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BETTER MONITORING AND FAULT RESPONSE OF MOTOR DRIVE USING SMTP OF SCADA

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Abstract - This project is all about better monitoring DRIVE using SMTP (Simple Mail Transfer Protocol). Induction motors are widely used AC motors in industrial area. Advanced Semiconductor technology & use of microcontroller have made the speed control of Induction motor easier. SCADA (Supervisory Control and Data Acquisition) is a system which exercises supervisory monitoring and control of a process from computer screen without being physically present near the process. As PLC directly monitors and controls the input given to the Drive, SCADA system acquires data through communication with PLC. SMTP connection is the only method used to send the Mail from SCADA. This, in turn, leads to the communicating with drive for user become more easier, and reduces the labor costs by minimizing site visits for inspection , data collection and making rectifications

Key words: SCADA(Supervisory Control and Data Acquisition), PLC(programmable logic controller), SMTP(simple mail transfer protocol)

1. INTRODUCTION

In industries to monitor and maintain a process, we usually have a process control room and regular list of parameters to be monitored. There might be some emergency situations where we have to respond immediately. Also because of the conventional monitoring methods there may be larger down times when multiple parameters at various locations go haywire. With the help of our proposed project we can minimize all these problems and pave way for wireless smart operation and maintenance.

Using our project we can send the commands to the PLC from SCADA so that one can control the operations in an industry where the PLC's are involved in a remote way from anywhere across the world, to access remotely and for passing the commands to PLC we are using an SCADA in between the PLC and the drive.

1.1 BLOCK DIAGRAM

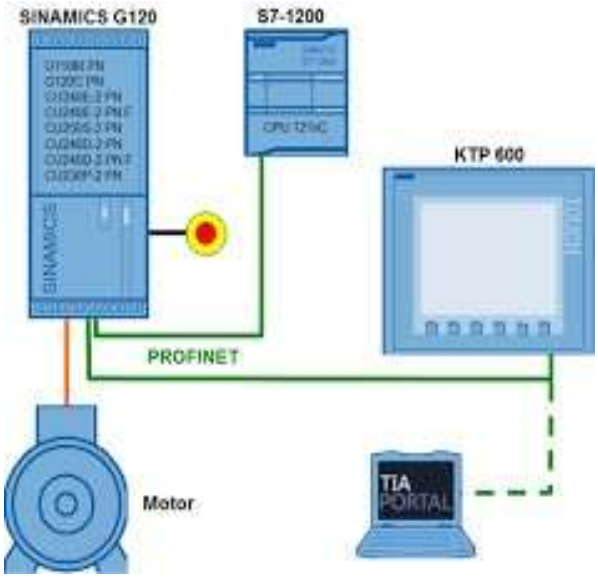


Fig 1:Block diagram of proposed model

1.2 The hardware components we used are

1.Siemens PLC S71200 :

Fig 2 : PLC S71200

A PLC is an electronic device that takes input from the plant via sensors and transmitters, executes the logic programmed in its memory and generates the useful output on actuators to control the plant. 1214 AC/DC type is used.

2. 2. Drive G120:

Fig 3: Drive G120

Siemens electromechanical drive systems help you increase uptime and minimize Total Cost of Ownership (TCO). Components are designed to work together seamlessly, delivering the most cost-effective, right sized drive system for any application. When supported by Siemens digitalization technology, your productivity is enhanced and repair time is reduced by quick and easy access to Siemens off-site technical resources.

3. PROFINET Cable:

Fig 4: Profinet Cable

Profinet (usually styled as PROFINET, as a portmanteau for Process Field Net) is an industry technical standard for data communication over Industrial Ethernet, designed for collecting data from, and controlling equipment in industrial systems, with a particular strength in delivering data under tight time constraints (on the order of 1ms or less).[1] The standard is maintained and supported by PROFIBUS & PROFINET International (PI) , an umbrella organization headquartered in Karlsruhe, Germany.

4. Motor and Drive:

Fig 5: Drive and Motor Combination

An **induction motor** or **asynchronous motor** is an **AC** electric **motor** in which the electric current in the rotor needed to produce torque is obtained by electromagnetic **induction** from the magnetic field of the stator winding. An **induction motor** can therefore be made without electrical connections to the rotor.

The following are the software's used.

