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Department of Electrical and Electronics Engineering

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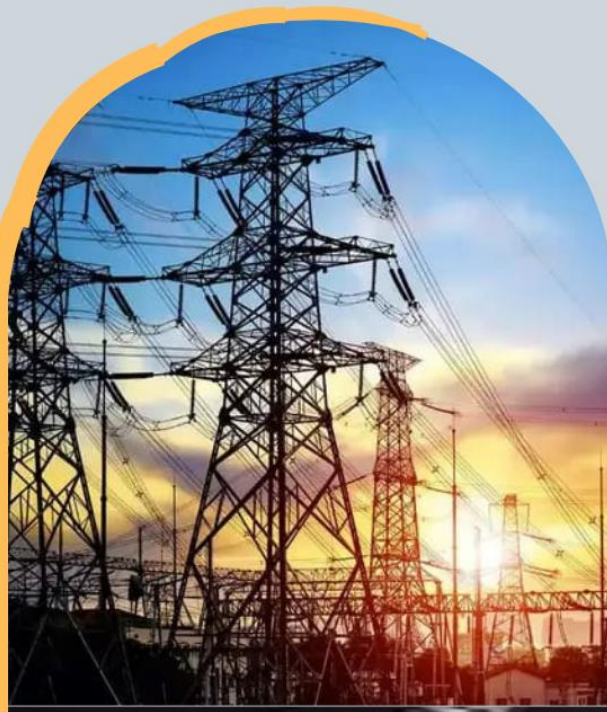

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VISION AND MISSION OF THE DEPARTMENT

VISION:

To be recognized as a Centre of Excellence in the field of Education and Research so as to produce Competent & Ethical Engineers capable enough to contribute to the society.

MISSION:

- To develop innovative, efficient and proficient electrical engineers.
- To keep the curriculum industry friendly, with due regard to the University curriculum.
- To be a place for innovative blended learning and entrepreneurship development in multidisciplinary areas.
- To promote ethical and moral values among the students so as to make them emerge as responsible professionals.

PROGRAM EDUCATIONAL OBJECTIVES(PEO's)

PEO1: To produce Electrical and Electronics Engineering graduates who have strong foundation in Mathematics, Sciences and Basic Engineering

PEO2: To develop problem-solving abilities, technical competency and proficiency in modern engineering tools through hands-on laboratory experience and innovaite projects.

PEO3: To prepare graduates for successful careers in industry, research, or higher education, empowering them to excel in diverse engineering and technology-related fields or become entrepreneurs.

PEO4: To inculcate in students professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate engineering issues to broader social context through life-long learning.

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1. CENTRALIZED MONITORING SYSTEM FOR STREET LIGHT FAULT DETECTION AND LOCATION TRACKING

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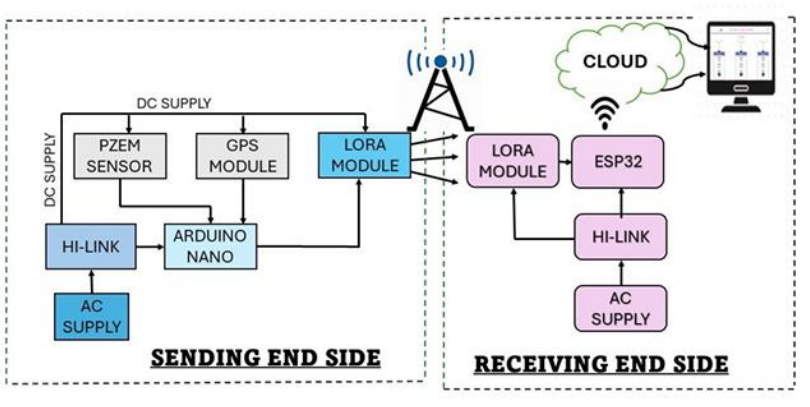
P. JAGANNADHA TIRUPATHIRAJU, P. UDAY VEERAIN
SUPERVISOR: Dr. S. PRAGASPATHY, M.E., Ph.D.

