

Proceedings of the Seventh National Conference  
on  
Innovations and Advancements in Electrical Sciences

NCIAES'22



Organized by

DEPARTMENT OF  
ELECTRICAL AND ELECTRONICS ENGINEERING

Knowledge Partners



IEEE



Learn Beyond

KPR Institute of  
Engineering and  
Technology

(Autonomous, NAAC "A")

## **PREFACE**

The Seventh National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'22) is organised by Department of EEE, KPR Institute of Engineering and Technology (KPRIET) in association with ISTE, IEEE Madras Section, and IE(I). KPRIET promoted by KPR groups, is a renowned autonomous institution that focuses to offer quality education to the younger generation to strengthen our nation in the field of Engineering and Technology.

The NCIAES is emphasis on “Greener Energy for future Generation”. The conference accomplishes on recent trends in the field of Electrical, Electronics, Communication and Computer Science Engineering. A substantial number of technical papers has been received in variety of disciplines for deliberations, the outcome of which is aimed at emerging trends in the respective field.

More than thirty presented papers maintained the high promise suggested by the full length papers and the programme was chaired in a professional and efficient way by the session chairmen. We are indebted to those who served as session chairs. We would like to thank all participants for their contributions to the conference and for their contribution to these proceedings. It is appropriate that we record our thanks to our fellow members of the organizing committee for their support to make the conference highly successful. We would also like to bestow our appreciation for all the faculty members in making excellent logistical arrangements. The efforts set has made a great contribution to the success. The continuing success of conference like this will lead for fruitful upliftment in a continuous series.

**Dr. V. KUMAR CHINNAIYAN, HoD, EEE**

## MESSAGE FROM CHAIRMAN



I am pleased to invite you all for the upcoming Seventh National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'22) with the theme “Greener Energy for future Generation” on 26<sup>th</sup> March 2022. I am happy to know that through this conference, the college proposes to showcase the current and emerging trends in the engineering and technology. As the topic for the conference discusses the recent trends in the field of Renewable Energy and allied sectors, definitely creates a forum for young budding engineers and research scholars. I congratulate the organizers for taking the initiative to host this national conference. I am confident that this conference will be a grand success, and that all participants will enjoy a fruitful and enlightening discussion. I wish the participants, all the very best in their future endeavors.

**Dr.K.P.Ramasamy**  
Chairman, KPR Group

## MESSAGE FROM PRINCIPAL



It is my pleasure and honour to invite the technocrats for Seventh National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'22). I appreciate the organizers for choosing the theme of national importance, "Greener Energy for future Generation". I am very much happy to note that this conference is organized in association with ISTE, IEEE Madras Section and IE(I). I am sure that the conference would set the stage for academicians across the spectrum of technology and industry to discuss and review the status of technological advancements in the country in renewable energy sector. I hope, this would go a long way to set a frame work to upgrade and improve the ever changing panorama of power generation, distribution and utilization. I wish the organizers of the conference the best in their endeavors to make the conference a grand success.

**Dr.M.Akila**  
Principal

## **MESSAGE FROM ORGANIZING SECRETARIES**

On behalf of the Organizing Committee, it is our pride and privilege to invite you for Seventh National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'22) to be held in KPR Institute of Engineering and Technology, Coimbatore. All the faculty members of our department are eagerly looking forward to welcome delegates from various part of the country. Our college has sprawling lush green lawns and is spacious with buildings of architectural excellence. Coimbatore, Manchester of South India is known for its textile, motor industry, auto component industry, medical tourism and hospitality. Apart from this, the city has more than 50 engineering colleges and five universities and has become an education hub of Tamilnadu.

Improving quality in Engineering is the dream and aspiration of all Engineers. This kind of conferences will definitely create a forum for young budding engineers and technocrats to discuss the advancements in the various fields of engineering. Amidst the power packed technical sessions, we, the organizing committee is committed to host a conference conducive to a plethora of knowledge sharing through key note addresses of eminent personalities. We hope that this conference will be a positive contribution towards building the youngest generation with good quality of technical skills.

We look forward to welcoming you all to KPRIET, Coimbatore and assure that your stay would be pleasant and productive.

**Prof.S.VIVEKANANDAN**

**Prof.G.SARAVANAN**

**Dr.S.RAVINDRAN**  
Organizing Secretaries

## ORGANIZING COMMITTEE

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## **ABOUT THE INSTITUTION**

KPR Institute of Engineering and Technology (KPRIET-Autonomus) is a new generation engineering college established in the year 2009 at Avinashi Road, Arasur, Coimbatore District, Tamil Nadu under KPR Educational Trust of KPR Group, one of the largest industrial conglomerates and vertically integrated apparel manufacturing companies in India.

KPRIET is approved by AICTE, New Delhi and affiliated to Anna University, Chennai, is dedicated for an unparalleled learning experience. The Institution has been accredited by NAAC with 'A' grade and 5 UG programs (CIVIL, CSE, ECE, EEE and Mechanical Engineering) have been accredited by NBA, New Delhi. The college is recognized under 2(F) and 12 B.

KPRIET offers eight undergraduate programmes (4 years) in B.E/B.Tech namely

- Artificial Intelligence and Data Science
- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Science and Engineering
- Electrical and Electronics Engineering
- Electronics and Communication Engineering
- Mechanical Engineering

And four post graduate programmes (2 years ) in Master of Engineering namely

- Structural Engineering
- VLSI Design
- CADD / CAM
- Computer Science and Engineering.

Ever since the inception, KPRIET is committed to holistic education and making the teaching – learning process more meaningful. The zeal and dedication with which KPRIET revolves is well depicted in its motto “Learn Beyond”, making it different from many institutions offering engineering education at large.

This commitment to excellence is supported by a strong team of experienced professionals and is best reflected in its goal to become a globally recognized institute of engineering and technology. The KPR group of companies has established a lead position in South India with interests in Textiles, Wind energy and Sugar. The companies are threaded by a unified code of values: commitment to excellence, quality and the willingness to give back to the environment.

## **Vision of the Institute**

To become a premier institute of academic excellence by imparting technical, intellectual and professional skills to students for meeting the diverse needs of the industry, society, the nation and the world at large.

## **Mission of the Institute**

- Commitment to offer value based education and enhancement of practical skills.
- Continuous assessment of teaching and learning process through scholarly activities.
- Enriching research and innovative activities in collaboration with industry and institute of repute.
- Ensuring the academic process to uphold culture, ethics and social responsibility.

