ABSTRACT

Rectifier is a circuit to convert AC voltage source into a DC voltage. One type of rectifier that is widely used is a three phase full wave rectifier. Rectifier has the disadvantage that the total harmonic distortion (THD) of input current, and therefore contributes to the power factor to be down.

This Final Project discusses the design and simulation of three phase full wave rectifier with hysteresis current control (HCC) method. This method can improve the input current waveform that initially distorted into a sinusoidal wave. The system developed uses three additional bidirectional switch that installed on each side of the source phase. The switch controlled by hysteresis current control, the switching that based on the comparison between the current input source with the desired reference. The switch's function is to inject current into the phase to created the source of 50 Hz sinusoidal wave.

The simulation results show that the three-phase full-wave rectifier with a load of 7.5 kW has a current THD of 30.76% with a power factor of 0.95. By using hysteresis current control current THD is 6.7% and power factor of 0.99.

Keyword: hysteresis current control (HCC), three phase full wave rectifier, power factor, total harmonic distortion (THD).
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