

A guide to lighting design for electricians and installers

Simon Robinson, Chair of the Society of Light and Lighting's (SLL) Technical and Publications Committee, provides some guidance about how to approach lighting design.

The visual element of lighting is perhaps the most noticeable part of an electrical installation, and yet can be one of the most subjective, with the same lighting design generating very different responses from people. Perhaps lighting design, especially where visual impact is important, is closer to architecture and interior design than it is to electrical installation work.

For this reason, some find it a difficult area to work in, however, there are a few basics that, when followed, should result in a lighting design that meets the customers' needs and produces that smile from them that we all want to see!

Where to start

What is a good lighting design? Unfortunately, there is no black-and-white answer to this question. There are too many variables that can affect the outcome, including public opinion, so anyone embarking on lighting design should first ensure that they understand their client's needs and aspirations.

Consider the function of the space: lighting levels

The tasks to be carried out in a space should be considered. Some spaces have areas where complex tasks are performed and need high light levels, whereas other areas that are not so critical can have much lower light levels. Different types of light are required for different tasks and even to create different moods. The SLL produces excellent guidance on recommended lighting levels for a variety of tasks, building types and uses, including outdoor lighting, so their [website](#) is a good starting point.



Generally, lighting can be described as either being direct or diffuse. A mixture of direct and diffuse light allows us to determine things such as surface texture or facial features. Choosing pale matt finishes for walls and ceilings will assist in creating a diffuse element, although a purely diffuse lighting solution can make a space look bland and featureless, whereas a purely direct solution can result in sharp contrast and deep shadows. A diffuse solution may be the best option for a space where tablet computers are being used extensively as there would be no direct light to reflect on the screen. It wouldn't really be suitable in a space such as a museum though where lighting is used to guide people and highlight exhibits.



Consider the surroundings: light absorbance

Once a lighting level has been determined, the route to achieving that level, and how uniform it needs to be, can begin. The lighting of a space is affected by the colours and reflectance of the walls and even the furniture, so these factors need to be taken into account. Dark matt finished walls and ceilings will absorb much of the light energy and result in a gloomy looking space unless the amount of light is increased to compensate. This, of course, increases the amount of energy being used, so it is better to have paler coloured walls and ceilings where possible. Floor coverings can also absorb light and the texture is as important as the colour. For example, a beech-effect laminate floor will reflect much more light than a carpet of a similar colour as the carpet's texture absorbs light.



In many cases, a lighting solution should include a mixture of both direct and diffuse elements so that a general diffuse illumination is achieved with areas highlighted by direct lighting. This will allow a user of the space to carry out a specific task or to be able to determine facial features or recognise textures.

Perhaps the domestic market has been an area where, historically, the need to mix diffuse and direct lighting with a sympathetic colour and texture choice has been misunderstood. Spotlights are often used in kitchens, which provide a direct element for tasks carried out within their beam range but do little to provide a general diffuse element. This can lead to frustrated users of the space, for example if they want to read a cookbook in an area not covered by a spotlight.



Consider the ambiance: light colour

The colour of the light can also have a significant effect. Visible light provided by electric lighting is generally in a range that covers white light with a yellow appearance (described as 'warm') to white light with a blue appearance (described as 'cool'). Cool colours are thought to promote alertness in people whereas warm colours are thought to help people relax. Warm colours in a domestic space and cool colours in an office environment should therefore be used, unless there is a specific reason to do otherwise. Wall, ceiling and floor finishes and colours can also affect the overall colour of a space. For example, a room with blue walls and a blue carpet will still appear to have a cool lighting effect even if warm light sources are used, so matching room finishes to the required lighting effect is important.

