

Efficient Use of Power Light-Emitting Diode Chips in the Main Lighting System and in Generating Heat in Intelligent Buildings

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Abstract : Among common electronic parts which have been invented and have made a great revolution in the lighting system through the world, certainly LEDs have no rival. These small parts with their very low power consumption, very dazzling and powerful light and small size and with their extremely high lifetime- compared to incandescent bulbs and compact fluorescent lamp (CFLs) have undoubtedly revolutionized the lighting industry of the world. Based on conducted studies and experiments, in addition to their acceptable light and low power consumption -compared to incandescent bulbs and CFLs-, they have very low and in some cases zero environmental pollution and negative effects on human beings. Because of their longevity, in the case of using high-quality circuits and proper and consistent use of LEDs in conventional and intelligent buildings, there will be no need to replace the burnout lamps, for a long time (10 years). In this study which was conducted on 10-watt power LEDs with suitable heatsink/cooling, considerable amount of heat was generated during lighting after 5 minutes and 45 seconds. The temperature rose to above 99 degrees Celsius and this amount of heat can raise the water temperature to 60 degrees Celsius and more. Based on conducted experiments, this can provide the heat required for bathing, washing, radiators (in cold seasons) easily and only by imposing very low cost and it will be a big step in the optimization of energy consumption in the future.

Keywords : energy, light, water, optimization of power LED

Conference Title : ICIBAD 2019 : International Conference on Individual Buildings and Architectural Design

Conference Location : Amsterdam, Netherlands

Conference Dates : January 21-22, 2019