## **Quality Policy**

- To impart education to bring academic excellence.
- To ensure students upholds moral and ethical values.
- To cater the demand driven needs of various stakeholders.
- To promote research and facilitate technology transfer of societal significance.

## **VISION OF THE DEPARTMENT**

To be the centre of higher learning in the field of Electrical and Electronics Engineering by educating the students to meet the global challenges with professional ethics and social consciousness.

## **MISSION OF THE DEPARTMENT**

- Providing technical, intellectual and ethical environment to the students through knowledge centric education and research.
- Collaborating with industries in the vicinity, nationally and internationally for exposure and innovation.
- Enabling the students to serve the society through prolific ideas

**Department of Electrical and Electronics Engineering**

**PROGRAM OUTLINE**

**26<sup>th</sup> March, 2022**

09.00 am – 9.55 am	Registration
09.55 am – 10.20 am	Inauguration
10.21 am – 11.20 am	Sessions-I
11.21 am – 11.30 am	Networking Tea/ Break
11.31 am – 01.00 pm	Sessions-II
01.01 pm – 02.00 pm	Lunch
02.01 pm – 03.30 pm	Sessions-III
03.31 pm – 03.45 pm	Networking Tea/ Break
03.46 pm – 04.00 pm	Valediction

## SESSION DETAILS

Paper ID	Title
1001	Chronic Kidney Disease Prognosis and Performance Analysis Using Analytical Techniques
1002	Design of Emergency Based Blood Delivery Drones during Pandemic Period
1003	A New Mode of Approach to Measure Blood Pressure Using IoT
1004	Solar Energy from Solar Panels to Solar Skins
1005	Area Efficient Mid-Point Filter Using Approximate Adder and Comparator for Image Processing Application
1006	Analysis of Cascaded H Bridge Multilevel Inverters for Three Phase Induction Motor
1007	LoRa Based Air and Noise Pollution Monitoring System
1008	Enhanced Cluster Based Link State Secure Routing Algorithm in Flying Ad-HoC Network
1009	IoT Based Health Monitoring System
1010	Automatic Overload Protection Relay Using IoT
1011	Power Quality Enhancement Using UPQC under Critical Loads
1012	Ultrasonic Aided Voice Based Smart Stick
1013	Gesture Controlled Contactless Switch
1014	Home Automation Using IoT
1017	Campus Wide Water Management System
1018	Railway Ticket Reservation Application Using Core Java
1019	Library Management Development
1020	Concentrated Solar Energy Applications using Fresnel Lenses
1021	Home Automation using IoT
1023	IoT Based Smart Key Finder
1024	IoT Based Self-Driving Car
1025	EV Battery Smart Charging
1027	Virtual Keys Activation using IoT
1029	Performance Analysis of Concentrating Semitransparent Photovoltaic System
1030	Remote Monitoring of Transformer Health Using IoT
1033	Smart Energy Efficient Home Automation Using Telegram
1034	IoT Based Smart Surveillance And Control of Street Light System
1035	Sequential Automation Process Using Microcontroller
1036	Smart Walking Device Using IoT
1037	Voice Controlled Indoor Air Purifier with Sleeping Aid
1038	Environment Monitoring in Factories Using IoT for Employee Safety
1040	Modelling and Realization of Cruise Control System for Electric Vehicles

**Paper ID:NCIAES 1001**

### **Chronic Kidney Disease Prognosis and Performance Analysis Using Analytical Techniques**

<sup>1</sup>R. Vedaasree, <sup>2</sup>V.Deepika, <sup>3</sup>A.T. Nighil, <sup>4</sup>M. Karthiga

<sup>1</sup>UG Scholar, Department of CSE, Bannari Amman Institute of Technology, Sathyamangalam.

<sup>2</sup>UG Scholar, Dept. of Agriculture Engg., Bannari Amman Institute of Technology, Sathyamangalam.

<sup>3</sup>UG Scholar, Department of Mechanical Engg., Bannari Amman Institute of Technology, Sathyamangalam.

<sup>4</sup>Assistant Professor, Department of CSE, Bannari Amman Institute of Technology, Sathyamangalam.

#### **Abstract:**

Chronic Kidney Disease (CKD), also referred to as chronic renal disease, becomes a serious public health concern with a constant increase in incidence. A human could only endure for two weeks without their kidneys, resulting in a high need for kidney transplants and therapy. It's critical to have reliable tools for predicting CKD earlier. In the prognosis of CKD, machine learning technologies are efficient. This article suggests a methodology for predicting CKD status from clinical data, which also includes data preprocessing. The random forest predictor is proven to have the best accuracy with lowest bias to the features out of the six machine learning algorithms studied. The study also takes into account the practical issues of data gathering and emphasises the need of applying technical knowledge while using analytics to forecast CKD status accordingly.

**Paper ID:NCIAES 1002**

### **Design of Emergency Based Blood Delivery Drones during Pandemic Period**

<sup>1</sup>B.Sathiyasivam, <sup>2</sup>K.Vellingiri,

<sup>1,2</sup>Research Scholar, Anna University, Chennai.

#### **Abstract:**

In this paper, blood delivery drone is design by using 3D flight controller that is configured the use of Open pilot Ground Control Station software. The drone is optimized to supply the blood in rural regions, its area may be tracked the use of GPS collectively with the Blynk software. The area tracker had been accomplished the use of Node MCU. This drone may be of extremely good use in sure areas in which the geographical terrain is choppy and now no longer healthy for correct transportation, additionally with inside the regions in which there's nevertheless loss of right transportation offerings available.

**Paper ID:NCIAES 1003**

### **A New Mode of Approach to Measure Blood Pressure Using IoT**

<sup>1</sup>D.Maladhi, <sup>2</sup>K.Selvasundar, <sup>3</sup>T.Deepa, <sup>4</sup>S.Angalaeswari, <sup>5</sup>D.Subbulekshmi  
<sup>1,2,3,4,5</sup>School of Electrical Engineering, Vellore Institute of Technology, Chennai.

#### **Abstract:**

This paper focuses on the design and implementation of blood pressure measurement system with Internet of Things as base for emergency medical services. This also can demonstrate integration, flexible collection, and interoperability of Internet of Things data and provide support to emergency medical services such as low and high blood pressure, using an ARDUINO, WI-FI development board. By efficiently collecting, recording, evaluating, and sharing huge data streams, the suggested model can help users reduce health-related risk and healthcare expenses. The goal of this project is to relieve patients' headaches by reducing the number of visits they must make to the doctor in order for him to monitor their blood pressure, heart rate, and other vital signs. Patients' and doctors' time is saved as a result of this idea, and doctors' time is saved as well. The project's expected goal is to connect and gather data from health status monitors, such as the patient's blood pressure and heart rate, in order to offer patients with correct and efficient medical services. An emergency alert is sent to the doctor or caregivers, containing the patient's current status, complete medical information, and the patient's location.