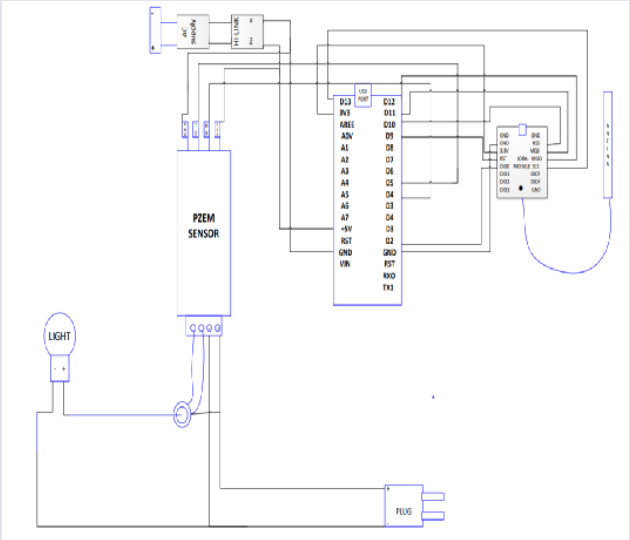
Objectiveoftheproject:

Electricity is the critical need for progress of the livelihood. In many Indian cities, the maintenance of streetlights has become a challenging and inefficient process due to the lack of a centralized monitoring system. Identifying faults, such as non- functioning lights and cable breakage, relies on citizen grievances, leading to delays, increased costs, and safety concerns. Linemen spend valuable time manually searching for faults, diagnosing issues,and fixing them, which can take several days to complete. The absence of precise fault location information further complicates the process. To overcome these obstacles, to give innovative solution that provides real time fault detection, accurate identification of fault types, and precise location tracking of faulty streetlights. This solution aims to empower linemen with efficient fault management capabilities, reducing their workload and ensuring timely maintenance. Moreover, it should enable the local authorities to proactively address faults, enhance service quality, and optimize street light maintenance processes in their respective cities. Consequently, linemen are burdened with the arduous task of manually scouring for faults, diagnosing issues, and rectifying them a process that often spans several days. Moreover, the lack of precise fault location information exacerbates these inefficiencies, further impeding swift resolutions. In response to these pressing challenges, an innovative solution endeavours to revolutionize street light maintenance by offering real-time fault detection, precise fault type identification, and accurate location tracking of faultystreetlights. By empowering linemen with efficientfault management capabilities, to alleviate their workload and ensure the timely maintenance of streetlights. Furthermore, the solution is poised to enable local authorities to proactively address faults, thereby enhancing service quality and optimizing street light maintenance processes across their respective cities. Notably, for approach includes the provision of exact location data for non-functioning lamps, ensuring pinpoint accuracy in fault resolution and streamlining the overall maintenance workflow has been done via gps tracker mechanism, iot technology & the same information is sent to the website for monitoring purposes.

BLOCK DIAGRAM OF STREET LIGHT FAULT DETECTION AND LOCATION TRACKING:



CIRCUIT DIAGRAM:



RECEIVER AND TRANSMITTER KIT:

CONCLUSION:

In conclusion, the implementation of our monitoring system for street light fault detection and location tracking marks a significant milestone in the realm of urban infrastructure management. By harnessing the capabilities of state-of-the-art components such as HI Link, Arduino, PZEM sensor, and GPS tracker, we have engineered a comprehensive and robust solution designed to revolutionize the way street light maintenance is conducted. Through meticulous design and integration, our system not only detects non-functioning streetlampsin real-time but also provides precise location data, thereby saving invaluable time for linemen and streamlining the fault identification and resolution process. This efficient utilization of technology translates into tangible benefits for both operational efficiency and public safety. By empowering linemen with the necessary tools and insights to expedite maintenance interventions, our project contributes to a safer, more sustainable urban environment while also ensuring minimal service disruptions for residents. Furthermore, our commitment to leveraging technology for social good underscores our dedication to improving the quality of life for communities across diverse urban landscapes. As we reflect on the achievements of our project, we recognize its potential to serve as a catalyst for continued innovation and collaboration in infrastructure management, thereby paving the way towards a brighter, more resilient future for all stakeholders involved. Through ongoing refinement and adaptation, we remain steadfast in our pursuit of excellence, committed to realizing the full potential of our monitoring system to address the evolving needs of urban environments and enhance the well-being of those who call them home.

