Smart Automation System

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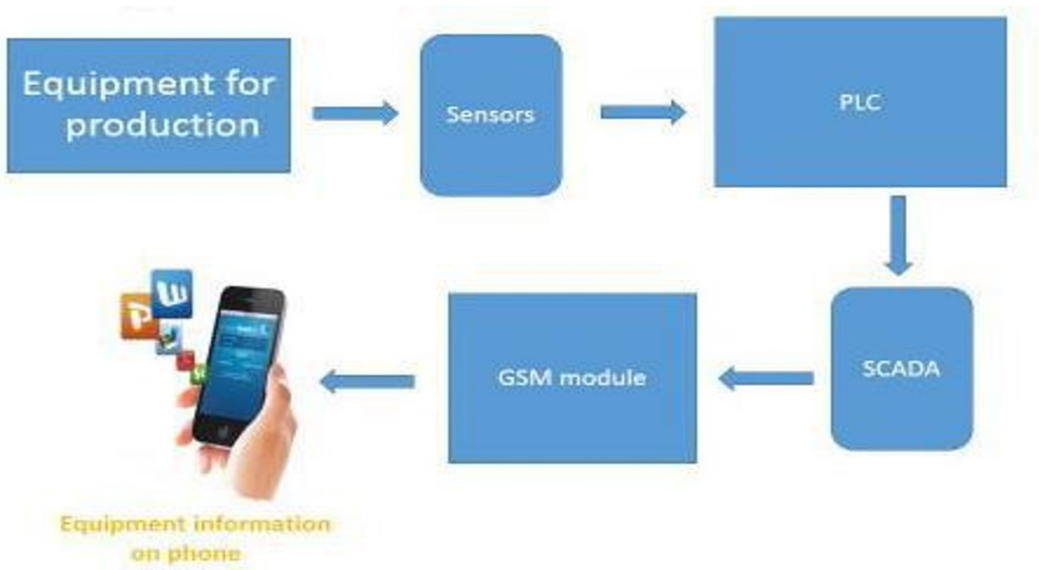
Abstract

This Poster involves the study of fault detection and correction in automation industry with the use of PLC, SCADA, GSM and smart sensor technology. Detection of fault can be made easily with the use of SCADA and proper implementation of PLC in automation machines , but this project shows how to control that detected fault with the use of mobile or GSM device and how to get a solution of that fault using smart sensors. This can same time and resources in protecting human lives and machines. The design of this smart system includes smart technology and smart devices. The use of PLC-SCADA -GSM is must but for further improvement, smart technology used.

