

ABSTRACT

AC-DC converter is a one full phase controlled rectifier. This converter having semiconductor switch component like thyristor. This AC-DC Converter is referred to a non linear load. A non linear load can cause distortion.

Harmonic distortion is the distortion of periodic sine wave voltage, current or power with the waveform frequency is a multiple of the number one outside of fundamental frequency (frequency 50Hz). The value of the frequency of the waveform distortion that is formed is the result of a fundamental frequency between time with the number of harmonics.

High levels of harmonic distortion content contained on electrical load or on electric power distribution system can cause system power quality became worse. This is because the system power becomes lower, the system distorted voltage waveform, lost power on the system increases, and more warming at the transformer. In the end the use of electrical energy to be inefficient. To fix this things, Current % THD (Total Harmonic Distortion) and the voltage generated by the AC-DC converter this attempted to meet IEEE 519-1992.

This study implements the emi filter at rectifier controlled single phase full-order harmonic distortion frequency converters in the three (150 Hz). Before fitting the filter, maximum controlled rectifier power efficiency of 87%; and after installation of the filter characteristic I, power efficiency is decreased to 83%, and after the second installation characteristic II of the filter, power efficiency is increased to 91%. After that, harmonic distortion can be measure using harmonic meter. Value of the measurement displaying that %THD_v maximum is 0,7% and %THD_i maximum is 27%, before the installation of the filter. And after the installation of emi filter characteristic I, %THD_v maximum is increased up to 4,1% and %THD_i maximum is increased up to 22%. In emi filter characteristic II %THD_v maximum is 0,9% and %THD_i maximum is became 27,4%. So, the installation of emi filter characteristic I is generating %THD_v that does not meet the standards of voltage harmonic distortion is permitted, i.e. under 3%. And %THD_v does not meet the standards of currents harmonic distortion, that below 20%. In the characteristic II having a value that meet the standard until 0,7 % but %THD_i does not value something that meet the standards.

Key words : EMI Filter, Harmonic Distortion, Total Harmonic Distortion, IEEE 519-1992