

ABSTRACT

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Study Program : *Electrical Engineering*
Title : *Comparative Analysis of Capacitor Bank Installation
With Compensation Method and Impact on
Harmonics at Nurhayati Hospital Garut*

This study aims to analyze and compare the installation of capacitor banks with global compensation and group compensation methods in improving the power factor and see the impact on harmonics in the power system at RSU Nurhayati Garut using ETAP 19.01 software simulation. The results showed that the group compensation method was superior with an increase in power factor up to 0.996 in Phase R and phase S then 0.997 in phase T, compared to the global compensation method which reached 0.997 in phase R, 0.993 in phase S and 0.993 in phase T. However, both methods increased the THD value of the power system. However, both methods increased THD_v and THD_i values due to parallel resonance, with THD_v rising from 2.6% to 2.9% (still within the 8% standard limit) and THD_i exceeding the 12% standard limit, reaching 33.1% in global compensation and 34.1% in group compensation. Resonance occurred at a frequency of 650 Hz in the global compensation and 600 Hz group compensation methods. Based on the analysis results, the group compensation method is more effective in improving the power factor and the harmonics produced are not much different, so it is recommended to be implemented at RSU Nurhayati Garut.

Keyword : *Capacitor Bank, Compensation Method, Harmonics, Power Factor. and Resonance.*