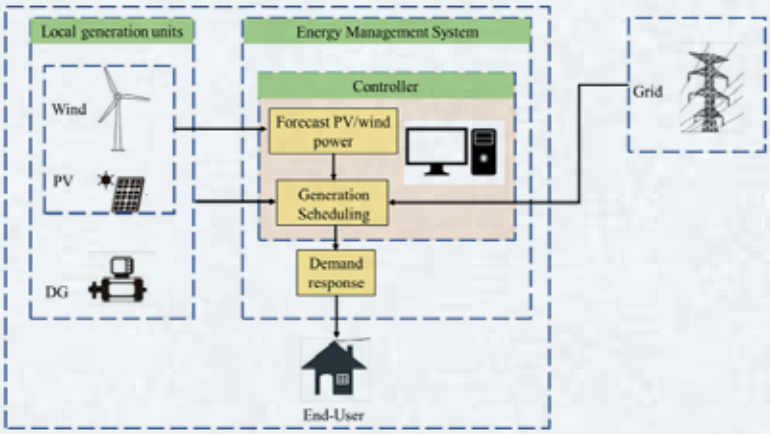
AI allows local autonomy with global coordination.

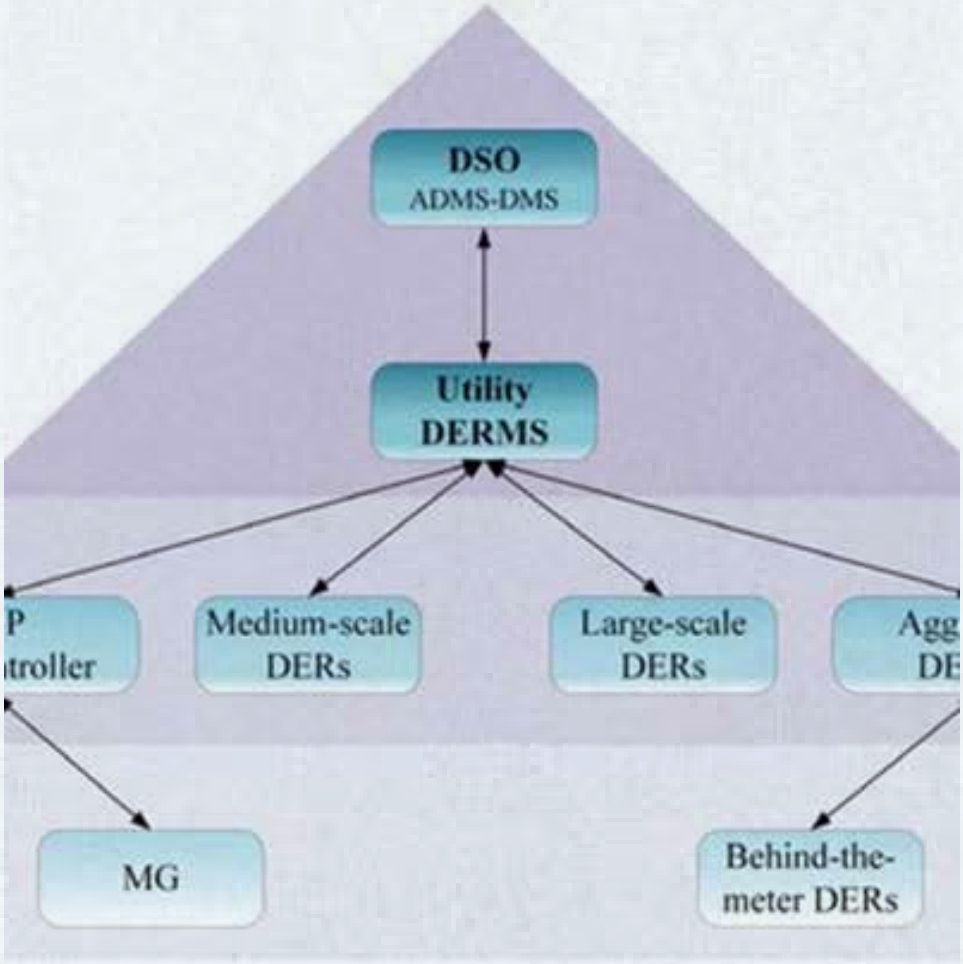
- Each DER acts as an intelligent agent
- DERMS provides high-level objectives
- Local controllers adapt in milliseconds

Example:

EV chargers autonomously slow charging when transformer loading exceeds safe limits—without human intervention.

5. Decentralised and Multi-Agent Control Architecture





Modern DERMS often follow a hierarchical or federated control model.

