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on 17th & 18th December 2024

(ICAEEE – 2024) **PROCEEDINGS**

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Department of Electrical and Electronics Engineering

Fourth "International Conference on Advances in Electrical and Electronics Engineering" during 17th & 18th December 2024 (ICAEEE – 2024)

ISBN: 978-93-94246-90-4

Patron, Program Chair
&
Editor in Chief

Dr. P. SANTOSH KUMAR PATRA

Group Director, SMEC

Editors

Dr. N. Ramchandra

Dean (Affiliations & Accreditations)

HOD, Department of EEE, SMEC

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Sri. M. LAXMAN REDDY
CHAIRMAN

MESSAGE

I am extremely pleased to know that the Department of Electrical and Electronics Engineering, of St. Martin's Engineering College is organizing Fourth **"International Conference on Advances in Electrical and Electronics Engineering"** during 17th and 18th of December 2024. I understand that the large number of researchers have submitted their research papers for presentation in the conference and also for publication. The response to this conference from all over India and Foreign countries is most encouraging. I am sure all the participants will be benefited by their interaction with their fellow researchers and engineers which will help for their research work and subsequently to the society at large.

I wish the conference meets its objective and confident that it will be a grand success.

M. Laxman Reddy

M. LAXMAN REDDY
Chairman

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Sri. G. CHANDRA SEKHAR YADAV
EXECUTIVE DIRECTOR

MESSAGE

I am pleased to state that the Department of EEE Engineering of SMEC is organizing Fourth **"International Conference on Advances in Electrical and Electronics Engineering"** during 17th and 18th of December 2024. For strengthening the "MAKE IN INDIA" concept many innovations need to be translated into workable product. Concept to commissioning is a long route. The academicians can play a major role in bringing out new products through innovations.

I am delighted to know that there are large number of researchers have submitted the papers on Interdisciplinary streams. I wish all the best to the participants of the conference additional insight to their subjects of interest.

I wish the organizers of the conference to have great success.

G. CHANDRA SEKHAR YADAV
Executive Director

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Dr. P. SANTOSH KUMAR PATRA
GROUP DIRECTOR

I am delighted to be the Patron & Program Chair for the Fourth **"International Conference on Advances in Electrical and Electronics Engineering"** organized by the Department of EEE on 17th and 18th of December 2024. I have strong desire that the conference to unfold new domains of research among the EEE Engineering fraternity and will boost the knowledge level of many participating budding scholars throughout the world by opening a plethora of future developments in the field of EEE Engineering.

The Conference aims to bring different ideologies under one roof and provide opportunities to exchange ideas, to establish research relations and to find many more global partners for future collaboration. About 56 research papers have been submitted to this conference, this itself is a great achievement and I wish the conference a grand success.

I appreciate the faculties, coordinators and Department Head of EEE Engineering for their continuous untiring contribution in making the conference a reality.

(Dr. P. Santosh Kumar Patra)
Group Director

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Dr. M. SRINIVAS RAO
PRINCIPAL

MESSAGE

Contemporary Society is technological and relies on technology for various aspects of daily life. There is no life without digital platforms, Internet, apps, codes, etc. Navigating the complexities of a technological society requires a balance between embracing innovation and addressing the challenges that come in the way. Considering the immediate needs of the technical Society, SMEC has been organizing International Conferences every year which really help a candidate in acquiring technical skills and making themselves familiar with the new inventions.

International Conferences are a Perfect Platform for enthusiastic researchers to come up with their innovative ideas, and I am delighted that SMEC is organizing the fourth **International Conference on Advances in Electrical and Electronics Engineering** this academic year as well to enhance the skills of desiring participants. The showcase of new ideas and the latest technological advancements through this Conference would facilitate the transfer of technology, helping participants to get updated with the latest tools and methodologies. I firmly believe that this Conference serves as the catalyst for change by bringing attention to pressing issues in different fields, encouraging discussions, fostering collaboration, and promoting initiatives that address different challenges on a global scale. It is an excellent opportunity to broaden our knowledge, establish meaningful connections, and contribute to advancing engineering research. I assure you that the commitment to excellence in education and research is reflected in this Conference, providing a unique platform for learning and growth.

Around 39 research papers were submitted to this Conference. I wish the authors a promising future and the Conference a grand success.

I appreciate the continuous efforts and dedication of the HOD of the Electrical and Electronics department and faculty members for their invaluable contribution to advancing global discourse. My most profound appreciation to the organizers and coordinators for organizing a conference of such calibre.

Dr. M. Srinivas Rao
Principal

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DR. S.V.S. RAMA KRISHNAM RAJU
DEAN ACADEMICS

MESSAGE

It gives me an immense pleasure to know that St. Martin's Engineering College, Department of Electrical & Electronics Engineering is organizing Fourth International Conference on Advances in Electrical and Electronics Engineering ICAEEE-2024. I am sure that this conference will provide a forum to national and international students, academicians, researchers and industrialists to interact and involve in Research and Innovation. Such academic events benefit the students, teachers and researchers immensely and widen the horizons of their knowledge and work experience in the field of Electrical engineering.

I sincerely appreciate the humble efforts of the Institute in providing a platform for students, academicians, researchers and industrialists to share their ideas and research outcome through the forum of this Conference.

I give my best wishes to all delegates and organizing committee to make this event a grand success.

Best Wishes

Dr. S V S Rama Krishnam Raju
Dean Academics

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Dr. SANJAY KUMAR SUMAN
DEAN R & D

MESSAGE

Research, curiosity and discovery has been in existence ever since man's presence on this planet millions of years ago, civilization has been characterized by curiosity and discovery. Therefore, the curiosity to explore what will happen, how it happens, is there a better way to do it, has been the driving force behind all research efforts. During the past few decades, the engineering faculties have taken a number of initiatives to reorient the engineering machinery to play leading roles in the industrial development process.

I am delighted to acknowledge the fourth international conference on Advances in Electrical and Electronics Engineering organized by the department of Electrical and Electronics Engineering. I appreciate organizing team for showing their keen interest in organizing a successful conference to provide a platform for contributors to explore new ideas and exchange research findings among researchers.

I thank the support of all students, authors, reviewers, conference team, faculty members, and conference convener for making the conference a grand success.

Best Wishes

Dr. Sanjay Kumar Suman

Dean R&D

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DR. D V SREEKANTH
DEAN ADMINISTRATION

MESSAGE

The Fourth International Conference on Advances in Electrical and Electronics Engineering ICAEEE-2024 has concluded its work successfully on 17th & 18th December, 2024 in St. Martin's Engineering College (SMEC), Hyderabad, India. The ICAEEE-2024 was organized online by the Department of Electrical & Electronics Engineering, and the objective of this conference was to bring together experts from academic institutions, industries, research organizations for sharing of knowledge and experience in the recent technologies in Electrical & Electronics engineering. The conference programme featured a wide variety of invited and contributed lectures from national and international speakers with expertise in their respective fields. The ICAEEE-2024 has become one of the most extensive, spectacular international events hosted by St. Martin's Engineering College (SMEC), for its high-level quality and the large size of participation. Well- known international and national invited speakers addressed the audience, shared knowledge, and rich experiences on ICAEEE.

I am sure that this conference will provide a forum to national and international students, academicians, researchers and industrialists to interact and involve in Research and Innovation. Such academic events benefit the students, teachers and researchers immensely and widen the horizons of their knowledge.

Best Wishes

Dr. D V Sreekanth
Dean Administration

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CONVENER

The world is always poised to move towards new and progressive engineering solutions that results in cleaner, safer and sustainable products for the use of mankind. India too is emerging as a big production center for world class quality. Electrical and Electronics Engineering plays a vital role in this endeavor.

The aim of the online "International Conference on Advances in Electrical and Electronics Engineering" being conducted by the Department of Electrical and Electronics Engineering of SMEC, is to create a platform for academicians and researchers to exchange their innovative ideas and interact with researchers of the same field of interest. This will enable to accelerate the work to progress faster to achieve the individuals end goals, which will ultimately benefit the larger society of India.

We, the organizers of the conference are glad to note that 53 papers have been received for presentation during the online conference. After scrutiny by editorial board 36 papers have been selected, and the authors have been informed to be there at the online platform for presentations. Steps have been to publish these papers with ISBN number in the Conference Proceedings and all the selected papers will be published in Scopus / UGC recognized reputed journals.

The editorial Committee and the organizers express their sincere to all authors who have shown interest and contributed their knowledge in the form of technical papers. We are delighted and happy to state that the conference is moving towards a grand success with the untiring effort of Head of the department, faculties and staff members of SMEC and with the blessing of the Principal and Management of SMEC