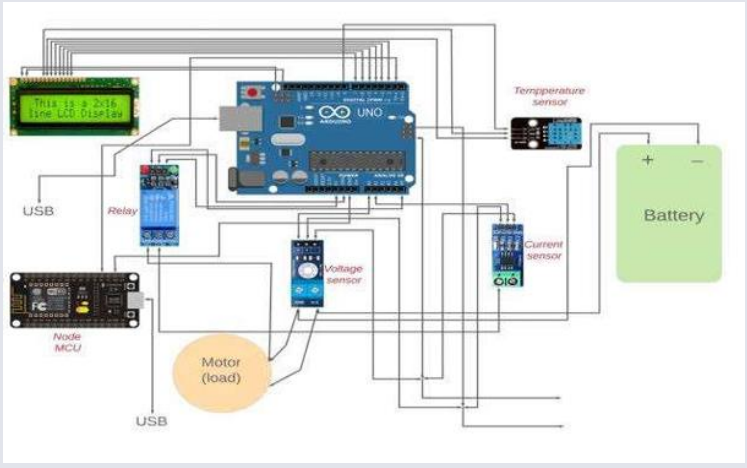
2. IOT BASED ELECTRICAL VEHICLE BATTERY MANAGEMENT SYSTEM

P.GAYATHRI PUSHPA ,M.KETHAN SAI PRANAY ,U.MANIKYALA PAVAN,
V.SURYA TEJA SRUJITH KUMAR, S.RAGHU VARMA
SUPERVISOR: Mr. P. NAVEEN, M.Tech

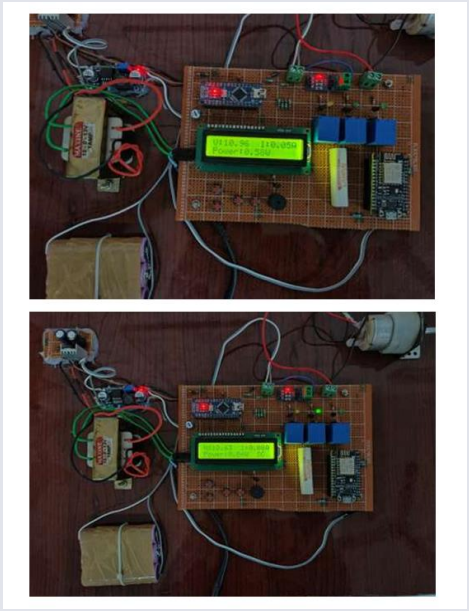
Objectiveoftheproject:

An IoT-based battery management system (BMS) is a technology that uses the internet of things (IoT) to monitor and control batteries in various applications. The BMS consists of sensors, microcontrollers, communication modules, and cloud-based servers that work together to collect data, analyse it, and optimize battery usage. Electric vehicle Battery Management Systems (BMS) play a crucial role in ensuring the safe and efficient operation of battery packs, thereby contributing to the performance and longevity of electric vehicles (EVs). This project focuses on the design, implementation, and evaluation of a sophisticated BMS solution tailored for electric vehicle applications. Leveraging advanced software algorithms, precise sensors, and intelligent control strategies, the BMS enables real-time monitoring, analysis, and optimization of critical battery parameters, including voltage, current, temperature, state of charge (SoC), and state of health (SoH). The software architecture orchestrates seamless communication between hardware components, facilitating accurate data acquisition and enabling proactive measures to prevent overcharging, over-discharging, and thermal runaway. Results obtained from the implementation and evaluation of the BMS demonstrate its efficacy in enhancing battery management,improving operational safety, and maximizing vehicle performance. Through comprehensive analysis and validation, the project underscores the significance of software-driven solutions in advancing electric vehicle technology and shaping the future of sustainable mobility. Further research and development efforts are recommended to explore the integration of advanced algorithms, sensor technologies, and fault-tolerant systems, thereby enhancing the robustness and scalability of BMS solutions for diverse electric vehicle applications.

