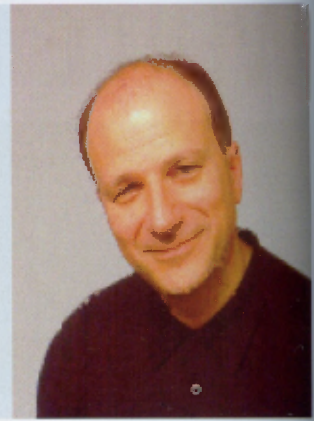


STREET VALUE

DAVID MORGAN WEIGHS UP THE PROS AND CONS OF
LED OVER HID WITH THE WE-EF RLF SERIES



WE-EF has produced exterior technical lighting at its factories in Germany for the past 59 years. Unusually these days the company has a vertical manufacturing structure with all design, engineering, tooling, production, finishing and assembly being undertaken in house. So far the cost saving, outsourcing approach has not appealed to this traditional German company.

WE-EF make considerable mention in their marketing literature of the environmental friendliness of their production processes as well as the energy efficiency of their products as part of their sustainable profile. For example 90% of the aluminium used in the production of WE-EF luminaires is refined recycled material and 90% of the final products can be, in turn, recycled.

The WE-EF product range is centred on high performance architectural lighting including a variety of street lighting ranges. The older collections of post top lanterns have a clear German style which may not be suitable for international markets. It is understood that street lighting is now a growing area of interest for WE-EF and they have recently introduced their RLF range of post top lanterns.

The RLF is presented in a clean contemporary design, in the best Bauhaus tradition. The range was created by the WE-EF in-house design team and should be suitable for use in most lighting markets where WE-EF operates.

There are two sizes of the simple circular design in the RLF range; 440 mm and 570 mm diameter incorporating a range of light source options including Cosmopolis, SON and now a new LED version.

The LED products feature a custom designed optical system that produces a very effective and distinctive bat wing distribution. The lens array is made up with a specially designed acrylic lens with a distinctive and amorphous shape named the Butterfly lens by WE-EF that seems to distribute the light very effectively.

It was not possible to undertake any detailed tests on the sample that I was given but the lens system certainly produced a very distinct sideways distribution and the amount of glare when viewed from the pavement side of the luminaire was comfortably low.

WE-EF has adopted a novel design approach to the optical design of the RLF lantern where each LED produces the same distribution. This creates a layering effect where the failure of individual LEDs or turning off numbers of LEDs to reduce energy consumption does not effect the lighting distribution but only the light intensity.

WE-EF term this approach OLC or One LED Concept. It is understood that as the efficiency of LEDs rises in the future the number of LEDs used could, in theory, be reduced to one while maintaining the distribution and light output of the current multi LED array.

It is understood that the effectiveness of the optical system allows wider luminaire spacing than is possible with HID versions so that the higher

capital cost of the LED lanterns can be weighed against the reduced number required on each project.

The appearance of the RLF is well detailed and the quality of construction seems good. The lantern opens easily with an effective over centre spring catch.

The ribbed heat sink for the LEDs forms a large part of the top of the lantern. When run for some hours it seemed to be working well in transferring heat from the LEDs to the housing and on into the atmosphere. However there was no obvious drainage for water and debris filling up this deeply ribbed area. This is likely to reduce the effectiveness of the heat sinking over the life of the luminaire unless it is cleaned on a regular basis.

