



K. RAMAKRISHNAN COLLEGE OF ENGINEERING

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DEPARTMENT OF

MECHANICAL ENGINEERING

KRCExpress

PERSISTENCE TOWARDS PASSION



Vol. II Issue 1



Magazine 2021-22



QUALITY
EDUCATION



RESEARCH &
INNOVATION



INDUSTRY
COLLABORATION



STUDENT
EXCELLENCE

LEADERSHIP MESSAGES



CHAIRMAN MESSAGE

The Department of Mechanical Engineering at K Ramakrishnan College of Engineering is dedicated to shaping innovative and skilled engineers through quality education, practical exposure, and research excellence. The department strives to empower students with technical knowledge, professional ethics, and leadership skills to meet global industrial challenges and contribute effectively to society.



DR. K. RAMAKRISHNAN
CHAIRMAN – KR Group



EXECUTIVE DIRECTOR'S MESSAGE

The Department of Mechanical Engineering at K. Ramakrishnan College of Engineering is committed to academic excellence, innovation, and industry-oriented learning. With advanced laboratories, experienced faculty, and a strong research culture, the department prepares students to become competent mechanical engineers with technical expertise, ethical values, and leadership skills to excel in their careers and serve society.



DR. S. KUPPUSAMY
EXECUTIVE DIRECTOR –
KR GROUP

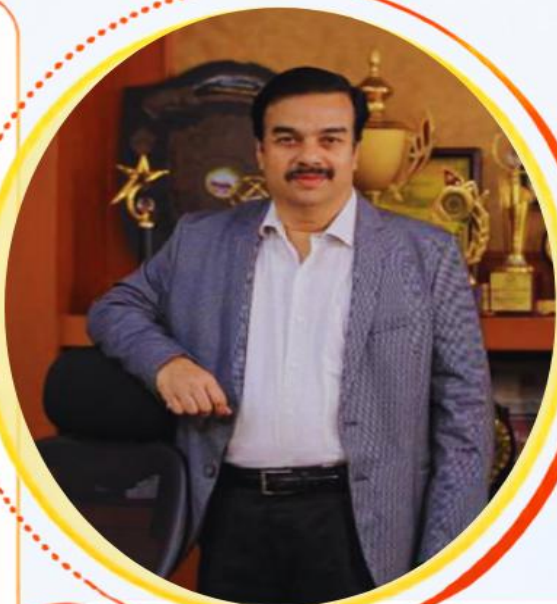


★ LEADERSHIP MESSAGES ★



PRINCIPAL'S MESSAGE

The Department of Mechanical Engineering at K. Ramakrishnan College of Engineering plays a vital role in shaping technically proficient and innovative engineers. The department focuses on delivering quality education through modern laboratories, experienced faculty, and research-driven learning. It strives to equip students with technical knowledge, practical skills, and ethical values to meet industrial challenges and emerge as successful professionals who contribute meaningfully to society.



DR. D. SRINIVASAN
PRINCIPAL - KRCE



DR. MEIGNANAMOORTHY
HOD / MECHANICAL

HOD'S MESSAGE

Welcome to the Department of Mechanical Engineering. Our mission is to bridge the gap between academic excellence and industrial requirement. Through our state-of-the-art laboratories and robust industry partnerships, we ensure our students gain the technical proficiency and practical experience necessary for a successful career. We take pride in our commitment to developing disciplined, competent, and ethical professionals who contribute meaningfully to the engineering community and society at large.



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DEPARTMENT OF MECHANICAL **KRC Express**

Persistence towards Passion



K. RAMAKRISHNAN
COLLEGE OF ENGINEERING

Vol. II Issue 1

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A magazine is a reflection of the department's achievements, innovations, and aspirations. Through this publication, we celebrate academic excellence, research contributions, student accomplishments, and the collective efforts of our Mechanical Engineering family.