CIRCUIT DIAGRAM:



HARD WAREKIT:



CONCLUSION:

In conclusion, this electric vehicle Battery Management System (BMS) project represents a significant advancement in the field of electric vehicle technology. Through the integration of sophisticated software, precise sensors, and intelligent algorithms, the BMS demonstrates its capability to monitor, manage, and optimize the performance of battery packs in electric vehicles. It is very important for BMS to well-maintained the battery reliability and safety, the state monitoring and evaluation, cell balancing and charge control are well functional. Thus, this present paper is review on BMS, focussing study for optimization of BMS that will lead to reliability of BMS and optimize power performance. Monitor the battery anywhere in the world using IoT. It's taking the data from IoT embedded sensor and transmit the cloud. Provide better performance to user enhance the battery life. This IoT based battery management system help us to monitor the battery conditions and also help us to monitor the battery health. The software architecture, meticulously designed and implemented, orchestrates the seamless communication between hardware components, enabling real-time monitoring of critical parameters such as voltage, current, and temperature. Leveraging advanced algorithms, the BMS accurately estimates state of charge (SoC), predicts potential faults, and implements proactive measures to ensure the safety and efficiency of the battery system. Furthermore, the results obtained from the implementation of the BMS project underscore its efficacy in enhancing battery management, improving operational safety, and maximizing vehicle performance. Through comprehensive analysis and evaluation, the project demonstrates the significance of software-driven solutions in shaping the future of electric vehicle technology and advancing sustainable mobility solutions.

3. PERFORMANCE COMPARISON OF VARIOUS MACHINE LEARNING ALGORITHMS FOR

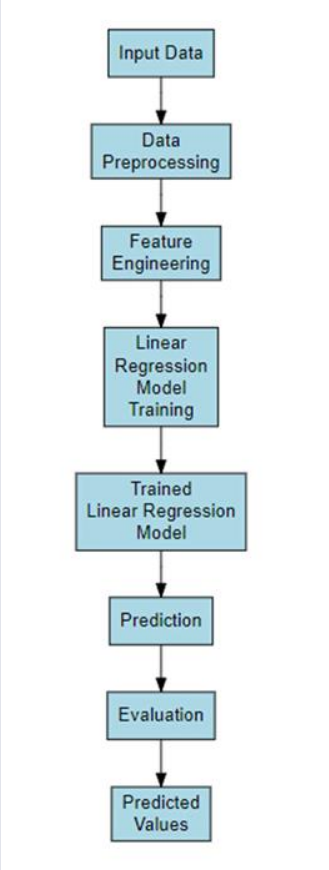
Venkatalakshmi Yerrabolu ,Manasa Jasmine Koram, Bala Murali Krishna Vamsi Tirumala, Shyam Kumar Vipparthi ,Joshua Nakka

SUPERVISOR: Dr. I. Kasireddy, M.Tech, Ph.D.

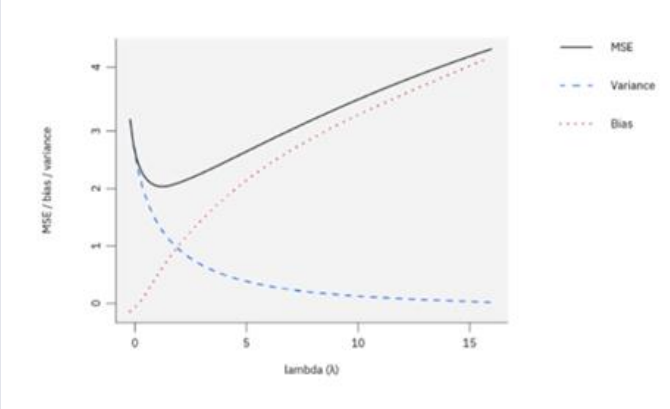
Objectiveoftheproject:

