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"Monitoring and Controlling of Single Phase IM through IOT"

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Abstract - Theoretical -Innovation has progressed essentially in later a long time, making our lives less demanding, speedier, and more pleasant. This paper portrays how to utilize the Web of Things to control and screen acceptance engines (IoT). Since it can be utilized from anyplace through Wi-Fi, the IoT is more helpful and effective for controlling frameworks. The major objective of this shrewdly framework is to avoid acceptance engine disappointment by actualizing preventative activities. Acceptance engines are utilized in a assortment of applications such as electric vehicles, businesses, and farming zones since of its numerous points of interest such as self-starting, moo fetched, tall control figure, and strong plan. As a result, utilizing the finest accessible shrewd assurance method, it is crucial to identify imperfections in motors at an early arrange in arrange to extend engine proficiency and guarantee secure and dependable operation. The speed, voltage, current, temperature, vibration, mugginess, and other electrical, mechanical, and natural parameters of the acceptance engine can be observed remotely because faults in these parameters cause extreme harm to the engines conjointly cause issues for applications that utilize the acceptance engine. A collection of sensors for securing the engine parameters in real-time and a transfer for controlling the engine are utilized in this framework for checking and directing Acceptance using IoT. The proposed framework will utilize an IoT-based stage to gather and prepare acceptance engine parameters in real-time. The collected information is spared within the cloud and can be recovered by means of a web page. Alarms will be sent out in the event that any of the checked parameters' edge confinements are surpassed. The data from the sensors is gotten by the microcontroller unit, which forms the detected information. In the event that an distorted esteem is identified, the programmed framework produces a control flag to switch on or off the engine.

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***Key Words*:** Single phase induction motor(SPIM),Monitoring and control Remote monitoring, Energy efficiency,Condition monitoring, Fault detection.

1.INTRODUCTION

The increased use of technology and automation in industries has led to the popularization of Internet of Things (IoT) based solutions. One such solution is the IoT-based monitoring and speed control of an induction motor, which has several advantages over traditional motor control methods.In the conventional system, motor monitoring and control are done through local input/output (IO) devices and a central control system. However, IoT-based monitoring and speed control of induction motors use sensors, internet connectivity, and cloud computing to improve flexibility, real-time operation, and scalability. Induction motors are commonly used in several industrial applications, ranging from small scale to large scale ones. These motors consume a lot of energy, and their energy consumption can be minimized by controlling their speed. IoT-based monitoring and speed control of these motors optimizes energy consumption and provides real-time data on the motor's performance.The system uses sensors to monitor the motor's parameters such as current, voltage, power, and temperature. The data is transmitted to the cloud for processing, and the control signals are sent back to the motor through IoT devices. The system can be remotely monitored and controlled from anywhere in the world, which increases its flexibility. In conclusion, IoT-based monitoring and speed control of induction motor is a cost-effective, flexible, and efficient system that improves the motor's performance while minimizing energy consumption. It

has several advantages over traditional motor control systems, making it a popular solution for industries.

2. BACKGROUNG

Induction motors are very popular electric motors because they are cheap, easy to take care of, and work well. However, they use up a lot of energy, which can be a problem in situations where saving energy is very important. This means that keeping track of and managing the speed of induction motors can be very helpful because it can save a lot of energy. In recent years, using Internet of Things (IoT) technologies has allowed us to create advanced systems that monitor and control induction motors. A monitoring and speed control system for an induction motor that uses IoT technology usually includes putting sensors on the motor. These sensors can measure different things like how much power is going through, how hot it is, and if it's shaking. The information from these sensors is sent to a main control system. This system can analyze the information and make changes to the motor's speed and other settings. An IoT-based monitoring and speed control system for an induction motor offers several advantages. It helps save more energy, lowers maintenance expenses, improves safety, and boosts productivity. Also, these systems can give operators up-to-date information about how well the motor is working. This can help them make smarter choices about when to do maintenance, fix problems, and do important tasks. In general, a monitoring and speed control system using IoT technology can provide many advantages for induction motor applications. This makes it a appealing choice for businesses aiming to enhance their operations and cut expenses.

3.OBJECTIVE

Objective The objective of this project is to design and develop an IoT-based monitoring and speed control system for an induction motor. The system will use sensors to monitor the motor's performance and gather data in real-time, which will be transmitted to a cloud-based platform using IoT technology. The collected data will then be analyzed to identify any anomalies or issues with the motor. The system will also provide remote speed control of the motor, allowing users to adjust the speed of the motor from a web application. The primary goal of this project is to improve the efficiency, reliability, and safety of induction motors in industrial and commercial settings.

4.METHODOLOGY

1.The methodology for the IoT based monitoring and speed control of an induction motor starts with conducting thorough research and literature review. This will help in identifying the different methods and techniques used in monitoring and controlling induction motors. 2.Selection of Hardware and Software: The next step is to select the appropriate hardware and software for implementing the IoT-based monitoring and speed control system. The hardware should be capable of measuring the necessary parameters such as voltage, current, power, and temperature. The software should be able to process the data in real-time and provide alerts and notifications in case of any faults.

3.Design and Development of the Circuitry: Based on the selected hardware and software, the circuitry for the IoT-based monitoring and speed control system is designed and developed. The circuit should be able to interface with the induction motor and measure the necessary parameters.

4.Prototyping and Testing: Once the circuit design is completed, a prototype of the system is developed and tested. The prototype should be able to monitor the

motor's performance and provide real-time data to the user.

5.Integration of IoT Platform and Cloud-based Analytics: To enable remote monitoring and control, the system is integrated with an IoT platform and cloud-based analytics. This will allow the user to access the motor's performance data from anywhere and take necessary actions in case of any issues.

6.Deployment and Optimization: Once the system is developed, tested, and integrated with the IoT platform, it is deployed in the real-world environment. The system is then optimized to ensure maximum performance and reliability.

7.Data Analysis and Reporting: The IoT-based monitoring and speed control system continuously collect data from the induction motor, which is analyzed and reported to the user. These reports can be used to identify any patterns or anomalies in the motor's performance and take preventive actions to avoid downtime.

5.Conclusion

In conclusion, the use of IoT-based monitoring and speed control of an induction motor has proven to be a highly effective and efficient method for industrial applications. Through the integration of various sensors and devices, it is now possible to collect real-time data and monitor the performance of induction motors remotely, which improves efficiency, reduces energy consumption, and increases productivity. Additionally, IoT-based speed control systems have proven to be much more accurate and reliable than traditional methods, which results in better output quality, reduced maintenance costs, and increased plant safety. Overall, the adoption of IoT-based technologies in motor control systems is a significant advancement in the field of industrial automation, and it is expected to revolutionize the way we approach motor control and maintenance in the years to come. This gadget will guard the motor from numerous faults which include over voltage, over current, temperature and the circuit will turn on the motor beneathneath protection conditions. It additionally measures pace of the induction motor very accurately.It complements the motor overall performance and make it dependable and will increase its life. We can make use of wireless communication technology to monitor the motor parameters from remote location by using GSM technology.

6.References

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