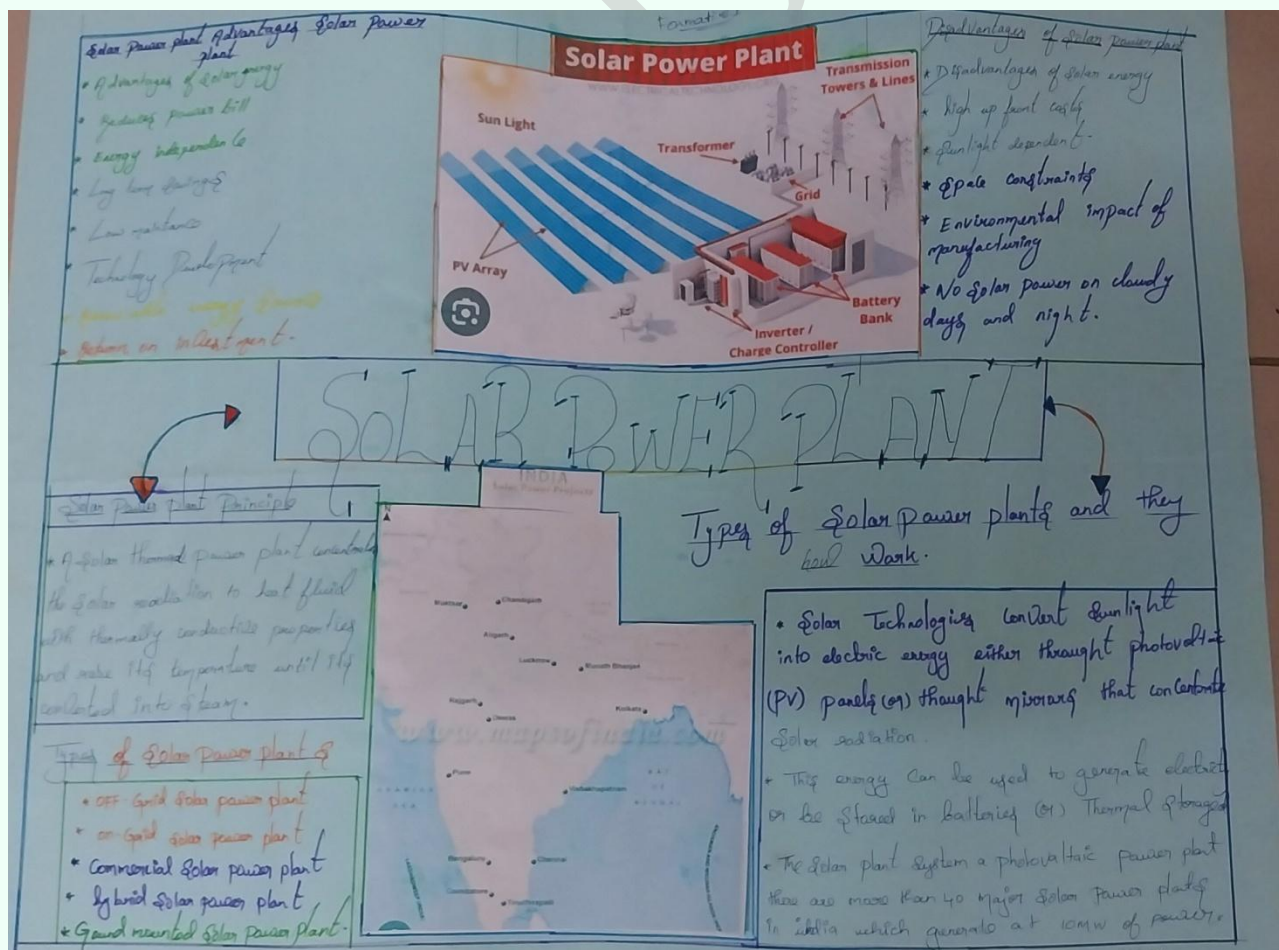
DEPARTMENT OF MECHANICAL ENGINEERING

KRCExpress – Persistence Towards Passion

TECHNICAL REPORT

SOLAR POWER PLANT

A Solar Power Plant is a renewable energy system that converts sunlight into electrical energy using Photovoltaic (PV) panels or solar thermal technologies. It plays a significant role in meeting the increasing global demand for clean and sustainable energy while reducing dependence on fossil fuels. Solar power is one of the fastest-growing renewable energy sources due to its environmental benefits, low operating costs, and technological advancements. The basic working principle of a solar power plant involves capturing solar radiation through PV modules, which convert sunlight directly into electricity using the photovoltaic effect. The generated direct current (DC) is converted into alternating current (AC) using an inverter before being supplied to the electrical grid through transformers and transmission lines.



