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on 24th & 25th February 2023

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International Conference on "Advances in Electrical and Electronics Engineering"

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Department of Electrical and Electronics Engineering

Second "International Conference on Advances in Electrical and Electronics Engineering" during 24th & 25th February 2023 (ICAEEE – 2023)

ISBN: 978-93-91420-24-6

Patron, Program Chair
&
Editor in Chief

Dr. P. SANTOSH KUMAR PATRA
Principal & Group Director, SMEC

Editors

Dr. N. Ramchandra
HOD, Dept. of EEE, SMEC

St. MARTIN'S ENGINEERING COLLEGE

Dhulapally, Secunderabad - 500100

NIRF ranked, NAAC A+ ACCREDITED

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 Second **"International Conference on Advances in Electrical and Electronics Engineering"** during 24th and 25th of February 2023. I understand that the large number of researchers have submitted their research papers for presentation in theconference 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 benefitted 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

St. MARTIN'S ENGINEERING COLLEGE

Dhulapally, Secunderabad - 500100

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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 Second **"International Conference on Advances in Electrical and Electronics Engineering"** during 24th and 25th of February 2023. 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

St. MARTIN'S ENGINEERING COLLEGE

Dhulapally, Secunderabad - 500100

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Dr. P. SANTOSH KUMAR PATRA
Principal and Group Director

I am delighted to be the Patron & Program Chair for the Second **"International Conference on Advances in Electrical and Electronics Engineering"** organized by the Department of EEE on 24th and 25th of February 2023. 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)
Principal & Group Director

St. MARTIN'S ENGINEERING COLLEGE

Dhulapally, Secunderabad - 500100

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

MESSAGE

It gives me an immense pleasure to know that St. Martin's Engineering College, Department of Electrical & Electronics Engineering is organizing II International Conference on Advances in Electrical and Electronics Engineering ICAEEE-2023. 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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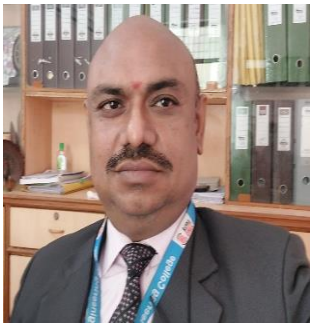
Dr. SANJAY KUMAR SUMAN
DEAN R & D



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 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 Convenor for making the conference a grand success.

Best Wishes

Dr. Sanjay Kumar Suman

Dean R&D

St. MARTIN'S ENGINEERING COLLEGE

Dhulapally, Secunderabad - 500100

NIRF ranked, NAAC A+ ACCREDITED

DR. D V SREEKANTH
PROFESSOR & DEAN ADMINISTRATION

MESSAGE

The II International Conference on Advances in Electrical and Electronics Engineering ICAEEE-2023 has concluded its work successfully on 24th & 25th Feb, 2023 in St. Martin's Engineering College (SMEC), Hyderabad, India. The ICAEEE-2023 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-2023 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

Head of the Department
Department of Mechanical Engineering
St. Martin's Engineering College

Dr. D V Sreekanth

Dean Administration

St. MARTIN'S ENGINEERING COLLEGE
Dhulapally, Secunderabad – 500100
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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-2023
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Department of Electrical & Electronics Engineering
St. Martin's Engineering College
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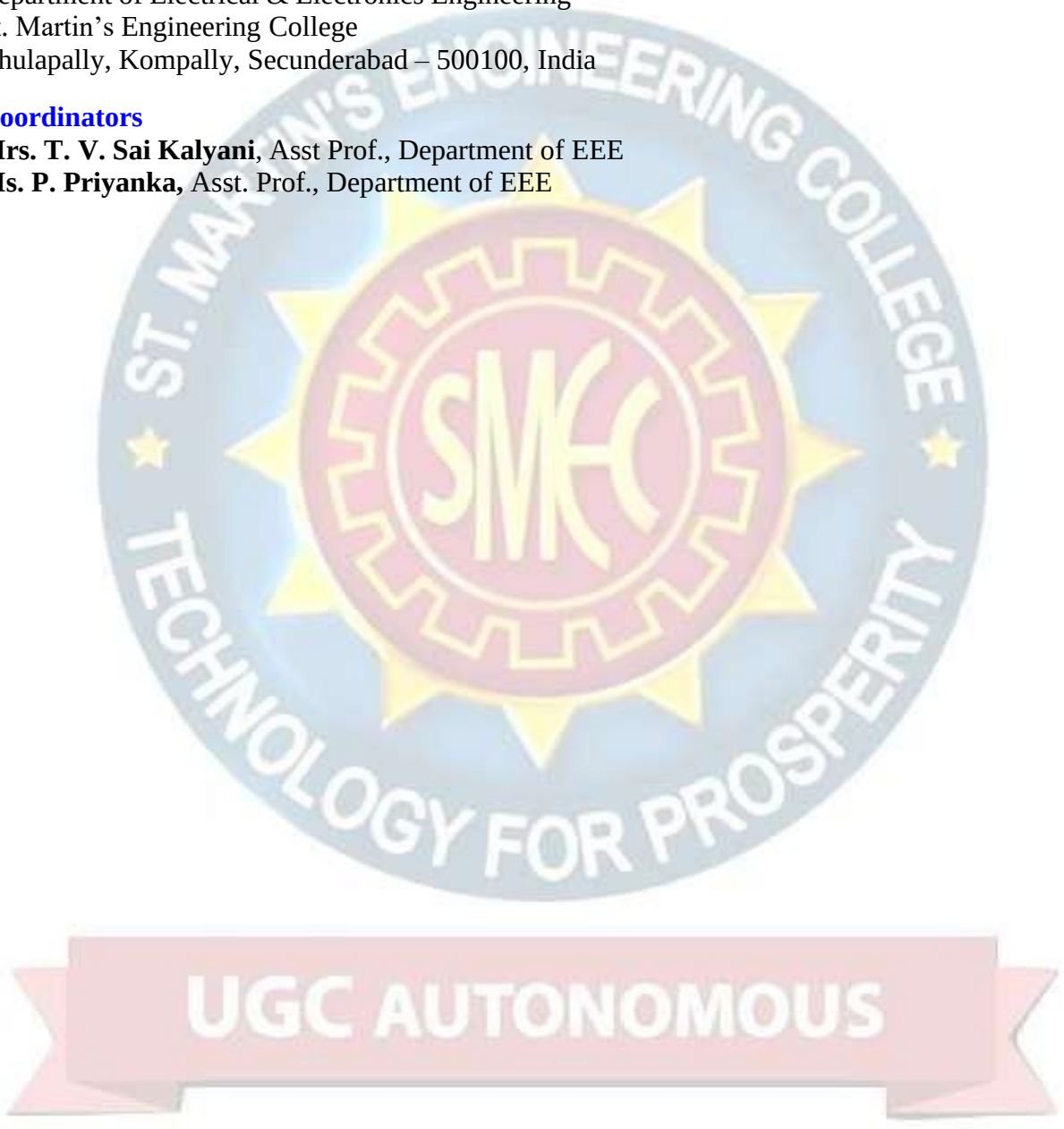