Ramchandra

Dr. N. Ramchandra
Convener, ICAEEE-2024
Dean (Affiliations & Accreditations),
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St. Martin's Engineering College
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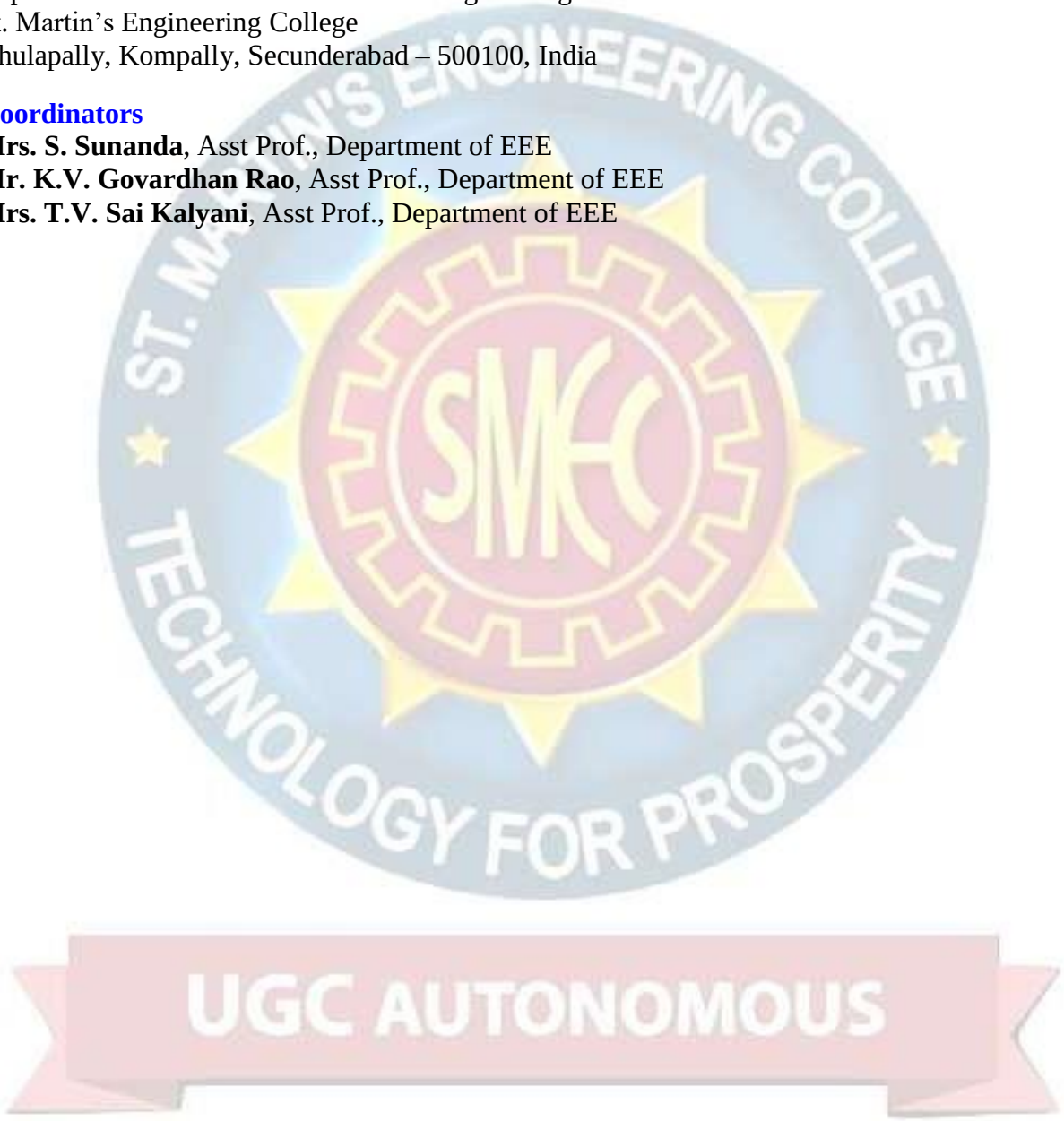

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Paper ID: ICAEEE-24-001

GPS AND GSM VEHICLE TRACKING SYSTEM USING AURDINO NANO

V. Suma Deepthi[1], S.Jayanthika[2], Maryam Riyaz[3], B. Priyanka[4], V. Sai Chaitanya[5], Y. Phanitha[6]
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ABSTRACT

The proposed design is cost-effective, reliable and has the function of accurate tracking. When large object or vehicles were spread out over ground, the owner corporations often found it difficult to keep track of what was happening. They required some type of system to determine where each object was at any given time and for how long it travelled. Also the need of tracking in consumer's vehicle use to prevent any kind of theft because police can use tracking reports to locate stolen vehicle using aurdino nano, GSM and GPS based tracking system will provide effective, real time vehicle location, and reporting. A GPS-GSM based tracking system will inform where your vehicle is and where it has been, how long it has been. The system uses geographic position and time information from the Global Positioning Satellites (GPS). The system has an "On-Board Module" which resides in the vehicle to be tracked. This project consists of three main designs (i) Arduino Nano (ii) GPS-Neo(6M) (iii) GSM-900M Initially what happens is that we make a program in Arduino (C language) regarding interfacing the GSM device and GPS device and we also set a mobile number in the program as per our need, on which we get information regarding the vehicle location.

Key words: Arduino Nano, GSM, GPS

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Paper ID: ICAEEE-24-002

HIGH-FREQUENCY OPTIMIZATION OF AN INTERLEAVED DUAL-BUCK BIDIRECTIONAL GRID-CONNECTED CONVERTER

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G. Narayanamma Institute of Technology and Science, Hyderabad, Telangana, India

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ABSTRACT

A high frequency, interleaved, double-buck, bidirectional converter topology linked to the grid is presented in this project. Unless there are direct and deadly problems, you can obtain higher frequency of switching and power density. Due to the approach interleaved, the current rip and stress may be decreased efficiently for inductors and other power equipment. In addition, a new design method is proposed for filter parameters. The approach is optimized with less inductance, greater filtering capacity and improved stability. Firstly, the performance requirements for the two inverters and converter states are fully taken into account. Another aspect is the relation between the performance indexes and the filter settings. The results, however, demonstrate that there are inconsistent links between performance indexes. The priority of the filter performance index was set to acquire a number of optimization parameters. The total harmonic distortions (THDs) in grid current at 2.7 percent, 1.2 percent and 4.5 percent, and the power density was 36 W/in 3 accordingly, among the grid-connected inverters, disconnected inverters and full-load rectifiers.

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A HIGH VOLTAGE GAIN DC-DC CONVERTER WITH VMC TECHNIQUE FOR PV APPLICATIONS

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ABSTRACT

A DC-DC converter is designed to produce a DC output voltage from a DC input. When a required output voltage is higher than input voltage, a boost converter is typically used. Due to its low conduction loss, simple design, and affordability, a conventional boost converter is suitable for step-up applications. However, it is not ideal for achieving high step-up ratios. Operating conventional boost converters at high ratios can result in significant voltage and current stress on the switches. To address this, an interleaving technique in boost converters is introduced, offering higher voltage gains suitable for high-power applications. Traditional DC-DC boost converters face limitations in achieving high voltage gains due to factors such as more stress on power switches, diode reverse recovery problems and the series resistance of inductors and capacitors. This document proposes a novel DC-DC converter that achieves high voltage gains without requiring an extremely high duty cycle. The design uses two inductors with identical inductance levels, charging them in parallel during the switch-on phase and discharging them in series during the switch-off phase, enhancing voltage conversion efficiency. Specifically designed for photovoltaic systems, the proposed converter family offers high-voltage-gain capabilities. It can function as a multi port converter drawing power from two independent sources or a single source in an interleaved fashion, maintaining continuous input current with low ripple—ideal for applications like solar energy. By cascading multiple diode-capacitor stages, the design effectively boosts voltage while minimizing stresses on switches, diodes, and capacitors.

Index Terms: VMC - voltage multi plier cell, IB- Interleaved boost, PV- Photo Voltaic

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MATLAB BASED REDUCTION OF COAL USAGE IN THERMAL POWER STATIONS

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ABSTRACT

India is the third largest producer of electricity in the world. The national electric grid in India has an installed capacity of 399.467 GW as of 31 March 2022. Renewable power plants, which also include large hydroelectric plants, constitute 39.2 % of total installed capacity. During the fiscal year (FY) 2019–20, the gross electricity generated by utilities in India was 1,383.5 TWh and the total electricity generation (utilities and non-utilities) in the country was 1,598 TWh. India has a surplus power generation capacity but lacks adequate fuel supply, transmission and distribution infrastructure. India's electricity sector is dominated by fossil fuels, in particular coal, which produced about three-quarters of the country's electricity.

The government's National Electricity Plan of 2018 states that they are commissioning 50,025 MW coal-based power plants under construction. It was observed that more amount of coal is using to generate the electric power than reference level. This was because of presence of magnetic elements in the bed material which was used in boiler to maintain desired temperature at the bottom of the boiler. The efficiency of the boiler is decreasing due to damage caused by the magnetic elements in the bed material.

These magnetic elements decreasing the reference temperature in the boiler and consequently the boiler operator allowing excess amount of coal to maintain the reference temperature in the boiler. Because of this, excess amount of col is used to generate electric power and there by producing excess amount of ash. This can be reduced by constructing a magnetic separator near the bed material stack point and verifying the magnetic elements in the bed material thoroughly. Due to this separator, the boiler efficiency can be maintained nearer to the designed value, usage of excess amount of coal can be reduced. The investment cost for erecting the magnetic separator can be obtained within 1 to 2 years. As a case study, the SKS Power Generation CG Ltd, Raigarh (the one considered in the present assessment), is considered.

It is seen that the proposed issue is attempted with MATLAB condition and cost appraisal of thermal power plant is disengaged and existing making data. The test results exhibited that the proposed structure give safe as ible system and best experience and is proved that it is essential for solving such type of assignments.

Keywords: Electrical Energy Situation, fluidized bed, efficiently removes iron particles from material, limit, Payback time, MATALB.

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Paper ID: ICAEEE-24-005

A NOVEL APPROACH FOR DETERMINING FAULT DISTANCES ON HIGH VOLTAGE TRANSMISSION LINES

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ABSTRACT

The transmission network plays a critical role in global energy infrastructure, carrying electricity from power plants to consumers through extensive networks of electrical transmission lines and equipment. As energy demands grow and renewable energy sources (RES) like wind and solar power become more integrated into the grid, transmission systems face new challenges. These renewable sources introduce greater variability, causing transmission lines to operate closer to their design limits, which increases the system's vulnerability to faults. Electrical faults can lead to large-scale power outages, disrupting service for hours or days, with significant economic and social impacts. Rapid and accurate fault detection is essential for restoring power quickly and minimizing damage, requiring advanced fault location methods to maintain grid reliability.

Keywords: Renewable energy sources, fault detection and location element (FDLE) algorithm

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Paper ID: ICAEEE-24-006

VEHICLE TRACKING AND MONITORING SYSTEM TO ENHANCE THE SAFETY AND SECURITY DRIVING USING IOT

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ABSTRACT

In this paper, an advanced vehicle monitoring and tracking system is proposed and designed for the purpose of monitoring the vehicles which are moving from one place to the other in order to provide safety and security. The proposed method puts together superior exercise of contemporary technology by means of Embedded C programming language and the unit developed via LPC2148 and its sophisticated features of storing database. The work includes Global Positioning System (GPS) and Global System for Mobile Communication (GSM) for vehicle tracking and monitoring purpose using SIM800 module. The GPS provides present site of the vehicle; GPRS sends the tracking information to the server and thus an alert message generated is transmitted to the owner of the vehicle. This scheme is deployed in the interior of the vehicle whose location is to be determined on the web page and supervised at real time. Hence, if the driver drives the vehicle on the wrong path then the alert message will be sent from the proposed system to the vehicle's owner mobile and if the vehicle's driver feels drowsy or drunk then also the warning sound is produced by Buzzer. The proposed system take care of the traveler's safety by using Alcohol sensor to find the status of the driver and Temperature sensor to monitor vehicle Engine Temperature to avoid sparking of the vehicle their by preventing from the disaster.