In off-grid systems, excess energy is stored in battery banks for use during cloudy weather or nighttime. Solar thermal power plants, on the other hand, use mirrors or lenses to concentrate sunlight and generate steam that drives turbines for electricity production.

Solar power plants are broadly classified into On-Grid, Off-Grid, Hybrid, Commercial, and Ground-Mounted systems, each designed to meet different energy requirements. These systems are widely used in residential buildings, industries, commercial establishments, agricultural applications, and utility-scale power generation. India has established numerous large-scale solar parks, supporting the nation's transition toward sustainable energy and reducing greenhouse gas emissions.

The major advantages of solar power include clean and renewable energy generation, reduced electricity costs, energy independence, low maintenance requirements, long service life, and minimal environmental pollution. Solar energy also contributes significantly to reducing carbon emissions and promoting sustainable development. However, certain limitations include high initial installation costs, dependence on sunlight availability, lower efficiency during cloudy weather and nighttime, land requirements for large installations, and environmental impacts associated with the manufacturing and disposal of PV modules.

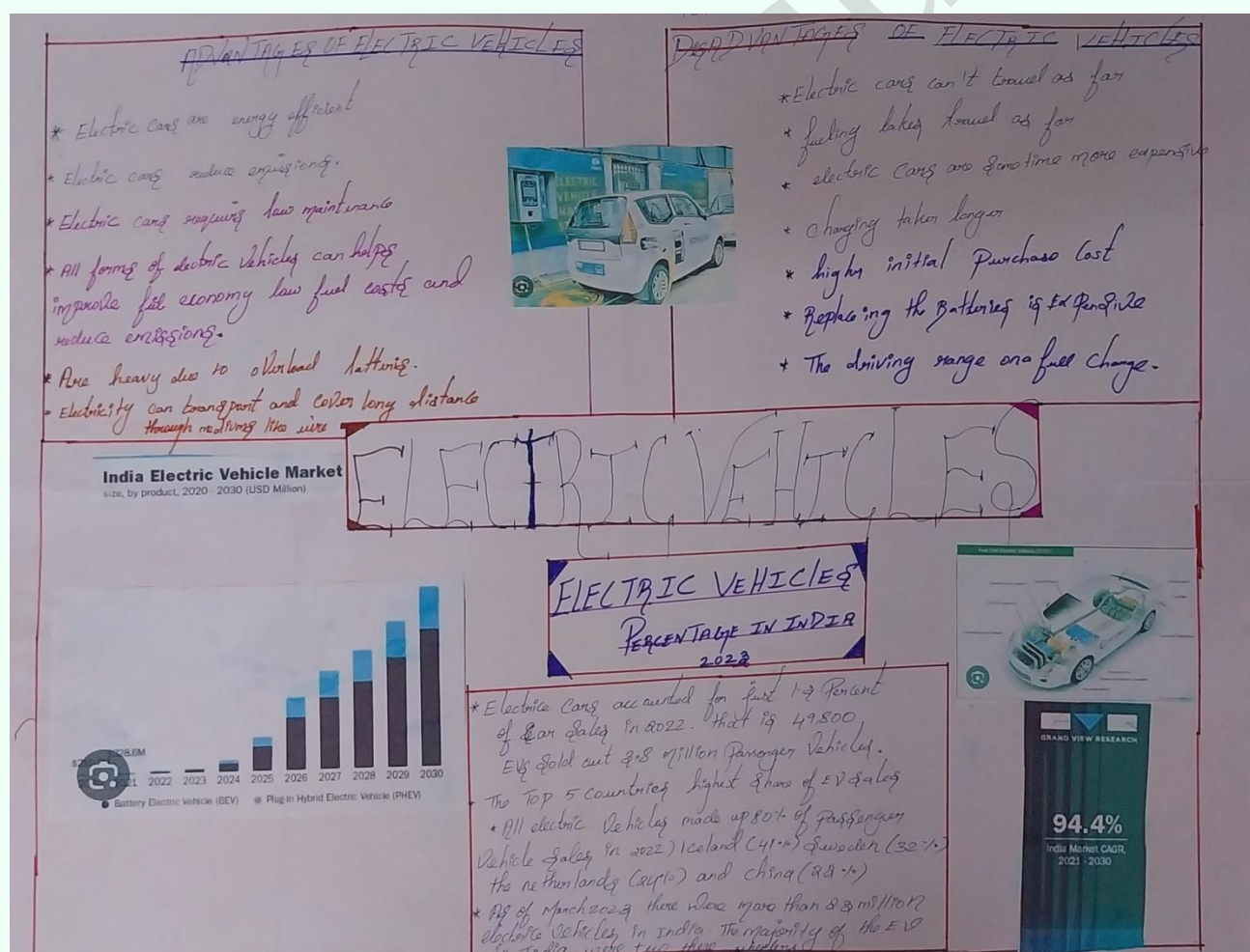
Overall, solar power plants are an essential component of the global renewable energy transition. Continuous advancements in high-efficiency photovoltaic cells, battery energy storage systems, smart grid technologies, and energy management systems are improving the performance and reliability of solar power generation. Understanding the principles, components, advantages, and applications of solar power plants provides engineering students with valuable technical knowledge, enabling them to contribute to the development of clean, sustainable, and energy-efficient solutions for the future.