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Paper ID: ICAEEE-23-001

Multi Functional Electric Bicycle

*Ms. P. Madhavi[1], Salava V Satyanarayana[2], E ChakraHarish[3], L. Sindhusri[4], P. Sai Kiran[5], B. Sangamesh[6]

[1,2] Assistant Professor, EEE Department, [3,4,5,6] UG Scholar, Department of EEE,
Hyderabad Institute of Technology and Managmenet, Hyderabad, Telangana, India

* Corresponding Author
E-mail: madhavipillalamarry@gmail.com

ABSTRACT

In today's world transportation has become an essential part to travel from one place to another place. We prefer different types of vehicles based on the distance we have to travel. One such vehicle cycle is for short distances to travel and is eco-friendly to nature. To ride cycling effort must be applied by the rider on the pedals to make the cycle move. While riding the cycle in hilly areas extra effort must be applied by the rider while pedaling and it is also difficult to ride the bicycle on steep surfaces. So, the aim of our project is for the smooth movement of bicycles on steep surfaces and easy riding in hilly areas with less human effort. The cycle is integrated with a BLDC motor and rechargeable battery like a Lithium-ion battery. The human can ride the bicycle by pedaling and when he feels tired of pedaling, he can ride the bicycle by accelerating like E-bike without applying any effort to the pedals. Hence this project can also help to attract people's attention towards electric vehicles and reduce the usage of fuel vehicles.

Keywords: Electric Vehicle, BLDC Motor, Rechargeable Battery.

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Paper ID: ICAEEE-23-002

Irrigation via Drip Automation Utilising Solar Energy

*Mrs. V. SumaDeepthi[1], Dr. N. Ramchandra[2]

[1] Assistant Professor, Department of EEE, G.Narayanamma Institute of Technology and Science, Hyderabad.
[2] Professor and HOD, EEE Department,
St. Martin's Engineering College Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: sumadeepthi.veeraganti@gmail.com

ABSTRACT

The study recommends employing a solar-powered, Arduino-based, float switch-based, soil moisture sensor-based autonomous watering system. As soon as the automatic irrigation system determines the level of soil moisture, the solenoid valve is immediately switched. The top water level is continuously monitored by a float switch detector. All of the system's required power is generated by solar panels. It also automatically controls the water level in the water tank. In every weather, this method is effective. This project proposes an autonomous irrigation system that is composed of an Arduino board, a soil moisture sensor, a float switch, and a solar panel. Solar panels provide the necessary energy for the complete system, while the autonomous watering system detects the soil moisture content and switches solenoid valves automatically. The above-water level is additionally monitored by a float switch sensor. It also automatically controls the water level in the water tank. Every time a valve opens or closes, the Global System for Mobile Communications (GSM) module sends a message. The programme employs renewable energy, consumes as little manpower, space, and money as possible while retaining user friendliness. It also gives total support for farmers.

Keywords: Solar panel, Automated drip Irrigation system, Arduino board, Soil moisture sensors

Paper ID: ICAEEE-23-003

Transformer Winding Connected for a Grid Connected PV Panel

Ch. Bhargav Raj[1], *P. Shreya[2], Akanksha Soni[3], Y. Vyshnavi[4]

[1,2,3,4] UG Scholar, Department of EEE
St. Martin's Engineering College , Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: shreyapoojala17@gmail.com

ABSTRACT

In this paper, a high-power PV power plant is connected to the weak grid by means of a three-phase power transformer. The selection of transformer winding connection is critical especially when the PV inverter has a reactive power controller. In general, transformer winding connection can be arranged in star-star (with neutrals grounded) or star-delta. The reactive power controller supports voltage regulation of the power system particularly under transient faults. Its control strategy is based on utilizing the grid currents to produce a three-phase unbalanced reactive current with a small gain. The gain is determined by the system impedance. Simulation results exhibit that the control strategy works very well particularly under disturbance conditions when the transformer winding connection is star-star with both neutrals grounded. The power quality in terms of the voltage quality is improved.

Keywords:- Transformer, Grid, PV Panel, Power quality

Paper ID: ICAEEE-23-004

Development of a Bi-Directional DC/DC Converter with Dual-Battery Energy Storage for Hybrid Electric Vehicle System

A. *Manideep[1], SK. Salman[2], Md. Ghani[3], K. Sai Kumar[4]

[1.2, 3, 4,] U.G. Scholar, Department of EEE,
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: amanideep@gmail.com

ABSTRACT

A vehicle key is the only way to start the car or to provide ignition to the engine. The face recognition-based car starter system literally replaces the car ignition by replacing the key with specific user face. This smart vehicle system is powered by Arduino circuit. Here, the face detection system takes multiple photos of the person and stores this data into its APP. While scanning, when the face is detected by the camera the system compares the given face with the images in the database and authorizes the person, if the person is already registered then it starts the vehicle or else identifies the person as Invalid user and the buzzer goes off and access is denied and the motor doesn't start. In order to stop the vehicle, the owner has to press the back switch.

Keywords:- DC-DC Converter, Battery, Energy Storage, Vehicle

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Paper ID: ICAEEE-23-005

Speed Control of DC Motor by Smart Voice Recognition

E. Akshay Reddy[1], *A.Bhargavi Rani[2], M. Srinivas Reddy[3], D. Nithish Reddy[4]

[1,2,3,4] U.G. Scholar,Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100,Telangana, India

* Corresponding Author
E-mail: bhargavirani@gmail.com

ABSTRACT

This project presents the research work done in the field of automotive safety. As head light are the major important in night drives but up and highs of light as per requirement, intensity of head light as per sun light has to be taken car which is not available in automotive In this work prototype of headlight system is made by using Arduino, sensors, LEDs and other accessories. A prototype of multi featured headlight system consist turning headlight on, off and provides facility of automatic switching of headlight from low beam to high intensity beam in poor weather conditions. Also this model eliminates the requirement of manual switch by the driver as switching takes place automatically. This model brought three different features of headlight system together. These features are automatic starting of headlight in night conditions, automatic light intensity adjustment with respect to opposite light beam and automatic switch ON during the moist weather conditions. This concept is very useful in the automobile field applications, which provides safety of driver during driving.

Keywords:- Speed Control, Motor, Voice, LED, LED.

Paper ID: ICAEEE-23-006

Commercial Power Saver

*M. Vikas[1], B. Sai Kumar[2], D. Nikitha[3], D. Vikas[4]

[1.2, 3, 4,] U.G. Scholar, Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: mvikas@gmail.com

ABSTRACT

The power factor is also known as the ratio of real power to apparent power. It is also represented as KW/KVA, in the equation KW stands for the active or real power where as KCA stands for reactive + active or apparent Power. The power generated by inductive as well as magnetic loads in order to create a magnetic flux is known as reactive power which is a non working power. An increase in the reactive power increases the apparent power, thus decreasing the power factor. With low power factor there is an increase in the need of energy to meet industry demands, this decreases the efficiency.

Our system works by feeding the time lag between zero voltage pulse and zero current pulse produced by suitable operation amplifier circuit working in comparator mode to 2 microcontroller pins. The time lag between voltage and current is displayed on a LCD screen.

The project program controls the working and actuates required number of relays from the output that will get shunt capacitors into load circuit in order to get power factor until it reaches unity. An Arduino microcontroller fulfils this process.

Keywords:- Commercial, Power, Amplifier, Comparator

ISBN : 978 -93-91420-24-6

Paper ID: ICAEEE-23-007

Gsm Based Three Phase Power Fault Monitoring System with SMS Alert

*M. Mahesh[1], M. Vignesh[2], M. Nikhil[3],G. SuryaKiran[4]

[1,2,3,4] U.G. Scholar,Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: mmahesh@gmail.com

ABSTRACT

When one phase of a three-phase system gets lost, a phase loss occurs. This is referred as a 'single phasing', this failure generally caused by a blown fuse, thermal overload, broken wire, worn contact or mechanical failure. This is an advanced system that monitors power failure. When any one of the faults detects failure it notifies the concerned authority with the help of message. Whenever the phases are been disconnected the system shows the power failure on LCD indicating and then it raises a buzzer. Then it sends message on the authorized person for informing the disconnected fault. In this way, the authority gets instantly notified and they may take appropriate action to solve the problem.

Keywords:- GSM, Power, Power, Fault Monitoring,GSM

Paper ID: ICAEEE-23-008

Transformer Overload Alert System with Voice Announcement

*K. Sandeep[1], K. Aparna[2], N. Nagaraj[3],E. Rakesh[4]

[1,2,3,4] U.G. Scholar,Department of EEE,
LNCT University Bhopal,Madhya Pradesh, India

* Corresponding Author
E-mail: ksandeep@gmail.com

ABSTRACT

Transformers are the important equipment's in the power system. Therefore, the continuity of its operation is very necessary. So better protection scheme should develop for transformers. Differential protection technique can be employed to protect the Transformers. In this project, we have used differential relay mechanism with voice announcement circuit. The voice circuit is synchronized with Arduino microcontroller. When the load is more then automatically voice alerts comes out through voice module and trip through relay Arduino Microcontroller is very high speed and cost-effective device with fine accuracy. By programming in the Arduino, the protection of transformers can be done. Programming is quite efficient and easy than 8051 microprocessor used in differential relay mechanism, so it is better to use Arduino place of 8051 microcontroller.

Keywords:- Transformer, Over load, voice, Alert system

Paper ID: ICAEEE-23-009

Industrial Power Control by Integral Cycle Switching without Generating Harmonics

*K. Abhinav[1], A. Tejith Reddy[2],Ch. Kumar Teja[3], P. Vinod[4]

[1,2,3,4]U.G. Scholar,Department of EEE,
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: kabhniav@gmail.com

ABSTRACT

The proposed project aims at getting integral cycle switching for controlling AC power in linear loads like heaters used in electric furnace. Integral cycle switching is basically removing whole cycle or portions of cycles from an AC signal. This is achieved by using microcontroller of 8051 family programmed in assembly/C language such that whenever the signal is applied on he load, the actual time-average voltage at the load should be proportionately lower than the whole signal.A comparator is used for zero crossing detection, fed to microcontroller as an interrupt. Microcontroller thus produces output as per interrupt received and generates triggering pulses. Thus, integral cycle is achieved as per the input switches interfaced to microcontroller. A lamp is used instead of motor to verify the output.

Keywords:- Power,Switching, Harmonics, Microcontroller

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Paper ID: ICAEEE-23-010

Electronic Code Lock using Matrix Keypad

*A.Durga Prasad[1], G. Anand[2], G. Shravan Kumar[3], G. Pavan Kumar[4]

[1,2,3,4]U.G. Scholar,Department of EEE,
St. Martin's Engineering College Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: adurgaprasad@gmail.com

ABSTRACT

Security is a major concern in our day-to-day life, and **digital locks** have become an important part of these security systems. There are many types technologies available to secure our place, like PIR Based security systems, RFID based Security system, Laser security alarms, bio-matrix systems etc. Even now, there are Digital locks which can be operated using our smart phones, means no more need to keep different keys, just one smart phone can operate all the locks, this concept is based on Internet of Things. In this project, we have explained a simple **Electronic code lock using Microcontroller**, which can only be unlocked by a predefined code, if we enter the wrong code, the system alerts by siren the buzzer. This system mainly contains **Arduino** microcontroller, keypad module, buzzer and LCD. At89s52 microcontroller controls the complete processes like taking password form keypad module, comparing passwords predefined password, driving buzzer and send status to LCD display. Keypad is used for inserting password into the microcontroller. Buzzer is used for indication of wrong password and LCD is used for displaying status or messages on it. Buzzer has inbuilt driver by using a NPN transistor.

Keywords:- Electronic, Matrix, Key Pad, Micro Controller

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Paper ID: ICAEEE-23-011

Underground Cable Fault Detection Ardinuo Uno Microcontroller

*N. Sahil[1], T. Yashasri[2], T. Venkata Sai Rakesh[3], E. Charan Tej[4]

[1,2,3,4]U.G. Scholar,Department of EEE,
St. Martin's Engineering College, Secunderaad, - 500100, Telangana, India

* Corresponding Author
E-mail: nsahil@gmail.com

ABSTRACT

In urban areas, electrical cables run underground instead of running over, because it does not affected by any adverse effect of weather such as heavy rainfall, snow, thunder storm. Whenever a fault occurs within the underground cable, it is difficult to detect the exact location of the fault for the repair process of particular cable. The proposed system found the point of the exact location of fault. The paper uses the standard concept of Ohm's law i.e. when a low dc voltage is applied at the end of feeder through series resister (cable lines) then the current will vary depending on the location of the fault. Short in the cable. This system uses an Arduino microcontroller and a rectified power supply. In this case, the current detection circuit in combination with the resister is connected to the microcontroller with the aid of an ADC device to represent the length of wire in Km. Error creation is performed by a set of switches. The relays are controlled by a relay exciter IC, which is used to check cable line. A 16x2 LCD is used to display information. Also one more feature is that using fault detection, location of fault and distance of fault from base station in kilometers this all information is send to base station of LCD. As soon as a fault occurs in a cable the buzzer produce the alarm to alert and to take an immediate action by field workers.

