International Scientific Journal of Engineering and Management
Volume: 03 Issue: 05 | May – 2024
An International Scholarly || Multidisciplinary || Open Access || Indexing in all major Database & Metadata
ISSN: 2583-6129
DOI: 10.55041/ISJEM01690

Diagnostic Machine safety with IoT Monitoring

Md Umer Mulla[1], Rahul Galimath[1], Shreyas Jodagunde[1], Vishwanath Shinde[1]

Prof. Suvarna Karki[2], Dr. Supanna Shirguppe[3]

[1]Students, Electrical & Electronics Engg, S. G. Balekundri Institute of Technology
[2]Asst Professor, Electrical & Electronics Engg, S. G. Balekundri Institute of Technology
[3]Professor & Head, Electrical & Electronics Engg, S. G. Balekundri Institute of Technology

---

Abstract - After analyzing the current situation of safety of diagnostic machine, it is realized that there is a need to develop a system that could inform the users about various faults in the machine, thereby protecting from severe damages. The proposed project presents a novel system that monitors machines and detects faults. This project is a model for a real time monitoring system using contemporary technologies like Internet of Things (IoT)-based sensors that are promising for efficient machine monitoring. The proposed project is a model for a real-time monitoring system using IoT-based sensors accessible via webpages. The system involves connecting the machine to two sensors: a current sensor to continuously monitor current flow and a temperature sensor to gauge heat production. These sensors provide input signals to an Arduino controller, which processes them into real values based on sensor output electrical signals. Subsequently, these values are translated from machine-level language to low-level language and displayed on an LCD. A Wi-Fi module facilitates transmission of these values over the internet to cloud storage. In this system "ThingSpeak" is opted as cloud platform, offering data collection. This platform stores the data, enabling access to values worldwide via webpages. It also generates graphs depicting sensor values over time.

***Key Words*:** Fault detection, Machinery monitoring, Arduino controller, Cloud storage, Real-time monitoring

1.INTRODUCTION

In this project search, the aim of this project is to establish something that is both innovative and beneficial for daily life. After analyzing the current situation, the importance of a system that can alert users to various faults in machinery is realized, thereby preventing severe damage. Consequently, it is decided to develop such a system capable of detecting machine faults and enabling monitoring. The system will be designed to detect voltage, temperature, and liquid levels in machines, ranging from normal to dangerous levels. It will take proactive measures to prevent machine damage by continuously uploading real-time values of these parameters to a webpage every 2 minutes. Moreover, in medical applications where machines are used to analyze components like WBC and RBC, there is a growing need to transition from traditional schedule-based maintenance to condition-based maintenance. This necessitates a focused approach towards diagnostics.

2. Body of Paper

In this system, machine is connected to three sensors say, voltage sensor will be installed to ensure continuous monitoring of the voltage level of the machine. This sensor will constantly track fluctuations in voltage, providing real-time data on the machine's electrical health. Similarly, a float sensor is set to monitor the liquid levels within the machine. It works by using a floating device to measure the amount of liquid accurately. By always checking the liquid level, it helps the machine run smoothly and avoid problems like spills or damage from not having enough liquid. And temperature sensor will be monitoring the amount of heat produced in the room. By always checking the temperature, it helps keep the room warm and safe. These values will be given as the input signals to the Arduino controller the controller is coded to take these signals and convert them into real values depending upon the output electrical signals from those sensors. Further these values are processed from machine level language to human language and displayed on the lcd display where values can be read near the system, and at the same time Wi-Fi module is used which is capable of transmitting the same values over internet and hence by creating a special channel we can access those values over internet by sitting anywhere across world. The values of different parameters of machine such as voltage level, amount of liquid, temperature of the transformer can be easily monitored in real time for every two minutes. The supply unit provides 5v and 12v dc supply for the system to work.

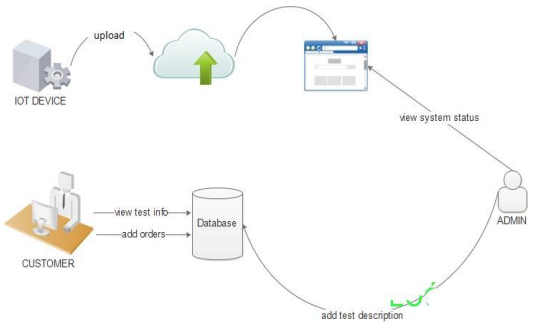

Fig. Flow diagram of the system

ISSN: 2583-6129
DOI: 10.55041/ISJEM01690

3. CONCLUSIONS

In conclusion, the system effectively utilizes sensors to monitor key parameters of a machine, including voltage, liquid level, and temperature. Through the Arduino controller, this data is processed and translated into user-friendly values, displayed on an LCD screen for easy observation. Moreover, integration with a Wi-Fi module enables remote access to these parameters via the internet, enhancing convenience and facilitating real-time monitoring from any location. Overall, the system ensures efficient machine management, timely detection of issues, and accessibility for users, contributing to improved operational performance and safety.

REFERENCES

1. Huang Zhongshan, Tian Ling: Research on Prognostics and Health Management System. Journal of Graphics 39. 855-861 (2018).
2. Liu Jingjun, Feng Yiding: Practice and Prospect of Intelligent Manufacturing in Steel Industry. Hebei Metallurgy 4, 74-80 (2018).
3. Zhu Hongbo, Yang Longxiang, Yu Quan. Investigation of technical thought and application strategy for the internet of things. Journal on Communications 31, 2-9 (2010).
4. Chang Hongzhu, Yan Mei, Xu Xiaocheng, Wang Kai: Application of Internet of Things Technology in Predictive Maintenance of Equipment. Logistics Engineering and Management 40, 79-80
5.Chen Lei:The Design of Intelligent in Equipment Monitoring Platform. Metallurgical Equipment 246, 32-34 (2018)