EDWIN SANTHOSH J

II YEAR / MECHANICAL

ELECTRIC VEHICLES

Electric Vehicles (EVs) are transforming the global transportation sector by offering an eco-friendly and energy-efficient alternative to conventional petrol and diesel vehicles. Powered by rechargeable batteries and electric motors, EVs produce zero tailpipe emissions, helping to reduce air pollution and greenhouse gas emissions. With rapid advancements in battery technology, charging infrastructure, and government support, electric mobility is becoming an essential component of sustainable development and clean energy initiatives.



The primary advantage of electric vehicles is their high energy efficiency and low operating cost. EVs require fewer moving parts than internal combustion engine vehicles, resulting in lower maintenance costs and improved reliability. They also reduce dependence on fossil fuels, contributing to energy security and environmental conservation. Regenerative braking systems further improve efficiency by recovering energy during braking and extending battery life. The increasing integration of renewable energy sources with EV charging stations further enhances the sustainability of electric transportation.

Despite these benefits, electric vehicles face several challenges. The high initial purchase cost, mainly due to battery expenses, remains a significant barrier for many consumers. Limited driving range, longer charging times compared to refueling conventional vehicles, and the availability of charging infrastructure in rural and remote areas are additional concerns. Battery replacement costs and responsible recycling of used batteries are also important issues that require technological advancements and effective policy support.

The electric vehicle market is experiencing rapid growth worldwide, driven by government incentives, stringent emission regulations, and increasing public awareness of environmental protection. India is also witnessing significant growth in EV adoption through initiatives such as the FAME (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles) scheme, investments in charging infrastructure, and domestic battery manufacturing. These efforts are expected to accelerate the transition toward sustainable mobility in the coming years.

For engineering students, understanding electric vehicle technology provides valuable knowledge in battery systems, electric motors, power electronics, energy management, regenerative braking, charging technologies, and vehicle control systems. As the automotive industry shifts towards electrification, expertise in EV technologies will create numerous career opportunities in design, manufacturing, research, and sustainable transportation. Electric vehicles represent the future of mobility by combining innovation, energy efficiency, and environmental responsibility to build a cleaner and greener world.

