

# STUDY OF THE LEVELS OF HARMONICS IN CENTRAL PHILIPPINE UNIVERSITY

Project Study Report

Presented to

The Faculty of the Department of the Electrical Engineering

Central Philippine University

Jaro, Iloilo City Philippines

In Partial Fulfillment

of the Requirements for the Degree of

Bachelor of Science in Electrical Engineering

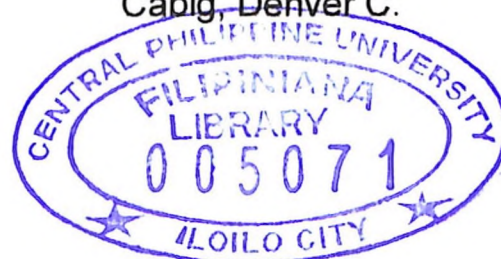
By

Silverderio, Julienne Marie B.

Sultan, Mycka Murielh S.

Tabiolo, Franz J.

Cabig, Denver C.



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Silvederio, Julienne Marie B.; Sultan, Mycka Murielh S.;  
Tabiolo, Franz J.; Cabig, Denver C.

ABSTRACT

This study was conducted to determine the levels of harmonics in Central Philippine University. Harmonic content and power factor data of the 12 transformer banks in the university were gathered using Fluke 1735-three phase power logger. Survey of the connected loads and defective electrical and electronic devices in all the buildings and functional areas of the university was conducted. The type of device were correlated with the harmonic order with the aid of Pearson Correlation Analysis. After the data analysis of the THDV and TDD content of each transformer bank, it was found out that the levels of harmonics in CPU electrical system are all in the acceptable range based on the IEEE Std-519. It has been found out that switched-mode power supply devices and ACU/Refrigerator have no linear relationship with the harmonic orders 3<sup>rd</sup>, 5<sup>th</sup>, and 7<sup>th</sup>. Variable Speed drives have moderate negative linear relationship with 7<sup>th</sup> harmonic content in line C. Lighting devices have moderate positive linear relationship with 7<sup>th</sup> harmonic content in line B. Heating devices have moderate negative linear relationship with 3<sup>rd</sup> harmonic content in line B and strong negative linear relationship with 7<sup>th</sup> harmonic content in line B. The levels of harmonics were not considered as the main contributors of the recorded defective devices. With the gathered and analyzed data, it has been concluded that the buildings in Central Philippine University are not susceptible to the impacts of harmonics. The gathered power factor and TDD per line in each bank have shown no significant linear relationship.