

On the other hand, the profligate and unnecessary use of energy and the associated costs, both financial and environmental, should be avoided. The environmental impact of lamps is discussed in the Lamps and the environment section of the LIF Lamp Guide (see CD).

The recommendations that follow provide guidance on energy efficiency for lighting installations. They assume that good design has been combined with the use of modern equipment. New lighting designs should normally meet these levels. The recommendations can also be used to gauge the efficiency of existing installations and to determine whether or not the existing installation needs remedial action to achieve acceptable energy efficiency.

The subject of energy use is also covered in the Building Regulations Part L. There are two approved documents that are in force from April 2002. They are:

- L1 – Conservation of fuel power in dwellings
- L2 – Conservation of fuel and power in buildings other than dwellings.

Part J of the Building Standards (Scotland) Regulations include similar requirements. The following three sections give further guidance on this topic.

### 2.4.1 Power and time

The energy (kW/h) used by a lighting installation depends on both the power (kW) and the time (h). Energy efficiency can be achieved:

- by using the most efficient lighting equipment (see CD – Lighting Equipment) to obtain the desired lighting solution, i.e. the electrical load (kW) is kept to a minimum while achieving the lighting design objectives
- by using effective controls so that the lighting is not in operation at times when it is not needed, i.e. the period of operation (h) is kept to a minimum.

The lighting designer can limit the electrical power loading and the use of energy, but it is the operator of the installation who will ultimately be responsible for achieving high energy efficiency in practice.

### 2.4.2 Energy efficient equipment

Information on the energy efficiency of lamps and luminaires is given in Lighting equipment (see CD). While the lighting requirements for different spaces within a building can be met most appropriately using different lamps or luminaires, an average initial circuit lamp luminous efficacy of at least 65 lm/W for the fixed lighting equipment within the building should be achieved. Both emergency lighting systems and equipment that is not fixed (e.g. track-mounted luminaires) are excluded from this figure. Thus it is possible to use equipment of lower energy efficiency (e.g. tungsten-halogen spotlights) in some areas, combined with more energy efficient equipment (e.g. fluorescent lamps with high frequency electronic ballasts) in other areas. This recommenda-