

Lighting Consumption Analysis in Retail Industry: Comparative Study

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Abstract : This article is referring to a comparative study regarding the electrical energy consumption for lighting on diverse types of big sizes commercial buildings built in Romania after 2007, having 3, 4, 5 versus 8, 9, 10 operational years. Some buildings have installed building management systems (BMS) to monitor also the lighting performances starting with the opening days till the present days but some have chosen only local meters to implement. Firstly, for each analyzed building, the total required energy power and the energy power consumption for lighting were calculated depending on the lamps number, the unit power and the average daily running hours. All objects and installations were chosen depending on the destination/location of the lighting (exterior parking or access, interior or covering parking, building interior and building perimeter). Secondly, to all lighting objects and installations, mechanical counters were installed, and to the ones linked to BMS there were installed the digital meters as well for a better monitoring. Some efficient solutions are proposed to improve the power consumption, for example the 1/3 lighting functioning for the covered and exterior parking lighting to those buildings if can be done. This type of lighting share can be performed on each level, especially on the night shifts. Another example is to use the dimmers to reduce the light level, depending on the executed work in the respective area, and a 30% power energy saving can be achieved. Using the right BMS to monitor, the energy consumption depending on the average operational daily hours and changing the non-performant unit lights with the ones having LED technology or economical ones might increase significantly the energy performances and reduce the energy consumption of the buildings.

Keywords : commercial buildings, energy performances, lightning consumption, maintenance

Conference Title : ICEFPBHD 2018 : International Conference on Efficiency Plus Houses and Building Design

Conference Location : Vienna, Austria

Conference Dates : June 14-15, 2018