Keywords:- Underground, Cable, Fault, Buzzer

Paper ID: ICAEEE-23-012

Ultrasonic Sensors Based Autonomous Vehicle with GPS Tracking

[*]K. Ruchitha[1], G. Greeshama[2], D. Snehasri[3], M. Sai Kumar[4]
[1,2,3,4]U.G. Scholar,Department of EEE,
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: kruchitha@gmail.com

ABSTRACT

Autonomous vehicles are considered as one of the most trending topics all over the world. An autonomous vehicle is able to recognize their surrounding and finding the path there itself. Autonomous vehicle senses their surrounding with the help of different sensors such as Lidar, radar, ultrasonic sensor, infrared sensor etc. The control system used in autonomous vehicle read the information from the surrounding and finds the appropriate path as well as the various obstacles on the path. Accidents are common in vehicles and it is considered to be a great challenge. Hence it is important to provide safety for vehicles. Accidents are caused by obstacles on traveling path. Obstacle detection is challenging and it is essential for an autonomous vehicle in order to make the vehicle to travel in the safer path. Sensors are used to detect the obstacles which are quite accurate. The system, proposed a driverless vehicle that has an onboard GPS module which is capable of driving the vehicle from one point to another without human operator. This system makes use of an Embedded System based GPS technologies. In this work ultrasonic sensor is used for obstacle detection and it is integrated with Arduino Uno to detect the obstacles. The mechanism of ultrasonic sensor is to transmit the ultrasonic wave in the space to search for targets. Targets are reflecting back to the transducer. These echoes or incident pulses are processed by the receiver to obtain target information such as distance between the obstacle and sensor, velocity and size. In this proposed approach, to improve safety for an autonomous-vehicle by use of ultrasonic sensor for monitoring/sensing the obstacles. This system is robust and economic.

Keywords:- Ultrasonic, Sensors,Autonomous, Vehicle

Smart Innovation through Traffic Control System

Akshitha Simran[1], G. Nandini[2], K. Lasya[3], *K. Mallikarjuna Reddy[4]

[1,2,3,4] U.G. Scholar, Department of EEE,
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: kmallikarjunareddy@gmail.com

ABSTRACT

Traffic management is the focus area for most urban dwellers and planners. Congestion is the most important major obstacle that has been seen in many countries including India. Countries To avoid this obstacle means how to manage the traffic smoothly. Traffic congestion mainly focuses on signal failure, reduced law enforcement, and improper traffic management. The existing foundations can't be extended increasingly and subsequently, the main choice accessible is to enhance the administration of the traffic. Traffic congestion is not a good sign for our country as well as it creates a negative impact starting from the economy to the leaving standard. Consequently, the opportunity has already come and gone to deal with the traffic congestion. Many methods are designed to manage traffic and minimize congestion. Out of all the techniques, infrared sensor, inductive loop detection, video data analysis, wireless sensor network, etc. are used to somewhat solve the congestion in the traffic and to manage the traffic smartly. But in the above said methods have some demerits like much time to take for installation, maintenance cost is very high. Actually, our objective is to develop a new technology or method; that will solve the above problems and produce better result within a stipulated time. To overcome the challenges, a new method arises called as Radio Frequency Identification (RFID). By this innovation, it will require less time for establishment with lesser expenses when contrasted with different strategies for traffic blockage administration. Utilization of this new innovation will prompt lessened traffic jam.

Keywords:- Smart, Traffic, Control, Management

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Analysis of Electric Vehicle of Wireless ChargingSystem

Koushik Velmala[1], *Lokesh K[2], N. Nandavardhan[3], V. guru Venkat Sai[4]

[1,2,3,4] U.G. Scholar,Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: klokesh@gmail.com

ABSTRACT

This project presents a system to improve the security of houses and properties that uses LPG gas. Given its flammability, an alarm system is strongly advised. To solve this issue, we house owner in a matter of seconds, at the beginning of a gas leak. Our system deals with limitations on Internet connectivity, using a clever solution to this problem. The number of deaths due to gas cylinder explosions has been increasing day by day. The reasons for such explosions are worn-out regulators, old valves and lack of awareness in handling gas cylinders. So to preventing such type of accidents we are going to develop an Arduino based LPG gas leakage detection and alert system. If gas leakage occurs, the system will detects it and makes an alert by buzzing the buzzer attached with circuit. This system will also contain GSM module which can be used to send the alert message to the user. GSM is a mobile communication modem and it is widely used mobile communication system in the world so with the help of GSM module or Nodemcu we can also control the home appliances with the help of Arduino microcontroller. Leakage of gas is a major issue in the industrial sector, residential buildings, and gas-powered vehicles, one of the preventive methods to stop accidents associated with gas leakage is to install gas leakage detection devices. The focus of this work is to propose a device that can detect gas leakage and alert the owners to avert problems due to gas leakages. The system is based on a microcontroller that employs a gas sensor as well as a GSM module, an LCD display, and a buzzer. The system was designed for gas leakage monitoring and alerts with SMS via an Arduino microcontroller with a buzzer and an MQ2 gas sensor.

Keywords:- DC-DC Converter, Battery, Energy Storage, Vehicle

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Paper ID: ICAEEE-23-015

Multifeatured Headlight with Eccentricity System

Sri Divya[1], *Varsha[2], Tejaswini[3], ShivaNaik[4]

[1,2,3,4] U.G. Scholar, Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: varsha@gmail.com

ABSTRACT

This project presents the research work done in the field of automotive safety. As head light are the major important in night drives but up and highs of light as per requirement, intensity of head light as per sun light has to be taken car which is not available in automotive In this work prototype of headlight system is made by using Arduino, sensors, LEDs and other accessories. A prototype of multi featured headlight system consist turning headlight on, off and provides facility of automatic switching of headlight from low beam to high intensity beam in poor weather conditions. Also this model eliminates the requirement of manual switch by the driver as switching takes place automatically. This model brought three different features of headlight system together. These features are automatic starting of headlight in night conditions, automatic light intensity adjustment with respect to opposite light beam and automatic switch ON during the moist weather conditions. This concept is very useful in the automobile field applications, which provides safety of driver during driving.

