"REVIEW : INDUCTION HEATER FOR INDUSTRIAL GEAR & BEARING ASSEMBLY BASED ON EDDY CURRENT TECHNIQUE "

Rahul Dekate[1,]*Asst. Prof., SCET,* P.P.Titarmare[2], *Asst. Prof., SCET,* Priyanka Gaurkhede[3], *Asst. Prof., SCET,* Ashish Motghare[4],*Student,* Ravindra Bisen[5],*Student* , Roshani Pokale[6],*Student,* Shubham Nagose[7],*Student,* Sagar Karemore[8], *Student*

Abstract

To reduce the risk of faulty mounting, the Import Heater helped to initiate the use of a flexible import radiator for mounting application. This Importing Radiator is safer and more direct in the heat of the import .The import temperature is expected to be warmer. In any case; another piece of metal that forms a closing circuit can be heated.

Keyword: import heater, bearing, gear, flexibility, reliability, Microcontroller, work piece.

Introduction

This phenomenon has been widely studied in many application as for example transformer & other magnetic design this basic electromagnetic phenomenon in which induction heater relies has been described & discussed extensively used .[2] This induction heater is designed to heat bearing that are mounted with an interference into a shaft . The heat causes the bearing to expand which eliminates the need to use force during installation. A 900C (1940 f) temperature difference between the bearing &shaft is generally sufficient to enable installation. [3]

Methodology

Microcontroller based Induction Heater Industrial Gear Bearing comprise of following parts - Temperature regulator , computerized clock , set reset start switches , transfer 5v DC , show marker , Temperature sensor , enlistment radiator curl , SSR, connector strip , twp pin , winding paper , transformer center. The beneath given graph of Induction Heater for gear and bearing gathering essential capacity of IH enlistment radiator.

A. Security structure over warming and over current

B. Temperature Controller

It gives heat energy into a substance at wanted temperature on the off chance that there is abrupt change in the current worth, this regulator give sign to save the hardware just as save the strength of administrator from enlistment warm

C. Execution Optimization

Strong state transfer stage best when the static progression of current to the warmer keeping up with inductive burden and get break the line from over stacking in this framework.

D. Correspondence

The microcontroller based enlistment warmer is obligated for correspondence with Electronic control unit computerized clock and temperature control within the time span. It's almost give sure running of the model

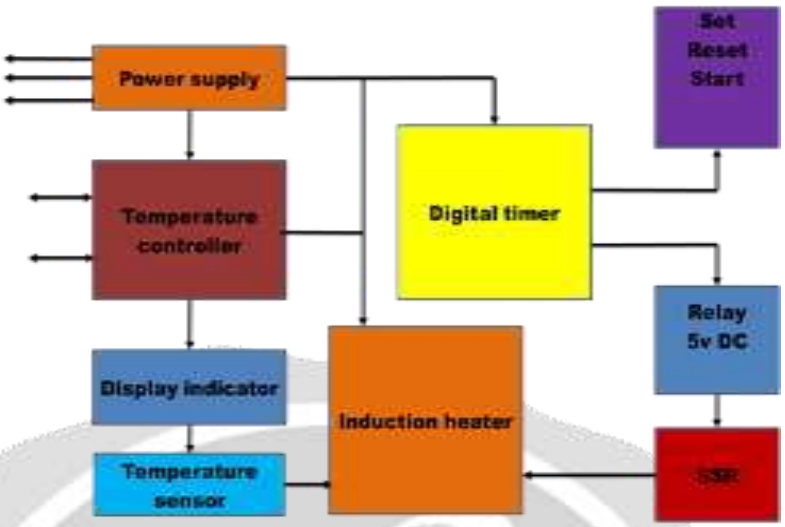

Fig: 1 Block Diagram of Microcontroller based Induction Heater for Industry Gear & Bearing.

Advantage And Application

Advantages :-

- Therequiredtargettemperaturecanbeheatedtothedesiredtargetinsecondscomparedwithother methods.
- Itismore economicalthanotherinductionheater.
- Itcanconsumelesspowerandgivemoreoutput.
- Ittakeslesstime.
- Itiscanmoresafe.
- Efficientand quickheating
- Accurate,repeatableheating
- Safeheatingas thereis no flame
- Prolongedlifeoffeaturingduetoaccurate heating

Applications:-

- Itcan beused inrailwayworkshop.
- Itcanbeusedincarindustry.
- Itcanbeusedforgearmechanism.
- Itcan alsouseinpipemoldingprocess.

Conclusion

In this paper, the design and construction of the power system for the induction heating cooker based on resonant converter is presented. The control circuit is composed of error amplifier, time delay section, oscillator section, gate pulse section, oscillator section, gate pulse transformer and resonant tank circuit. The halt-bridge series resonant converter and configuration is chosen.

References

1. F. Forest, E. Lamoure, F. Costa, and J. Y. Gaspard, "Principle of a multi-load/single converter system for low power induction heating," IEEE Trans. Power Electron., vol. 15, no. 2, pp. 223–230, 2000. 88.
2. F. Montverde, P. Hernandez, J. M. Birdie, J. R. Garcia, and A. Martinez, "A new ZVS twooutput series-resonant inverter for induction cookers obtained by a synthesis method," in Proc. 31st IEEE Power Electronics Specialists Conf., vol. 3, 2000, pp. 1375–1380 vol.3. 88.
3. V. Estevez, J. Jordan, E. J. Deed, E. Sanchis-Kilders, and E. Mast, "Induction heating inverter with simultaneous dual-frequency output," in Proc. 21st IEEE Applied Power Electronics Conf. and Exposition, 2006, pp. 5 pp.–. 87.
4. S. Okudaira and K. Mats use, "Power control of an adjustable frequency quasi-resonant inverter for dual frequency induction heating," in Proc. 3rd Int. Power Electronics and Motion Control Conf., vol. 2, 2000, pp. 968–973 vol.2. 87.
5. H. P. Ngoc, H. Fujita, K. Ozaki, and N. Uchida, "Phase angle control of high-frequency resonant currents in a multiple inverter system for zone-control induction heating," IEEE Trans. Power Electron., vol. 26, no. 11,.