LED Lighting: street lighting case study

The exterior lighting systems market is undergoing rapid change as new disruptive technologies such as LED lighting and central management systems (CMS) come on to the market. With a perplexing range of technologies available, street lighting managers and engineers face a difficult task in driving forwards the appropriate specification, selection and implementation of technology that balances, on the one hand, overall project quality and cost, and on the other, the end-user expectations and minimum design requirements (as specified by standards).

Last year Transport for London (TfL) conducted a case study looking at how to improve the energy efficiency of street lighting in the Greater London area.

What was the project’s objective?

TfL’s overriding objective was to improve the energy efficiency of its street lighting while providing the right light, in the right place, at the right time. Climate change was a key factor in setting up the project, as the Climate Change Act 2008 targets a reduction in CO₂ generation of 34 % by 2020 and 80 % by 2050.

After reviewing the results of a number of pilot projects, and after monitoring developments in the LED lantern market and studying financial viability, TfL decided to install LED and CMS technology on the network.

Why use CMS?

A CMS would allow TfL to control and profile lighting levels across strategic traffic routes in Greater London.

Why use LEDs?

When the Climate Change Act 2008 targets are coupled with increased exposure to carbon tax, the introduction of energy efficient LEDs began to show significant advantages.

Why use both?

Combining CMS technology with LED lighting offers a flexibility of lighting control in terms of profiling and flexible lighting levels during public events or planned works. It also provides a safer white light solution for driving/pedestrian experiences and reduces maintenance costs across the network.
Figure 1  Example of lighting: a road and underpass

Figure 2  Example of lighting: a road in a residential area
The road ahead

So far CU Phosco have provided over 5,000 luminaires to the TfL network. The TfL project management team are working very closely with both client and contractor to facilitate the requirements of the project.

Working on a similar project?

If you are considering changing lighting to LEDs or other energy efficient lighting systems or are working on projects like this, then you should be consulting the IET Code of Practice for the Application of LED Lighting Systems. For exterior lighting, the IET has recently published Recommendations for Energy Efficient Exterior Lighting Systems. This new publication was developed by a working group of technical experts and end-users responsible for the management, specification and procurement of the exterior lighting systems market. It outlines many aspects of exterior lighting systems, including design, retrofitting, financial and asset management and performance requirements, as well as a good practice template.

These IET publications are great for reference for any energy efficient lighting. There is also a wealth of information on MyCommunity or you can visit the electrical site.