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Investigating the effect of using pulse width modulation on reducing thermal losses of LED lighting systems

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ABSTRACT

The aim of the present research study is to investigate effects of use of pulse width modulation on decreased consumption power and increased life of LEDs along with decreased heat losses. To do so, a microcontroller was used for signal generation with different pulses width at different frequencies and the light produced by LEDs at different pulses width and frequencies was measured by luxmeter. Findings of the study revealed that the highest average decreased loss was observed at 100 kHz, so that at the 100 kHz, the highest decreased loss was measured as 80% observed in blue LED of OSRAM brand. The value was measured as 78.2 % for red LED of EDISON brand, 65.9% for green LED of SEUL brand and 62% for white LED of EDISON brand.

Keywords: LED ، Pulse width modulation ، Reducing heat losses ،OSRAM ، EDISON ، SEUL