

SHORT REPORT
LIGHTING INSTALLATIONS

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Model computations that give the lay-out of a lighting installation have to be implemented in the real world. There, deviations from the ideal performance of just about every element of the installation will be felt. A list of possible sources of non-ideal behavior, based on practical experience, are the following:

Lamps: Discharge lamps are manufactured to close tolerances of, typically, $\pm 3\%$. Their light output decreases during their life, depending on operating conditions and lamp type. A typical value is 15% over 10,000 hours for HPS lamps, which is well before their "burn-out". It should be decided in the design phase what level of reduction is acceptable, and a schedule for lamp replacement should be drawn up accordingly.

Ballasts: Ballasts built to IEC standards have close tolerances of, typically, $\pm 3\%$. Their power output will gradually change during their useful life. This useful life depends largely on the highest temperatures during operation, which in turn depend on the design of the fixture.

Reflectors: A good reflector design can be reproduced to within a few percent. Sometimes, however, unfavorable conditions during production result in a significantly lower luminaire efficiency.

Mounting Position: The distance between fixtures in relation to the highest level specified (top of the crop) is often such, that adjacent light distributions only just overlap. Then, a slight tilt of a luminaire means a dark gap between the lighted areas. The mounting height is best chosen as high as possible, and careful levelling is often required.

Sagging of Lamps: The lamps often sag under their own weight in or with the socket. This always decreases lighting uniformity. Some luminaire designs provide an extra support for the lamp at its top.

Soiling: Soiling of luminaires during operation is unavoidable, though it will affect some places more than others. Regular wiping can prevent the occurrence of dark spots over the crop.

It is clear, that with all possible deviations from the ideal the homogeneity of a real lighting installation can never be as good as the one computed. The only way to make sure it is nearly as good is by measurement of the actual light distribution. Then, an occasional adjustment or replacement may often yield a satisfactory result. This measurement should really be part of the installation contract.