Keywords:- Headlight, Eccentric, Sensors, LED

Paper ID: ICAEEE-23-016

Testing Life Cycle of Electrical Loads Using Down Counter

*Neerudi Sandeep[1], G. Mahesh[2], B. Pavan Kalyan[3], Shaik Mubin[4]

[1,2,3,4] U.G. Scholar,Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: neerudisandeep@gmail.com

ABSTRACT

The system is a down counter arrangement using a micro controller of Arduino family that is used to test the life of electrical products. In industries having products like lights/bulbs/motor etc, it is important to test the lifecycle of the product. This life cycle is tested as the number of times it is switches ON/OFF and still works. Our project activates a relay switch that is used to switch the load On and OFF for desired number of times. Our system uses a microcontroller of the 8051-family having a keypad interfaced to it. It also has a 7-segment display to display the count. On running the system, the user can enter the number of times (0 – 999) he wishes to run the The system is a down counter arrangement using a micro controller of Arduino system cycle. Based on this, the system starts the cycle switching the load and a till the counter reached 0. The counter is a down counter that counts downwards from user entered number. On reaching zero the switching cycle is turned off. The system can be enhanced by adding a load output measuring system that lets user know when load collapses, so that system can directly provide the load life.

Keywords:- Life cycle, Electrical, Load, Counter

Paper ID: ICAEEE-23-017

Remote Monitoring of Transformer Health over the Internet

*M. Sai Pradeep[1], P. Vignesh[2], V. Kalyan Kumar[3], Sai Vamshi[4]

[1,2,3,4] U.G. Scholar,Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: msaipradeep@gmail.com

ABSTRACT

Transformers are widely used for power transmission and the monitoring of various parameters from transformer plays a crucial role in industries by using a particular system for continuous monitoring of transformer health can be done by internet of things. In this system there will be a temperature sensor and oil level sensor are incorporated inside the transformer to continuously monitor the parameters and check the health of the transformer through internet. Temperature sensor and humidity sensor are connected to Arduino microcontroller. As the Arduino connects to wifi module which is (ESP826601) to actively transfer the data in bidirectional way of communication with the faster bit rate. This allows programming of the Wi-Fi module chip's onboard processor to run the application itself without the need for an Arduino. The module comes pre-flashed with the wifi module (ESP826601) AT command set firmware. So as the wifi module is connected to the Internet server and the corresponding data is displayed on to the monitoring device. So, by this way a continuous monitoring of data can be monitored and as if the temperature of the transformer rises above a particular threshold, then the buzzer activated and also as if the level of the oil is getting drained then also a proper signal will be initiated, and proper action will be taken. So here by a real time monitoring of the transformer can be done with this system

IOT based monitoring of distribution transformer is more useful than manual operating system. If we consider manual operating system there are many disadvantages compared to IoT based monitoring system.

Keywords:- Remote, Transformer, Internet, Micro Controller

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Paper ID: ICAEEE-23-018

Smart Crop Protection from Animals using PIC

*V. Saraswathi[1], Sriram Biradar[2], V. Karthik Reddy[3]

[1,2,3] U.G. Scholar, Department of EEE

St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: vsaraswathi@gmail.com

ABSTRACT

Even today we can see people who consider agriculture as their main source of income and there are a lot of issues faced by the farmers during growing the crop and getting down the yield. Crops in farm lands are many times ravaged by local animals like buffaloes, cows, goats etc. This causes huge losses for the farmers. It is not possible for farmers to barricade entire fields or stay on field 24 hours and guard it. As crops are the only source of income to the farmers it is very important to safeguard them to get a good yield. So here we propose smart crop protection system from animals. This is a microcontroller-based system using ARDUINO microcontroller. This system uses a motion sensor to detect animals approaching near the field. In such a case the sensor signals the microcontroller to take action. The microcontroller now sounds an alarm to keep the animals away from the field and a sensor is places at a distance to detect if the animal enters the fields if frightened by the buzzer, then that sensor sends SMS to the farmer so that he may know about the issue and come to the spot in case the animals don't turn away by the alarm. We have used sensor technology to detect the moment and a communication system is setup using GSM that would alert the farmer as soon as the animal enters the field. With our project the crops can be protected from the damage and the farmers can earn for their hard work, they have put into the crop. It is a harmless system and protects the field. This system will be very useful as it gives the farmer the alert whenever there is something entering into his farm and destroying it.

Keywords:- Smart Crop, Protection, Arduino, GSM

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Paper ID: ICAEEE-23-019

Energy Saving System for Classroom Based on Campus Card

B. Anusha[1], *K. Shravya[2], K. Archana[3], Md. Imathiyaz Ali[4]

[1,2,3,4]U.G. Scholar,Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: kshravya@gmail.com

ABSTRACT

The proposed project aims at getting integral cycle switching for controlling AC power in linear loads like heaters used in electric furnace. Integral cycle switching is basically removing whole cycle or portions of cycles from an AC signal. This is achieved by using microcontroller of 8051 family programmed in assembly/C language such that whenever the signal is applied on the load, the actual time-average voltage at the load should be proportionately lower than the whole signal. A comparator is used for zero crossing detection, fed to microcontroller as an interrupt. Microcontroller thus produces output as per interrupt received and generates triggering pulses. Thus, integral cycle is achieved as per the input switches interfaced to microcontroller. A lamp is used instead of motor to verify the output.

Keywords:- Energy, Saving, System, Campus

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Paper ID: ICAEEE-23-020

Power Efficinet Mini Inverter

*B. Sunil Kumar[1], M. Jagadheesh[2]

[1,2]U.G. Scholar,Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: bsunilkumar@gmail.com

ABSTRACT

Project is one of the thing which obligatory be taken by each final year Student whose had taken diploma in E.C. Engineering to fulfill condition to be Bestowed diploma. For this section, we will be exposed to our research; on What kind of method have been used by us in order to get information and the Data for our project that is Inverter single phase. Some theoretical Background about inverter single phase is basically on how the it our self Operates and how it could possibly be done. The main components that we Have implemented in the construction of inverter single phase will also be Provided. This project is can use for the small places, camping area and Other a place is same thing it. So, that why we develop this project. By do this Project also we can learn many more about a new thing. This report focuses on DC to AC power inverter, which aim to Efficiently transform a DC power source to a high voltage AC source similar To power that would be available at an electrical wall outlet. Inverters are used For many applications, as in situations where low voltage DC sources such as Batteries, solar panels or fuel cells must be converted so that devices can run Off of AC power.

