Chapter 10: Industrial lighting

10.1 Functions of lighting in industrial premises

The basic problem of lighting for industry is the wide variability in the amount and nature of visual information required to undertake work in different industries. Some industrial work requires the extraction of a lot of visual information, typically the detection and identification of detail, shape and surface finish. Other types of industrial work require accurate eye-hand coordination and the judgment of colour. Yet other types of industrial work can be done with very little visual information at all. The materials from which visual information has to be extracted can be matte or specular in reflection or some combination of the two, and the information can occur on many different planes, implying many different directions of view. Further, the material from which the information has to be extracted can be stationary or moving. This variability means that the design of industrial lighting is inevitably a matter of tailoring the lighting to the situation. There is no 'one size fits all' solution to industrial lighting.

However, there is a limit to how closely the lighting can be tailored. This limit is set by the fact that many different tasks are likely to occur on the same industrial site, within the same building, on the same production line and, certainly, within the area lit by one general lighting installation. The usual solution to this problem is to provide general lighting of the whole area appropriate for the average level of task difficulty; localised lighting where work is concentrated, e.g. on an assembly line and local lighting where fine detail needs to be seen, e.g. on a lathe in a machine shop, or where obstruction reduces the visibility of the task, e.g. on the work piece of a hydraulic press, or where there is an obvious hazard, e.g. on the feed to a circular saw. The only place where this general/localised/local lighting approach is impossible is where the scale of the equipment is so large that both the people and the lighting work within the equipment, e.g. a chemical plant. For such applications, lighting equipment is integrated into the plant.

10.2 Factors to be considered

Despite the variability faced by the designer of industrial lighting, the objectives are the same everywhere. They are:

- to facilitate quick and accurate work
- to contribute to the safety of those doing the work
- to create a comfortable visual environment.

To meet these objectives it is necessary to consider many aspects of the situation.

10.2.1 Legislation and guidance

There are several different pieces of legislation relevant to industrial lighting, ranging from statements of general principle to specific requirements.

Under the Health and Safety at Work Act 1974 the employer must, as far as reasonably practicable, provide and maintain a safe working environment with adequate lighting.

Under the Factories Act 1961, Section 4, reference is made for the effective provision for sufficient and suitable lighting in every part of the factory in which persons are working or passing through.