ADVANCED THERMAL OVERLOAD PROTECTION FOR HIGH TENSON MOTOR USING DIGITAL PROTECTION WITH EMBEDDED SYSTEM

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ABSTRACT

A SIBY Solvents Extraction Private Limited (Soap Oil factory) located near Chinna Salem has a major problem in Palletizer control. This problem mainly depends on load control like handling coal and other raw materials by the conveyor.An embedded system based design consists of a controller which is used to measure the current and voltage rating for the Palletizer. Based on the above parameters the power of the motors can be calculated simultaneously. The solution of the problem is solved by setting the lower limit and upper limit of current value for the motor. If the motor current is greater than set value the contactor, will cut the power supply to the motor. If the motor current less than set value it generates the on signal to the motor. In addition with that the on time and off time of the motor will be stored to the controller for the future reference. The workers from the industry can't control the palletizer within in a time due to its control panel distance and lack of language communication.

Keyword :- palletizer,conveyor,contactor,microcontroller

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1. INTRODUCTION

In this fast growing industrial age every industrial unit needs speed in manufacturing. Robotics has found a wide application in industries. Automation provides far better service to customers eliminating the monotonous work by human, achieving accuracy and speed in work. They are high in demand and are used to carry out most of the work which saves time and is more efficient. A large number of motors are being used for general purposes in our surrounding from house- hold equipment to machine tools in industrial facilities. The electric motor is now a necessary and indispensable source of power in many industries. The function and performance required for these motor are wide-ranging. IM are the most widely used motor for appliances, induction control, and automation; hence they are roust, reliable and durable. Three phase induction motor generally suffers from under voltage, over voltage, overheating, single phasing and phase reversal problems.

Due to this electrical fault the winding of motor get heated which lead to insulation failure and thus reduce the life time of motor. When the three phase induction motor supply with higher voltage than is rated then induction motor starts overheated. When supply voltage is lower than rated then voltage drop across the resistance is higher than it protects the motor from this fault. When supply voltage is lower than voltage drop across the resistance is lower than specified value and motor fails to start. When supply is only one phase, this is single phasing problem and supply voltage fall the rated and once again motor fails to start. It is highly desired that 3 phase induction motor works freely from the seal types' of faults. This fault is generated in induction motor due to variation in induction motor parameters.

2. PROPOSED SYSTEM

In that industry palletizer is used to run continuously without any delay for grinding and crushing of raw materials in accurate manner.

The controller is used to measure the current and voltage rating for the motor. Based on the above parameters the power of the motors can be calculated simultaneously. The solution of the problem is solved by setting the reference current value for the motor. If the motor current greater than set value, the contactor will cut the power supply to the motor. If the motor current less than set value it generates the on signal to the motor.