Keywords: Global Positioning System (GPS), GSM, LPC2148

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Paper ID: ICAEEE-24-007

GSM AND MICROCONTROLLER BASED THREE PHASE FAULT ANALYSIS SYSTEM

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ABSTRACT

The three phase fault detector and analysis system is designed for based on GSM & Microcontroller. Using these types of device we could find automatically after a short-lived interruption in a provisional fault from the tripped situation in case of eternal fault. All sorts of electrical substation that supply the electricity to their clients such as: for residential, industrial and official using. This power supply may have failures due to some faults that might be temporary or eternal fault. Due to arising these types of faults some accident might be occurred and the power system equipment would be damaged. In developing countries as like Bangladesh it can be closely observed that the power supply system is interrupted due to faults and transmission or distribution line is seriously affected for the fault. There are two types of faults that are denoted "Line to Ground and Line to Line fault. The described system is constructed only for overcoming the stated difficulties that can senses those faults automatically and will take an immediate action against the created faults. The system can be used three single phase transformers those are wired in star input and star output also three transformers are connected in delta connections which having 220 volts input and 12 volts output.

Keywords: GSM & Microcontroller, fault detector

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Paper ID: ICAEEE-24-008

REMOTE-CONTROLLABLE AND ENERGY-SAVING ROOM ARCHITECTURE BASED ON ZIGBEE COMMUNICATION

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ABSTRACT

This paper describes room architecture to reduce power consumption and to make the room easily controllable with an IR remote control of a home appliance. The room is composed of automatic standby power cut-off outlets, a dimming light and a ZigBee controller. The automatic standby power cut-off outlet monitors the power consumption of the outlet and completely cut off the power supply when the monitored power value is below the threshold. Based on the ZigBee communication, the ZigBee controller plays a role of switches for the power outlet and the dimming light. It turns on the power outlet and dims the light in the room. The ZigBee controller has an education function of an IR remote control signal of a home appliance connected to the power outlet. With this architecture a user can handle the power outlet and the dimming light through one IR remote control in the energy-saving room.

Keywords: ZigBee controller, dimming light, IR remote control

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Paper ID: ICAEEE-24-009

MICRO-CONTROLLER-BASED RF SYSTEM FOR EFFICIENT SUBSTATION MONITORING

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ABSTRACT

This paper presents a micro controller-based system for monitoring and protecting the power of distribution transformers in substations. Using ZIGBEE communication, the system prevents damage by transmitting data from the substation (transmitter unit) to the main station (receiver unit). The transmitter continuously monitors power via a PIC micro controller and sends signals using ZIGBEE. At the main station, the ZIGBEE receiver displays the data on an LCD and LED, enabling prompt response based on the received signals.

Keywords: ZIGBEE, transmitter, receiver

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Paper ID: ICAEEE-24-010

OPTIMIZED ELECTRIC POWER SYSTEM DESIGNS FOR WIDE-BODY ALL-ELECTRIC AIRCRAFT

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ABSTRACT

To convert conventional wide-body aircraft into all-electric aircraft (AEA), approximately 25 MW of electrical power is required, with nearly all of this power dedicated to thrust, provided by electrochemical energy units (EEUs). This significant power demand (25x that of current more-electric aircraft, or MEA, with non-electric thrust) necessitates innovative AEA electric power system (EPS) architectures. This paper, for the first time, explores various EPS architectures for wide-body AEA. It evaluates the placement of EEUs and non-propulsion loads, estimates distances to busbars, and conducts load flow studies under normal and contingency conditions. The study also compares circuit configurations, including H connections and ring busbars, based on power density, reliability, power loss, and cost to identify optimal architectures.

Keywords: all-electric aircraft (AEA), electric power system (EPS) architectures

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Paper ID: ICAEEE-24-011

A NOVEL HIGH-EFFICIENCY DC-DC CONVERTER FOR FUEL CELL VEHICLE APPLICATIONS

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ABSTRACT

This paper presents a novel high-efficiency DC-DC converter designed specifically for fuel cell vehicle applications. The proposed converter aims to address the challenges of efficient power conversion and management in fuel cell-powered electric vehicles (FCEVs), where high performance, reliability, and compactness are crucial. By utilizing advanced topologies and innovative control strategies, the converter significantly improves energy efficiency while ensuring smooth and stable operation across varying load conditions. The design focuses on achieving high power density, minimizing energy losses, and maintaining a high conversion gain, making it well-suited for fuel cell systems with wide voltage variations. Additionally, the converter features enhanced thermal management and reduced electromagnetic interference (EMI), key considerations in the automotive industry. Simulation and experimental results demonstrate the converter's superior efficiency and performance compared to conventional designs, showcasing its potential to enhance the overall efficiency and operational lifespan of fuel cell vehicles. This work provides a promising solution for the integration of fuel cell technology into clean transportation, offering improved energy conversion and reduced environmental impact.

Keywords: DC-DC converter, Fuel Cell Vehicle, Electric Vehicle (EV), Energy Management, Fuel Cell Systems

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INTEGRATION OF SMART TRANSFORMERS WITH PLC AND SCADA SYSTEMS

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ABSTRACT

The integration of smart transformers with PLC (Programmable Logic Controllers) and SCADA (Supervisory Control and Data Acquisition) systems marks a significant advancement in modern power distribution and management. This synergy enhances the performance, reliability, and monitoring capabilities of electrical grids. Smart transformers, equipped with advanced sensors and communication technologies, deliver real-time data on critical parameters such as voltage, current, and temperature. By connecting these transformers to PLC and SCADA systems, operators can remotely oversee and control their operation, detect faults, and apply predictive maintenance techniques. This integration not only improves energy management and reduces downtime but also boosts the overall stability and resilience of the power grid. Furthermore, it facilitates the integration of renewable energy sources by optimizing their operation, ensuring efficient load balancing and distribution across the grid.

Key words: Smart Transformers (Programmable Logic Controller), SCADA (Supervisory Control and Data Acquisition), Smart Grid, Automation Systems

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DESIGN & IMPLEMENTATION OF SOLAR FED INTENSITY CONTROLLED STREETLIGHT

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ABSTRACT

SPV based LED Streetlight has advantages over other conventional lighting systems as no power conversion is needed. LED work on DC and energy optimization is possible by controlling the duty cycle of the LED driver. The components of Solar Fed LED Street lighting system are SPV array, MPPT, dc-dc converter and battery unit. In this paper, the intensity of solar fed Street light is controlled from traffic hours to non-traffic hours which results in saving the electricity consumption. A hybrid street light model is also designed and developed. The simulation studies are performed in MATLAB - Simulink environment.

Key words: LED, MATLAB-Simulink, SPV array, MPPT

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AUTOMATION AND ROBOTICS IN THE FIELD OF CONSTRUCTION

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ABSTRACT

Building and construction is one of the major industries around the world. Construction industry is labor-intensive and is conducted in dangerous situations; therefore the importance of construction robotics has grown rapidly. Applications and activities of robotics and automation in this industry started in the early 90s aiming to optimize equipment operations, improve safety, enhance perception of workspace and furthermore, ensure quality environment for building occupants[1]. The main goal of this paper is to convince building designers and managers to incorporate robotic systems when managing modern buildings. This paper studies recent applications for robots and automation in the construction industry and sets opportunities and challenges through a new framework for better planning and control of construction equipment operation.

Keywords: Building automation; Robotics; Construction; Management; safety; Performance; Maintenance; Opportunities and challenges.

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Paper ID: ICAEEE-24-015

REACTIVE POWER COMPENSATION USING VEHICLE-TO- GRID ENABLED BIDIRECTIONAL OFF-BOARD EV BATTERY CHARGER

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ABSTRACT

This paper investigates the application of a grid- connected off-board Electric vehicle (EV) battery charger on the reactive power compensation and simultaneously use as a battery charger (grid-to-vehicle (G2V)) and power generator (vehicle-to-grid (V2G)). The topology of the charger consists of a grid facing front-end AC-DC cascaded H-bridge bidirectional converter, which controls the power flow between the grid and EV battery using a back-end DC-DC bidirectional converter. The charger configuration provides galvanic isolation at the user end from the rest of the system as a safety measure. The proposed control algorithm follows the active power command for G2V and V2G operation along with reactive power command from the utility grid when requested, by controlling EV current and battery current. Furthermore, an adaptive notch filter based controller is designed for system phase estimation and generated reference current synchronization. The proposed control algorithm eliminates phase locked loop (PLL) from the controller design. As a result, the computational complexity of the controller reduces with improved steady-state and trainset performance. Furthermore, a 12.6 kVA off-board charger simulation model is developed in MATLAB/Simulink environment and the performance of the proposed control algorithm is tested during G2V, V2G, and reactive power compensation operation of the EV charger.

Keywords: Adaptive notch filter, Bidirectional EV Charger, Grid to vehicle, Reactive power Compensation, Vehicle to grid

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Paper ID: ICAEEE-24-016

REPLACING THE GRID INTERFACE TRANSFORMER IN WIND ENERGY CONVERSION SYSTEM WITH SOLID-STATE TRANSFORMER

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ABSTRACT

In wind energy conversion systems, the fundamental frequency step-up transformer acts as a key interface between the wind turbine and the grid. Recently, there have been efforts to replace this transformer by an advanced power-electronics-based solid-state transformer (SST). This paper proposes a configuration that combines the doubly fed induction generator-based wind turbine and SST operation. The main objective of the proposed configuration is to interface the turbine with the grid while providing enhanced operation and performance. In this paper, SST controls the active power to/from the rotor side converter, thus, eliminating the grid side converter. The proposed system meets the recent grid code requirements of wind turbine operation under fault conditions. Additionally, it has the ability to supply reactive power to the grid when the wind generation is not up to its rated value. A detailed simulation study is conducted to validate the performance of the proposed configuration.