**Paper ID:NCIAES 1004**

### **Solar Energy from Solar Panels to Solar Skins**

<sup>1</sup>Dr. M. Shyamalagowri, <sup>2</sup>G. Karkuvel Shankar, <sup>3</sup>M. Karthikeyan, <sup>4</sup>R. Mugesh Kannan  
<sup>1</sup>Associate.Professor, Dept. of EEE, Erode Sengunthar Engineering College, Perundurai.  
<sup>2,3,4</sup>UG Scholar, Dept. of EEE, Erode Sengunthar Engineering College, Perundurai.

#### **Abstract:**

Sun energy is the most abundant energy available on earth. Over the years with advances in technology solar energy has emerged as most useful renewable sources of energy. Solar energy has evolved from ground mounted solar panels to wearable solar panels and solar tracking mounts. But there are now several exciting new solar panel technologies either in the pipeline or already on the market. These promising technologies will revolutionize the way we think about not just solar, but energy production in general. Solar no longer requires large parcels of land or roof space, nor does it need to look boring. Silicon panels are becoming cheaper and

more efficient day-by day. According to experts, if photovoltaic panels are placed on reservoirs and other water bodies, they offer even greater efficiency as well as a plethora of other benefits. Innovation in solar technology continues to improve efficiency, size and cost, making it more pervasive throughout society. The trend is leaning toward incorporating solar into more buildings beyond panels placed upon the roof. Cool applications include: solar shingles, solar film, solar roadways, and solar windows. Other innovations being explored are: the solar orb, solar cars, solar balloons, nanowires, and working with the infrared spectrum. As the manager of the Green Mountain Energy Sun Club, I'm excited about these advances in solar technology and the growing part this pollution-free resource will provide in our lives. A solar future is closer than you may think. Technology for producing electricity from the sun using solar cells, typically encased in panels.

**Paper ID:NCIAES 1005**

### **Area Efficient Mid-Point Filter Using Approximate Adder and Comparator for Image Processing Application**

*<sup>1</sup>S.Dharani,<sup>2</sup>T.Jasper, <sup>3</sup>S.Kavya,<sup>4</sup>P.Prathiba*

*<sup>1,2,3,4</sup>UG Scholar, Department of ECE, Dr.Mahalingam College of Engineering and Technology, Pollachi.*

#### **Abstract:**

Approximate computing is a recent approach to design area efficient architecture for error tolerant applications. Denoising corrupted images is an essential task in biomedical, telecasting, space and marine exploration applications. Since the visual quality of image does not change significantly for small errors in pixel intensity values, we have proposed an approximate parallel architecture for midpoint filter which would be useful in denoising corrupted images. Proposed Parallel Midpoint Filter (PMF) uses sorter and Average Computation Units (ACU) to replace corrupted Processing Pixel (PP) with the midpoint of the surrounding pixels in the 3X3 processing window. Approximate Compare and Swap (CS) blocks that can trade of area at the expense of accuracy is designed and used in the proposed PMF. Architecture for two variants of PMF is discussed. To optimize area and power further, we have proposed an area efficient approximate parallel adder. The proposed adder is used in the ACU. In the proposed comparators c4 and c6, the area has been reduced by 35.3% and 17.4% respectively. The power consumption and area occupied has been reduced by 51.4% and 15.4% respectively in the proposed adder.

**Paper ID:NCIAES 1006**

### **Analysis of Cascaded H Bridge Multilevel Inverters for Three Phase Induction Motor**

<sup>1</sup>D.Narmitha, <sup>2</sup>K.Shalini, <sup>3</sup>M.Pallavi

<sup>1,2,3</sup>Asistant Professor, Dept. of EEE, School of Engineering and Technology  
Sri Padmavati Mahila Visvavidyalayam, Tirupati, Andhra Pradesh.

**Abstract:**

The use of multilevel inverter utilization has been raised since the last decade. Due to their capacity to generate waveforms with a better harmonic spectrum and faithful output, these new inverters are appropriate for a variety of high voltage and high power applications. Not only does a multilayer converter produce high power ratings, but it also saves time and money, but also enhances the overall system performance in terms of harmonics, dv/dt strains, and stresses in the motor bearings. Due to their modularity and flexibility, the cascaded multilevel inverter (CMI) with isolated DC sources is clearly the most practical topology for usage as a power application. This study examines a three-phase induction motor driven by a cascade H-bridge multilevel inverter, such as a 3-level, 5-level, 7-level, 9-level, and 11-level inverter. For the CHBMLI, a level shifted pulse width modulation (PWM) approach was used. Aspects of total harmonic distortion (THD) and modulation that are required or desired for multilevel converters are examined in particular. For both technical and pedagogical reasons, sine-triangle carrier modulation is selected as the most promising technique to explore. In order to analyse the many performance factors, such as load torque, motor speed, and efficiency, an extensive survey is conducted. Matlab / Simulink is built into the entire system, and simulation results are delivered. The purpose of this research is to demonstrate the performance of 9-level and 11-level fed induction motor driving results. The CHBMLI is better suitable for induction motors, according to the findings (IM).

**Paper ID:NCIAES 1007**

### **LoRa Based Air and Noise Pollution Monitoring System**

<sup>1</sup>Pa.Balaji, <sup>2</sup>A.Bhuvaneshwaran, <sup>3</sup>P.M.Gugan, <sup>4</sup>Dr. R. Uthirasamy

<sup>1,2,3</sup>UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.  
<sup>4</sup>Professor, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

**Abstract:**

These days, air and sound pollution is a major problem. For a brighter future and healthier life for everybody, air quality must be monitored and kept under control. Air pollution causes roughly 3 million fatalities per year in open regions, and interior air pollution can result in

the same number of deaths. As a result, the suggested system includes both an air quality and a sound pollution monitoring system, allowing us to monitor and check real-time air quality and sound pollution in specific regions via IoT based on LoRa. This suggested system employs gas sensors to detect the presence of dangerous gases/compounds in the air and transmits this information to a microcontroller on a continuous basis. In addition, this device continuously monitors sound levels, temperature, and humidity and sends data to an internet server through IoT. The sensors communicate with the microcontroller, which analyses the information and sends it to the base station via LoRa. The data that the base station collects is analyzed and transferred to the cloud. This allows authorities to keep track of air pollution in various places and take action as necessary.

**Paper ID:NCIAES 1008**

### **Enhanced Cluster Based Link State Secure Routing Algorithm in Flying Ad Hoc Network**

<sup>1</sup>M. Gokul, <sup>2</sup>P. Kiruthic, <sup>3</sup>R. Mukesh Kannan, <sup>4</sup>S. Vivekanandan

<sup>1,2,3</sup>UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

<sup>4</sup>Assistant Professor (Sl.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

The rise of communication through Unmanned Air Vehicle, the major study issue in last few years due to its unique properties has been developed in Flying Ad Hoc Network (FANET). It's widely used in civilian and military settings. FANET is an unmanned aerial vehicle (UAV) network that may be used to relay data in a number of situations. Routing algorithm is an important factor to achieve communication among UAVs with more reliable and robust nature. So, care should be given while designing the algorithm. The importance and utility of the UAV has attracted a large number of academics, and many routing strategies have been proposed to improve data transmission quality in FANETs. As a result, in this paper, we provide an overview of current routing methods.

**Paper ID:NCIAES 1009**

### **IoT Based Health Monitoring System**

<sup>1</sup>K.Abisheak, <sup>2</sup>P.Boobalan, <sup>3</sup>N. Laxman, <sup>4</sup>V.Kamalkumar

<sup>1,2,3</sup>UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

<sup>4</sup>Assistant Prof.(Sr.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

According to a recent study in India, there is one doctor for every 1456 people, making traditional treatment challenging for ordinary people. As a result, some automation in the

healthcare system is essential. The major goal of this project is to allow clinicians to remotely monitor patients in order to reduce burden and address the pandemic's grave situation. We use various sensors like Temperature sensor (LM35), Pulse sensor (SEN11574), Glucose monitoring system to continuously monitor the patient's daily health, such as pulse checking, temperature checking, heartbeat checking, or any other metrics. Temperature abnormalities, for example, can be a sign of a variety of diseases, including the corona virus and malaria. Heart rate abnormalities can cause the heart to malfunction, resulting in heart attacks, heart failure, and other serious complications. The goal of this system is to keep track of the patient's temperature and heart rate, and the information is sent over the air through GSM to a doctor's or caretaker's phone, as well as shown on an LCD. As a result, information is conveyed through SMS with an emergency alarm through the GSM module.

**Paper ID: NCIAES 1010**

### **Automatic Overload Protection Relay Using IoT**

<sup>1</sup>D.Gokul, <sup>2</sup>C.Karthikeyan, <sup>3</sup>R.Kalkikanth, <sup>4</sup>Dr.I.Baranilingesan

<sup>1,2,3</sup>UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

<sup>4</sup>Assistant Prof.(Sl.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

Protection systems and uninterrupted power supply are critical in residential and commercial locations, hence a variety of intelligent MCBs and fuses are being developed to prevent power surges. However, in residential circuits, MCBs are frequently employed to protect the entire system. When a sudden short circuit occurs, the entire system is shut off, causing numerous activities to come to a halt. Wi-Fi relays are used in this project to isolate only the loads that could cause the system to overheat, while guaranteeing that the remaining components in the circuit continue to operate normally. The major goal of this project is to prevent traditional protection circuits such as fuses or MCBs from regularly tripping and to assure appliance continuity in the case of high current while also considering appliance protection in such situations. To create a product that would monitor the current value from the source in real time and act accordingly when switching on or off the loads automatically depending on the current value without the need for manual intervention. Although the circuit for this paper has been designed successfully, the circuit's operation cannot be reproduced using computer simulation software since the crucial component, the ESP8266 Wi-Fi module, cannot be simulated using

software and the library for this module has not yet been designed. As a result, the circuit is created using hardware implementation. The transmission part of the circuit, which measures the current in real time using an ACS712 current sensor and sends the signal to a receiver circuit using an ESP8266 Wi-Fi module and an Arduino UNO, hasn't been implemented because the Wi-Fi module failed to communicate with the Arduino UNO, preventing it from sending the desired signal to the receiver circuit, whereas the reception part of the circuit is almost complete, with the wireless relay operating based on the command given. At the moment, the relay is controlled by a signal from the Blynk app, which is received by the ESP8266 module on the receiver side.

**Paper ID:NCIAES 1011**

### **Power Quality Enhancement Using UPQC under Critical Loads**

<sup>1</sup>S.Ashok, <sup>2</sup>V.Balakarthick, <sup>3</sup>T.Balasurya, <sup>4</sup>Dr.R.Sampath Kumar

<sup>1,2,3</sup>UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

<sup>4</sup>Assistant Prof. (Sl.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

Maintaining the quality of the power is a crucial part in the electrical system and the power quality has to be maintained to the standard level for flawless operation of electrical appliances. The deviation in these power quality standards leads to major losses for both supplying and consuming community. In order to maintain the quality of power many power electronic devices known as custom power devices are used, with these devices many methods are adopted to maintain the power quality. One such methodology is called Unified Power Quality Conditioning which uses Dynamic Voltage Restorer and Distribution Static Compensator as their series and shunt active power filters. Pulse Width Modulation technique is used to control the switching devices which are presented in these series and shunt compensators. Phase Locked Loop is used to the purpose of synchronization. Through this system the voltage sag, swell and current harmonics are decreased to the standard power quality levels.

**Paper ID:NCIAES 1012**

### **Ultrasonic Aided Voice Based Smart Stick**

<sup>1</sup>N.Navaneethan, <sup>2</sup>S.Manikandan, <sup>3</sup>S.Gnanadesikan, <sup>4</sup>Dr.S.Ravindran

UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

<sup>2</sup>Asst.Prof(Sl.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

The study is focused on finding an easy way to detect a hindrance and a path by the help of ultrasonic sensors that can detect drench or steps with a maximum diameter of 2 meters. 30 million people are permanently visually impaired and 285 billion people have vision impairment, says WHO. As we see visually impaired people are likely to have trouble in making their living habits because they do not see even one thing. Using the blind stick, visually impaired people can walk confidently. This ultrasonic-aided smart stick has a few features that can help these visually impaired people to navigate on their trails and observe the obstacle. It also incorporates a GSM and GPS module to provide the GPS location of visually challenged people when they were lost in a remote place.

**Paper ID:NCIAES 1013**

### **Gesture Controlled Contactless Switch**

<sup>1</sup>V.Aravind, <sup>2</sup>J.Deepak, <sup>3</sup>R.Dhanushya, <sup>4</sup>S.Gokul, <sup>5</sup>Dr. P.Pandiyam

<sup>1,2,3,4</sup>UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

<sup>5</sup>Associate Professor, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract :**

To avoid the risk of contracting Covid-19, it is important not to touch surfaces including switches, doorknobs, and keys that have been frequently used by other people. This project is for a contactless switch that works with hand gestures. The smart switch includes a sensor that can detect hand movements and translate them into commands for controlling lights, fans, and various other home appliances. With the help of Arduino programming and gestures of hand the entire operation takes place. The project find its major application in Hospitals for the immobile patients. It can be used in various industries.

**Paper ID:NCIAES 1014**

### **Home Automation Using IoT**

<sup>1</sup>S.Dinesh Kumar, <sup>2</sup>K.Aravindh, <sup>3</sup>V.HariPrakash, <sup>4</sup>R.Krishna, <sup>5</sup>C.J.Vignesh

<sup>1,2,3,4</sup>UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

<sup>5</sup>Asst.Prof(Sr.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

Home Automation is a topic which gaining popularity day by day, because of large advantages. One can achieve home automation by simply connecting home appliance electrical devices to the internet or cloud storage. The reason for this surge demand of network enabled home automation is reaching the zenith in recent days for its simplicity and comparable affordability. Platforms based on cloud computing help to connect to the things surroundings

everyone so that one can find it easy to access anything and everything at any time and place in a user friendly manner using custom defined portals. In project we use IoT based home automation system which goal is to develop is to develop a home automation system that gives the user complete control over all remotely controllable aspects of his or her home. The automation system will have ability to be controlled from a central host PC, the internet, and also remotely accessed via a packet PC with windows mobile based applications.

**Paper ID:NCIAES 1017**

### **Campus Wide Water Management System**

<sup>1</sup>K.Darsini, <sup>2</sup>R.Aishwaryaa, <sup>3</sup>B.Lalitha

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#### **Abstract:**

The goal of the project is to fetch data on the amount of fluid in the overhead storage container. This project is aimed at limiting the tank's water levels by flipping over the water pump when the water level drops then off whenever the water content is high. As a consequence, the NODE MCU water level analysis and control assist to avert consumption of water. Using Blynk IoT app, this project sends information wirelessly to the user's smartphone. A transmitter circuit is used in this project employing an ultrasonic sensor to determine the level of water in proportion to the distance. This information is relayed to the microcontroller, and a local OLED display keeps track of the water level. A relay driver is coupled to the controller, which handles the water pump. The microcontroller dictates when to flip on and off the motor depending on the quantity of fluid.

**Paper ID:NCIAES 1018**

### **Railway Ticket Reservation Application Using Core Java**

<sup>1</sup>S.Vasanth, <sup>2</sup>C.Rajeshkumar, <sup>3</sup>G.santhosh, <sup>4</sup>Dr.I. Baranilingesan

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#### **Abstract:**

The railway reservation system facilitates the passengers to enquiry about the trains available on the basis of source and destination, booking and cancellation of tickets, enquiry about the status of the booked ticket, etc. The aim of case study is to design and develop a data base maintaining records of different trains, train status and passengers. This project contains introduction to the railways reservation system. It is the computerized system of

reserving the seats of train seats in advance. It is mainly used for a long route. Online reservation has made the process for the reservation of seats very much easier than ever before.

**Paper ID:NCIAES 1019**

### **Library Management Development**

<sup>1</sup>E.Naveen, <sup>2</sup>R.Sanjay, <sup>3</sup>A.Shanmugavel, <sup>4</sup>C.Dinesh

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<sup>4</sup>Assitant Prof.(Sr.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

Design and develop a monolith console based library management system by understanding various use cases from the borrower and administrator point of view. Application must authenticate both borrower and administrator taking Email D and password and display a welcome menu based on their role. Admin can add a book, modify book details such as available quantity and delete a book. Admin will add other admins and borrowers into the system. Borrowers can view a list of all books available select the book by name or ISBN and checkout borrower can borrower maximum of 3 books at a time .Each borrower has deposited 1500 rupees initially into the book bank as a caution deposit .The amount will be refunded on closure of account. The amount will be reduced if there is any delay in return or loss of book. Books with less quantity so that they can refill. Books that are not borrowed so far by any students. Books that's heavily borrowed so that they can check the condition of book. Students who has outstanding not returned book as on given date. Status of current book searched by ISBN number, display the details of students who borrowed that book and when it can be expected to be return in rack.

**Paper ID:NCIAES 1020**

### **Concentrated Solar Energy Applications using Fresnel Lenses**

<sup>1</sup>V.Varun, <sup>2</sup>J.Vignesh, <sup>3</sup>V.Udaya Prakash, <sup>4</sup>Dr.A.Karthick

<sup>1,2,3</sup>UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

<sup>4</sup>Associate Professor, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

Fresnel lens with a solar panel increases the power output of the panel up to 300% or more. The experiments: we took power readings (volts and amps) with the solar panel in regular or unamplified sunlight, then we add the Fresnel lens in front of the solar panel so the light passing thru the lens squarely landed on the face of the panel. Then we took a second set of power readings. The voltage went up slightly but the amps output went up 3x or 300%. The

combination works great to draw extra power out of solar panels. Here, one way you can utilize the technology at home for extra power output without the extra expense of adding additional panels. Add a mount and sun-tracker and you've got a completely automated unit. CSP or 'concentrated solar power' is often thought of as mirrors concentrating sunlight onto liquid filled pipes but we have seen some systems lately that are using Fresnel lens with solar panels. Solar energy concentration technology using Fresnel lens is an effective way to make full use of sunlight. The ongoing research and development involves imaging systems and non-imaging systems. Compared with imaging systems, non-imaging systems have the merits of larger accept angles, higher concentration ratios with less volume and shorter focal length, higher optical efficiency.

**Paper ID:NCIAES 1021**

### **Home Automation using IoT**

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<sup>4</sup>Asst.Prof. (Sl.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

This work presents the overall design of Home Automation System (HAS) with low cost and wireless system. It specifically focuses on the development of an IOT based home automation system that is able to control various components via internet or be automatically programmed to operate from ambient conditions. In this project, we design the development of a firmware for smart control which can successfully be automated minimizing human interaction to preserve the integrity within whole electrical devices in the home. We used Node MCU, a popular open source IOT platform, to execute the process of automation. Different components of the system will use different transmission mode that will be implemented to communicate the control of the devices by the user through Node MCU to the actual appliance. The main control system implements wireless technology to provide remote access from smart phone. We are using a cloud server-based communication that would add to the practicality of the project by enabling unrestricted access of the appliances to the user irrespective of the distance factor. We provided a data transmission network to create a stronger automation. The system intended to control electrical appliances and devices in house with relatively low cost design, user-friendly interface and ease of installation. The status of the appliance would be available, along with the control on an android platform.

**Paper ID:NCIAES 1023**

### **IoT Based Smart Key Finder**

<sup>1</sup>C.B.Magendra Kumar, <sup>2</sup>P.V.Sharveshwaran, <sup>3</sup>A.R.Sachin, <sup>4</sup>A.Mohamed Ibrahim

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#### **Abstract:**

It has happened to all the peoples many times, we misplace our keys and go searching for them everywhere in the house, and after a long search and we end up finding them with much distress. As a solution for that some companies introduced a tracker like (TILE, Apple air Tag are bottle cap-sized tracker that is designed to find misplaced gadgets with the help of an app). It is pocket sized and can be latched onto a bag, wallet, keys or any other essentials. But, the major issue is the cost, it will be expensive. For that we invented a tracker in low cost. We are going to build a simple IoT-based Smart Key Chain just using ESP8266-01, Buzzer, and Battery. Now in case if you can't find your keys and you remember that you have attached an IoT keychain to your keys, so you take out your phone and open the Blynk application and find your keys. Then you click on the toggle button, and in moments, you hear a beep sound coming from your keychain and with this, you can easily track your keys. We will explain more on how to use pcb online later in this article, but for design and working of our IoT based Key chain.

**Paper ID:NCIAES 1024**

### **IoT Based Self-Driving Car**

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<sup>5</sup>Associate Professor, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

While selecting an autonomous vehicle (Self-driving car) certain things are taken into consideration such as obstacle avoidance, obstacle ranging, traffic signals, vehicle classification, tracking, and parking. The major cons of Autonomous vehicle is finding obstacles and finding barriers. Due to this the autonomous vehicle Technologies has been demonstrated in recent years. LIDAR sensors (Light Imaging Detection and Ranging) are one of the most widely used stereo vision technologies. LIDAR is a laser-based detection and ranging technology with radar likes feature. In order to determine and distance obstacles, LIDAR is used, whereas radar is used to park the car. To boost recognition of this technology, it become determined to awareness on LIDAR, which has played an important role in the development of self-driving cars.

**Paper ID:NCIAES 1025**

### **EV Battery Smart Charging**

<sup>1</sup>M.Ramakrishnan, <sup>2</sup>S.Navanitharan, <sup>3</sup>S.Vasantharaj, <sup>4</sup>S. Vivekanandan

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<sup>4</sup>Assistant Prof.(Sl.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

**Abstract:**

Due to restriction of vehicle emissions and high demand for fossil fuels nowadays, automotive manufacturers around the world are looking into alternative ways in introducing vehicles. Thus, Electric Vehicles (EVs) has been developed and commercialized to take the advantage of the current global issues and impact on the environment. EV battery plays the crucial role on the overall performance of the vehicles, many researchers have been working on improving the performance by introducing new techniques. In this paper, a new approach is introduced in that, two motors are connected in the vehicles by separate batteries. If the first motor connected with the wheels and used for the vehicle function and the second motor connected in shaft act as a generator, which is used to charge the battery through a boost converter. This way the charging time of the battery is reduced while charges during the vehicle operation. If the first battery power goes low, second battery is automatically connected with the wheels. Hence it reduces the charging time of the battery.

**Paper ID:NCIAES 1027**

### **Virtual Keys Activation using IoT**

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<sup>4</sup>Assistant Prof.(Sl.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

**Abstract:**

When being SMART is highly in trend nowadays, why stop only to smartphones or computers? So here the home appliances are made possible to control using a simple smart phone. An Android application is used to control the devices that are used in daily life. The other important devices that are used in this project are Bluetooth module, microcontroller and relay board. The hardware and software architecture of the whole system are described in this paper. It has been made sure that this venture can be accomplished under extreme low price so that it can easily be implemented in familiar atmosphere. This system was wirelessly controlled the switches from a distance of approximately 30 m radius. It is possibly used in health centre, nursing home, and home appliances. To be able to design a product using the current technology

that will be beneficial to the lives of others is a huge contribution to the community. The design is based on a standalone Arduino BT board and the home appliances are connected to the input/output ports of this board via relays. The communication between the cell phone and the Arduino BT board is wireless.

**Paper ID:NCIAES 1029**

**Performance Analysis of Concentrating Semitransparent Photovoltaic System**

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<sup>5</sup>Associate Professor, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

**Abstract:**

The building integrated photovoltaic system is an emerging technology to harness the solar energy. The performance of the concentrating semitransparent photovoltaic (CSTPV) module may enhance the performance of the system. In this work two semitransparent photovoltaic module is fabricated. The one module is provided with the concentrating setup and another one module is used as the reference module. The various parameters of the CSTPV is measured such as open circuit voltage, short circuit current, maximum voltage and maximum current. The CSTPV cells are connected in series and its performance are analyzed. Finally the performance of the CSTPV and reference module will be compared with respect to output power, efficiency of the system and the reduction in the CO<sub>2</sub> emission.

**Paper ID:NCIAES 1030**

**Remote Monitoring of Transformer Health Using IoT**

<sup>1</sup>M.Rangaraji, <sup>2</sup>S.Vignesh, <sup>3</sup>D.Satheesh, <sup>4</sup>Dr.S.Ravindran

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**Abstract:**

Electricity plays an important role in our life. Every moment of our life depends upon electricity. Electricity has several components and equipment helping human to transfer and regulate the distribution according to usage. The most crucial equipment of transmission and distribution of electric power is transformer. Health monitoring of electrical equipment using IOT may help to replace the equipment before failure and continuity of the power will not be disturbed. This paper presents an implementation of this concept which acquires the real-time condition of the distribution transformer remotely with the use of internet implementing IOT. The proposed health monitoring system works in real time and uses temperature-sensor, potential transformer and current transformer for monitoring temperature, oil level, voltage and

current of the distribution transformer. Temperature, voltage and current are analog values and Ultrasonic level sensor produces digital output is calculated using a programmable microcontroller of Arduino Uno. They are then sent directly to a Wi-Fi module under TCP IP protocol to a dedicated IP that displays the data in real-time chart form in any web connected PC / Laptop for display in 3 different charts. So, This Transformer Health Measuring will help to identify or recognize unexpected situations before any serious failure which leads to a greater reliability and significant cost savings.

**Paper ID:NCIAES 1033**

### **Smart Energy Efficient Home Automation Using Telegram**

*<sup>1</sup>S.Ranjith Kumar, <sup>2</sup>R.Srinath, <sup>3</sup>R.Vinayak, <sup>4</sup>S.Vivekanandan*

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*<sup>4</sup>Asst.Prof (Sl.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.*

#### **Abstract:**

Electricity is at the heart of modern economies, and it accounts for a growing proportion of energy services. Rising family earnings, electrification of transportation and heat, and increased demand for digital linked gadgets and air conditioning are all expected to drive up power demand. Household energy use has fallen by 12%, while heavy industry has dropped by 60%. The transportation industry, on the other hand, has seen a rise in energy usage. This is attributable to an increase in the number of automobiles on the road. The primary sources originate from two categories of sources: renewable and non-renewable. The electrical energy they produce comes primarily from renewable sources, with some non-renewable sources. The energy efficient is also a major part in the modern world. For that many efficient ways are available and one of the method of saving is Iot based home automation. For a few years now, the Internet of Things (IoT) has sparked interest, with both start-ups and established companies betting on the industry's growth. It basically involves using the Internet to link and monitor numerous devices and sensors. Smart homes essentially provide home automation for existing gadgets in the home and allow users to operate equipment connected to the Internet remotely by 2.4GHZ is the frequency range which is formally agreed for it. By connecting to the internet, IoT plays a virtual role in constructing smart surroundings. The picture depicts the use, upkeep, usefulness, and efficiency of IoT in fast evolving technology at any location, any network, at any time, and by any person. Also, because IoT deals with enormous amounts of data acquired from various sensors deployed in the smart environment, adequate care must be given in managing,

safeguarding, and storing this data. This technique also serves as a security measure; if an unavoidable occurrence occurs, the user will receive an alarm message on their smart phone right away. when someone trespasses the house (security perimeter), fire alert, gas leakage monitoring and to report the calculation of how much money has been spent in consuming the electrical appliances. The communication between user and the system is done using Telegram Bot.

**Paper ID:NCIAES 1034**

### **IoT Based Smart Surveillance And Control of Street Light System**

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<sup>1,2,3</sup>UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

<sup>4</sup>Asst.Prof(Sl.G) , Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

The pace of urbanization has increased significantly over the past few decades. Urban areas need improved services and applications to enable better lifestyles. The implementation of the Internet of Things could significantly improve the urban lighting system, as it consumes more energy than the rest of the city. Lighting fixtures consume a lot of energy, so improving efficiency and detecting failures quickly is a major challenge. The conventional street light control systems require maintenance and manual work. The proposed IoT-based street light control system uses the web-based controls as an energy-efficient alternative. The system uses wireless technology to connect all streetlights to a common Wi-Fi network, solving the problem of unorganized and unsystematic maintenance. The developed prototype system works well for controlling each street lighting system individually and reduces the power consumption through an LDR sensor, which controls the LED brightness. It monitors the status and turns off electrical equipment from a central location, which results in improved system efficiency and centralized device management significantly reduces the power consumption.

**Paper ID:NCIAES 1035**

### **Sequential Automation Process Using Microcontroller**

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<sup>1,2,3</sup>UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

<sup>4</sup>Asst.Prof(Sl.G) , Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

The final product of industry was reached through different stage since raw materials. Each stage has specific process and repetitive in nature. Each process made an automation with the aids of recent technologies. The microcontrollers is one which plays a vital role and it has more stability, reliability, minimal error and good performance. The microcontroller's function controls task

logically called as switching state: ON and OFF. This aid is generally used for step-by-step processes. This project demonstrates about the operation of sequential process using the microcontroller from 8051 family. This application employs input switches to execute the programmed instructions. Even though the process is in repetitive nature, there are many operations are in industries to be carried out to produce an end product. Some products need to process in certain time intervals. Finally, to achieve the required product, the proposed systems uses some different kinds of modes, like auto, set and manual according to the operation.

**Paper ID:NCIAES 1036**

### **Smart Walking Device Using IoT**

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<sup>4</sup>Asst.Prof(Sl.G) , Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

One of the biggest problems faced by the visually impaired is navigating from place to place, be it indoors or outdoors. Further, the adverse conditions of the roads make it even more difficult for them to walk outdoors. They have to be alert at all times to avoid consequences like colliding with stable or moving obstacles, ascending or descending staircases, slipping down wet terrain. Also, at times they may be in distress and might want to send an alert message to their relatives or friends about their whereabouts. These problems of blind people can be addressed with the intervention of technology. The proposed solution employs the Internet of Things (IoT) paradigm to provide a medium between the blind and the environment. Several sensors can be used to detect anomalies like obstacles, staircases and wet terrains respectively. The prototype discussed here is a simple, sophisticated and affordable smart blind stick equipped with various IoT sensors and modules. Also, this solution provides a way to send a message about the whereabouts of the user to the concerned people who can track on Google maps and also be updated in online server where we can monitor online. System also calls when user press emergency button after sending all alerts to concern people to talk about their emergency. Misplacing the stick indoors can also be a substantial issue; it can be solved by RF stick finder.

**Paper ID:NCIAES 1037**

### **Voice Controlled Indoor Air Purifier with Sleeping Aid**

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**Abstract:**

The level of pollution has increased with times by lot of factors which results in harmful effects on human wellbeing by directly affecting health of population exposed to it. It has been found out that the persons inhaling particulate matter in air are at more risk of lung cancer and comparable to non-smoker susceptible to second hand smoke. Poor indoor air quality is commonly found in homes, larger cities, and the result of a growing industrialization that pollutes the air. The atmospheric air gets mixed with the contaminants like industrial dust, smog, and other particles from traffic. Because of these patterns, the issue of feasible and sound indoor climate has got expanding consideration. Different air filtration procedures have been embraced to improve indoor air quality. Air filtration procedure can eliminate air poisons and reduce the decay of indoor air quality. This paper presents a complete survey on the synergistic impact of various air cleansing advancements, air filtration hypothesis, materials, and principles. It assessed diverse air filtration advances by considering elements like air quality improvement, separating execution, energy, and financial conduct. By the investigation of the current situation of the issues of air contamination, seriousness of the issues has been featured. An assemblage of the most widely recognized and huge strategies for air purifier is utilizing the utilization of HEPA filtration added with UV to filter as well as kill any bacteria or virus. Purifier integrated with sleeping aid which plays pleasant music's which triggers of good sleep. The solution is to use an air purifier that clean the air from these dust particles along with sleep aid that plays music which helps to sleep.

**Paper ID:NCIAES 1038**

### **Environment Monitoring in Factories Using IoT for Employee Safet**

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<sup>1,2,3</sup>UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

<sup>4</sup>Asst.Prof(Sr.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore.

#### **Abstract:**

Safety of employees, in any industry, especially at the factory level is one of the most important aspects to be considered by business. This is of paramount importance, both for the wellbeing of the employees and that of the corporation as a whole. Clean fresh air is vital for human well-being and good health. However, in India, an increase in air pollution level has been observed over the past few years due to industrialization and urbanization in the country whereby maintaining a good ambient air quality has become a challenge. The release of hazardous gases such as carbon monoxide and Nitrogen are not only harmful to the health of the population but are also causing irreversible impact to the environment. In factories where working conditions are harsh and employees need to take great caution while going about their work, it is common for mishaps to occur. As a solution to this problem, we propose a monitoring system to be installed in factories. With this system, we will be able to monitor critical safety parameters of the working environment in these factories so that we are well-aware of the safety situation and the possibility of occurrence of any mishap.

**Paper ID:NCIAES 1040**

### **Modelling and Realization of Cruise Control System for Electric Vehicles**

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<sup>1,2,3,4,5</sup> School of Electrical Engineering, Vellore Institute of Technology, Chennai.

#### **Abstract:**

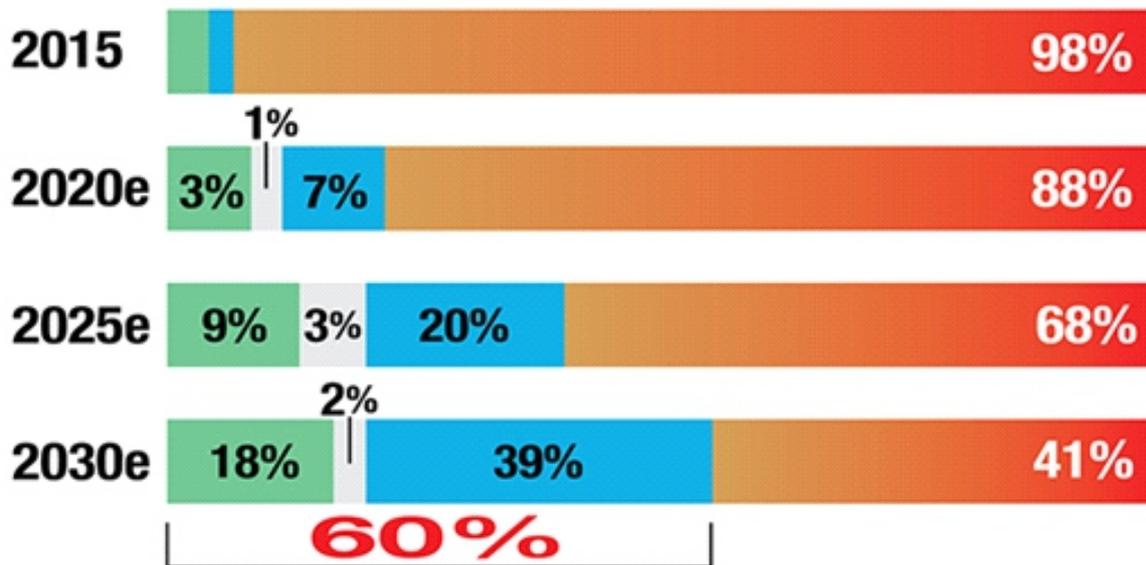
The purpose of a cruise control system is accurately maintain a speed set by the driver without any outside intervention by controlling the throttle-accelerator pedal linkage. While driving a long distance by car, the driver usually tries to maintain a constant speed for most of the journey, the driver may sometime find lifting and coasting a tedious task, as it would cause exhaustion much faster for the driver. Therefore using the cruise control system in this situation would easily solve the problem, as the system will automatically decide when to accelerate and stop doing so based on the speed that the driver decides.



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## EV Contributions

By 2030, Hybrids will account for 60% of all global vehicle sales



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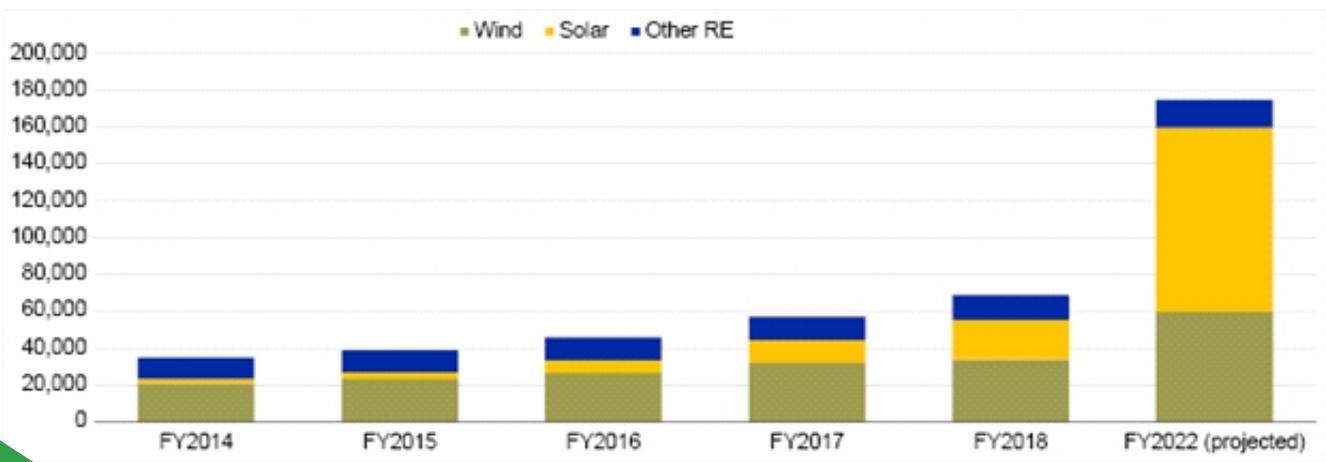


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VEHICLE

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