#Jenny

Finally I get this ebook, thanks for all these I can get now!

#Rio

Cool! I'am really happy

#Markus Jensen

I did not think that this would work, my best friend showed me this website, and it does! I get my most wanted eBook

#Hun Tsu

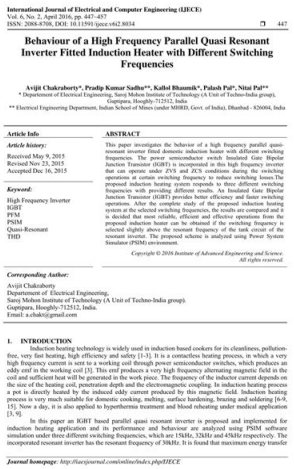
wtf this great ebook for free?!

#Che Salsa

My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler

so many fake sites. this is the first one which worked! Many thanks



International Journal of Electrical and Computer Engineering (IJECE)
Vol. 6, No. 2, April 2016, pp. 447~457
ISSN: 2088-8708, DOI: 10.11591/ijece.v6i2.8034 ❒ 447

Behaviour of a High Frequency Parallel Quasi Resonant Inverter Fitted Induction Heater with Different Switching Frequencies

Avijit Chakraborty*, Pradip Kumar Sadhu, Kallol Bhaumik*, Palash Pal*, Nitai Pal****
* Department of Electrical Engineering, Saroj Mohon Institute of Technology (A Unit of Techno-India group), Guptipara, Hooghly-712512, India
** Electrical Engineering Department, Indian School of Mines (under MHRD, Govt. of India), Dhanbad - 826004, India

Article Info
Article history:
Received May 9, 2015
Revised Nov 23, 2015
Accepted Dec 16, 2015
Keyword:
High Frequency Inverter
IGBT
PFM
PSIM
Quasi-Resonant
THD

ABSTRACT
This paper investigates the behavior of a high frequency parallel quasi-resonant inverter fitted domestic induction heater with different switching frequencies. The power semiconductor switch Insulated Gate Bipolar Junction Transistor (IGBT) is incorporated in this high frequency inverter that can operate under ZVS and ZCS conditions during the switching operations at certain switching frequency to reduce switching losses.The proposed induction heating system responds to three different switching frequencies with providing different results. An Insulated Gate Bipolar Junction Transistor (IGBT) provides better efficiency and faster switching operations. After the complete study of the proposed induction heating system at three selected switching frequencies, the results are compared and it is provided that more reliable, efficient and effective operation can be provided if induction heater operates at switching frequency is selected slightly above the resonant frequency of the tank circuit of the resonant inverter. The proposed scheme is analyzed using Power System Simulator (PSIM) environment.

Corresponding Author:
Avijit Chakraborty
Department of Electrical Engineering,
Saroj Mohon Institute of Technology (A Unit of Techno-India group).
Guptipara, Hooghly-712512, India.
Email: a.chakt@gmail.com

1. INTRODUCTION

Induction heating technology is widely used in induction based cookers for its cleanliness, pollution-free, very fast heating, high efficiency and safety [1-3]. It is a contactless heating process, in which a very high frequency current is sent to a working coil through power semiconductor switches, which produces an eddy emf in the working coil [3]. This emf produces a very high frequency alternating magnetic field in the coil and sufficient heat will be generated in the work piece. The frequency of the inductor current depends on the size of the heating coil, penetration depth and the electromagnetic coupling. In induction heating process a pot is directly heated by the induced eddy current produced by this magnetic field. Induction heating process is very much suitable for domestic cooking, melting, surface hardening, brazing and soldering [6-9, 15]. Now a day, it is also applied to hyperthermia treatment and blood reheating under medical application [3, 9].

In this paper an IGBT based parallel quasi resonant inverter is proposed and implemented for induction heating application and its performance and behaviour are analyzed using PSIM software simulation under three different switching frequencies, which are 15kHz, 32kHz and 45kHz respectively. The incorporated resonant inverter has the resonant frequency of 30kHz. It is found that maximum energy transfer

Journal homepage: *http://iaesjournal.com/online/index.php/IJECE*