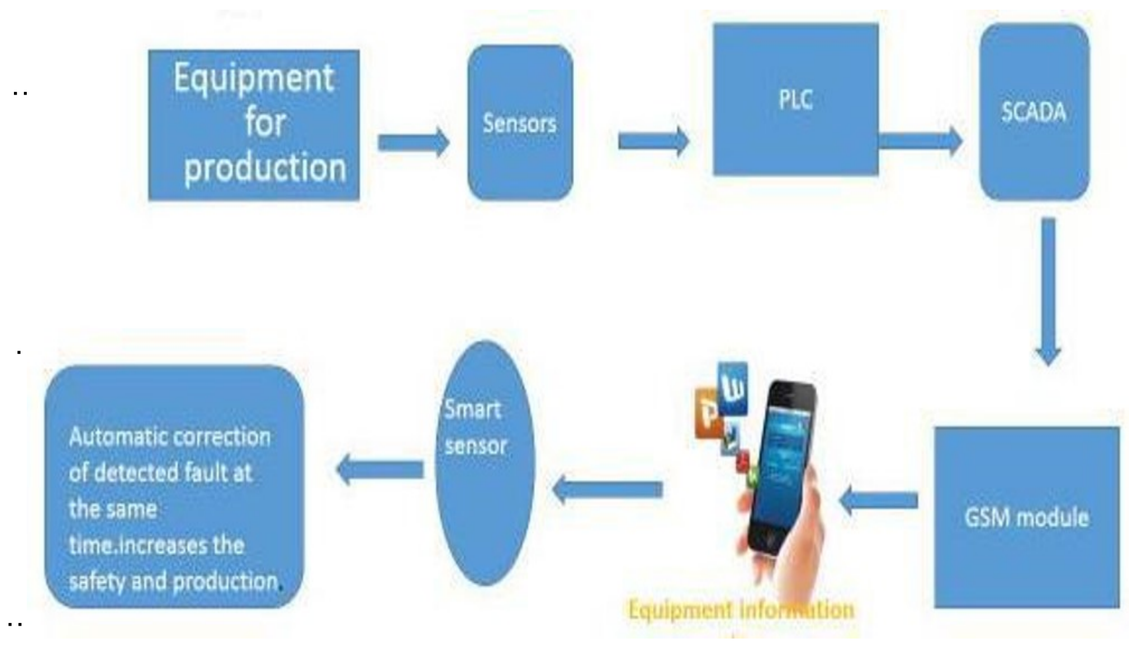
Introduction

"Automation is the use of tools and strategies that reduce human involvement or interaction in unskilled, repetitive or redundant tasks". In industry there are semi auto machines running across the plant continuously and daily. Production and line running is very important for the plant team to achieve targets. When a machine is under breakdown in a plant, it is important that the machine is repaired in minimum time to avoid huge production losses. But in plant it is observed that there is delay in informing the engineering team about breakdown and so there is a delay in repair. Also information regarding critical process parameters are to be collected daily by person, which is time consuming and human dependent job in a plant. Sometimes even the data are not available in case of people are not present.
In such case if there can be a system developed through which engineer can get critical process parameters on his mobile without going to machine can be of huge benefit. If equipment is malfunctioning and immediately the information is received by the plant engineer, it can make a difference. The engineers can solve the problems quickly with minimal loss to industry. This project is developing a prototype which increases the speed of production and safety of all machines and human besides increasing profit and revenue.

Working Principle and Equations

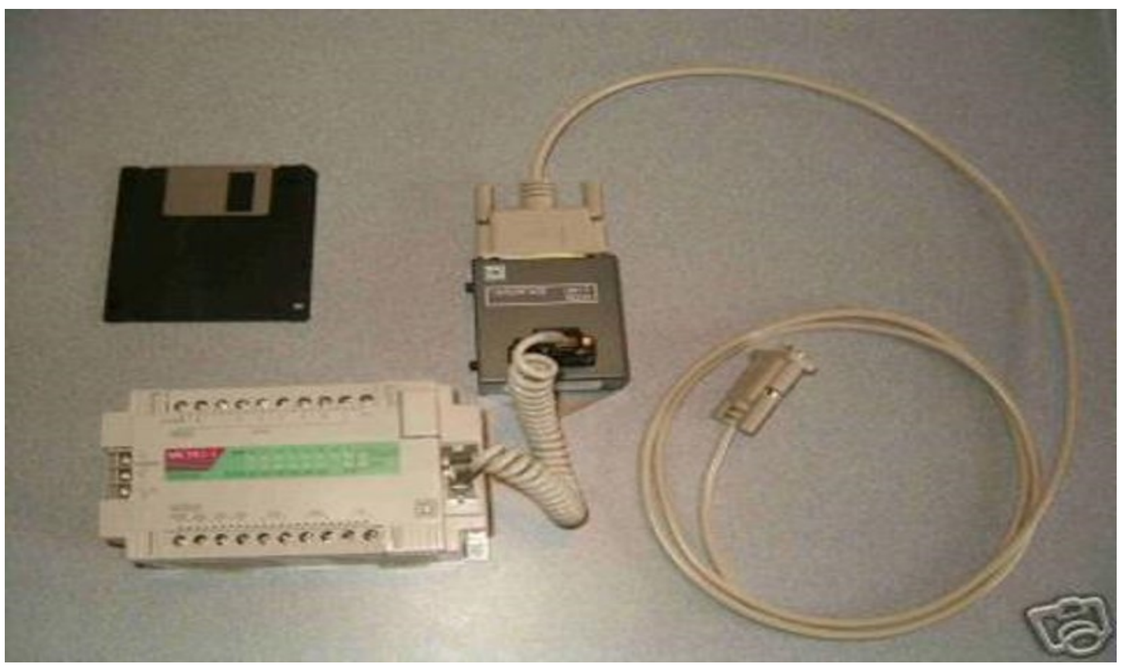


There is a provision in our system through which plant engineer gets information immediately regarding machine breakdown . Data is collected from a mill (equipment) through sensors. The sensors will be connected to a PLC. From PLC the data would be processed and sent to a CPU based SCADA system . GSM module will be connected to the CPU after configuration and the data will be sent on the mobile. Once you get the data using smart technology like sensor and auto control devices immediate solution can be taken and there will be no loss for the user and machine.

