Chapter 7: Daylighting

7.1 Benefits of daylight

In the face of increasing energy costs and concern about global warming, there is considerable interest in using daylight as the major light source in buildings. Unfortunately, there is little point in doing this if daylighting causes problems to the occupants of buildings. The possibility of daylight causing problems to occupants may seem unlikely given the well established desire of people to have natural light wherever possible, whenever available. However, a short walk around any city will reveal numerous well-glazed office buildings where the blinds on many windows are permanently closed (Figure 7.1). Such behaviour demonstrates the existence of a failed daylighting design for at least some people within the building. Nonetheless, unless there is a good reason why there should be no daylight in the building, daylighting should always be encouraged.

Figure 7.1 A modern office building with extensive glazing and extensive use of blinds

To make the best use of daylight it is first necessary to recognise that daylight can have both positive and negative effects on people. The conclusions of an extensive literature review on daylight (Boyce et al, 2003a) can be summarised as follows:

- Physically, daylight is just another source of electromagnetic radiation in the visible range. Physiologically, daylight is an effective stimulant to the human visual system and the human circadian system. Psychologically, daylight and a view out are much desired and, in consequence, may have benefits for human well-being.

- The performance of tasks limited by visibility is determined by the stimuli the task presents to the visual system and the operating state of that system. Daylight is not inherently better than electric light in determining either of these factors. However, daylighting does have a greater probability of maximising visual performance than most forms of electric lighting because it tends to be delivered in large amounts with a spectrum that ensures excellent colour rendering.

- There can be no guarantee that daylighting will always be successful in maximising visual performance. Daylight can cause visual discomfort through glare and distraction, and it can diminish the stimuli the task presents to the visual system by producing veiling reflections or by shadows. The effectiveness of daylighting for visual performance will depend on how it is delivered.