ABSTRACT

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Study Program	:	Teknik Elektro
Title	:	*Design Analysis of an Automatic Capacitor Bank for Fluctuating Loads to Optimize Power Factor Correction at* PT. Melu Bangun Wiweka

Technological developments in the field of electrical energy trigger an increase in power demand in the industrial sector, where large inductive loads often cause a decrease in power factor, network losses, and voltage instability. This condition has an impact on the efficiency of the power grid and higher operating costs due to fines related to low power factor values. This research was conducted at PT. Melu Bangun Wiweka*, a manufacturing company with fluctuating load characteristics dominated by inductive loads. This research aims to design and implement an automatic capacitor bank that can optimize power factor correction on the company's power grid. Measurements and analysis were conducted to compare the performance of the previously used manual capacitor bank with the designed automatic capacitor bank panel. Based on the measurement results before and after implementation, it was found that the use of automatic capacitor banks can significantly improve the power factor value at fluctuating loads, thereby increasing the efficiency of the power grid and reducing power losses. The results of this study demonstrate the importance of using automatic bank capacitors in fluctuating power systems to maintain reactive power stability and power factor optimization*

Key words: Fluctuating Load, Power Factor, Automatic Capacitor Bank