DHANUSH R B

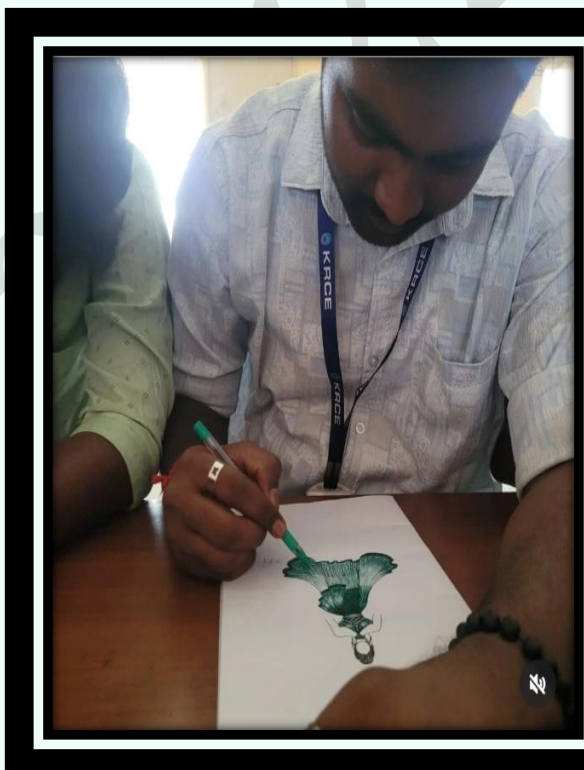
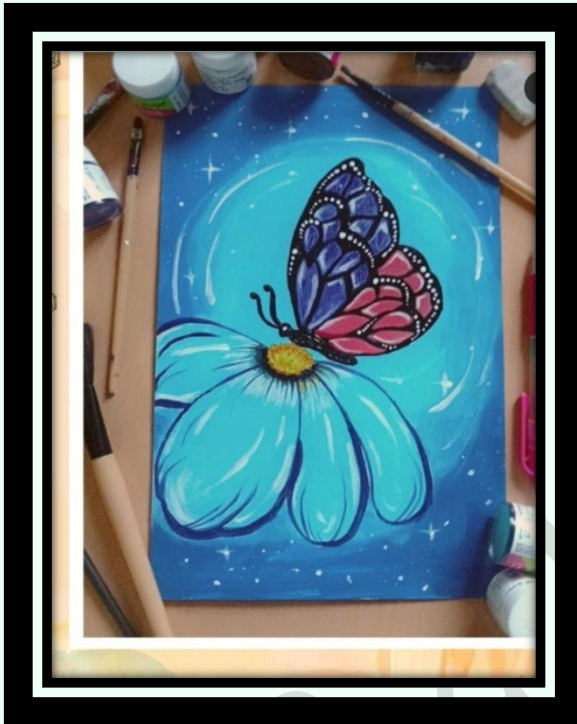
III YEAR / MECHANICAL

ART WORK

The Department of Mechanical Engineering proudly recognizes the artistic talent and creativity of Mr. Kabashraj, First Year Mechanical Engineering, who has demonstrated exceptional skills in drawing, painting, and visual arts. Through a collection of impressive artworks, he has showcased his imagination, attention to detail, and passion for creative expression beyond the field of engineering.

His artworks feature vibrant paintings, intricate illustrations, creative sketches, and personalized artistic designs that reflect originality and aesthetic excellence. The ability to balance technical education with artistic pursuits highlights the multidisciplinary talents of Mechanical Engineering students and their commitment to holistic personal development.

Mr. Kabashraj's creative achievements serve as an inspiration to fellow students, encouraging them to explore their talents and interests while pursuing academic excellence. His contributions exemplify the importance of creativity, innovation, and self-expression in shaping well-rounded professionals.



FACULTY INDUSTRIAL VISIT TO SREE KALEEESHWARI ENGINEERING WORKS

The Department of Mechanical Engineering, K. Ramakrishnan College of Engineering, organized an industrial visit for Mr. A. Mohanakrishnan and Mr. B. Prakash, Assistant Professors, to Sree Kaleeeshwari Engineering Works with the objective of strengthening industry-institution collaboration. During the visit, the faculty members interacted with the management and technical experts to understand modern manufacturing practices, machining processes, quality control, and industrial safety standards. Discussions were also held regarding student internships, in-plant training, industrial visits, project collaborations, and placement opportunities to enhance students' practical exposure and employability. The visit provided valuable insights into current industrial requirements and reinforced the department's commitment to bridging the gap between academic learning and industry expectations through effective collaboration.



SEMINAR ON AUGMENTED REALITY (AR) AND VIRTUAL REALITY (VR)

The Department of Mechanical Engineering, K. Ramakrishnan College of Engineering, organized a Seminar on Augmented Reality (AR) and Virtual Reality (VR) for students of the Computer Science and Engineering (CSE), Artificial Intelligence (AI), and Information Technology (IT) departments. The seminar aimed to provide participants with comprehensive knowledge of immersive technologies and their growing applications across various engineering and industrial domains.



