

ABSTRACT

Electric power factor is very important in an industry or household. Electric power factor can decrease because the load used in daily life is inductive so that the power factor decreases and produces reactive power. To find out the magnitude of the value of the power factor, we need a device that can measure the amount of power factor and to reduce the reactive power that appears can be overcome by a bank capacitor.

Therefore, this final project will discuss the design and manufacture of microcontroller-based one-phase power factor improvement tools. The measurement of electrical quantities will be carried out using a current and voltage sensor and a zero crossing detector and a phase detector to determine the phase difference of the electrical amount. The measurement results are analog signals and converted into digital signals by the microcontroller. The output of the microcontroller is a signal to turn on the relay used for switching and activate the bank capacitor. The results obtained from this final project are automatic power factor repair tools. The monitored data will be displayed on the LCD.

Based on the results of testing the reading of $\cos \phi$ on the LCD has been almost close to conformance with the power meter measuring instrument made in factories with an average error of 3.7%. System testing in general has been successful in making improvements to the power factor where capacitors can make improvements $\cos \phi$ with the smallest $\cos \phi$ 0.55 to 0.96 with an average $\cos \phi$ error of 2.35% with a power meter

Keywords: Microcontroller, zero crossing detector, power factor