

ABSTRACT

Electricity is needed by humans in performing daily activities, such as the use of electricity for lights, televisions, computers, water pumps, air conditioners, and others. The electrical equipment is mostly inductive load. As a result of the use of the inductive load, the power factor value will be smaller than 1 (one). Smaller power factor can make use of electric power by electric customers becomes less than optimal from a large available capacity. One way to overcome these values is by improving power factor in order to have power can be used optimally.

In general, the improvements of power factor made with the installation capacitor with a constant value using a timer. But this method has drawbacks, namely the condition will result in over-compensation or under compensation on the power grid due to improper switching capacitors. To overcome this, the authors designed a system that can improve the power factor automatically by using a microcontroller on the switching capacitor. In the designed system, Fuzzy Logic method is used to obtain the value of compensation. Compensation capacitor is connected in parallel with the load. Once installed on the load capacitor compensation, power factor value changes according to changes in the value of the inductive load.

In this thesis, the system controls the automatic power factor correction which was built capable to improve the power factor value. Results obtained from testing is the initial value of power factor of a test load of 0.26 and then repaired by installing a capacitor in accordance with the required compensation, then the value obtained improvement of power factor to 0.99.

Keywords: *power factor, capacitors, microcontroller, fuzzy logic*