In today's world, electricity has become a fundamental necessity in our daily lives and has transformed the way we live, work, and communicate. The demand for electricity has grown tremendously over the years due to the increasing population, industrialization, and economic development. However, the increasing demand for electric energy has led to heightened environmental pollution from conventional power generation methods. But we have a way that doesn't disturb our environment that is renewable energy. Among renewable energy sources, solar energy is the most prominent renewable energy. Many countries are adapting solar energy because of their advantages such as reduceair pollution and does not emit greenhouse gases. India is also decided to produce major electrical energy with solar by 2030. Despite its numerous advantages, solar energy systems face challenges such as lowefficiency and high capital costs. Efficiency can be increased by proper usage of grid. By forecasting the solar energy, it is possible to increase the efficiency of grid which leads to increase in overall efficiency of solar system. By using advanced methods like machine learning, one can predict the outputof solar energy. Inthis project several machine learning algorithms have been implemented for solar energy predictions. These algorithms are implemented in Jupyter note book or Google collab. Finally, the results are compared and analysed. From the analysis, it is observed that Random Forest Regression (RFR) algorithm is outperformed as compared to the rest of them.

Flow chart:



GRAPH:



CONCLUSION:

In our analysis of machine learning algorithms for solar energy prediction, we implemented and evaluated Lasso Regression, Ridge Regression, Linear Regression, Support Vector Regression (SVR), and Random Forest Regression models. From the analysis, accuracies of Lasso, Ridge and Linear regressions are found in between 51% - 52%. However, the Support Vector Regression exhibited a notably higher accuracy of /88.4%, while the Random Forest Regression demonstrated the highest accuracy of 90.5%. From these results, it is evident that Random Forest Regression outperformed the other regression models for predicting solar energy. This highlights the importance of selecting appropriate algorithms for 7.2 Future scope: accurate and reliable solar energy prediction tasks.