The session introduced students to the fundamentals of AR, VR, Mixed Reality (MR), Extended Reality (XR), Artificial Intelligence (AI), Computer Vision, 3D Modelling, and Human-Computer Interaction. Participants learned how AR overlays digital content onto the real world, while VR creates fully immersive virtual environments using advanced hardware such as VR headsets, motion

controllers, and tracking sensors. Live demonstrations and interactive sessions enabled students to experience immersive applications and understand the underlying technologies.

The resource person highlighted the wide range of applications of AR and VR in education, healthcare, manufacturing, smart factories, gaming, architecture, defense, automotive design, industrial maintenance, simulation-based training, and the Metaverse. The seminar also emphasized the integration of AR/VR with Artificial Intelligence, Machine Learning, Internet of Things (IoT), Digital Twins, and Industry 4.0, demonstrating how these technologies are transforming digital experiences and industrial processes.

The seminar proved to be highly informative and inspiring, enhancing students' technical knowledge and awareness of emerging immersive technologies. It motivated participants to develop innovative AR/VR solutions and prepare for future careers in the rapidly evolving fields of Artificial Intelligence, Extended Reality (XR), and Industry 4.0.

INDEPENDENCE DAY 2021

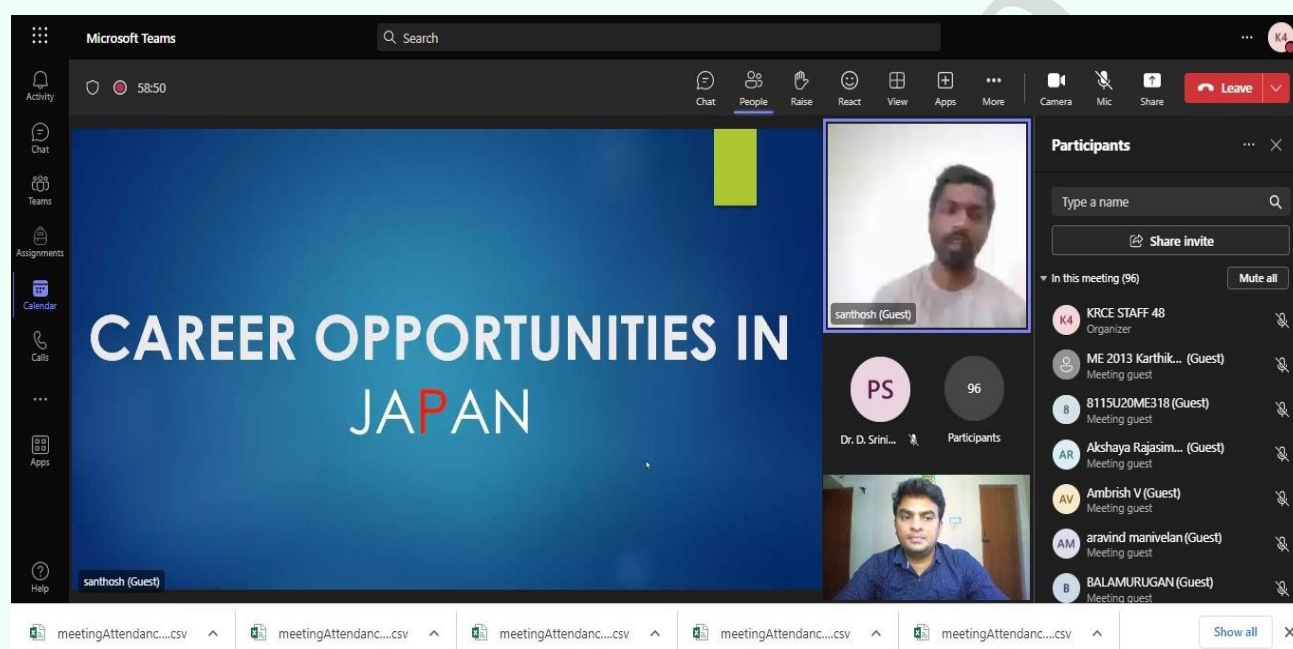
The Department of Mechanical Engineering proudly congratulates its students for their commendable performance in the March Past Competition during the Independence Day 2021 celebrations at K. Ramakrishnan College of Engineering. Their discipline, coordination, and patriotic spirit reflected outstanding teamwork and dedication. The achievement brought pride to the department and the institution while showcasing the importance of leadership, unity, and active participation in extracurricular activities. The

department extends its heartfelt congratulations and wishes the students continued success in all their future endeavors.