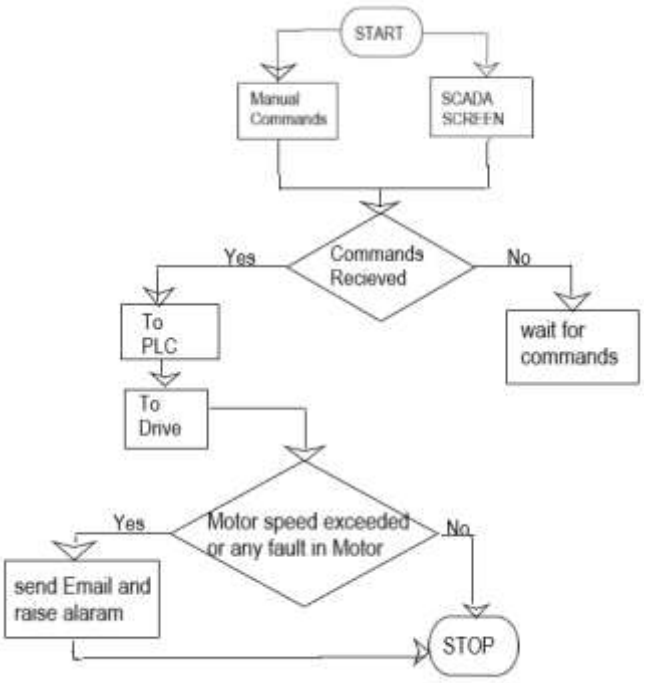
1. TIA portal:

Totally Integrated Automation (TIA) portal, we can configure the hardware and do the programming. Ladder logic is used to program the PLC.

2. SCADA

Supervisory control and data acquisition (**SCADA**) is a control system architecture comprising computers, networked data communications and graphical user interfaces (GUI) for high-level process supervisory management, while also comprising other peripheral devices like programmable logic controllers (PLC) and discrete proportional-integral-derivative (PID) controllers to interface with process plant or machinery. The use of SCADA has been considered also formanagement and operations of project-driven-process in construction.

IV. FLOW CHART



V. EXPERIMENTAL SETUP

Step wise control flow of the project is explained in simple images below

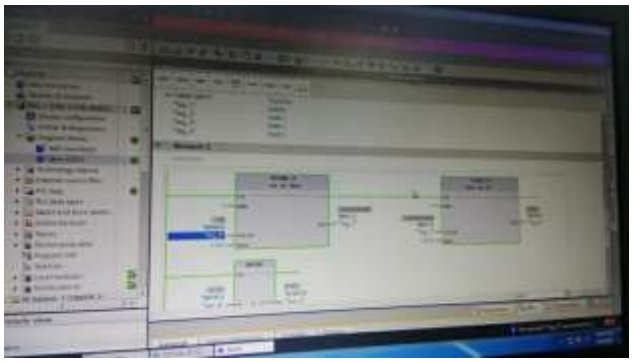
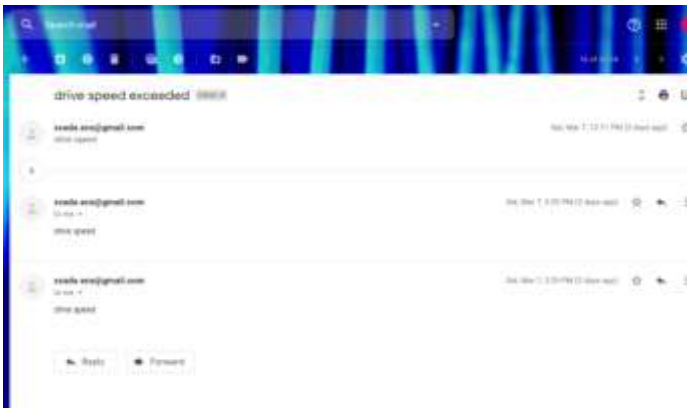


Fig 6: Basic Program Written for contolling motor

Fig 7: Running of Motor at controllable speed

Fig 8: Speed of Motor on Display

VI. SENDING A MAIL FROM SCADA



The better method of drive communication is achieved with this message that we get through mail making us aware of the motor status such as the speed changes and voltage fluctuations in the motor given by drive.

VII. CONCLUSION

Concisely, by adopting the supervision of drive through PLC and sending a mail for each and every drive status and abnormal conditions such as communication errors, overload, and rotor stalled etc. This method increases flexibility of operation and handling capacity of the plant.

This method can be implemented with any process equipment associated with feedback devices for monitoring. By addressing the errors and . There is no interruption by using this method in the plant. It reduces the workforce. Hence, we conclude that the efficiency of the plant increases which leads to quality of the production.

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