Keywords:-Power, Inverter

Paper ID: ICAEEE-23-021

Time Based Fish Feeder Mechanism using RTC

*N. Swapna[1], R. Dinesh[2], M. Gokul[3], J. Snehalatha[4]

[1,2,3,4]U.G.Scholar,Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: nswapna@gmail.com

ABSTRACT

The fish feeder system is now a days a necessity to keep alive the fish in the aquarium when the people are going out of station for a long time. In this review the area cover buy different researcher in the field of fish feeder system is being discussed. There has been an increase in the inland farming of catfish in Nigeria to meet with its demand. However, the farmers may situate their farm far away from their places of residences. In other to optimize the feeding of the fish even when the farmer is not available, the automatic fish feeder wad designed and implemented. They consist of timing circuitry to keep track of time and a trigger or switch to activate the dispensing mechanism which usually employs a motor. The amount of food dispensed is controlled by the to-and-fro movement of the motor depending on the time of release of food and closure. Automatic fish feeders relieve the fish owner of the routine task of fish feeding, and often come in handy when the fish owner is busy or out of town. All the owner needs to do is ensure there is enough feed in the tank. Automatic fish feeders are electronic devices capable of dispensing fish food at preset intervals. They consist of timing circuitry to keep track of time and a trigger or switch to activate the dispensing mechanism which usually employs a motor The amount of food dispensed is controlled by the to-and-fro movement of the motor depending on the time of release of food and closure. Automatic fish feeders relieve the fish owner of the routine task of fish feeding, and often come in handy when the fish owner is busy or out of town. This study centers on the design and construction of an automatic fish feeder from readily available materials.

Keywords:-Fish, Feeder, Mechanism, RTC

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Power Quality Improvemnet of Large Power System Using a Conventional Method

*Dr. N. Ramchandra[1], V. SumaDeepthi[2]

[1]Professor and HOD, Department of EEE,
St. Martin's Engineering College Secunderabad, - 500100, Telangana, India
[2] Assistant Professor, Department of EEE
G. Narayanamma Institute of Technology and Sciences, Hyderabad, Telangana, India.

* Corresponding Author
E-mail: hodeee@smec.ac.in

ABSTRACT

Operation of a large power system with maintaining proper power quality is always been a difficult task. It becomes more difficult to maintain the power quality when rapid expansion of previously designed power system occurred. To redesign of such a power system is not feasible and also cost effective. To improve the quality of power of such a large system, conventional methods of compensation can be used. In this paper a power system of 419 buses is analyzed. It is found that 76 buses have under voltage problem. Conventional shunt compensation method is used by connecting capacitor in parallel to the bus. After compensation the system is simulated again and found that the under voltage problem of this large power system is removed. Power factor of the system is also improved.

Keywords : Shunt Compensation, Power Quality, Under Voltage, Power Factor, Power Flow, PSAF

Paper ID: ICAEEE-23-023

Review on Harmonics and its Eliminating Strategies in Power Systems

*K. V. Govardhan Rao[1], T. V. Sai Kalyani[2]

[1,2] Assistant Professor, Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: govardhaneee@smec.ac.in

ABSTRACT

Non-linear loads are the major source of harmonics in the power system. These loads impose varying reactive-power demands that have to be compensated in order to improve the power factor and efficiently deliver the active power to the loads. This results in harmonic distortion-related problems, reducing the quality of electrical power and the performance of the power system. In this paper, the nature of harmonics that exists in the operation of various equipment, devices and components, the effects of harmonics and methods to eliminate the harmonics of power systems have been discussed briefly. The paper also reviews the pros and cons of various harmonics eliminating strategies followed in the literature and propose a new hybrid optimization method to eliminate the harmonics in multilevel inverters. The proposed hybrid optimization based harmonic elimination method calculates the switching angles for the multilevel inverter in real-time and offers a optimum switching angle at a faster convergence rate compared to other existing methods which calculate the switching angles off-line and look up tables were used, which leads to finding the near optimum switching angle and converges at a lower rate.

Keywords: Harmonics, Multilevel Inverter, Optimization Algorithm, Power System, Total Harmonic Distortion

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Transformer Connections for Solar and Wind Connected Systems for Power Quality Stability

*T. V. Sai Kalyani[1], K. V. Govardhan Rao[2]

[1,2] Assistant Professor, Department of EEE
St. Martin's Engineering College , Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: kalyanieee@smec.ac.in

ABSTRACT

In this paper, a high-power PV power plant is connected to the weak grid by means of a three-phase power transformer. The selection of transformer winding connection is critical especially when the PV inverter has a reactive power controller. In general, transformer winding connection can be arranged in star-star (with neutrals grounded) or star-delta. The reactive power controller supports voltage regulation of the power system particularly under transient faults. Its control strategy is based on utilizing the grid currents to produce a three-phase unbalanced reactive current with a small gain. The gain is determined by the system impedance. Simulation results exhibit that the control strategy works very well particularly under disturbance conditions when the transformer winding connection is star-star with both neutrals grounded. The power quality in terms of the voltage quality is improved.

Keywords:- Transformer, Solar, Wind, Power quality

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Paper ID: ICAEEE-23-025

A Fuel Cell Based Multiport Dc -Dc Converter

*Ms. P. Priyanka[1], Dr. P. Santosh Kumar Patra[2]

[1]Assistant Professor, Department of EEE,
[2] Professor, Principal, Group Director Department of CSE
St. Martin's Engineering College , Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: ppriyankaeee@smec.ac.in

ABSTRACT

This paper proposes A fuel cell based Multiport DC-DC Converter with an input fuel cell and the obtained output is given to the load. EVs are vehicles that are either partially or fully powered on electric power. Electric vehicles have low running costs as they have less moving parts for maintaining and also very environmentally friendly as they use little or no fossil fuels (petrol or diesel).As the conventional sources are tends to depleting, the alternative ways are chosen to generate electrical power nothing but non-conventional energy sources. Energy conversion always involves a DC section. So it is mandatory to focus on the DC-DC converters. As huge progress takes place in power electronics field, multiport converters are one of the greatest deals. It treats the whole system as a single power converter, gives high efficiency. Multiport dc-dc converters are compact in structure with fewer components, lower cost compared to numerous DC-DC converters. The existing topology of the multiport DC-DC Converter used four switches but the proposed topology used only two switches results in reduction of switching losses and the output voltages are high and regulated. The closed loop PI controlling strategy is adopted. The results were verified by using MATLAB simulink Software. Key words: Fcell, Multiport, input, Dual Output, single , Dc- Dc Converter.

Keywords: Fuel cell, Multiport, input, Dual Output, single , Dc- Dc Converter.

