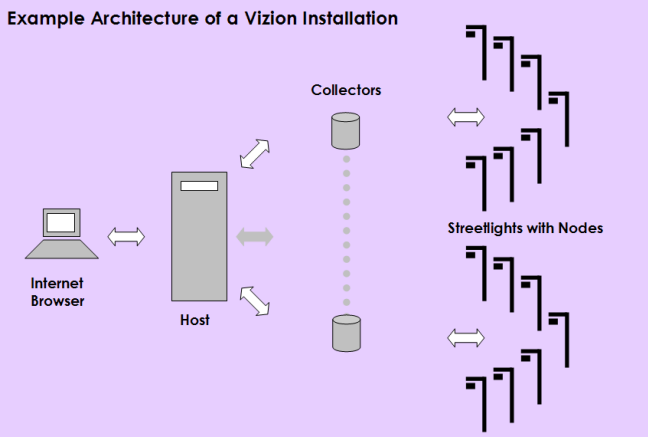
Reap the Benefits of Central Management Systems NOW

It is a universal truth that energy costs are changing the ways in which we look at all aspects of our professional lives today. The increasing cost of electricity has focussed attention further on how streetlighting is controlled. Whilst energy-saving 'stand alone' solutions have been widely deployed, the use of Central Management Systems (CMS) is seen as a potential long-term solution. Given the adoption of radical regimes it is possible to make very significant reductions (40%) in energy usage (and consequentially reduce CO_2 emissions). A crucial issue has been how these savings can be realised in the electricity charges made to the streetlighting authority. This article serves to explain how recent changes to the settlement procedure mean that these paybacks can be realised today!

A challenging question is to define "Central Management System" (CMS) in the context of a streetlighting installation. Perhaps it is best characterised (rather than defined) as a communication system for providing 'Monitoring', 'Reporting' and 'Control' of streetlighting. The exact



hardware and software required to implement a CMS varies between the different approaches adopted by the various manufacturers producing CMS today. Typically a 'node' is deployed into every luminaire (or in the base of the column), this is connected to a method of communication (eg Low-Power Radio, Power Line Carrier, Fixed Cabling etc), possibly through other dedicated routers/bridges to one or more servers (computers) that run software servicing the 'nodes'. The scope of the software varies between the systems available, but usually includes regime scheduling, status monitoring and reporting (including energy usage)

Benefits of Vizion CMS

- Efficient Management of Streetlighting
  - Energy Use Reduction
  - Resource utilisation
- Timely Reporting
  - Continuous affirmation of status of each asset
  - Highly visible
  - Near real-time energy usage
- Flexibility
  - Virtually instant deployment of alternative regimes
  - Allows 'crisis' regimes to be deployed

The benefits of CMS have been widely discussed and the insert shows a [brief] summary of them. Whilst many of these benefits are operational the principal cost benefit arises from the control possibilities provided by CMS. Conventional control systems (Photocells, Timeclocks) provide a relatively simple control regime (although fixed period part night variable lighting levels can be implemented), they are not sufficiently flexible to deploy advanced lighting profiles. The table shows examples of lighting profiles, comparing those possible with existing control systems to those that CMS can provide. The wealth of control possibilities offered by CMS provides a real opportunity to address energy reduction.

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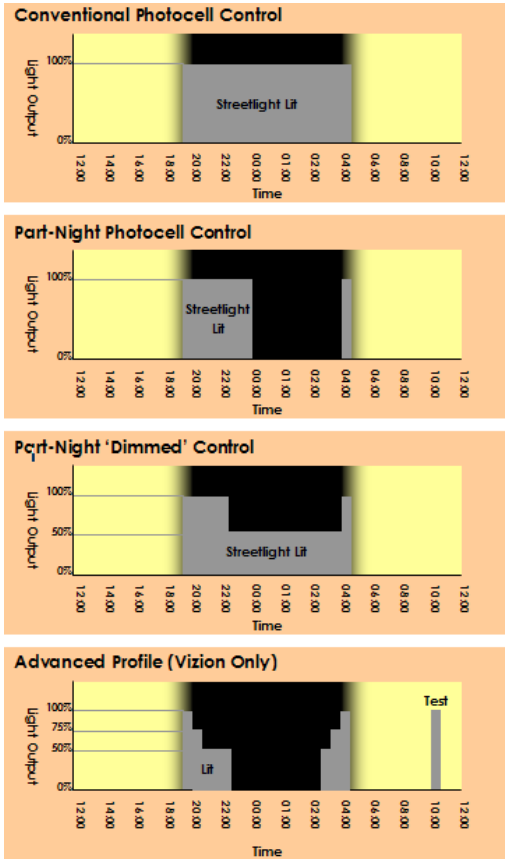


Given that practical implementation of advanced lighting profiles are now possible, the issue of how to account for the reduced energy consumption was unresolved until earlier this year. Most streetlighting in the UK is connected to an unmetered supply, and how to accommodate this required the recognition of CMS within the current unmetered supply framework, or the acceptance of metering for streetlighting under CMS control. These two paths are fundamentally different and a very different approach is required to address them.

CMS on Unmetered Supplies

The procedure for settlement of unmetered supplies is defined within a document known as BSCP520 produced by Elexon (the company responsible for the balancing and settlement of electricity supplies in Great Britain). The need to address energy reporting of CMS within unmetered supplies was understood by UMSUG (A working group within Elexon), and work was progressed in late 2006 to recommend how CMS could be incorporated within the existing settlement arrangements for unmetered electricity supplies. This work resulted in a change to BSCP520 published in February 2008. The change to BSCP520 now allows for the full energy reductions resulting from CMS to be recognised within the energy 'bill'. It is expected that a number of CMS capable systems will be registered and approved by Elexon over the coming few months.

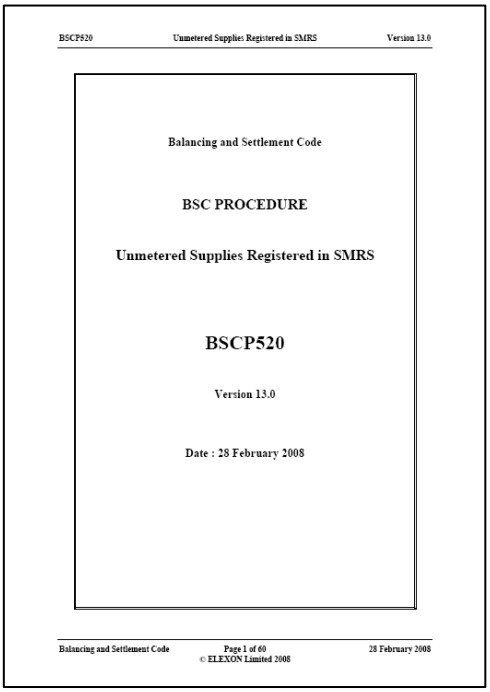
Metered CMS

Whilst impractical in many circumstances it would be possible to install conventional electricity meters within each separate circuit supplying only streetlighting and produce a 'bill' based on these readings. More elegantly it would be possible to use the CMS to return 'meter-readings' via the communication network implicit within the deployment of the Central Management System. This poses several issues that are currently being investigated by Ofgem, and the technical requirements and timescales for any procedural changes are eagerly awaited. Self-evidently products cannot be produced certain to meet this approach until these requirements are defined.

How BSCP520 has changed to accommodate CMS

BSCP520 is a detailed technical document explaining how unmetered supplies are treated in order to allow 'Settlement'. Settlement is an involved procedure resolving the various payments relating to the provision of electricity. BSCP520 imposes a variety of requirements, and defines the format of data interchanged between the various parties involved with the provision of energy into unmetered supplies. The principal of calculating energy usage is to use tables detailing the

consumption of specified equipment with the times that the equipment is 'ON'.



For conventional systems this can either be determined by: (i) passive values (accepted estimates of the times equipment is 'ON') or (ii) dynamic values (actual measured times of activation). Classically dynamic values have been obtained from representative examples of the equipment installed on monitoring sites (PECU array). The inclusion of CMS has been accommodated by allowing the use of dynamic data supplied by the CMS. The CMS data is 'richer' than that from a PECU array as it covers the actual switching time of every light (rather than a representative summary) and it contains a value representing the actual level of energy consumption of the light. The CMS has to record every change in the setting of the consumption level by the system. Each of these events are saved within an 'event log', which can contain many events for the same piece of inventory every day (the number of events dependent upon the regime programmed by the CMS). It can be seen that this makes the calculation of energy usage straightforward (if somewhat laborious). The calculation is achieved by breaking the day into half-hour timeslots and adding together the energy consumed by each individual light during each of these timeslots.

There is also a need for the CMS to be approved, and this is achieved by Elexon auditing the system to a test specification published by Elexon earlier this year. This audit involves verification of the accuracy of the CMS in terms of its ability to correctly identify the inventory, report events and translate this information (through the meter administration system) into an accurate 'bill'. Only approved CMS can be certain of acceptance into settlement.

The issues surrounding energy costs and carbon footprint remain forefront in streetlighting as with most industries in the UK today. Central Management Systems are becoming reliable, interoperable and more affordable. Given the above it can also be seen that there is no impediment to the information from CMS being accepted as a means of settlement, and consequently users benefiting from the energy reductions possible. What are you waiting for?

The above is a slightly modified article written by Zodion for HEN. It is written to summarise the current position concerning the adoption of CMS output by Elexon.

Zodion's Vizion system is a highly capable CMS. For further details on Vizion please visit our website (www.vizion.eu.com) or contact our sales office on 01422 317337. The Vizion system is currently being evaluated for compliance to the Elexon requirements and it is envisaged that compliance will be gained before early 2009.

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