



Intelligent control of lighting based on daylight, weather forecasts and energy prices

Energy research in artificial lighting has shown, that if the artificial light sources are dynamically controlled, significant energy savings can be achieved. In office lighting significant energy savings has been achieved by combining an energy efficient lighting system with daylight and contrast control. In some cases up to 75% compared to the existing installation.

The largest energy savings via daylight control is achieved when the desired illumination for each workplace is kept high in relation to the surrounding part of the room (Ratio Control). If we compare the annual energy consumption from the best LED spot light sources (spring 2009) with fluorescent light in a single office, it turns out that LED spot with contrast control and daylight control uses 50% less energy than fluorescent daylight control while achieving a significantly better quality of light. If the regulation of the LED spot contrast ratio is combined with additional information about electricity prices, the contrast of LED spot can be dynamically controlled in relation to the current electricity price. Thereby workplaces that tolerate some fluctuation in contrast can achieve additional saving.

This project will be the first to develop software for the intelligent control of lighting systems, that combine research in dynamic daylight control with research in price elastic supplementary light control. The intelligent lighting control will balance on going activities in the illuminated rooms with the current daylight level, the weather forecast for that day, and the variations in energy prices over the day.

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Danish Lighting Innovation Network

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Industrial partners:

Odense Municipality
ABB
Siemens A/S
Lindpro A/S
Riegens A/S
ConWx ApS
Philips

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