



ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijareeie.com

Vol. 7, Issue 4, April 2018

In 3 Phase Induction Heating Machine Parameter Measuring and Alert System

Prof. Mr. Vaibhav Joshi¹, Punam R. Mande², Surabhi R. Yeole³, Pranjali K. Sonawane⁴

Assistant Professor, Department of E&Tc Engineering, SITRC, Nasik, Maharashtra, India¹

BE Students, Department of E&Tc Engineering, SITRC, Nasik, Maharashtra, India²³⁴

ABSTRACT: In industry to measure the parameters of three phase induction heating machine digital multimeter is used, but this process is risky. To overcome this problem we are implementing a system which measure the parameters of heating machine i.e. AC Voltage, AC Current, Power factor, Power consumption and Frequency with the help of sensor and controller. In 3 Phase Induction Heating Machine Parameter Measuring and Alert System, the all the above parameters are measured automatically i.e. without interference of human being and interlocking system is used for safety purpose. When we are using the interlocking system it is very expedient to protect the complete system which is working on 3 phase power supply.

KEYWORDS: Interlocking system, 3 phase power supply, Parameter measuring.

I. INTRODUCTION

This project is based on parameter measuring of heating machine. In the existing Induction heating machines of the YatinIndustronics, all the parameters needs to be measured using the DSO and DMM. To overcome this we implement our project .In our project the following parameters are measured: AC voltage, AC current, Frequency, Power consumption, Power factor. All the above parameters are displayed on LCD using arduino. In existing system there is no any security system, for this we are using interlocking system in which our system is automatically locked when threshold value is increases above the limiting value. And when the value is exceeds its limit the alert system provided i.e. GSM system is used for sending the message to the user.

II. SYSTEM MODEL AND ASSUMPTIONS

EXISTING SYSTEM AND PROPOSED WORK

In the existing Induction heating machines of the YatinIndustronics, all the parameters i.e. AC voltage, AC current, Frequency, Power factor, Power consumption needs to be measured using the DSO and DMM. When we used DSO and DMM for measuring the above parameter it's very risky to measure it. So to reduce the human efforts to measure all these parameters there is need of system which will measure all these parameters and display on common display board. We used Interlocking system to avoid damage

WORKING PRINCIPLE

BLOCK DIAGRAM

In this diagram above all the parameter are measured using microcontroller and displayed on LCD. And the alert system is used for security purpose. This system is nothing but GSM system with the help of this we can send the message to the user when value are increases above the threshold value.

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijareeie.com

Vol. 7, Issue 4, April 2018

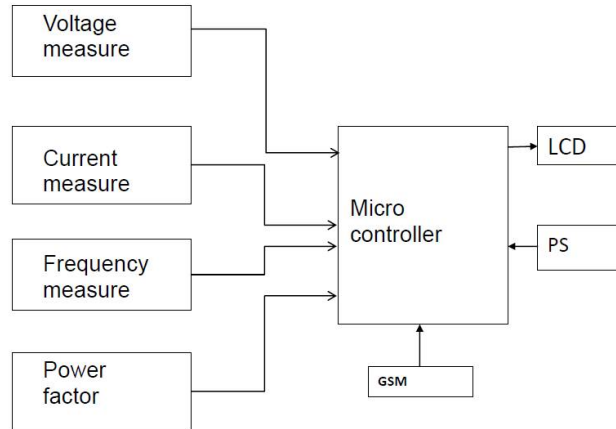


Fig -1: BLOCK DIAGRAM

AC VOLTAGE

In this block diagram we can measure the AC voltage, firstly we measure single phase supply with the help of potential transformer and this measured voltage is in AC form but we want the voltage in DC form due to this we have to rectify the this voltage then filtered it and then it given to the resistor divider network and with the help of this network we can measure the voltage using microcontroller.

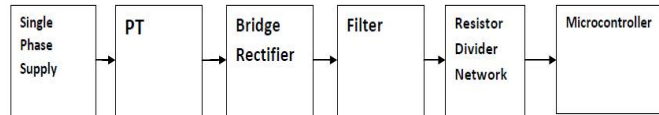


Fig - 2: AC VOLTAGE

AC CURRENT

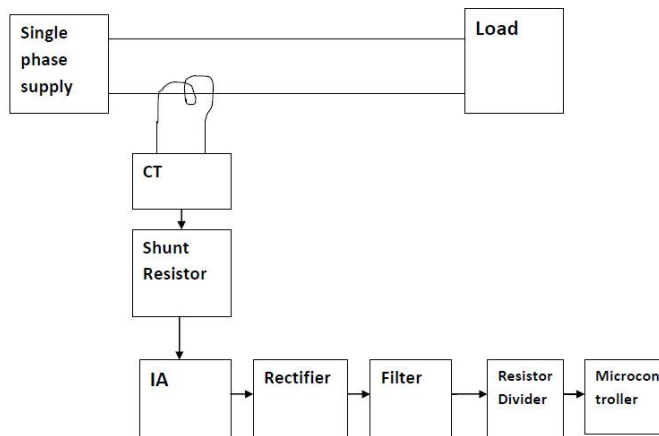


Fig - 3: AC CURRENT.