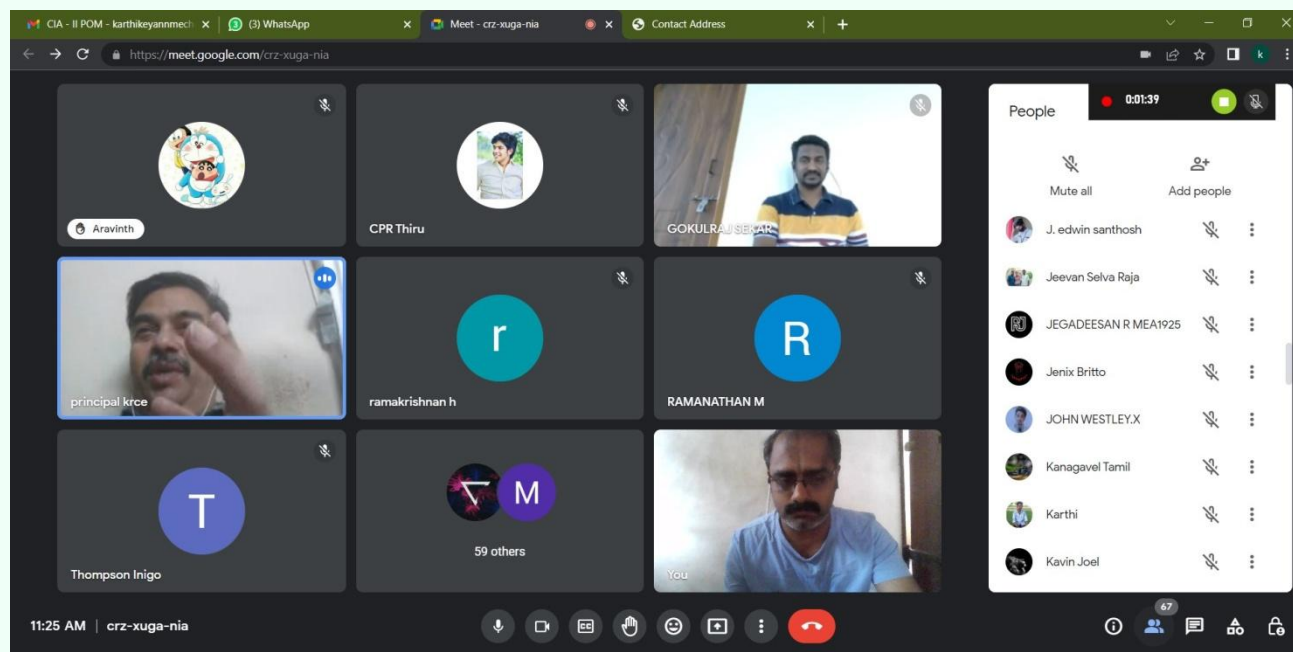


ALUMNI TALK ON CAREER OPPORTUNITIES IN JAPAN

The Department of Mechanical Engineering, K. Ramakrishnan College of Engineering, organized an Alumni Interaction Session on "Career Opportunities in Japan" for the II and III Year Mechanical Engineering students. The session was delivered by Mr. Santhosh Kathiravan, a distinguished alumnus of the department, who shared his professional journey and valuable experiences of working in Japan.



During the session, Mr. Santhosh Kathiravan provided insights into the career prospects available for mechanical engineers in Japan, highlighting opportunities in the automotive, manufacturing, robotics, automation, and precision engineering industries. He explained the importance of technical skills, Japanese language proficiency (JLPT), cultural adaptability, and professional ethics required to build a successful career in Japan. He also guided students on higher education opportunities, internship programs, recruitment processes, visa procedures, and the skills expected by Japanese employers.



The interactive session motivated students to prepare for global career opportunities by enhancing their technical competencies, communication skills, and industry knowledge. The programme concluded with an engaging question-and-answer session, where students clarified their doubts regarding employment, higher studies, and life in Japan. The Department sincerely thanks Mr. Santhosh Kathiravan for inspiring the students and helping them explore promising international career opportunities.