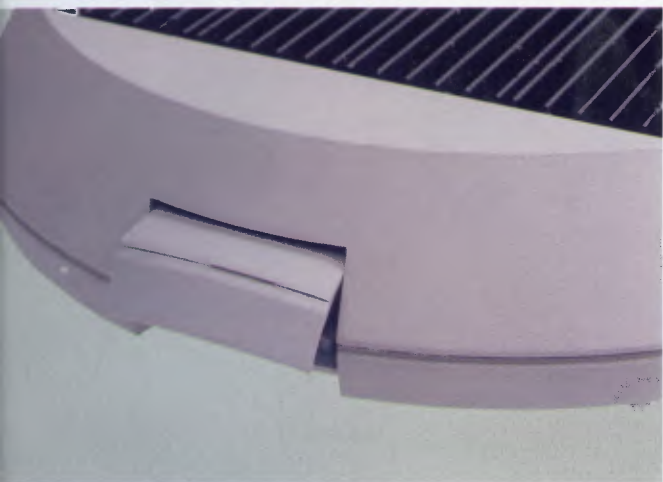
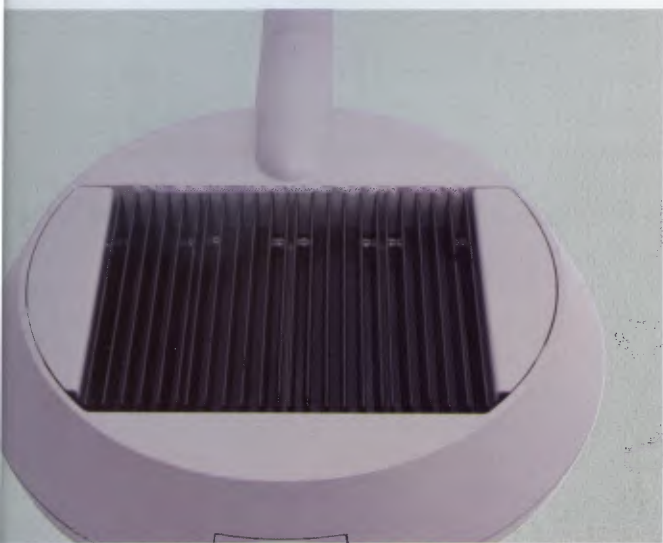
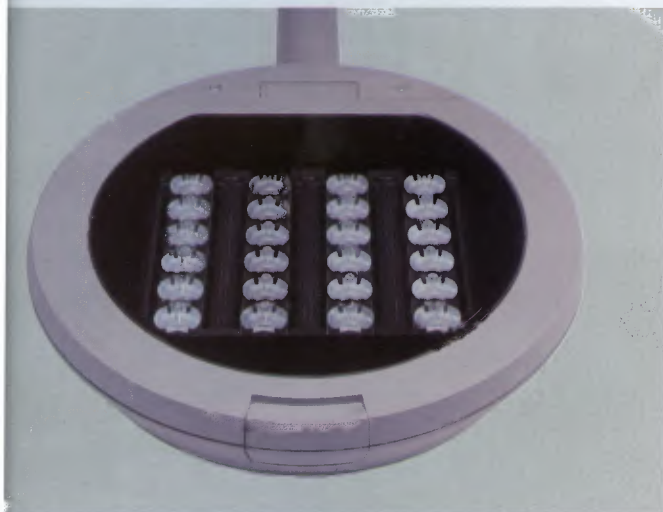
All of the electrical and electronic components including the LED arrays are easily replaceable, on site, so that as LEDs become more efficient these components can be replaced to reduce energy consumption. The point at which this would make commercial sense is hard to determine since one of the key selling points of LEDs is that they have a very long operational life. The capital cost of replacing the LEDs would be high so in some ways this seems to provide an argument for delaying the purchase of the LED version until the efficiency gets closer to HID.

WE-EF have produced energy and cost comparisons for the RLF showing the installation costs, running costs and carbon dioxide emissions for the various lamp options. The LED solution comes out with the lowest CO₂ and capital cost but this is achieved by increasing the spacing of lanterns by around 50% compared to the HID versions. While this may work as a theoretical exercise it does depend on getting each supporting post precisely vertical. It is not hard to imagine what will happen to the uniformity and light levels with such increased spacing if the posts are not perfectly installed or under high wind conditions.

The case for using the LED rather than the Cosmopolis version of the RLF seems to be rather questionable. The Cosmopolis lamp is getting on for twice as efficient as the LED version and already has an average 30,000 hour life compared to the 50,000 hours for LED. The flat cover glass on the LED version will need cleaning periodically to maintain light output that will have around the same labour cost as a lamp change thus eliminating one of the perceived cost advantages.

The RLF series is an attractive and well engineered addition to the WE-EF range and the LED version has a number of innovative technical features. However it is difficult to predict at this point if there would be any significant total cost or CO₂ savings over the life of the installation by adopting the LED version rather than the HID versions. When the overall efficiency of LEDs finally reaches that for HID sources then probably the more precise optical system, ease of dimming and improved distribution would make it the preferred option.

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WE-EF's RLF LED version features a custom designed optical system that produces a very effective and distinctive bat wing distribution. Its One LED Concept means that, as the efficiency of LEDs rise in the future, the number of LEDs used in the fitting can be reduced without affecting performance