PIC 16F877A is used for controlling the overall process. The project in feature can be enhanced by using current sensors for overload protection and phase-sequence sensor for protecting the motor from applying wrong phase sequence
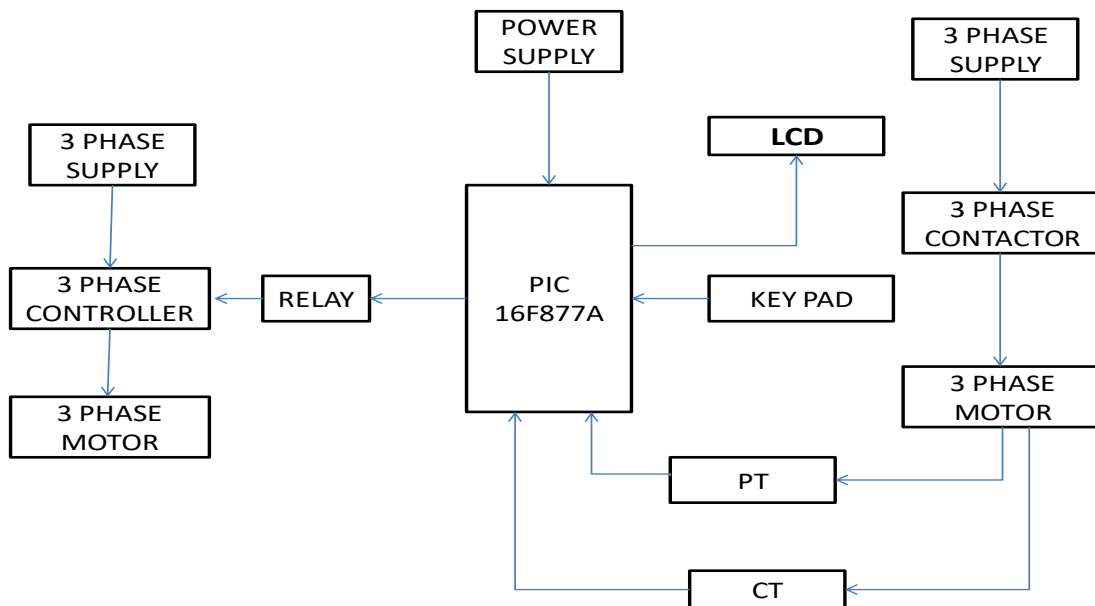

Fig -1: proposed system block diagram

3.MICROCONTROLLER(PIC IC 16F877A)

   PIC is a family of modified Harvard architecture microcontrollers made by Microchip Technology, derived from the PIC1650 originally developed by General Instrument's Microelectronics Division. The name PIC initially referred to "Peripheral Interface Controller". PICs are popular with both industrial developers and hobbyists alike due to their low cost, wide availability, large user base, extensive collection of application notes, availability of low cost or free development tools, and serial programming (and re-programming with flash memory) capability.
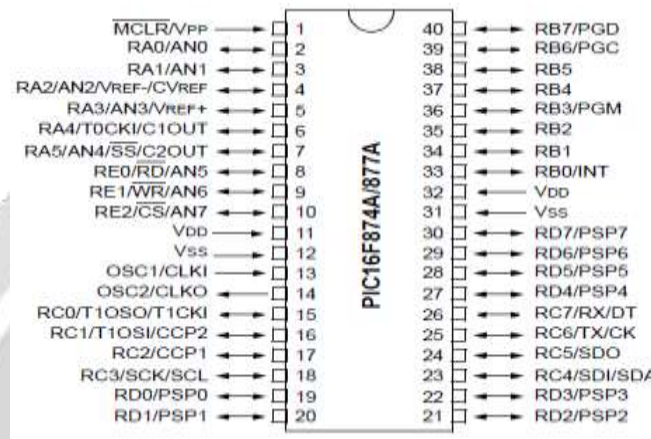
PIN DIAGRAM

Fig. 3.Pic16f877a Pin Diagram

4.POWER SUPPLY

   A power supply (sometimes known as a power supply unit or PSU) is a device or system that supplies electrical or other types of energy to an output load or group of loads. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others.

5.TRANSFORMER

   Transformer is a device used either for stepping-up or stepping-down the AC supply voltage with a corresponding decreases or increases in the current. Here, a transformer is used for stepping-down the voltage so as to get a voltage that can be regulated to get a constant 5V.

6.CONCLUSIONS

   This chapter explains about results of this project and also concluded with scope in the future. This project presents the automatic motor controlling system. This design is the system which can detect the load requirements very quickly and sends the information to the conveyor motor. This project is user-

friendly and reliable. The proposed method is highly beneficial to the automotive industry.

6.1. FUTURE SCOPE

   In, future data logging and analysis can be used for monitoring the overall

Process used in many places.

6.2. ADVANTAGES

- *Smoother behaviour.*
- *Fast response time.*
- *Contains small offset.*
- *Keep system at consistent setting.*
- *It is user friendly.*
- *Highly reliable.*

7. REFERENCES

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