4. IoT Based Test Kit To Determine Performance Of A Single Phase Transformer

M.D.V.Trinath, Md.Usman Sharif, M.R.N.A.Ganesh ,T.Mano,

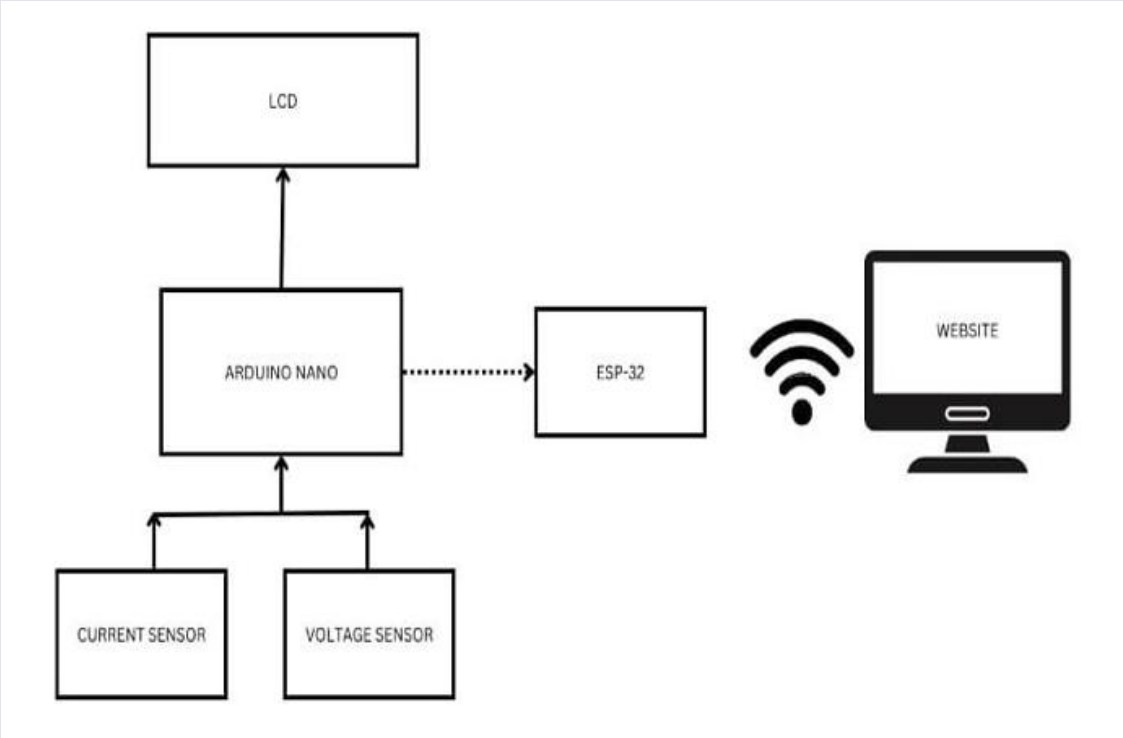
M.Yashwanth Satya Sri Ram

SUPERVISOR: Mr.Ch. Siva Narayana, M.Tech

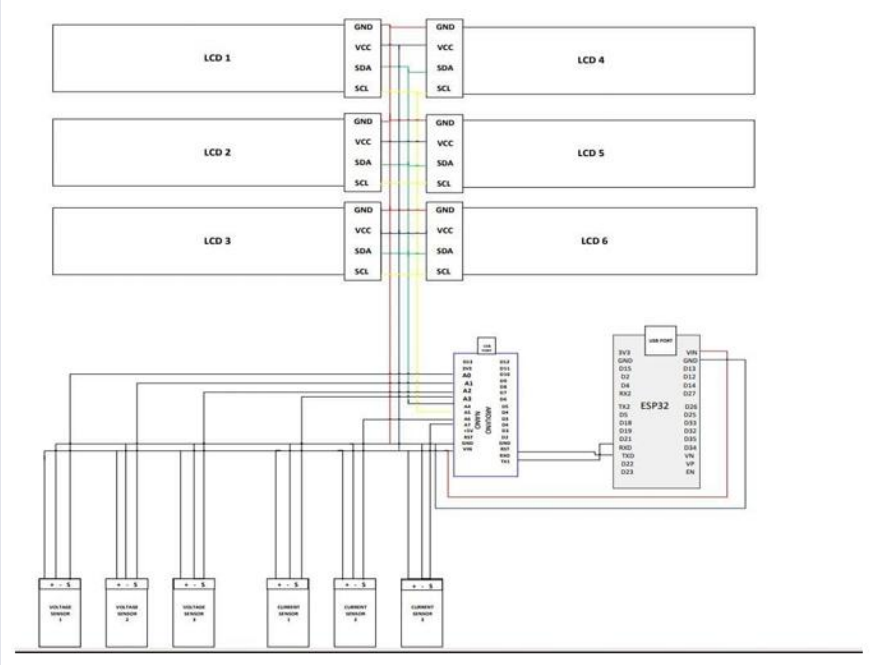
OBJECTIVEOFTHEPROJECT:

To determine performance of a transformer it is required to identify iron and copper losses. This can be done by OC & SC test. OC & SC test are to be performed separately on same transformer. In this project we are going design test kit which will conducts the required tests and determines performance, iron losses and copper losses and displays on the LED display. Single-phase transformers play a crucial role in various electrical systems, and assessing their performance is essential for ensuring efficient power distribution. Traditional methods of testing transformers often involve manual procedures and are time-consuming. To address these limitations, this paper proposes an Internet of Things (IoT)-based test kit designed for the performance evaluation of single-phase transformers. The IoT-based test kit integrates various sensors to collect real-time data from the transformer under test. Parameters such as voltage, current, power factor, core losses and copper losses are continuously monitored to provide comprehensive insights into the transformer's performance. Additionally, the test kit incorporates a microcontroller unit for data processing and analysis. Our primary objective is to design a user-friendly and efficient test kit that simplifies the process of conducting OC and SC tests. The kit will incorporate all necessary components, including voltage and current sources, measurement instruments, and a microcontroller for automation.

