ELECTRIC LIGHTING
ENERGY SAVINGS CATALYST
Talking Points

Keywords: Electric Lighting, Personal Control, Energy Savings, Advanced Lighting Control, Maintenance, Satisfaction, Controls

A controls-based dynamic lighting control system can realize significant energy and maintenance savings and help boost employee satisfaction

- The results of the experiment confirms significant lighting energy savings, showing a 62% decrease in the lighting energy use after changing the lighting control system to the manual-on/ vacancy-off compared to the previous lighting control setting (i.e. occupancy-on/vacancy- off) (Gilani & O'Brien, 2018).
- The after LED fixture and after tuning bars represent the reduction in maximum lighting power with new LED fixtures and light levels adjusted to occupant needs. The LPD reduction across all zones going from fluorescent to LED lighting is 53% (0.86 W/ft2 to 0.41 W/ft2) of the original lighting power (Myer, 2018).
- For all office zones combined, the total annual energy use intensity (EUI) savings of 2.41 kWh/ft2 (3.50–1.09) represents a 69% overall reduction in lighting energy use (Myer, 2018).
- 45% of the savings resulted from a combination of improved lighting efficiency (LED) and significant light-level reductions (up to 76%) supported in part by a reduction in total light fixtures (Myer, 2018).
- Simply switching to new LED technology will obtain significant energy savings, however, with the addition of lighting controls, further savings will be captured (Davidson, 2016).
- Jennings et al. [10] achieved lighting energy reductions of 20–26% by replacing manual control systems with occupancy-based light controls in a field study (Gilani & O'Brien, 2018).
- Controls must be installed correctly or they will severely hinder the overall performance of the lighting system. Simply having controls is not enough (Parise, 2013).
- As indicated by the distribution of annual lighting electricity use for the four investigated lighting control systems presented in Fig. 8, a 92% reduction in the annual lighting electricity consumption is achievable with the manual-on/vacancy-off control system (i.e. lighting control system 4) compared to the occupancy-on/vacancy-off (i.e. lighting control systems 1 and 2) (Gilani & O'Brien, 2018).

Dynamic electric lighting systems can contribute to maintaining natural biological cycles that lead to improved health

- Using cool white light at moments that biologically active lighting is required is important; because it lowers the lighting level required and thus enables saving on energy costs (van Bommel, 2006).

KEY REFERENCES

Primary Research

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