

An investigation on the energy saving potential of electromagnetic ballast fluorescent lamps

Abstract

Energy saving issue is a matter of great concern for industry and electrical utilities. Energy saving from fluorescent lamp system can be achieved by means of optimizing lighting level, reducing power consumption and improving the efficiency of fluorescent lamps. This paper presents an alternative energy saving control method for electromagnetic ballast fluorescent lamps. Non-linearity characteristics of fluorescent lamps and the effect of energy saving controller are taken into account in the proposed energy saving controller. The proposed energy saving controller provides energy saving feature and dimmable illuminance level control for electromagnetic ballast fluorescent lamps. In comparison to electronic ballast, integration of an energy saving controller with electromagnetic ballast results in less power consumption, less green house gas emission and longer lifespan at a much lower installation cost. Experiment results based on the proposed controller showed that 37.5% energy can be saved by reducing 15% of the AC line voltage.