Key words: Solid-state transformer (SST)

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Paper ID: ICAEEE-24-017

DIGITAL SIMULATION OF AN INTERLINE POWER FLOW CONTROLLER SYSTEM USING ARTIFICIAL INTELLIGENCE TECHNIQUES

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ABSTRACT

The Interline Power Flow Controller (IPFC) is a controller that can govern the flow of power among a substation's several transmission lines. It uses voltage source converters to make up for series losses and is based on the FACTS system. To manage the active power flow in each line, one may modify the reactive voltage injected by each Voltage Source Converter (VSC). The reactive power fluxes in the lines are controlled by injecting a series active voltage, while the DC voltage is regulated by a single VSC. The creation of an IPFC circuit model and its application to the interline power flow controller model are detailed in this work. We use MATLAB Simulink to do the simulations. The outcomes produced using MATLAB.

Key Words: Voltage Source Converter (VSC), Interline Power Flow Controller (IPFC), and Flexible AC Transmission System (FACTS).

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SELF ACTIVATING EMERGENCY VOICE BASED HELP TAG FOR WOMEN SAFETY

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ABSTRACT

The Automatic Emergency Help Tag for Women is a compact, wearable device designed to ensure women's safety in critical situations. This tag uses real-time GPS tracking, an emergency alert system. When activated, it sends an immediate SOS alert with the wearer's location to emergency contacts and nearby authorities, ensuring rapid response. The tag can be triggered automatically if it detects abnormal patterns like when they are asking help(screaming). Additionally, it is discreet, minimizing visibility to avoid drawing attention. Integrated with a mobile app, users can configure emergency contacts and monitor device status. The Automatic Emergency Help Tag aims to empower women with a sense of security and a reliable, user-friendly tool that provides support when they need it most, offering a proactive approach to personal safety.

Keywords: Women safety, Automatic emergency help tag, GPS tracking

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ADVANCED ELECTRIC VEHICLE CHARGING STATION WITH ULTRA FAST CHARGING CAPABILITY

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ABSTRACT

To develop a advanced EV Charging Station aims to revolutionize electric vehicle charging infrastructure by offering like Ultra-Fast Charging, AI-Driven Energy Management, Renewable Energy Integration, Wireless Charging, Smart Connectivity, User-Friendly Interface, Sustainability Focus. This EV Charging Station is affordable and suitable for Urban Commuters, Fleet Operators, Governments and Municipalities. Objective of the work is to analyze Current Challenges in EV Charging, Explore Advanced Charging Technologies, Evaluate Impact on User Experience and Grid Efficiency, and to Promote Sustainable Transportation. In order to improve user experience and lessen the burden on the electrical grid, these stations integrate cutting-edge technologies like as ultra-fast charging, AI-driven energy management and integration of renewable energy sources. The rapid transition towards electric vehicles (EVs) necessitates the development of advanced electric vehicle charging infrastructure to support the growing demand for clean, efficient, and sustainable transportation. Advanced EV charging stations are designed to optimize energy distribution, reduce charging time, and enhance user convenience. These stations integrate cutting-edge technologies such as high-power fast chargers, smart grid capabilities, renewable energy integration, and wireless charging options. The evolution of charging station networks will also contribute to grid stability, reduce carbon emissions, and foster a circular economy by enabling energy exchange between EVs and the grid. The future of EV charging infrastructure promises to be more efficient, scalable, and integrated into the digital ecosystems that are shaping the future of sustainable energy.

Keywords: Ultra fast charging, Energy management, Renewable energy integration, Sustainable transportation

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POWER QUALITY IMPROVEMENT OF SMALL HYDROPOWER PLANT LOCATED IN THE INDUSTRIAL AREA

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ABSTRACT

Climate problems, the increasingly robust European emissions policy and falling prices of solar and wind have led to the shutdown of many thermal power plants and increased installation of renewable energy power plants. The installed capacity of wind and solar power plants in our country is not yet significant, but small hydro-power plants are often considered as a good solution for the power supply to remote areas despite the problems that sometimes arise after the installation of these power plants. This paper describes a power quality problem of high voltages occurs after the installation of a small hydro-power plant of 800 kVA in an area with predominantly industrial consumers. Many industries use high technology for manufacturing and require high power quality and reliability of power supply. Even modest power quality problems can have significant technical and economic effects on these consumers. Therefore, it was necessary to precisely monitor power quality to adequately address all related problem recorded during the plant performance test phase. Also, the observed problem has led to power plant outage on several occasions in a short period of time which resulted in a reduction in power generation. Techniques for mitigation the observed power quality issue are also considered in this paper. The implemented solution of the problem is verified by power quality monitoring and SCADA system measurements.

Key words: Power quality, SCADA, Hydro power plants

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Paper ID: ICAEEE-24-021

AN ANALYSIS OF THE SIMILARITIES AND DIFFERENCES BETWEEN A COMBINED SERIES ACTIVE AND SHUNT PASSIVE POWER FILTER THAT MAKES USE OF TWO DISTINCT CONTROL MECHANISMS

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ABSTRACT

Through the utilization of the instantaneous real active and reactive power (p-q) and instantaneous active and reactive current component (id-iq) approach, this research presents a comparative study of the combined series active and shunt passive power filter. For the combined filter, the p-q technique has been suggested as the control method, and it has been demonstrated to provide sufficient performance. On the other hand, the id-iq approach has been demonstrated to provide superior performance for the shunt active power filter when it comes to harmonic compensation. The MATLAB-Simulink SimPower System is used to construct two models of a power line with a nonlinear load. These models are developed using the p-q approach and the id-iq method. The balanced sinusoidal supply, the unbalanced sinusoidal supply, and the balanced non-sinusoidal supply are the three different circumstances of supply source that are simulated in the models. While the waveform is being watched, the percentage of total harmonic distortion (%THD) of the output current is being measured. On the basis of the findings, it has been established that the id-iq control approach produces a somewhat more favorable outcome when applied to a distorted supply condition. On the other hand, when the supply is normal balanced and sinusoidal, both control methods are equally successful in compensating for the harmonic current.

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USING A HYBRID ACTIVE POWER FILTER IN CONJUNCTION WITH A PASSIVE POWER FILTER OR CAPACITORS THROUGH PARALLEL OPERATION

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ABSTRACT

Harmonic pollution and reactive power compensation are the most significant issues pertaining to power quality. The purpose of this study is to present a combined power filter system that is comprised of the parallel functioning of a hybrid active power filter (HAPF) and the passive power filters or capacitors. A single tuned LC filter for each phase and a small-rated three-phase active filter are put together to make the HAPF. These two filters are coupled in series and are directly connected to one another. Analyses and simulations are performed on the features of the combined system as well as the harmonic current detection method that makes use of the combination of load current and mains current. According to the findings of the simulation, the combined system is capable of achieving a satisfactory level of filter performance. This paper presents the experimental findings obtained from a 100kVA/380V hardware prototype that operates in parallel with capacitors. The purpose of this presentation is to demonstrate the validity and efficiency of the combined system.

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BEAMFORMING UTILISING CSI THAT IS IMPERFECT

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ABSTRACT

Both spatial diversity and multiple spatial access can be achieved through the utilization of beamforming when channel state information (CSI) is present at the transmitter position. As a result of latency and the constraint of feedback bandwidth, the CSI at the transmitter is frequently discovered with a certain degree of uncertainty. The purpose of this study is to provide a reliable solution for downlink beamforming that takes into account the ambiguity of the Communication Security Index (CSI). A computer simulation demonstrates that the needed signal-to-noise ratio (SNR) for a 1% bit-error rate (BER) is decreased by more than 2 dB for a system with 4 transmit antennas and 2 users when the variance of the CSI is -20 dB. This is in comparison to the approach that is currently in use. In situations where the number of users remains constant, the performance gain improves in proportion to the number of transmit antennas. The needed signal-to-noise ratio (SNR) for a 1% bit error rate (BER) is decreased by more than 4 decibels if there are 8 transmitter antennas. Furthermore, we investigate the influence that power distribution has on the beamforming of the downlink.

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Paper ID: ICAEEE-24-024

SOLAR POWERED EV CHARGING STATION

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ABSTRACT

Electric vehicles (EVs) are increasingly popular as a dependable alternative to gas-powered vehicles. These vehicles rely on batteries for operation. Despite the long-standing prevalence of grid-based EV charging, solar-powered EV chargers are emerging as an intriguing alternative. By supplying clean electricity to electric vehicles, which produce no pollution of their own, these chargers play a significant role in environmental conservation. The escalating demand for sustainable energy solutions and the growing appeal of electric vehicles have driven the development of innovative charging infrastructure. This project aims to pioneer the development and construction of an advanced solar- powered electric vehicle charging station. The primary aim of the station is to charge electric cars using solar energy, providing a cost-effective and environmentally friendly option. The integration of solar panels, energy storage systems, charging infrastructure design, and smart grid connectivity are among the critical components of this project. The program seeks to merge electric car technology with renewable energy sources to contribute to a more eco-friendly and sustainable transportation ecosystem. The project's abstract emphasizes its importance in addressing the urgent issues of energy sustainability and reducing the carbon footprint associated with transportation.

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ELECTRIC VEHICLE CHARGING USING RENEWABLE ENERGY

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ABSTRACT

One of the ongoing major problems is "The Hike on Petrol and Diesel Prices". This situation is because of the depletion of the "FOSSIL FUELS". These Fossil Fuels includes Coal, Gas and Oil etc. Due to this hike on Petrol and Diesel Prices, Engineers, Scientists and researchers are doing research on/ finding for the alternatives for the Fossil Fuels. One of the best alternatives for the Fossil Fuel is use of the Electricity. With the help of the electricity, we can run a vehicle. The vehicles which run on the Electricity are called or named as Electric Vehicles. These Electric Vehicles (Shortly termed as EVs) replaces the traditional Internal Combustion Engine (IC Engine). For Electric Vehicles also, we need intermediate charging stations like intermediate Gasoline/Petroleum filling stations for the traditional Internal Combustion Engines. Charging of an Electric Vehicle mainly depends on the location and requirement. The EVSE (Electric Vehicle Supply Equipment) change from one country to another country and it is also called as the EV charger's specification and standards.

