

(i.e. can it be dimmed?), the desired level of control sophistication and, of course, costs.

The cost of a control system installation should be compared with the cost of a traditional hard-wire installation, and the difference related to the projected energy savings. Especially with new buildings, the cost difference may be very small. For existing installations there may be constraints on selection of controls where the existing wiring gives little scope for alteration or change. The use of mains-borne signalling may reduce these constraints and allow a central system to be installed without disturbing existing wiring, but it is essential to ensure compatibility with other electrical and signalling circuits. Simple reset switches may also be installed without significantly affecting existing wiring.

Alternatively, the use of self-contained luminaires, each with its own sensor, may be a more practical and economic solution than centralised control. For this it has to be accepted that certain refinements of centralised control cannot be achieved.

The following control elements can be considered.

3.7.1.1 Daylight linking

One or more of the lighting rows adjacent to the windows (see section 3.4.1, Initial appraisal of daylight quantity) may be linked to either external or internal photocells to monitor daylight and adjust the electric lighting accordingly, by either switching or dimming.

3.7.1.2 Constant illuminance

Designing for maintained illuminance means that initially, when lamps are new and luminaires and room surfaces are clean, the illuminance will be substantially higher than the design level. How much higher will depend on the characteristics of the installation and the maintenance programme that the user intends to follow.

High frequency fluorescent lamp systems, which can be regulated, can be linked to photocells that will hold the lighting at the design maintained illuminance value. As the system ages, the controls will automatically increase the power to the lamp. Eventually the system will operate at full load in order to produce the maintained illuminance, and this is when maintenance should be carried out.

The same control system can also cover change of use. If the function of an area changes, requiring a lower task illuminance, the system can be adjusted to control the lighting to the revised level.

3.7.1.3 Occupancy

Lighting linked to occupancy, or more appropriately to occupancy pattern, can show considerable savings in energy usage.

An example of occupancy detection is where a detector senses the approach of a forklift truck and switches lighting between warehouse aisles. A predetermined time delay should be built into the control system to avoid excessive switching, which can shorten lamp life.