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Personal Environmental Controls: Saving Energy and Boosting Occupant Satisfaction

Objectives

To evaluate the benefits of personal controls over lighting and ventilation/temperature in offices in terms of occupant satisfaction, mood and visual comfort, as well as energy efficiency.

Background

Previous research on individual lighting control demonstrates energy savings of 15-40%, while improving occupant satisfaction, mood and visual comfort. Studies of individual control of ventilation/temperature also suggest energy savings, improvements in satisfaction, and a decrease in discomfort complaints. More research is needed to better evaluate the benefits of integrated Personal Environmental Controls (PEC), to optimize their functionality in practice, and to provide guidance to the controls industry and facility managers.

Statement of Work

The research will be carried out in three phases:

1. Field study: An already installed lighting system with personal controls, combined with daylight-linked dimming and occupancy sensors, will be evaluated in terms of energy consumption and occupant satisfaction.
2. Laboratory studies: Using six open-plan workstations installed in IRC's Indoor Environmental Research Facility, this phase will evaluate how occupants use personal environmental controls and how that use affects their mood, satisfaction and performance, and energy consumption, under a variety of conditions.
3. Field studies in a building with an integrated PEC system.

Expected Outcomes

- Reports containing the analysis of the data and their implications for practice
- Articles in journals, conference proceedings and construction magazines

Partners

Natural Resources Canada, Public Works and Government Services Canada, BC Hydro Power Smart

Start/Completion Dates

The project began in April 2004 and will be completed in March 2008.

Project Manager

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For more information, see http://irc.nrc-cnrc.gc.ca/ie/lighting/office/envirocontrols_e.html

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