Key Words: Electric Vehicles, Batteries for storing, charging Levels of EV, EV charging station requirements, Wind Power generation technology.

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TECH DRIVEN HOMES-REVOLUTIONIZING DAILY LIVING WITH AUTOMATION

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ABSTRACT

The aim of this project is to explore the integration of automation technologies to enhance daily life experiences within households. By leveraging smart devices, and WAN systems, homes are poised to become more efficient, comfortable, and responsive to occupant's needs. This project discusses the evolution of smart home technologies, their impact on lifestyle convenience, energy efficiency, and security. The key component of the system is The ESP 32 WIFI module which serves as the core computing unit, facilitating seamless communication and management of connected devices. The system's operational reliability is bolstered by relays, which act as switches for controlling various appliances and systems, these components form a robust framework that not only enhances convenience but also prioritizes safety and efficiency in modern household environments. Looking ahead, the integration of automation technologies in residential settings holds immense promise for the future. As advancements in Automations and connectivity continue to evolve, "Tech Driven Homes" are poised to offer unprecedented levels of customization, energy efficiency, and convenience. The potential benefits extend beyond individual households to encompass broader societal impacts, including reduced environmental footprints and enhanced quality of life.

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Paper ID: ICAEEE-24-027

IOT IV BAG MONITORING AND ALERT SYSTEM FOR ENCHANCED PATIENT SAFETY AND INFUSION MANAGEMENT

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ABSTRACT

The "IoT IV Bag Monitoring and Alert System for Enhanced Patient Safety and Infusion Management" project aims to address critical challenges in healthcare by automating the monitoring of intravenous (IV) fluid administration. This system leverages the Arduino Uno as the central microcontroller, integrating various sensors and communication modules to ensure accurate and real-time monitoring of IV fluid levels and flow rates, thus enhancing patient safety and improving infusion management. The system incorporates a flow sensor to measure the rate of fluid delivery, a level sensor to monitor the remaining fluid in the IV bag, and a DHT11 sensor to track ambient temperature and humidity, ensuring optimal conditions for fluid storage and delivery. An LCD display provides healthcare professionals with real-time data, while a buzzer alerts them to any anomalies such as low fluid levels or irregular flow rates. Additionally, a GSM module and a Wi-Fi module facilitate remote monitoring and alerting, enabling timely interventions through SMS notifications and internet-based alerts. By automating the monitoring process, this IoT-based system reduces the risk of human error and ensures that IV fluid administration is conducted with precision. The project's emphasis on real-time data acquisition and communication allows for immediate responses to potential issues, significantly improving patient care and safety. This solution not only streamlines the workflow for healthcare providers but also sets a foundation for further advancements in medical IoT applications.

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ANTHROLINK: PHASED ANTENNA ARRAYS AND APPLICATIONS IN WIRELESS CONNECTIVITY

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ABSTRACT

The Anthro Link project explores the implementation and applications of phased antenna arrays in enhancing wireless connectivity. Leveraging the Arduino Uno as the central control unit, the system integrates an LCD display, servo motors, and a Wi-Fi module to dynamically monitor and optimize network strength. The phased antenna arrays, controlled by servo motors, can be precisely oriented to maximize signal reception and transmission. A Light Dependent Resistor (LDR) module is employed for fast information receiving, ensuring real-time adjustments to the antenna orientation based on the varying signal strengths. The Arduino Uno processes the data collected from the LDR and Wi-Fi module, displaying the network strength on the LCD screen for user monitoring. This feedback loop allows the system to fine-tune the antenna's direction, thereby enhancing the reliability and speed of wireless communication. The project demonstrates a practical application of phased antenna arrays in everyday wireless connectivity, highlighting their potential in optimizing network performance in variable environments. Through this integration, Anthro Link offers an innovative approach to improving the efficiency and effectiveness of wireless networks using accessible and cost-effective components.

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SMART ARM WITH IOT TECHNOLOGY REVOLUTIONIZING CONTROL AND AUTOMATION

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ABSTRACT

This project, titled "Smart Arm with IoT Technology: Revolutionizing Control and Automation," aims to develop a smart arm enhanced by IoT technology. The primary objective is to create a robotic arm that performs various tasks with high precision and can be controlled remotely via IoT connectivity. With the combination of IoT and robotics, the smart arm has the potential to assist humans in more advanced ways. This project focuses on exploring how IoT can enhance the capabilities of a smart robotic arm, addressing the technology and its potential applications. The integration of Internet of Things (IoT) technology into robotics has paved the way for innovative solutions in automation and control systems. This project presents the development of a smart robotic arm designed to enhance operational efficiency in various applications, including manufacturing, logistics, and healthcare. By leveraging IoT capabilities, the smart arm can be remotely monitored and controlled, allowing for real-time data analysis and adaptive responses to environmental changes. Key features include advanced wifi integration for precision tasks, cloud connectivity for data storage and accessibility, and a user-friendly interface for seamless interaction. This project aims to demonstrate how IoTdriven automation can improve productivity, reduce operational costs, and facilitate advanced human-robot collaboration, ultimately revolutionizing traditional workflows.

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Paper ID: ICAEEE-24-030

IOT - POWERED SMART NIGHT PATROL ROBOT ENSURING ROUND THE-CLOCK SURVEILLANCE

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ABSTRACT

The implementation of an IoT-based smart night patrolling robot is presented in this project, utilizing an Arduino uno, camera module, sound sensor, ultrasonic sensor, motor driver, motors, wi-fi module, and buzzer. The proposed robot is designed to autonomously patrol a designated area and capture images and videos of the area using the camera module. Where the sensors are used to sense the motion of robot, disturbances, obstacles around the robot premises. The buzzer is included to provide an audible alarm in case of any significant disturbance in the patrolling area. The robot is designed to move around and change directions using the motor driver and motors, which are operated by an Arduino uno. The wi-fi module provides internet connectivity, enabling remote monitoring and control. This project can be used for a variety of applications, such as surveillance and security and has the potential to improve the efficiency and effectiveness of night patrolling operations. The project is developed at a low cost, making it accessible to a wider range of users and the GPS (global positioning system) marks the locations. The system is controlled using a webbased interface, and the users can monitor and control the system remotely. The main purpose of this project is to survey a huge area from one place without needing the security person to physical monitor it. The robot will be equipped with a camera along with lights to provide visibility at night.

Key Words: IOT(Internet Of Things), Motor Driver, Wi-Fi Module, Camera Module, Ultrasonic Sensor, Sound Sensor, Robot, GPS

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POWER GENERATION USING SPEED BREAKERS

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ABSTRACT

In the current scenario demand of power is increasing day by day with increasing population. On the other hand, energy crisis is also a main issue of today's life and all there is a shortage of conventional energy resources due to its large usage. So, we have to sort out this problem with a technique which will not only overcome this energy crisis but also should be ecofriendly. Many conventional resources are creating pollution so that's why focus is towards ecofriendly solution. This project emphasizes on idea which shows that power could be generated by specially designed speed breakers. A large amount of kinetic energy is being wasted on roads on daily basis in different forms which could be used to generate power and this power can be stored in batteries. This project shows clearly how we can generate power by using piezoelectric sensor where basically mechanical energy is converted into electrical energy. Thus, electricity can be generated using this method and this method is eco-friendly.

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REVOLUTIONISING HEALTHCARE WITH IOT ENABLED SMART BOTTLES FOR PERSONALISED MEDICATION MANAGEMENT

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ABSTRACT

In the modern healthcare landscape, ensuring timely and accurate medication intake is critical for effective treatment outcomes. This project, titled Revolutionizing Healthcare with IoT-enabled Smart Bottles for Personalized Medication Management, aims to enhance patient adherence to prescribed medication regimens through an innovative, technology-driven solution .Utilizing an Arduino UNO as the central microcontroller with an LCD display for real-time monitoring, a DHT11 sensor for temperature tracking, an ultrasonic sensor for precise medication level detection, and a GSM module for remote communication. An RTC module ensures accurate timekeeping, enabling timely alerts and reminders for medication intake. The system also incorporates two LED indicators—yellow and red—to visually represent the medication level, providing intuitive feedback to users. The yellow LED indicates a adequate level of medication and the red LED signals a low medication level, prompting timely refills. Additionally, a buzzer provides audible alerts for critical reminders and warnings, ensuring the user's attention.

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CONTROLLED AREA NETWORK FOR INTELLIGENT VEHICULAR SYSTEM

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ABSTRACT

The Controlled Area Network (CAN) is a robust vehicle bus standard designed to allow microcontrollers and devices to communicate with each other without a host computer. This presentation covers the application of CAN in intelligent vehicular systems, focusing on the communication protocols, system architecture, and the enhancements over traditional systems. Key components of the system include the DHT11 sensor for monitoring temperature and humidity, an ultrasonic sensor for obstacle detection and distance measurement, and a speed sensor for real-time vehicle speed tracking. The L293D motor driver, along with DC motors, is used for controlling vehicle movement, while a servo motor facilitates precise steering adjustments. An LCD display is incorporated for real-time data visualization and system status updates.

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TRANSMISSION LINE MULTIPLE FAULT DETECTION AND INDICATION TO THE ELECTRICITY BOARD

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ABSTRACT

This project focuses on the development of an advanced system for detecting and indicating multiple faults in transmission lines, with the primary objective of identifying issues such as overcurrent, overvoltage, and line breaks. By employing sophisticated sensors and monitoring techniques, the system is designed to accurately detect these faults in real time. The gathered data is then communicated to the electricity board via a GSM module, ensuring prompt notification and enabling swift response actions. This automated approach enhances operational efficiency, reduces downtime, and improves overall grid reliability. Through practical implementation and testing, the project demonstrates its effectiveness in maintaining the integrity of the electrical supply network, ultimately contributing to safer and more resilient power distribution systems.

