
PLC BASED INDUCTION MOTOR STATUS MONITORING AND PROTECTION UNDER VARIOUS ABNORMAL CONDITIONS- REVIEW PAPER

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ABSTRACT

In today's situation, the business fills in as quickly as conceivable to complete the item/administration. In numerous enterprises, the acceptance engines are generally used to handle the item. To guarantee the dependable activity of enlistment engines late progression methods are utilized. Due to innovation advancement, the checking and controlling are done consequently. The enlistment machine bombs most ordinarily because of maturing or unfortunate development and, assuming disappointment is of a profoundly fruitless occasion, risks to creation, wellbeing, and the climate can frequently result. The ideal approach to invalidating these perils is by the condition checking of the enlistment machine. This permits early ID of the corruption of the machine wellbeing and, henceforth, works with a proactive reaction, limited vacation, and augmented efficiency.

Keywords: Programmable Logic Controller (PLC), Induction Motor, Temperature, Voltage.

I. INTRODUCTION

Industrial machinery is constantly get affected by shock and vibration, which generates fatigue and deformation of materials and components. Results are imprecision and eventually system failure. Forecasting potential problems to implement preventive measures and maintenance is essential. Often replacement of equipment may decrease system performance. The proposed work is to avoid downtime and costly damage to mechanical equipment. Condition monitoring is the process of identifying the status of machinery considering various parameters. This helps to identify a significant change to rectify faults. It is a major component of Predictive maintenance. The use of condition monitoring allows maintenance to be scheduled or other action to be taken to prevent consequential damages and avoid its consequences. Condition monitoring has a unique benefit in conditions that would shorten the lifespan of equipment and this can be addressed before they develop into a major failure.

II. LITERATURE REVIEW

1] PLC Based Monitoring & Protection of 3-Phase Induction Motors against Various Abnormal Conditions, 2019 IEEE International Conference on Computing, Mathematics and Engineering Technologies – comment 2019

This paper examines present-day security procedures where complete assurance is done through the programmable rationale regulator (PLC). In this technique for insurance, the internet observation of the enlistment engine is done and every one of the important electrical boundaries - voltage, flow, and temperature are checked. Assuming that the boundaries are limited which means every one of the boundaries is inside their typical working reach, the PLC will consistently be permitting the acceptance engine to be associated with the three-stage supply. In any case, if there is any unsettling influence found, PLC will trip the acceptance engine by giving a stumbling sign to an attractive contactor and transfer according to the customized conditions.

2] INDUCTION MOTOR CONDITION MONITORING AND CONTROLLING BASED ON IOT, International Research Journal of Engineering and Technology (IRJET), Volume: 06 Issue: 3 | Mar 2019

In today's scenario, the induction motor plays a predominant role in industrial applications. The major superiority of induction motors is rugged and simple in construction. It can operate in any environmental condition and the cost is inexpensive. This paper grants the information regarding IoT (Internet of Things) based remote control and monitoring system of an induction motor in industries for implementation, For

protected and economic conditions.

The Transducer modules and sensors observe the parameters like Temperature, vibrations, external moisture RPM, induction machine load current, and voltage and send them to the (Arduino) processing unit. It will inspect and exhibit the parameters. To send information for remote monitoring, the processing unit (Arduino) conveys the gateway module to the cloud database. To avoid system failure, this paper presents the induction machine start and stop control by both automatic and by manual. It also provides an industrial application to make the system faster and user friendly.

3] IoT platform for Condition Monitoring of Industrial Motors, 2017 2nd International Conference on Communication and Electronics Systems (ICCES) IEEE Xplore Compliant - Part Number: CFP17AWO-ART, ISBN:978-1-5090-5013-0

The proposed technique contains an IoT-based stage to gather and deal with the acceptance engine boundaries. The information gathered can be put away in the cloud stage and the same can be gotten to through the site page. Furthermore ideal alarms will be gotten for any infringement in wanted constraints of boundaries under observing, So quick move can be made to stay away from the undesirable vacation of the engine that sets aside time and cash. The benefits of this strategy incorporate persistent checking of the gear, getting cautions, and information accessibility for prescient support.

4] Fault Detection and Protection of Induction Motors Using Sensors", IEEE TRANSACTIONS ON ENERGY CONVERSION, VOL. 23, NO. 3, SEPTEMBER 2008

Insurance of an acceptance engine (IM) against potential issues, for example, overvoltage, overcurrent, overburden, overtemperature, and Undervoltage, happening throughout its activity is vital, because it is utilized seriously in the industry as an actuator. IMs can be safeguarded utilizing a few parts, like clocks, contactors, voltage, and current transfers. This technique known as the old-style strategy is exceptionally fundamental and includes mechanical powerful parts. PC and programmable coordinated circuit (PIC) based insurance techniques have wiped out the majority of the mechanical parts. Nonetheless, the PC-based insurance technique requires a simple to-advanced change (ADC) card, and the PIC-based assurance strategy doesn't picture the electrical boundaries estimated. In this review, for IMs, another assurance strategy in light of a programmable rationale regulator (PLC) has been presented. Besides, the voltages, the flows, the speed, and the temperature upsides of the engine, and the issues that happened in the framework, are checked, and cautioning messages are displayed on the PC screen.

5] Induction Machine Condition Monitoring with Higher-Order Spectra", IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, VOL. 47, NO. 5, OCTOBER 2000

This paper tends to this large number of inadequacies and depicts the improvement of an extensive acceptance machine condition-observing framework in light of straightforward framework, enlistment machine, and ideal HOS measures. This strategy requires no deduced information for shortcoming location and evaluation. This strategy is extensible to both sinusoidally and inverter-took care of acceptance machines and is free of the machine burden and speed. The strategy can unambiguously identify the sort and size of the machine issue. The framework is embodied in a product-based, robotized, and monetarily practical enlistment machine condition-checking framework.

III. CONCLUSION

This strategy gives simple control and unwavering quality. The dependability of the engine is acquired by nonstop checking of electrical and mechanical boundaries. If any unusual worth of electrical and mechanical variables might be distinguished, the engine is controlled by utilizing different sensors. To check the state of the engine by utilizing different boundaries dissected by the PLC.

IV. REFERENCES

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