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Occupant Centered Lighting Control for Comfort and Energy Efficient Building Operation

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Abstract

We present an adaptive control strategy for lighting control in office spaces, with the aim to reduce energy consumption and provide occupant comfort. Based on the premise that each occupant is unique, yet consistent in his actions, the set-points for switching the artificial lights on and off are derived dynamically from statistical analysis of the occupancy sensor data, and from interaction with the occupant. We present a 6-week case study in 10 offices, where we achieved 37.9% and 73.2% energy savings compared to a standard setting control baseline and a worst-case scenario, respectively. We show that individual offices determine individual set-points and discuss their adaptive nature.

Keywords:

building control, energy efficient buildings, smart buildings, user interaction

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