CAPACITOR SWITCHING TRANSIENT IN SINGLE-PHASE AC REGULATOR CIRCUIT

This thesis is presented in partial fulfillment for the award of the Bachelor of Electrical Engineering (Honour) by

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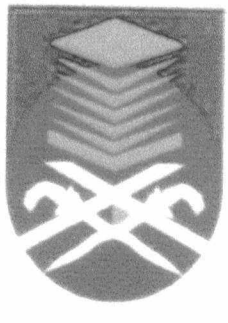

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ABSTRACT

This project presents the analysis of capacitor switching transient in single-phase AC regulator. Terminal capacitor switching is the process of improvement the power factor correction without altering the voltage or current to the original load. The main target of this project is to obtain the characteristic of the transient and resonant of the circuit in the presence of terminal capacitance with and without the supply inductance. The step-by-step design procedure, which involved many equations, have been implemented in this design. The project is designed using computer simulation via MATLAB.

The capacitor switching provokes transient current. This transient current can reach values ten times of the capacitor nominal current with duration of several millisecond [3]. The oscillation phenomenon of the capacitor switching transient result from the energy exchanged between the inductive and capacitive elements in the circuit. When existing of L and C in the circuit, it can create resonant. An increase in the value of L or C, or both L and C, will lower the resonant frequency of a given circuit. A decrease in the value of L or C, or both L and C, will raise the resonant frequency of a given circuit [2]. This disturbance can cause damage to electrical equipments. Possible solutions to the problems are also given in the last chapter.

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