

Most high wattage lamp circuits are designed to have a power factor greater than 0.85. The other factor that may affect the sizing of the cables that supply a lighting installation is the current required during the run-up of the lamps. With some types of lamp this can be over double the nominal running current. When using lighting controls the power demand is more difficult to predict as the power consumed may be reduced at times when full output is not required from the lamp.

3.4.3 Luminous efficacy

Luminous efficacy is usually expressed in terms of lumens per watt. Many lamp manufacturers produce lumens per watt figures for their lamps. However, for discharge lamps and other lamps requiring some form of control gear, these figures may be misleading as they refer to the power consumed in the lamp only and do not consider the power lost in the control gear. All the values quoted in this chapter for efficacy are based on total circuit watts.

Efficacy is a primary concern when selecting a lamp. In general, if a range of lamps suitable for a particular installation then it is the most efficient that should be used.

3.4.4 Lumen maintenance

The light output of most lamps decreases as the lamps get older. With some relatively short life lamps this is not a problem as they fail before the light output has fallen significantly. See Section 21.7.1 for further details of the lamp lumen maintenance factor (LLMF).

3.4.5 Life

It is normal when considering the life of a lamp to talk about the percentage of lamps that will survive after a certain number of hours of operation. This value is known as the lamp survival factor (LSF). See Section 21.7.2 for further details.

Other factors in a particular installation may affect the life of the lamp used. These factors include the switching frequency, the supply voltage, the ambient temperature and presence of vibration.

It is often the case that the combined effect of the number of lamp failures coupled with the reduced lumen output of the lamps makes it necessary to replace the lamps in an installation. Sometimes lamp makers quote an economic service life for lamps, this generally is the point where the LSF multiplied by the LLMF falls below 0.7.

3.4.6 Colour properties

The colour of the light produced by a lamp is generally described by two parameters; the correlated colour temperature and the CIE general colour rendering index. These two terms are described in Sections 1.4.3 and 1.4.4 respectively

For most applications there is a minimum requirement for the colour rendering properties of the lamps used and the correlated colour temperature of the source is generally chosen for the atmosphere that the lighting is designed to produce.

3.4.7 Run-up time

When a lamp is switched on it takes a certain amount of time to reach full light output. The usual measure used to assess run-up time is the time that it takes for a lamp to reach 80% of its full output.