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SMART HELMET

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ABSTRACT

In recent years, road safety has become a major concern, particularly for motorcyclists, who are highly vulnerable to accidents. Helmets play a critical role in protecting riders, but standard helmets often lack intelligent features that could further enhance safety. This project presents the design and development of a SMART HELMET using Arduino and various sensors, aimed at improving rider safety by monitoring critical parameters and preventing accidents. The helmet incorporates multiple technologies such as GSM, RF, motor, GPS, LCD, ADXL sensor, alcohol sensor, and an ultrasonic sensor to create a comprehensive safety system. The Arduino-based smart helmet utilizes an alcohol sensor to detect if the rider has consumed alcohol and prevents the bike from starting if alcohol is detected. The ADXL sensor, which senses head movement and tilt, acts as an impact sensor, triggering an alert in case of an accident. The ultrasonic sensor assists in collision avoidance by detecting obstacles in the rider's path. GPS is integrated to track the location of the rider, while the GSM module sends real-time alerts to emergency contacts in case of an accident. Additionally, a RF module ensures that the bike can only be started when the rider is wearing the helmet. An LCD display is included for showing essential information such as alerts, status, and system diagnostics. This SMART HELMET not only enhances rider safety by monitoring their condition and surroundings but also prevents unsafe practices like riding under the influence of alcohol. By integrating these advanced technologies, this project aims to reduce motorcycle-related accidents and improve emergency response times

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AUTOMATIC ZIGBEE BASED QUICK ANSWERING SYSTEM FOR MULTIPLE USERS FOR QUIZ GAMES AND FEEDBACK

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ABSTRACT

The main aim of this project is designed to reduce penalty and power consumption for industrial units by using Automatic Power Factor Correction (APFC) unit. In the industrial sector the various motoring loads are continuously running and generating the inductive load. So, the power factor in this system gets reduced due to the inductive reactive power. Reactive power is the non -working power generated by the magnetic and inductive loads, to generate magnetic flux. The increase in reactive power increases the apparent power, so the power factor also decreases. Having low power factor, the industry needs more energy to meet its demand, so the efficiency decreases. In this proposed system the voltage and current sample is converted into a square wave using a zero-cross detector. The voltage and current sample signals are feed to the microcontroller at two analog pins and the difference between the arrivals of waveform indicate the phase angle difference. The difference is measured with high accuracy by using internal timer. This time value is calibrated and the phase angle and the corresponding power factor is also calculated. Arduino UNO displays the power factor on an LCD. The program takes over to actuate appropriate number of relays from its output to bring shunt capacitors into the load circuit to get the power factor till it reaches near unity. If capacitors fail to compensate and reach power factor unity, Arduino blows the buzzer and switch on LED.

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ENERGY HARVESTING BACKPACK

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ABSTRACT

The project integrates advanced technologies to harness renewable energy sources for portable applications. Utilizing an Arduino Uno microcontroller as the central processing unit, this system incorporates variety of sensors and modules to maximize energy efficiency and user interaction. A piezoelectric sensor is employed to capture mechanical vibrations and convert them into electrical energy, supplementing power derived from a solar panel. This dual-energy approach ensures continuous operation even under varying environmental conditions. The LCD and DHT11 sensor provide real time environmental data, enhancing user awareness of energy generation, and consumption. A voltage sensor monitors the energy storage levels, optimizing charging processes and protecting against overcharging. It demonstrates the feasibility and practicality of energy harvesting technologies in every day scenarios, promoting sustainable energy practices and reducing reliance on conventional power sources. By leveraging capabilities of Arduino and modern sensors, the energy harvesting backpack represents a significant advancement towards environmentally conscious and energy-efficient portable systems.

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IOT ENABLED FAULT DIAGNOSIS AND MONITORING FOR SMALL WIND TURBINE

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ABSTRACT

Electrical energy is the most reliable energy forms. Out of which the development in technology is claiming for energy in large quantities. But the conventional energy sources are causing pollution also the fossil fuels are been depleting day to day, thus the path have been led for Renewable energy sources. The most dependent renewable energy source includes the wind energy. But the maintenance of wind turbine is complex, continuous monitoring becomes tough due to its location at great height and they are installed in rural areas. So, a reliable condition monitoring system is essential for wind turbine to minimize downtimes and to increase the productivity. The aim of this project is to monitor the wind turbine parameters and to improve the early fault detection. Here, sensors are used to monitor the condition of wind turbine. The three sensors used are temperature sensor, vibration sensor and voltage sensor. If any sensor gives an abnormal value, the data is updated to IOT cloud with in fraction of seconds. For this project, we use Arduino UNO , and WIFI module. Arduino UNO collects sensor values from different sensors of wind turbine and WIFI module sends the data to IOT cloud which is already installed in our phone like telegram. Working of Kit and the performance check is done on the proposed system.

Keywords: Arduino UNO, DC Gear motor, WIFI module, Fault Diagnosis, IOT cloud, Wind turbine Mobile telnet.

Paper ID: ICAEEE-24-039

INDUSTRIAL DATA LOGGER USING RS485

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ABSTRACT

This project presents the design and implementation of an Industrial Data Logger utilizing RS485 communication protocol. The system integrates various sensors and modules including Arduino Uno microcontroller, DHT11 for temperature and humidity sensing, MQ2 for gas detection, an LCD display for real-time data visualization, an RS485 shield for robust communication in industrial environments, a buzzer for alarm notifications, and a WiFi module for remote monitoring and data transmission. The primary objective of the Industrial Data Logger is to monitor environmental parameters crucial for industrial safety and process control. The Arduino Uno serves as the central processing unit, collecting data from the DHT11 and MQ2 sensors. The RS485 shield facilitates reliable data exchange over long distances, ideal for industrial settings where electromagnetic interference is prevalent. Real-time data is displayed on the LCD screen, providing immediate feedback to operators. Furthermore, the inclusion of a buzzer enables timely alerts in response to predefined thresholds or hazardous conditions detected by the sensors. The WiFi module enables connectivity for remote access to logged data, enhancing accessibility and facilitating proactive maintenance and decision-making. This project demonstrates a practical application of embedded systems and sensor integration for industrial monitoring, emphasizing reliability, scalability, and real-time data management in challenging environments.

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IOT HELMET ENSURING MINING WORKERS PROTECTION SYSTEM

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ABSTRACT

In the hazardous mining industry, worker safety is of paramount importance. This project presents an innovative IoT Helmet designed to enhance the protection and monitoring of mining workers using an Arduino Uno platform. The helmet integrates several sensors and modules to provide real-time monitoring and alerting capabilities. Key components include an MQ-2 gas sensor to detect harmful gases, a DHT11 sensor for measuring temperature and humidity, an ADXL345 accelerometer to detect falls or abnormal movements, a heart rate sensor for monitoring the worker's physiological condition, a GPS module for location tracking, and a Wi-Fi module for wireless data transmission. An LCD display provides real-time data and alerts to the worker, ensuring immediate awareness of potential hazards. The system continuously collects and processes data from the sensors. When predefined safety thresholds are breached, alerts are generated and transmitted via the Wi-Fi module to a remote monitoring station, ensuring prompt response to potential emergencies. This IoT-based solution aims to significantly enhance the safety and health monitoring of mining workers, reducing the risk of accidents and improving emergency response times. The integration of these technologies in a compact, weara3ble helmet offers a practical and scalable solution for ensuring the well-being of workers in one of the most dangerous occupational environments.

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INTELLIGENT TRAIN ENGINE TO AVOID ACCIDENTS AND CONTROLLING RAILWAY GATE AUTOMATICALLY

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ABSTRACT

The project "Intelligent Train Engine to Avoid Accidents and Controlling Railway Gate Automatically" aims to enhance railway safety and efficiency using an Arduino Uno microcontroller. The system integrates a GSM module, servo motor, DC motor, relay, LCD display, and ultrasonic sensor to create a comprehensive accident avoidance and automatic gate control solution. The ultrasonic sensor continuously monitors the track for obstacles, triggering an alert and halting the train engine via the DC motor and relay if any obstructions are detected. Simultaneously, the GSM module sends an emergency notification to the relevant authorities. The servo motor operates the railway gate automatically, ensuring timely and secure closure and opening based on the train's proximity, which is detected by the ultrasonic sensor. The LCD display provides real-time status updates, enhancing situational awareness for operators. This intelligent system aims to significantly reduce the risk of train accidents at level crossings and improve the overall safety of railway operations.

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NEXT GENERATION SMART GRID SYSTEM IOT ENABLED ENERGY MANAGEMENT SYSTEM

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ABSTRACT

Develop a smart energy grid system using IOT to prevent blackout situationscaused by grid failures and manage electricity efficiently. Based on ATMEGA family controller utilizesWI-FI for internet communication. Bulb and Buzzer is used to represent valid consumer and another to represent invalid consumer. Status of active grid gets updated on Application accessible to authorities for real time monitoring.

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SMART REFRIGERATOR

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ABSTRACT

The SMART REFRIGERATOR project leverages the Arduino Uno microcontroller to create an intelligent refrigeration system. This project integrates various sensors and modules to enhance functionality and user convenience. The DHT11 sensor monitors and reports the internal temperature and humidity levels, ensuring optimal storage conditions for perishable items. An LCD display provides real-time feedback to the user, while an IR sensor detects door openings, triggering a buzzer alert if the door remains open for an extended period. The gas sensor identifies any potential gas leaks, contributing to the overall safety of the refrigerator. Additionally, the Wi-Fi module enables remote monitoring and control, allowing users to access the refrigerator's status and receive alerts via a connected device. LED indicators provide visual cues for different operational states and alerts. This comprehensive integration of sensors and modules transforms a conventional refrigerator into a smart appliance, offering enhanced safety, convenience, and efficiency.

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ILLUMINATING EFFICIENCY SMART SOLUTIONS TO MINIMIZE LIGHTING WASTAGE IN SMALL AND MEDIUM INDUSTRIES

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ABSTRACT

This project presents an innovative solution for minimizing lighting wastage in small and medium industries by employing a smart lighting system based on Arduino Uno. The system integrates LED lights, Infrared Sensors (IR), LDR SENSORs, a Wi-Fi module, and a reliable power supply to create an energy-efficient lighting network. The primary objective is to optimize energy consumption by ensuring that lighting is only used when necessary and adjusted based on ambient light conditions. The Arduino Uno serves as the central control unit, processing data from the IR sensors to detect human presence and automatically turning lights on or off. The LDR SENSOR monitors natural light levels, allowing the system to dim or brighten the LED lights accordingly. The inclusion of a Wi-Fi module enables remote monitoring and control, providing users with the flexibility to manage the lighting system via a smartphone or computer. By utilizing LED lights, which are known for their energy efficiency and long lifespan, and combining them with smart sensors and controllers, the proposed solution significantly reduces energy wastage. The system's power supply ensures stable and efficient operation, making it a viable and cost-effective option for small and medium industries aiming to enhance their energy management practices. This smart lighting solution not only contributes to reducing operational costs but also supports environmental sustainability by lowering energy consumption and carbon footprint. The implementation of such a system demonstrates the potential of integrating simple, yet effective, technologies to achieve substantial improvements in energy efficiency within industrial settings.

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DESIGN OF MANAGEMENT SYSTEMS FOR SMART GRID

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ABSTRACT

An electrical energy is and would be one of the most important energy sectors. By accepting green resolutions to generate electricity, researchers are giving their best to get the most reliable and efficient way to generate electricity with renewables. As renewables are intermittent in nature healthy management system is very important. In this article, we have demonstrated 2-way energy and communication flow with peer-to-peer energy transfer. Users and utility connection is distinguished with the Smart Control Panel in the street, which empower small prosumer to participate in the market. To identify algorithm and system management, two cases are considered. Normal Gird operation and Faulty Grid. The result shows that systems have the potential to withstand for a quite long time to get supplied to the street even without taking electricity from the main grid. This system saves user rights to use electricity anytime in a day with a full load and including cost-saving phenomena.

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STUDY OF HARMONICS AND INTER HARMONICS IN VSI/CSI INVERTERS IN GENERAL: ANALYSIS, MODELING, AND SIMULATION

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ABSTRACT

When compared to integer harmonics, the effects of inter harmonics, which are defined as non-integer multiples of fundamental or switching frequencies in power utility connected VSI/CSI systems, are distinct from those of integer harmonics. In order to characterize the formation of harmonics and inter harmonics in generalized power converters, a novel approach that is based on the concept of a "non-linear modulator" is proposed in this study. In the following step, the analytical model is finished and analyzed for the conventional d-q rotating reference frame controller in the VSI converter. Additionally, the consequences of the feedback control approach as well as additional compensation blocks are taken into consideration. The validation of the analysis is also validated by the findings of the simulation.

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MODELING AND SIMULATION OF A NUMBER OF DIFFERENT HYBRID ELECTRIC CONFIGURATIONS OF THE HIGH-MOBILITY MULTIFUNCTIONAL WHEELED VEHICLE

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ABSTRACT

Despite the fact that hybrid electric vehicles (HEVs) have been investigated primarily with the intention of improving fuel economy, very little has been done in order to increase both fuel efficiency and performance. When it comes to military vehicles, such as the high-mobility multipurpose wheeled vehicle (HMMWV), the dynamic performance qualities of the vehicle, such as acceleration and gradeability, are of the utmost significance. The models that explain hybridized heavy-duty multi-purpose utility vehicles (HMMWV) vehicles and the simulation results of those models are the primary focus of this article. The advanced vehicle simulator (ADVISOR) software that was developed by the National Renewable Energy Laboratory (NREL) has been utilized in order to model both parallel and series setups. A retrofit strategy as well as a constant power approach have been put through their paces, and the outcomes of these tests are compared to the outcomes of the traditional model evaluation. Additionally, the implications of using engines that are smaller than the ones that are currently used in hybrid heavy-duty multi-purpose utility vehicles (HMMWV) drive trains have been investigated, and the findings have been compared to the data that was gathered from a real implementation of such a vehicle. Additionally, the integrated starter/alternator (ISA) arrangement has been taken into consideration, and the results have been favorable.

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CONGESTION MANAGEMENT IN DEREGULATED POWER SYSTEMS USING INTERLINE POWER FLOW CONTROLLER AND AI-BASED CONTROLLERS TO REDUCE REAL AND REACTIVE POWER LOSSES

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ABSTRACT

When there is deregulation in the electrical market, it might be challenging to dispatch power because of power congestion in transmission lines caused by bus traffic. In order to enhance loadability and stability of severely loaded lines and minimise power flow in buses and system loss, an Interline Power Flow Controller (IPFC) is used. In this study, we use the Disparity Utilisation Factor for Line to the Gravitational Search Algorithm to find the optimal tuning and location of IPFC-based transmission lines in order to alleviate power congestion.. Line congestion is used to rank transmission lines according to relative DLUF. The IPFC places a weak line in the crowded distribution network that is linked to the same bus and has the bare minimum of congestion. The Gravitational Search Algorithm is used to carry out IPFC optimum sizing. The multiobjective function is selected for IPFC parameter tweaking. This work examines a graphical representation that is used to create a planned IEEE-30 bus test system. to lower LUF in transmission lines using the best possible IPFC location. It is essential to minimise both reactive and active power losses in the power system after each cycle of IPFC optimum tuning. The efficient tuning that is suggested in this research to lower the power system values while maintaining the goal functions.

Keywords: Thyristor-controlled series capacitor, adaptive moth swarm optimisation, power loss, line congestion and FACTS.

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ECO-DRIVING STRATEGY FOR FUEL CELL VEHICLES IN CAR

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ABSTRACT

Temperature is a key factor affecting the efficiency, durability, and safety of proton exchange membrane fuel cell (PEMFC) stacks. However, current ecological driving (eco-driving) strategies have scarcely delved into the thermal effects and durability of PEMFC stacks in fuel cell vehicles. Therefore, this paper proposes an integrated eco-driving strategy based on soft actor-critic (SAC) in car-following scenarios, which takes into account both the thermal characteristics and durability of the PEMFC stack. Firstly, a map model of system characteristics with temperature changes is extracted from the fuel cell system (FCS) model to alleviate the training computational burden and ensure the dynamic characteristics of PEMFC. Secondly, to mitigate the risk of overestimating Q-values, a clipped double Q-learning technique is introduced based on the SAC algorithm. Finally, the proposed strategy makes decisions on control quantities for adaptive cruise control (ACC) and energy management strategy (EMS) based on the following state and the power system state of the vehicle, including the temperature and state of health (SOH) of the stack, to achieve the coordinated optimization of vehicle speed trajectory and energy distribution. Offline training and real-time control results show that the proposed strategy exhibits faster convergence speed and better adaptability. Compared to the SAC-based strategy that ignores stack heat and durability, as well as the deep deterministic policy gradient (DDPG)-based strategy that considers stack heat and durability, the proposed strategy achieves better temperature control and reduces hydrogen consumption by 3.53 % and 9.07 %, and SOH degradation by 3.32 % and 19.7 %, respectively. In addition, the proposed strategy achieves the best following performance and nearly optimal comfort in ACC control performance verification.

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NEW TRENDS IN ELECTRIC MOTORS AND SELECTION FOR ELECTRIC VEHICLE PROPULSION SYSTEMS

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ABSTRACT

The increase in the numbers of electric vehicles (eves) is seen as an upgrading of the existing Vehicles for various reasons. This calls for an in-depth analysis of the heart of these vehicles the motor. A motor in an electric vehicle propulsion system is a crucial component that has the Ability to affect the efficiency, weight, cost, reliability, power output and performance. Hence A detailed comparative study, that compares the existing types and topologies of various motors, Is the need of the hour. The various motors that can be used in electric traction, namely DC, Induction, switched reluctance, permanent magnet brushless AC motors and permanent magnet Brushless DC motors, are reviewed in view of their capabilities with respect to EV propulsion. A detailed review is presented of existing motors and the application of power electronic Techniques to eves, and recommendations for some new designs of brushless DC motors. These Include permanent magnet hybrid motors; permanent magnet spoke motors and permanent Magnet inset motors.

Keywords: Electric motors, EV propulsion systems, motor efficiency, permanent magnet motors, axial flux motors, thermal management.

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SYNCHRONIZATION OF THE PHOTOVOLTAIC CONVERTER WITH ON-BOARD HIGH FREQUENCY GRID

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ABSTRACT

Due to the minimization of the dimensions of on-board equipment of ac-powered vehicles or flying platforms, there is a need to increase the voltage frequency. Consequently, renewable energy devices must convert it to the form implied by the nature of the on-board grid. One of the key converters involved in converting photovoltaic energy is the synchronized grid converter. The nature of on-board voltages raises the question of whether the available synchronizer systems will do the job for an elevated frequency grid, which may behave differently from the power grid. The paper presents the system of photovoltaic converter adapted to operation with 400Hz grid frequency. Basic synchronization method and a proprietary synchronization system using fuzzy logic were implemented and tested. An FPGA was used as the control element, which additionally enabled performed tests of specific changes in on-board network parameters. Based on the obtained measurement results, comparative characteristic was drawn up and conclusions were formulated.

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GRID INTEGRATION OF ELECTRIC VEHICLES

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ABSTRACT

In urban areas, Emissions of greenhouse gases from oil-based fuel cars with Internal Combustion Engines (ICEs) are still a challenge. Electric Vehicles (EVs) will ultimately be the most cost-effective method of transportation due to their significant benefits of using versatile fuels, convenience, secure charging, excellent performance, and cost benefits. The location and size of aggregated EVs, on the other hand, could compromise power system reliability. As a consequence, to guarantee power network dependability, efficient charging point planning is vital. On the other hand, potential charging station placements should include city traffic conditions as well as electricity distribution facilities. This study provides a thorough examination of several optimization strategies for the appropriate location and sizing of Electric Vehicles (EVs) in Smart Power Grid Networks (SPGNs) with load models. For EV planning, the optimization strategies are classified into different types: traditional, optimization, artificial intelligence, hybrid, and current optimization strategies. Various network characteristics are taken into account for EV planning with various objective function perspectives, such as minimizing the system's actual and reactive power losses. This comprehensive survey article also includes an overview of current frameworks and strategies for planning, assessing, and categorizing existing and future studies advancing in the field of electric cars. The editors are confident that this review article will be of great assistance to researchers, industry professionals, academics, and scientists looking for relevant references on the best positioning and scalability of electric vehicles in smart power grid infrastructure.

***Keywords*:** Electric vehicles, Battery operated electric vehicles, plug-in electric vehicles, Hybrid electric vehicles, Fuel cell electric vehicles

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Paper ID: ICAEEE-24-053

A NOVEL PID CONTROLLER BASED D-STATCOM FOR ENHANCING POWER QUALITY WITH PR-FB CONTROLLER

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ABSTRACT

This article proposes a PID controller based custom power device for enhancing Power quality (PQ) with PR and comb filter. This research compares with different control strategies for improved the power quality by reducing harmonic content in nonlinear load fed with microgrids. Proposed PID controller tune the DC-link voltage of DSTATCOM for improve the power factor. A comb filter was used to achieve compensation of harmonics in the grid current, which unlike a PR-controller, does not require tuning for seperate harmonic compensation. The results of these forms comb filters, such as feed forward and feedback form, are compared in this study. The D-STATCOM compensates the reactive power and harmonics efficiently. The proposed system is designed in MATLAB/Simulink environments and obtained better results compared to conventional systems.

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Paper ID: ICAEEE-24-054

DETECTION AND NOTIFICATION OF MULTIPLE FAULTS IN TRANSMISSION LINES TO THE POWER AUTHORITY

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ABSTRACT

Transmission lines are crucial components of power systems, yet they incur significant losses compared to other elements due to various operational conditions and their susceptibility to failures. These flaws can be challenging to detect, often necessitating the complete replacement of the cable. To address these issues, extensive research has focused on leveraging advanced technologies to enhance energy supply for consumers. Rapid failure detection is essential, as it enables protective measures to be implemented before extensive damage occurs. Accurate fault location is vital for maintenance teams, as it facilitates the troubleshooting of persistent faults and helps identify areas prone to future failures, ultimately reducing the frequency of faults and minimizing outage durations. the use of an Arduino board to detect faults in transmission lines and relay information to a control center through an Internet of Things (IoT) device. The proposed IoT-based circuit breaker system offers quick responses, operating through an interconnected network via the Internet. The Blynk platform plays a key role by providing real-time monitoring of critical parameters, such as transformer temperature and fire detection events. With the integration of an IoT module, users can access line status, including temperature readings and ON/OFF conditions, through the Blynk app. The implementation of a low-power, cost-effective Node MCU IoT module makes this system feasible, allowing for efficient communication and monitoring. By harnessing the capabilities of IoT technology, this approach aims to improve the reliability and safety of transmission lines, ensuring a more efficient power supply network while reducing maintenance challenges and downtime. Overall, the integration of smart technologies into power systems marks a significant advancement in managing and mitigating transmission line issues.

Keywords: Failure detection, Internet of Things (IoT), Blynk app

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Paper ID: ICAEEE-24-055

IMPLEMENTATION OF ZIGBEE-GSM BASED HOME SECURITY MONITORING AND REMOTE-CONTROL SYSTEM

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ABSTRACT

Home security and control is one of the basic needs of mankind from early days. But today it has to be updated with the rapidly changing technology to ensure vast coverage, remote control, reliability, and real time operation. Deploying wireless technologies for security and control in home automation systems offers attractive benefits along with user friendly interface. In this paper, implementation of a novel security and control system for home automation is presented. The proposed system consists of a control console interfaced with different sensors using ZigBee. Suspected activities are conveyed to remote user through SMS (Short Message Service) or Call using GSM (Global System for Mobile communication) technology. Upon reply, the remote user can control his premises again through GSM-ZigBee combination. Besides, traditional burglar alarm enhances security in case of no acknowledgment from remote user. This system offers a low cost, low power consumption and user-friendly way of a reliable portable monitoring and control of the secured environment. Using the concept of serial communication and mobile phone AT-commands (Attention Telephone/Terminal commands), the software is programmed using C-language. The design has been implemented in the hardware using ZigBee EM357 module, Atmega128 MCU (microcontroller unit) and Sony Ericsson T290i mobile phone set.

Keywords: ZigBee EM357 module, GSM (Global System for Mobile communication) technology,

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SMART TRAIN ENGINE FOR ACCIDENT PREVENTION AND AUTOMATED RAILWAY GATE CONTROL

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ABSTRACT

This system aids the railway department in preventing accidents by automating railway operations. An obstacle sensor monitors the track, detecting objects in close proximity, triggering a buzzer and stopping the train. If a person or vehicle crosses the railway gate, the train halts, and a DC motor opens the gate for safe passage. A fire sensor alerts passengers and activates a motor to spray water on the detected fire. RF transmitters and receivers control train movement, while an ATMEL microcontroller manages system operations, including gate control and fire response.

Keywords: sensor monitors, buzzer, RF transmitters and receivers

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Paper ID: ICAEEE-24-057

REMOTE ONLINE AUTOMATIC SWITCHING OF CONSUMER CONNECTIONS FOR ENHANCED DISTRIBUTION FEEDER PERFORMANCE

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ABSTRACT

Load balancing across phases often relies on a conventional trial-and-error method, leading to unavoidable service interruptions and infrequent rearrangement of consumer load distribution. Although this approach may temporarily address phase voltage and current imbalances, the improvements are short-lived. To optimize secondary distribution performance, a remote and automated technology is essential. This paper introduces a static transfer switching technology for the low voltage side of the distribution network. Utilizing an open-transition switch, this technology enables rapid transfer of consumer loads in a three-phase system within milliseconds, supported by a supervisory control system for efficient coordination and management of intelligent units.

Keywords: Load balancing, voltage and current imbalances

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Paper ID: ICAEEE-24-058

INTEGRATION OF SMART TRANSFORMERS WITH PLC AND SCADA SYSTEMS

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ABSTRACT

The integration of smart transformers with PLC (Programmable Logic Controllers) and SCADA (Supervisory Control and Data Acquisition) systems marks a significant advancement in modern power distribution and management. This synergy enhances the performance, reliability, and monitoring capabilities of electrical grids. Smart transformers, equipped with advanced sensors and communication technologies, deliver real-time data on critical parameters such as voltage, current, and temperature. By connecting these transformers to PLC and SCADA systems, operators can remotely oversee and control their operation, detect faults, and apply predictive maintenance techniques. This integration not only improves energy management and reduces downtime but also boosts the overall stability and resilience of the power grid. Furthermore, it facilitates the integration of renewable energy sources by optimizing their operation, ensuring efficient load balancing and distribution across the grid.

Key words: Smart Transformers (Programmable Logic Controller),SCADA (Supervisory Control and Data Acquisition),Smart Grid, Automation Systems

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Paper ID: ICAEEE-24-059

A NOVEL ANFIS CONTROLLER BASED V-G ENABLED IN BIDIRECTIONAL EV CHARGER FOR REACTIVE POWER COMPENSATION

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ABSTRACT

This article presents an advanced ANFIS controller for reactive power compensation in bidirectional EV charger. In the front end, an AC-DC spiraled H-bridge transformer regulates power flow between both the grid as well as the EV battery, whereas a back-end DC-DC transformer controls this same power flow. The charger setup offers galvanic isolation from the rest of the system at the user's end as a safety precaution. The suggested ANFIS management algorithm follows active power instructions for G2V and V2G operation, as well as reactive power orders from the utility grid, as required, by controlling EV current and battery current. In addition, an adaptive notch filter-based controller is built for phase estimation and produced reference current synchronization. The suggested control approach eliminates the phase-locked loop (PLL) from the controller design. Because the controller's steady-state and transient performance increases, its computing complexity reduces.

Keywords: Reactive power compensation, EV charger, Grid to vehicle and vehicle to grid, ANFIS controller, Phase locked loop

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AUTO SELECTION OF ANY AVAILABLE PHASE IN 3 PHASE SUPPLY SYSTEM

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ABSTRACT

This project is designed with an aim to provide uninterrupted AC mains supply that is 230 volts to a single-phase load. This is achieved by automatic changeover of the load from the missing phase to the next available phase in a 3-phase system. It is often noticed that power interruption in the distribution system is about 70% for single phase faults while the two other phases are in normal condition. Thus, in any commercial or domestic power providing system wherever three phases are offered, it's wise to possess automatic shift system for uninterrupted power to essential loads in the event of missing phase. In this three-phase supply system, the auto selection is achieved by using a set of relays interconnected in such a way that if one of the relays feeding to the load remains energized always. Under the phase failure condition, the corresponding step-down transformer is turned on using a transistor assembly. Here, we are having three phases namely the R phase, Y phase, and B phase. To control the switching of the phase, there are three switches. Led which is placed on left is used to indicate which phase is on or off, the led and relays placed on the right indicates, which supply is providing power to the load.

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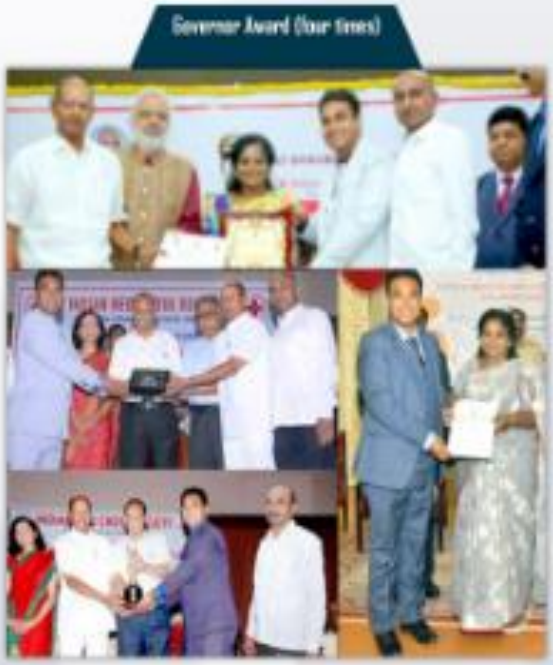
ABOUT CONFERENCE

The International Conference on Advances in Electrical and Electronics Engineering (ICAEEE), for its enormous impact on the next generation and advanced technology focused on research and deployment venture which paved way for inter-disciplinary research in electrical, electronics, computer, instrumentation, automation, and communication engineering. ICAEEE aims to bring together researchers, scientists, engineers, and scholar students to exchange and share their experiences, new ideas, and research results about all aspects and discuss the practical challenges encountered and the solutions adopted. Expert talks are planned for exchange of ideas and sharing expertise. The conference serves to be better platform to enrich research activities.



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