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Modelling of Hybrid Electric Vehicle Charger

Surya[1], Santhosh[2], *N. D. Manoj[3], Vamshi[4]

[1,2,4] U.G. Scholars, Department of EEE
[3]Assistant Professor, Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: manojeee@smec.ac.in

ABSTRACT

The Plug in Hybrid Electric Vehicles are driven by the energy stored in the battery. Through conductive AC charging method, Electric vehicle supply equipment (EVSE) is connected to Electric vehicle (EV) for charging the battery. Apart from charging it can also help in creating trustworthy equipment ground track and exchange control data among EV and EVSE. This paper discusses electrical and physical interface between EV and EVSE to facilitate conductive charging and design of an on-board charger for fast charging of the hybrid electric vehicle. The aim of this project is to design interfacing system between EV and EVSE as per automotive industry standard and to design prototype of 3.45 KW on-board charger using MATLAB software. By modelling the charger, charging of Li-ion battery can be done which is used for providing propulsion torque and through various stages of charger voltage and current level is controlled and make them desired for charging.

Keywords: Control Pilot Circuit, EV, EVS, IEC, ISO

Paper ID: ICAEEE-23-027

Model Predictive Control of Induction Motor with Delay Time Consideration

*Ms. Vaishali Nandanwar[1]

[1]Assistant Professor,Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

*** Corresponding Author**
E-mail: vaishalinandanwareee@smec.ac.in

ABSTRACT

This paper proposes a delay time compensation method in the model predictive control (MPC) of induction motor (IM) at high and low speed considering the selection of optimum switching vector to actuate the three-phase voltage source inverter (VSI). The proposed control method compensates the delay time to improve the performance of the system, and consequently maintain the accurate tracking of the references at different speed regions. The control scheme utilizes the discrete nature of the system, and uses the possible switching vectors of the converter in an intuitive manner. Therefore, based on minimum quality function the optimum switching vector is selected for the next sampling time actuation of the power converter. The control scheme is validated through the MATLAB simulation and experimental validation in DS1104 R&D Controller Platform. The simulation and experimental results prove the feasibility of the proposed method with encouraging performance.

Keywords: Predictive Control; Power Converter; Delay Time Compensation; Induction Motor; Torque & Flux..

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PV Integrated UPQC For Power Quality Improvement Based On MAF - SRF

*Mrs. CH. Shilpa[1]

[1]Assistant Professor,Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: chshilpaeee@smec.ac.in

ABSTRACT

In this proposed article, application of Unified Power Quality Conditioner (UPQC) in Photovoltaic system is discussed. A controller based on synchronous reference frame (SRF) is utilized to generate the switching signals for shunt and series compensator. The load compensation is obtained through the implementation of moving average filter (MAF). It is is utilized as in-loop filter to filter out high frequency component of non-linear load current. The UPQC has the benefits of both shunt and series compensation, i.e., current and voltage related power quality (PQ) issues respectively. The PQ issues like harmonic elimination, reactive power compensation, voltage sag, voltage swell and load imbalance are mitigated through PV connected UPQC. This article also emphasis the application of green energy resources such as Solar Power Generation. The THD of source current and source voltage are limited under IEEE-519 and IEEE-1159 standards. The performance of UPQC-PV is tested and analyzed in MATLAB platform having nonlinear load. A comparison has been made between the conventional SRF which includes Type 1 Low pass filter (LPF) for load current filtration and proposed SRF which includes MAF for load current filtration control techniques.

***Keywords**:* Reactive power, Voltage fluctuations, Filtration, Power quality, Switches, Harmonic analysis, Steady-state

Paper ID: ICAEEE-23-029

Electric Car Charging Device with PV Grid- Setup

*[1]Vishnuvardhan Vadla, [2] Medarimetla Venkata Sai Charan, [3] Maloth Mahesh Naik, [4] Kammari Vishnu Sai

[1]Assistant professor , Department of EEE
[2,3,4] U.G. Scholars, Department of EEE

St. Martin's Engineering College , Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: vvishnuvardhaneee@smec.ac.in

ABSTRACT

This paper presents an experimental control strategy of electric vehicle charging system composed of photovoltaic (PV) array, converters, power grid emulator and programmable DC electronic load that represents Li-ion battery emulator. The designed system can supply the battery at the same time as PV energy production. The applied control strategy aims to extract maximum power from PV array and manages the energy flow through the battery with respect to its state of charge and taking into account the constraints of the public grid. The experimental results, obtained with a dSPACE 1103 controller board, show that the system responds within certain limits and confirm the relevance of such system for electric vehicle charging.

Keywords- Renewable energy integration, photovoltaic, battery electric vehicles, public grid, control charging system.

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Hybridized Electric Energy Storage Systems for Hybrid Electric Vehicles

[1*]CH. Srinivas ,[2]N. D .Manoj , [3]G .Bala chandraiah, [4]S. Pavan
[1]Associate professor , Department of EEE
[2,3]Assistant professor , Department of EEE
[4]U.G. scholar, Department of EEE

St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

*** Corresponding Author**
E-mail: chsrinivaseee@smec.ac.in

ABSTRACT

Batteries and ultra capacitors have significantly different energy storage and power delivery capabilities. Electrical traction motors in hybrid electric vehicles have characteristic power and energy demands, and a single energy storage technology may not be optimized to meet both the minimum power and energy demands. In this paper, we investigate the effect of combining batteries and ultra capacitors, both actively and passively, to produce a more versatile electrical energy storage system for hybrid electric vehicles. Hybridized energy storage systems result in increased component life cycles, decreased internal resistance losses, and reduced cost and mass when compared to either battery-only or ultra capacitor-only configurations.

Keywords:- Hybrid, Energy, Electric Vehicle

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Study on Simulation of Electrical Characteristics of Grid-Connected Photovoltaic Failure

[1*]G .Bala chandraiah ,[2]CH. Srinivas ,[3]N. D .Manoj ,[4]S. Sunanda

[1,3,4]Assistant professor , Department of EEE
[2]Associate professor , Department of EEE

St. Martin's Engineering College ,Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: gbalachandraiaheee@smec.ac.in

ABSTRACT

At present, the research on the grid connection characteristics of photovoltaic system mainly focuses on the steady-state characteristics of photovoltaic grid connection interface. Such as photovoltaic grid connected power quality characteristics, low voltage ride through characteristics, islanding detection methods and so on. Under the condition of grid failure, the voltage and current characteristics of photovoltaic grid connected system have not formed an accurate analysis model, which brings great trouble to the fault analysis and relay protection setting calculation of large-scale photovoltaic grid connected system. With the continuous improvement of the penetration rate of grid connected photovoltaic power generation, the research focus of photovoltaic power generation has gradually shifted from the steady-state characteristics of power quality of photovoltaic power generation to the transient characteristics of grid operation faults caused by grid connected power generation. Because the working principles and connection modes of various photovoltaic power generation are quite different from those of traditional generators, the research methods and tools of conventional power system fault analysis and setting calculation are difficult to be applied to large-scale photovoltaic grid connected systems.

