

INVESTIGATION OF HARMONIC LOSSES FOR
PERSONAL COMPUTER DUE TO TYPE
OF VOLTAGE SOURCE

MOHD HAFIZ BIN HAMZAH

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INVESTIGATION OF HARMONIC LOSSES FOR PERSONAL COMPUTER DUE TO TYPE OF VOLTAGE SOURCE

By

MOHD HAFIZ BIN HAMZAH

Report submitted in partial fulfillment
of the requirements for the degree
of Bachelor of Engineering (Industrial Electronic Engineering)



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Thank you,

DECLARATION SHEET

I hereby declare that my Final Year Project Thesis is the result of my research work under supervision of Ir. Risnidar Chan Bahaudin. All literature sources used for the writing of this thesis have been adequately referenced.

Name : MOHD HAFIZ BIN HAMZAH
Candidate number : 081070472
Supervisor : IR. RISNIDAR CHAN BHAUDIN
Title of thesis : AN INVESTIGATION OF HARMONIC LOSSES FROM PERSONAL COMPUTER (PC) DUE TO TYPE OF VOLTAGE SOURCE.

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Candidate's signature: Supervisor signature:

.....

Date:

Date:

APPROVAL AND DECLARATION SHEET

This project report titled An Investigation of Harmonic Losses from Personal Computer due to type of Voltage Source was prepared and submitted by Mohd Hafiz Bin Hamzah (Matrix Number: 081070472) and has been found satisfactory in terms of scope, quality and presentation as partial fulfillment of the requirement for the Bachelor of Engineering (Industrial Electronic Engineering) in Universiti Malaysia Perlis (UniMAP).

Checked and Approved by

**(IR RISNIDAR CHAN BHAUDIN MT)
Project Supervisor**

**School of Electrical System Engineering
Universiti Malaysia Perlis**

May 2011

KAJIAN KEHILANGAN HARMONIK DARIPADA KOMPUTER PERIBADI

ABSTRAK

Projek ini adalah kajian berkenaan gangguan harmonik yang akan disebabkan oleh pelbagai jenis bentuk gelombang daripada pembekal voltan kepada komputer peribadi (komputer riba). Pembekal voltan untuk projek ini adalah gelombang sinus, gelombang segi empat, gelombang segi tiga dan gelombang kombinasi harmonik ketiga dan harmonik kelima. Ini kerana beban yang digunakan dalam projek ini adalah komputer yang mana akan menghasilkan arus tidak sinus melalui harmonik bernombor ganjil dengan lebih jelas. Gangguan harmonik daripada beban akan diukur terhadap setiap jenis gelombang pembekal voltan seterusnya untuk penyelesaian, penapis harmonik akan direka untuk mengurangkan gangguan harmonik dan meningkatkan faktor kuasa. Perbandingan antara nilai yang mempunyai penapis harmonik dan tanpa penapis harmonik akan ditunjukkan untuk membuktikan nilai harmonik akan mengurang dan faktor kuasa akan menaik.

INVESTIGATION OF HARMONIC LOSSES FROM PERSONAL COMPUTER

ABSTRACT

This project is about investigating harmonics distortion caused by the type of voltage source to personal computer (laptop). The voltage sources for this project are sine wave, square wave, triangle wave and combination of harmonic 3rd and 5th. The load that has been used for this project is Computer which will draw non-sinusoidal current with odd number of harmonics more significantly. Harmonic distortion from the load will be measured due to multiple types of voltage source waveforms and as the solution the harmonic filter will be designed to reduce harmonic distortion and improve the power factor. Comparison value with harmonic filter and without harmonic filter will be shown to prove that harmonic value will decrease and power factor will be increase.

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