e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:07/Issue:04/April-2025 Impact Factor- 8.187 www.irjmets.com

DIGITIZATION AND MANUFACTURING PROCESS REMOTE MONITORING AND CONTROL SYSTEM

Shubham Patole*1, Mayur Malunjkar*2, Omkar Warungase*3, G.L. Borhade*4

*1,2,3Third Year, Electronics And Telecommunication, Amrutvahini Polytechnic, Sangamner, India.

*4Dept. Of Electronics And Telecommunication, Amrutvahini Polytechnic, Sangamner, India.

DOI: https://www.doi.org/10.56726/IRJMETS71771

ABSTRACT

Numerous corporations and start-up ventures have latched onto the Internet of Things concept looking to take advantage of whatever business opportunities are available. IoT assumes that the underlying network equipment and related technology can operate semi intelligently and often automatically. Simply keeping mobile devices connected to the Internet can be difficult enough much less trying to make them smarter. People have diverse needs that require an IoT system to adapt or be configurable for many different situations and preferences. The "Monitoring and Controlling of Smart Equipment's towards Manufacturing Industries using IoT" which is an Industrial automation projects keep you safe, manage energy consumption, and provide entertainment. Solutions for your industry or business are available for every income level and lifestyle. Simply choose the automation, energy management, and convenience features you desire. Industrial automation systems may be installed in new or existing structures and may be accessed and controlled via your smart phone or tablet. It is automation of the industrial, housework or household activity. Industrial automation may include centralized control of lighting, HVAC (heating, ventilation and air conditioning), appliances, security locks of gates and doors and other systems, to provide improved convenience, comfort, energy efficiency and security.

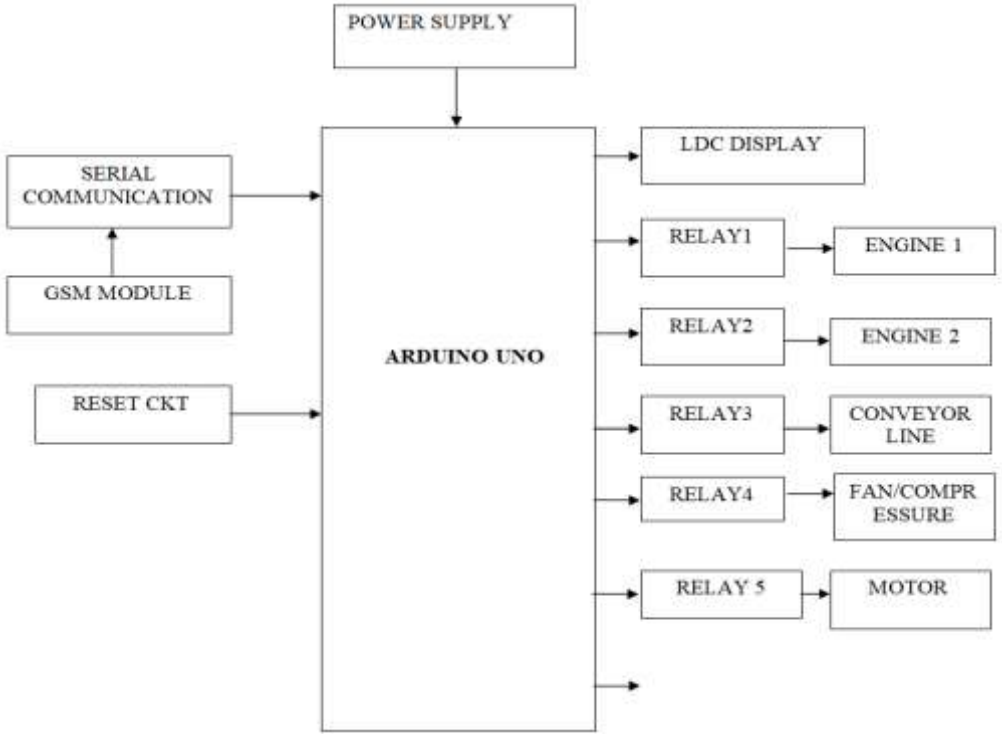
I. INTRODUCTION

The term Internet of Things (often abbreviated IoT) was coined more than ten years ago boindustry researchers but has emerged into mainstream public view only more recently. Some claim the Internet of Things will completely transform how computer networks are used for the next 10 or 100 years, while others believe IoT is simply hype that won't much impact the daily lives of most people. Industrial automation for the elderly and disabled can provide increased quality of life for persons who might otherwise require caregivers or institutional care. This project helps to avoid the wastage of energy, here you can control some of your industrial appliances through internet that can switch ON/OFF some of home appliances like water heater, lights and fans etc. Automation used at the industry or home is no longer a future found in state-of the-art buildings but it is getting more common as the prices fall to reasonable ranges. Industrial automation is the residential extension of building automation and designed a novel gateway between industrial appliance connected to a smart phone and the Internet mainly for the scenario in industries and building automation. With the improvement of the traditional gateway, the users on the Internet can control the sensors which are connected to a PC with internet. The popularity of industrial automation has been increasing greatly in recent years due to much higher affordability and simplicity through Smartphone and tablet connectivity. The concept of the "Internet of Things" has tied in closely with the popularization of home automation

II. METHODOLOGY

GSM based remote temperature Monitoring system is implemented, remote temperature is sensed and sent to the personal computer successfully using GSM modem. Using the equipment, temperature is successfully checked. The instrument can be placed in the garages, factories to keep a check on temperature data. Thus suitable measures can be taken to monitor the temperature. The limitation of this project is that the sensors which is used for the project is sensitive. One more limitation is that if network is busy, the delivery of SMS may fail. • Input module design can be made simpler. • Hardware can be further reduced. • Data sending can be made real time. • An alarm can be triggered if the temperature value crosses the limit. Better temperature sensors can be used to get accurate values

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:07/Issue:04/April-2025 Impact Factor- 8.187 www.irjmets.com



Hardware requirements:

- Arduino UNO
- GSM Modul
- Relay driver
- Load
- LCD display
- Buzzer

Software requirements:

- MPLAB IDE
- PCB wizard
- Protel SE 99

III. MODELING AND ANALYSIS

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:07/Issue:04/April-2025 Impact Factor- 8.187 www.irjmets.com

IV. ADVANTAGES

1. Increased Efficiency
2. Enhanced Quality Control
3. Cost Savings
4. Predictive Maintenance
5. Flexibility and Scalability
6. Improved Safety
7. Data-Driven Insights

V. CONCLUSION

Implementing digitization and remote monitoring and control systems in manufacturing provides numerous advantages, enhancing efficiency, quality, and adaptability while reducing costs and risks. These systems not only improve operational performance but also position manufacturers to respond effectively to market demands and challenges.

VI. REFERENCES

[1] P. Guillemin; P. Friess,"Internet of Things Strategic Research Roadmap", 2009.

[2] K. Nosbusch,"Industrial IoT in Action", Keynote sessions at Internet of Things world forum, 2013, Barcelona Spain.

[3] J. Chambers,"Industrial IoT in Action", Keynote sessions at Internet of Things world forum, 2013, Barcelona Spain.

[4] K.A. Karini,"The IoT architecture needed to enable > 95% of sensing nodes at the edge of the network, Keynote sessions at Internet of Things world forum, 2013, Barcelona Spain