In this block diagram we can measure the AC current of single phase power supply. We can measure the current using current transformer and shunt resistor. And we cannot measure the current directly firstly we have to measure current across the shunt resistor and then this current is amplified with the help instrumentation amplifier. The

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijareeie.com

Vol. 7, Issue 4, April 2018

output of IA is given to the rectifier for rectification purpose then the rectified output is filtered by filter is given to the resistor divider network and output of this network is nothing but the voltage and this voltage is measured by microcontroller.

FREQUENCY

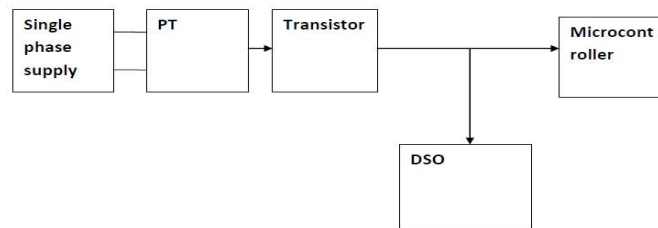


Fig - 3: FREQUENCY

In this block diagram we can measure the frequency of the supply with the help of DSO using microcontroller.

III.SECURITY

For security purpose the interlocking system is provided for protecting whole circuitry. In that interlocking system relay is provided for cut out the threshold value.

IV. RESULT AND DISCUSSION

Fig 1 shows the whole circuitry of project in which PIC microcontroller is use as a processor and current sensor is use For measuring the current of heating machine. In this circuit three step down transformer are used because the voltage of heating machine.

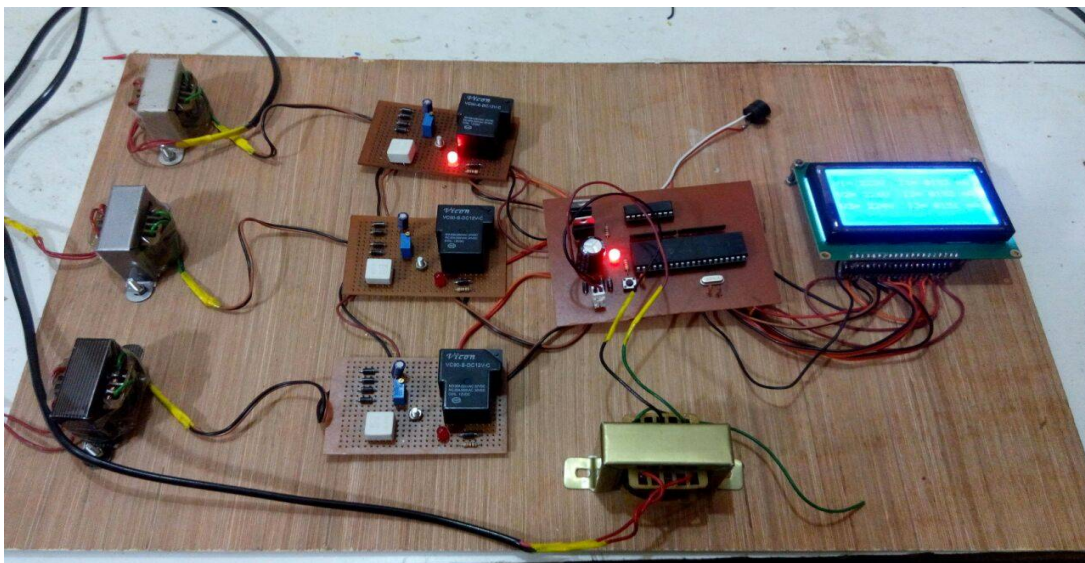


Fig:1



ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijareeie.com

Vol. 7, Issue 4, April 2018



Fig: 2

The Fig 3 shows the measured parameter on GLCD display



Fig: 3

V.CONCLUSION

This system provides human safety and gives us the measured parameters without any risk. This system uses current sensor for measuring AC Current and microcontroller as processing unit.

REFERENCES

1. Dr. K.Ravichandrudu, P.SumanPramod Kumar, " 3-Phase Ac Motor Monitoring and Parameter Calculation Using Labview and Daq"International Journal of Computational Engineering Research, Vol, 03, Issue, 10.
2. Mohit Kumar, Mohnish Sharma, " ZIGBEE BASED PARAMETER MONITORING AND CONTROLLING SYSTEM FOR INDUCTION MACHINE" Conference on Advances in Communication and Control Systems 2013, Published by Atlantis Press
3. Prof. Ms.MadhuriBalasahebZambre, " Microcontroller Based Protection and Control of Three-Phase Induction Motor"International Journal on Recent and Innovation Trends in Computing and Communication ISSN: 2321-8169 Volume: 3 Issue: 11 6287 – 6292