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DESIGN OF LOW COST VARJABLE SPEED DRIVE FOR AIR BLOWER MOTOR

A dissertation submitted to the
Department of Electrical Engineering, University of Moratuwa
in partial fulfillment of the requirements for the
Degree of Master of Engineering

BY
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Abstract

In Air conditioning air blowers are working at full speed although the conditional area at set temperature. Tins situation consumed considerable amount of energy to drive \ the fan or blower and running the refrigeration cycle itself The amount of energy which is used to drive the air blower and refrigeration cycle of the air conditioning system can be considered as loss of energy. This loss can be minimized by introducing the Variable Speed Drive (VSD) to drive the air blower or fan by sensing the conditional area temperature etc.

Cost of the VSD is very high in the local market, and it creates long pay back period for investment of installing a VSD for air conditioning system. Also electricity tariff in Sri Lanka is very high and has a trend of increasing. Therefore by introducing VSD the electrical energy used for Air conditioning can be minimized.

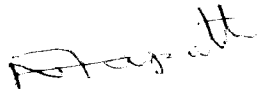
By considering the above facts low cost VSD is useful for the local market. In this project low cost Micro controller has been used as the motor control unit. Micro controller generates PWM to drive IGBTs in power module. The method used to vary the speed of induction motor is varying the voltage and frequency by keeping voltage/frequency ratio constant. Micro controller senses the variable voltage created by the potential meter or controller. TIns voltage is converted into form of binary value by one of analog to digital converter in the micro controller. This value is used to calculate pulse width and number of pulses in the period. The software program senses the ON/OFF switch input for the Micro controller and accordingly Run or Stop the motor.

The program can be further developed for improving reliability and safety of the

DECLARATION

The work submitted in this dissertation is the result of my own investigation, except where otherwise stated.

It has not already been accepted for any degree, and is also not being concurrently submitted for any other degree.



N. T. Athapattu
06 / 12 / 2006

I endorse the declaration by the candidate.

UOM Verified Signature

Dr. J. P. Karunadasa

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