Control Layers

1. **Grid Operator (Top Layer)**
   Sets constraints and objectives (voltage limits, peak caps)
2. **DERMS Platform (Coordination Layer)**
   Translates grid needs into DER-level signals
3. **Edge Intelligence (Local Layer)**
   AI agents embedded in inverters, EV chargers, and batteries

This architecture:

- Scales to millions of assets
- Preserves privacy
- Improves resilience (no single point of failure)

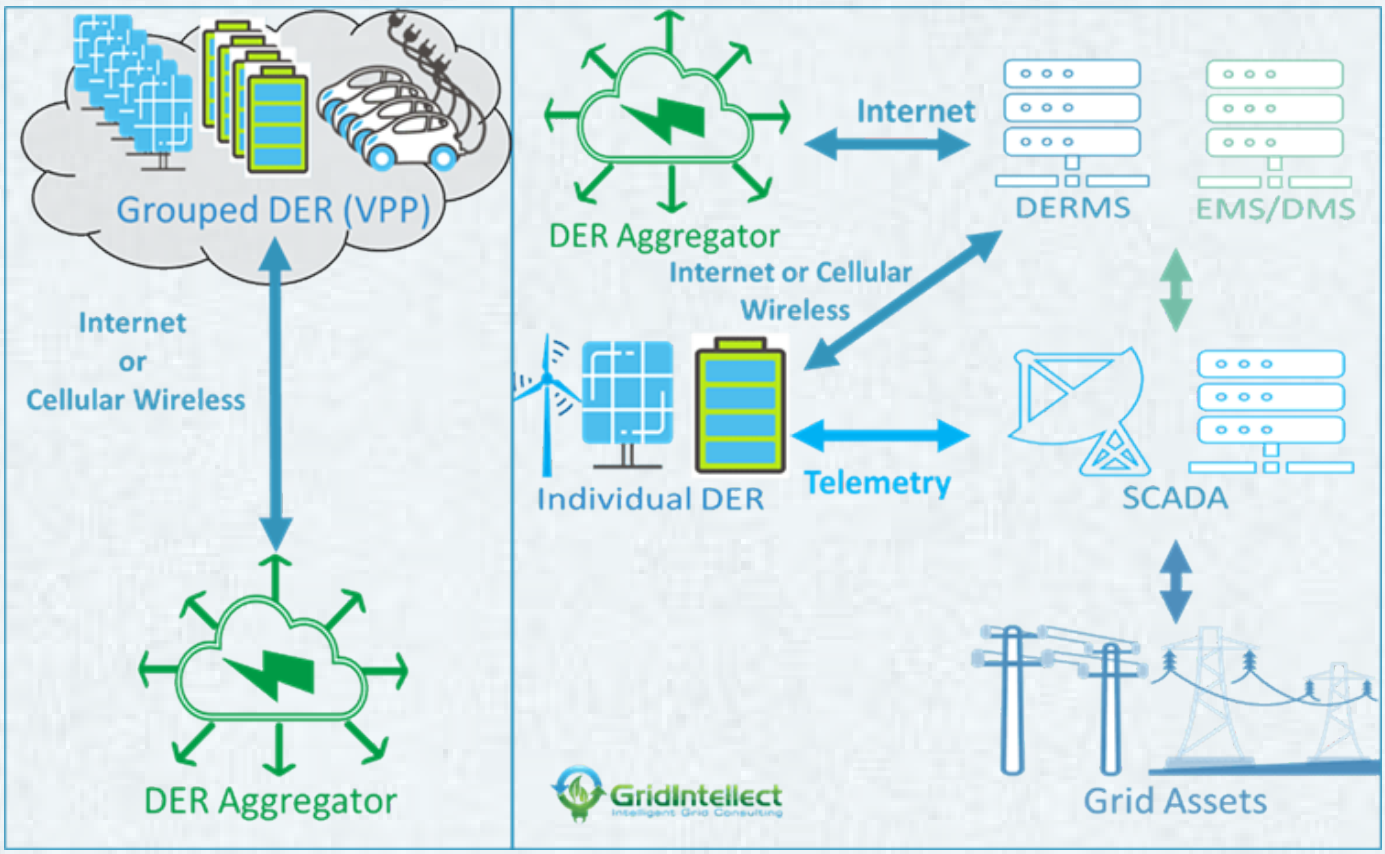
6. Concrete Examples of DERMS + AI in Action

Example 1: Solar + Battery Virtual Power Plant (VPP)

- 50,000 homes with rooftop solar + batteries
- DERMS aggregates them into a virtual power plant
- AI decides when to:
  - Store excess solar
  - Export power during peak demand
  - Provide frequency regulation

Result:

Behaves like a conventional power plant—without fossil fuels.



Example 2: Smart EV Charging

- Thousands of EVs plug in after work
- AI forecasts feeder congestion
- DERMS staggers charging times dynamically

Result:

No transformer overload, drivers still wake up with full batteries.

Example 3: Community Microgrid Autonomy

- During a grid outage:
  - DERMS islands the microgrid
  - AI balances solar, batteries, and critical loads
- Hospitals and emergency services remain powered

Result:

Self-healing, resilient local energy system.

7. Benefits of AI-Enabled DERMS

Dimension	**Benefit**
Reliability	Prevents outages and voltage violations
Economics	Defers costly grid upgrades

Sustainability	Maximizes renewable integration
Scalability	Manages millions of DERs
Resilience	Enables islanding and self-healing

8. Key Takeaway

DERMS + AI transforms the power grid from a centrally controlled machine into a decentralised, intelligent ecosystem.

AI is not optional - it is the only practical way to:

- Coordinate millions of autonomous energy assets
- Handle uncertainty and variability
- Enable real-time, grid-safe autonomy at scale

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