3.4 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 Chapter L / 2.3 for further details of the lamp lumen maintenance factor (LLMF).

3.5 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 Chapter L / 2.4 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.

NOTE 1 For LED lighting the LLMF may differ in many ways; therefore it is mandatory to get all parameters of the used LED from the manufacturer, in order to accurately determine the LLMF.

3.6 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 Chapter A / 2.9 and 2.10 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.

3.7 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. For a GLS lamp this might be a fraction of a second, while for low pressure sodium this could be as much as 20 minutes. For some applications such as road lighting the run-up time is not very important. However, for some facilities, like emergency and/or security lighting of tunnels, sports, etc. it is very important.

3.8 Other Factors

There are also many other factors that impact upon the use of lamps in a particular application. These factors include the following: