

# Up to speed on roadway LIGHTING

Technical editor **Alan Tulla** casts his eyes over a new edition of the bible for streetlighting designers, updated to reflect the latest technological advances

**I**f you are going to design streetlighting, you must read this book.' That's what my tutor said to me about the first edition of Wout van Bommel's *Road Lighting* in 1980, and it's still true today.

At that time, it was *the* textbook on the theory and standards underpinning streetlighting design.

Now, the author has updated his original text to deal with the changes in streetlighting design over the past 35 years, addressing modern light sources (especially LED) and technology, energy and environmental considerations, completely new research on vision, and changes in car technology.

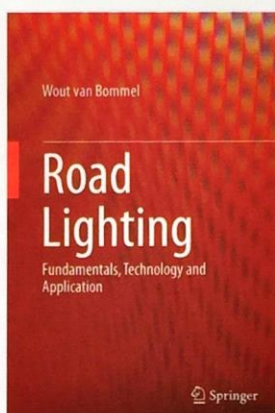
The book outlines the principles on which modern road lighting is based. The book gives the reader knowledge of how these principles should be applied in practice. It describes European and North American practice, with reference to the CIE, CEN and IESNA standards.

About three quarters of the book is devoted to road lighting – it also covers underpass and tunnel lighting, and has a section on light pollution.

The book begins by explaining that, at the relatively low lighting levels common in road lighting, colour vision is poor and visual detection is made possible more by the difference in luminance between an object and its background (the luminance contrast) than by differences in colour.

There is a long section on visual performance for motorists dealing with topics such as contrast, glare, vertical illuminance and target visibility. A discussion of visual comfort for motorists follows, and finally there is a section on visual performance, comfort and pleasantness for other road users such as pedestrians, cyclists and residents.

There is a comparatively short section on mesopic vision and photometry. The author emphasises that mesopic vision only becomes important where peripheral vision is significant – because the fovea has no rods, which are more sensitive than cones



Van Bommel's book is one of the key textbooks on streetlighting design

to movement and low light levels. The lumen is a photopic unit, so he discusses S/P ratios and how they may be applied.

In the chapters devoted to equipment, there is a large section about road surfaces. There may not be much the lighting designer can do about the choice of surface, but van Bommel points out the huge impact it can have on drivers' visual performance and the energy consumption required for lighting.

The section on design aspects not only includes different column arrangements, including catenary, which is popular in mainland Europe, but also design for wet, snowy and foggy weather.

Although light pollution was a consideration in 1980, there was not much general awareness of it. Van Bommel emphasises how important it is to restrict light pollution. He says: 'Sky glow is a visible sign of unprofessional lighting that wastes energy and contributes to CO<sub>2</sub> emissions and the associated climate change.' Would anyone like to disagree?

## Summary

There is a widespread view that streetlighting design is simply a matter of punching the numbers into a software package. As well as giving a solid foundation to all the numerically quantifiable factors involved, this book also emphasises the importance of visual comfort for motorists and pleasantness for pedestrians. For that reason alone I would recommend it. This is a solid, comprehensive textbook written by an acknowledged expert in the field – if you have a query about any aspect of streetlighting design, you will find the answer here.