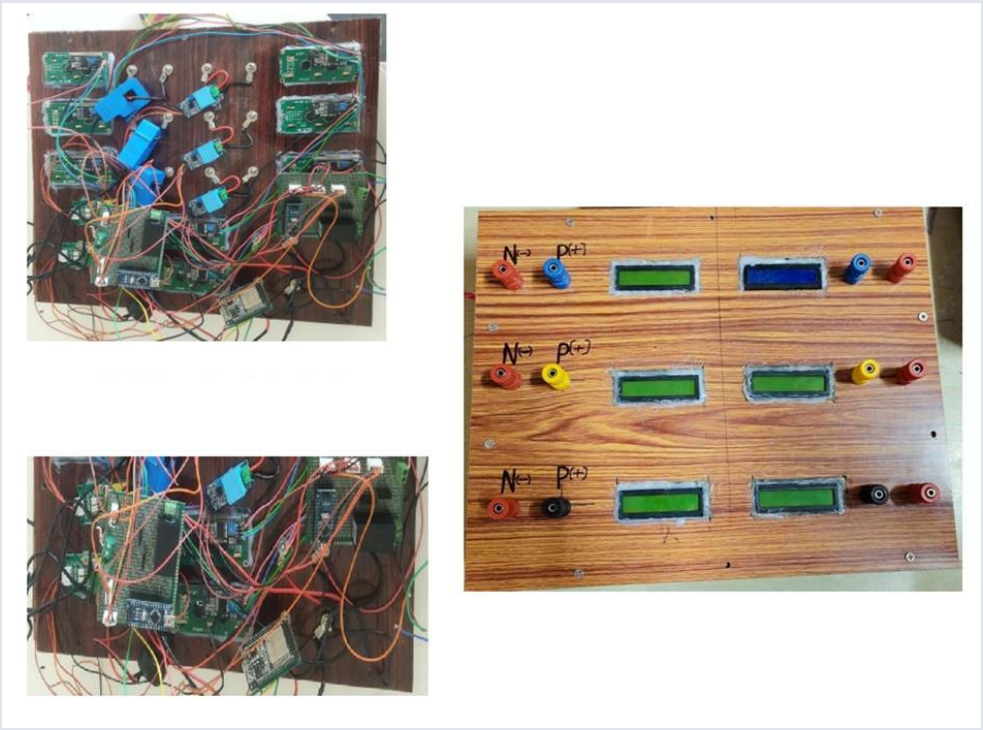
BLOCK DIAGRAM OF IOT-ENABLED DC PERAMETER MEASUREMENT SYSTEM:



CIRCUIT DIAGRAM:



HARD WAREKIT:



CONCLUSION OF THE PROJECT:

An IoT-based test kit for determining single-phase transformer performance could be a revolutionary tool in the field of electrical engineering. By integrating IoT technology, this kit could provide real-time monitoring and analysis of various parameters such as voltage, current, power factor. The performance of a transformer is described in terms of its voltage regulation and efficiency, and can be predicted from the results of two tests: the open-circuit test and the short-circuit test. An open-circuit test is accomplished by measuring the (no-load) secondary voltage, the primary current, and the input voltage and power. In order to conduct a short-circuit test, the secondary side is shorted, and the primary current is adjusted to the normal full-load level. The primary voltage and input power are measured The main goal of the project is to design and construct an Internet of Things (IoT)based Transformer Monitoring System which can display real time states in transformer. After the construction of the device, the system was tested successfully. That is the device can monitor the condition of transformer and send data accumulated from the sensors and displayed over the display. It continuously monitors the parameters throughout its operation with high accuracy. it overcomes the drawbacks of previous working methods. The project focuses mainly on the efficiency of monitoring process of transformer by using less wireless communication that eliminates the use of large cables which are of high cost, low reliability and maintenance.