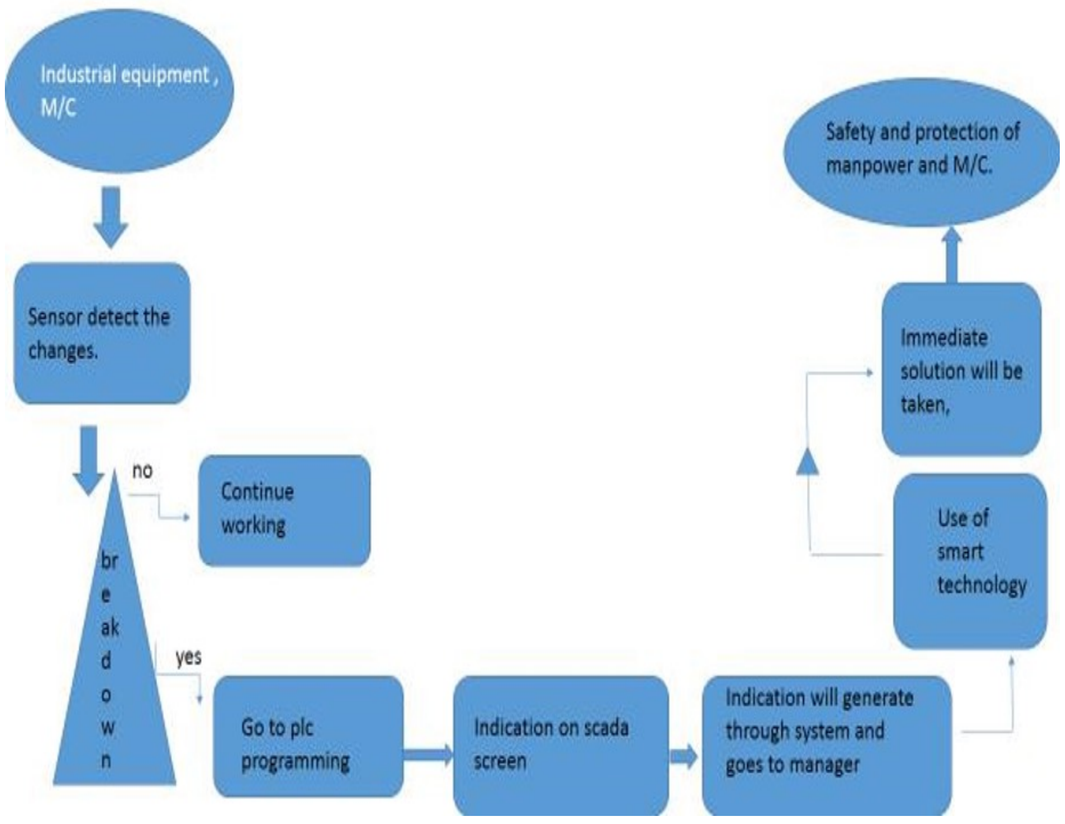


Parts

- Rs linx for communication set up between plc hardware and software.
- Rs logix 500.
- Factory talk for scada.
- Rockwell software which is installed in automation industry.
- Allen Bradely plc.



Project Schematics Circuit



Future Work

- Suppose as you detect the fault and you get SMS on your phone and you have application in your phone with all the available smart sensors on the app. If IP address is available on app's sensor and then we established a direct communication between both of them. We can directly correct /control the same fault immediately.
- It would be nice to develop this kind of application which contain all kind of smart sensors and software communication techniques.

Conclusion

- We need to have SMART AUTOMATION in our industry as these are the becoming commonly available and are not expensive anymore. So we need to develop this kind of app and we are working on it. As soon as we get success in making this application, our industries will become more productive, and this will help cut down the time for repair.