Indirect luminaires

Indirect luminaires are luminaires in which the light distribution is predominantly upward (see Table 4.7). Such luminaires can be suspended below the ceiling, wall mounted or free standing. They require a clean, white ceiling for efficient operation. Indirect luminaires are most practical where the ceiling height is over 2.75 m. The usual light source in suspended indirect luminaires is a linear fluorescent lamp. Wall mounted and free-standing indirect luminaires tend to use a high intensity discharge lamp. Optical control is confined to ensuring that the light output from the luminaire is widely spread across the ceiling so that no hot spots of high luminance are apparent. While indirect luminaires have a high light output ratio, lighting installations using indirect luminaires are usually less energy efficient than those using direct luminaires because of the losses caused by having to use the ceiling as a secondary reflector. This is compensated by the bright appearance of the space, the high level of illuminance uniformity and the absence of discomfort glare. Figure 4.11 shows a selection of indirect luminaires.

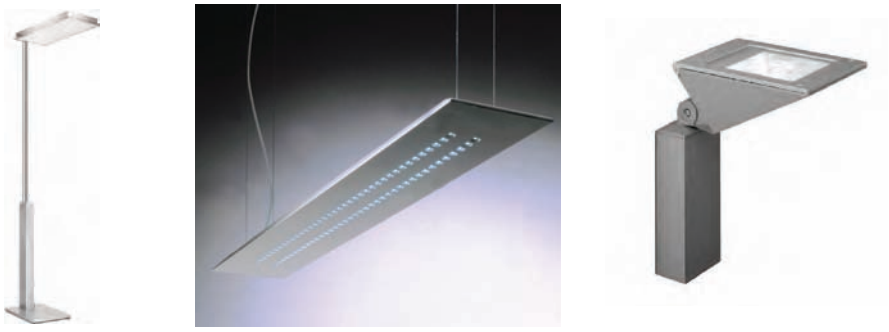

Figure 4.11 Examples of indirect luminaires

Direct/indirect luminaires

Direct/indirect luminaires are luminaires in which the light distribution is evenly divided between the upward and downward directions. In many ways, direct/indirect luminaires provide the best of both worlds. The energy efficiency of a lighting installation using direct/indirect luminaires will be higher than that of one using indirect luminaires but the problems of dark ceilings and poor illuminance uniformity are reduced by the indirect component. Direct /indirect luminaires are suspended below the ceiling. They are difficult to use where the ceiling height is below about 2.75 m. The usual light source in direct/indirect luminaires is a linear fluorescent lamp. Optical control is different for the two directions of light output, being much tighter for the downward component than the upward. Direct/indirect luminaires are available with individual dimming of the direct component. Figure 4.12 shows a selection of direct/indirect luminaires.

Figure 4.12 Examples of direct/indirect luminaires