5. IOT- ENABLED DC PARAMETER MEASUREMENT SYSTEM

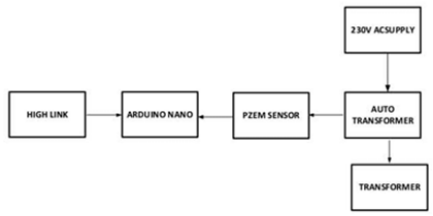
R. UDAY, V.SAI RAJ SRINIVAS, R. NARENDRA VARMA, S. REVANTH, V.SWAMY

SUPERVISOR: Mrs. D. Mamatha, M. Tech., (Ph.D)

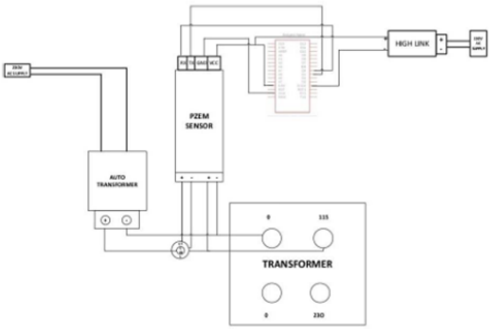
OBJECTIVEOFTHE PROJECT:

The integration of IoT (Internet of Things) technology has revolutionized the measurement and monitoring of electrical parameters in laboratory settings. This project focuses on implementing IoT-based solutions for real-time measurement of electrical parameters in a DC (Direct Current) machines laboratory, with the objective of enhancing efficiency, accuracy, and accessibility. Traditional methods of measuring electrical parameters in laboratories often involve manual recording and monitoring, which are time-consuming and prone to errors. By leveraging IoT technology, this project automates measurements and enables remote monitoring, providing a more reliable and convenient solution.

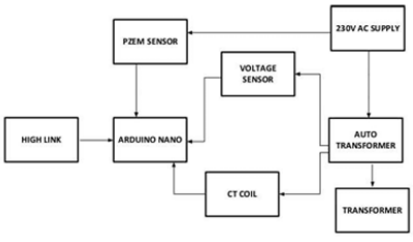
BLOCK DIAGRAMS AND PCB CIRCUIT DIAGRAM:



OC Test Block Diagram

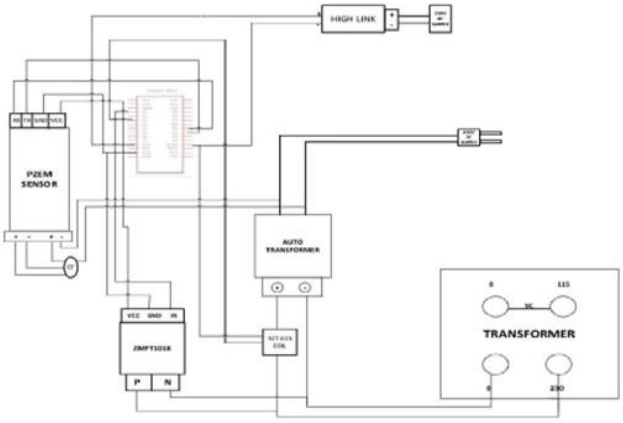


OC TEST PIN DIAGRAM



SC Test Block Diagram

SC TEST PIN DIAGRAM AND PCB HARDWARE KIT:



(a) SC TEST PIN DIAGRAM

(b) PCB HARDWARE KIT

CONCLUSION:

The development of a IoT-Enabled DC Parameter Measurement System represents a significant advancement in the field of electrical engineering and instrumentation. By consolidating various measurement capabilities into a single device, engineers and researchers can streamline their testing processes, saving time and resources. This multifunctional box offers the versatility to accurately measure parameters such as voltage, current, power across a wide range of electrical systems, from small-scale circuits to large industrial installations. Its compatibility with different DC sources and load conditions makes it an indispensable tool for both academic research and industrial applications, enabling comprehensive analysis and validation of electrical systems with ease and precision. Furthermore, the IoT-Enabled DC Parameter Measurement System enhances the efficiency and reliability of electrical testing and troubleshooting tasks. Its compact design and user-friendly interface facilitate ease of use, allowing technicians and engineers to quickly set up experiments and obtain accurate measurements. The integration of advanced features such as data logging and remote monitoring capabilities further enhances its utility in diverse settings, enabling real- time analysis and diagnostics. Overall, this innovative device represents a significant step forward in electrical measurement technology, empowering practitioners with the tools they need to tackle the complexities of modern electrical systems with confidence and efficiency.