Keywords: Photovoltaic systems Analytical models, Power system dynamics

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A Survey on Self-Excited Induction Generators

*Ms. CH.Nirosha[1]

[1]Assistant Professor , Department of EEE
St. Martin's Engineering College , Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: chniroshaeee@smec.ac.in

ABSTRACT

The increasing use of renewable energy sources such as wind energy, bio gas energy, solar energy and hydro potential have become to adopt a low cost generating system, which are capable of operating in the remote areas, and in conjugation with the variety of prime movers. With wind turbine and micro/mini hydro generators as an alternative energy source, the induction generators are being considered as an alternative choice to well developed synchronous generator because of their simplicity, ruggedness, little maintenance, price , brushless (in squirrel cage construction), absence of separate dc source, self-protection against severe overloads and short circuits. In isolated systems, squirrel cage induction generators with capacitor excitation, known as self-excited induction generators (SEIGs), are very popular. This paper presents an exhaustive survey of literature of research on self excited induction generator (SEIG) over the past 30 years discussing the classification of induction generator, steady state and transient analysis, voltage control aspects and parallel operation of SEIG.

Keywords: Self excited induction generator, self excitation, voltage buildup

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Design of Photo Voltaic Array as Control Technique for Power Quality Problem

*S. Sunanda Kumari[1], Dr. M. Lakshmi Swarupa [2]
[1,2]Assistant Professor,Department of EEE

[1]St. Martin's Engineering College , Secunderabad, - 500100, Telangana, India
[2]CVR College of Engineering, Hyderabad, Telangana, India

*** Corresponding Author**
E-mail: ssunandaeee@smec.ac.in

ABSTRACT

This Renewable Energy Sources Now-a-days have an alternative source with environmentally friendly to meet load demand which is increasing day by day in nature. Photo Voltaic (PV) source is one of the Renewable Energy Sources. Solar energy is gaining more importance for obtaining maximum Power Point Tracking Technique. The technique will extract power maximum from Photo Voltaic (PV) Array. The power quality issues are predominant with bulk or huge amount of power grid which has active or reactive power flow problems. The FACTS devices are used for improvement of quality problems like series, shunt and series-shunt compensators namely STATCOM, SSSC and UPFC. In this paper a novel control technique is proposed for the power flow with power quality problems when photo-voltaic array either connected in series or parallel which is integrated with grid. This paper with individual Sources including system model simulated in MATLAB/ SIMULINK environment.

Keywords: FACTS devices: UPFC, STATCOM, SSSC, MATLAB-SIMULINK

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Economic and Efficient Prevention of Soiling in Solar Panels

*V.Kiranmayee[1], Dr. B. Lekshmi Sree [2]

[1,2]Assistant Professor, Department of EEE
[1]St. Martin's Engineering College , Secunderabad, - 500100, Telangana, India
[2]Narsimha Reddy Engineering College , Secunderabad, - 500100, Telangana, India

*** Corresponding Author**
E-mail: vkiranmayeeeee@smec.ac.in

ABSTRACT

For the most part, cardiovascular disease (CVD) refers to disorders that include narrowing or blocked veins, which can lead to a heart attack, chest pain (angina), or stroke. The condition is predicted by the machine learning classifier based on the state of the patient's side effect. The purpose of this research is to examine the presentation of Machine Learning Tree Classifiers in the prediction of cardiovascular disease (CVD). Random Forest, Decision Tree, Logistic Regression, Support vector machine (SVM), and K-nearest neighbors (KNN) were used to break down machine learning tree classifiers based on their precision and AUC ROC scores. The Random Forest Machine learning classifier achieved a greater precision of 85 percent, ROC AUC score of 0.8675, and execution time of 1.09 seconds in this study of cardiovascular disease prediction.

Keywords: Prevention of soiling, Solar panel, Borosilicate glass, Copper wire, Electrostatic effect, Coulombic force, Blower

Paper ID: ICAEEE-23-035

A Comparison of Three-Level and Five Level ZVS Active Clamping PWM for the DC–DC Buck Converter

*Mr. K. Vinoth Bresnav[1], Dr. N. Ramchnadra[2], Dr. S. Singaravelu[3], Dr. M. Ramasamy[4]

[1]Assistant Professor, Department of EEE
[2] Professor and HOD, Department of EEE
[3]Professor, Department of EEE
[4]Professor Department of EEE

[1,2]St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India
[3,4] Annamalai University, Tamil Nadu, India.

* Corresponding Author
E-mail: kvinothbrenaveee@smec.ac.in

ABSTRACT

This paper presents the comparison of different level of DC –DC Buck Converters, such as Two – Level, Three – Level and Five – Level DC – DC Converter, These methods are designed by the use of active clamping and constant frequency pulse width modulation. A feature that is common to all the introduced topologies is the theoretical reduction of the voltage stresses across the active semiconductors to 50% of the corresponding two level converters. Accordingly, the switches of the buck–buck converter provide 50% of the blocking voltage of a ZVS three-level buck converter. The steady-state analysis of the converter is performed according to the description of the operation stages of the converter. Based on the performed analyses, a comparative discussion to other topologies is given. The whole model is simulated using MATLAB 7.6 package.

Keywords: Index Buck, dc–dc converter, pulse width modulation (PWM), soft switching, three levels

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Linear Peak Current Mode Controller for Transformerless DC-DC Converter with High Step Up Voltage Gain

*Mr. P. Venkatesh[1]

[1]Assistant Professor , Department of EEE
St. Martin's Engineering College, Secunderabad, - 500100, Telangana, India

* Corresponding Author
E-mail: pvenkatesheee@smec.ac.in

ABSTRACT

Conventional dc-dc boost converters are unable to provide high step-up voltage gains due to the effect of power switches, rectifier diodes, and the equivalent series resistance of inductors and capacitors. In this paper a Linear Peak Current Mode Controller for transformer less dc-dc converters is proposed to achieve high step-up voltage gain without an extremely high duty ratio. In the proposed converter, two inductors with same level of inductance are charged in parallel during the switch-on period and are discharged in series during the switch-off period. The structures of the proposed converter and controller are very simple.

KeyWords : DC-DC boost converter, high step-up voltage gain, power stage.

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