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Mesopic describes the light conditions at which the eye moves from using cone photoreceptors (in high light levels) to using rod photoreceptors (in low light levels.) In layman's terms at twilight there is a transition as the eye moves from one set of photoreceptors to the other and at that point changes take place which affect, amongst other things, colour recognition. The colour to which the eye is most receptive shifts

from yellow-green at daylight to green-blue light at night.

But why is this important? Marijn explains that the practical result is that it allows light levels to be lowered further simply by making use of the capabilities of the human eye without significant loss of either visibility or colour recognition which can affect, for instance, a pedestrian's perception of security.

But the application of green light only would result in insufficient colour recognition, he says, which is why the Lumis-LED comprises of coloured LEDs: green and red. The eventual light perception is bright, and the colour recognition is excellent!

Innolumis believe that energy savings of up to 70% are possible using these luminaires without compromising safety. The first projects in the Netherlands have proven extensive energy reduction. Every authority battling with budgets will be interested in a product which could, potentially, result in significant revenue savings in the total cost of ownership and energy costs, but Marijn is keen to underline that the 'green'

light is also environmentally friendly. 'For a start the light source will last for 20 years without any significant loss of light intensity which in itself is good for the environment. Secondly, the special optic design in the luminaire directs the light to where it belongs and, together with the lower light levels, reduces light pollution. Last but not least, the whole item is manufactured from fully recyclable environmentally-friendly components which becomes important when disposal becomes necessary in the future.'

Where can you see this light in action? Well, it is possible to go to Holland were currently there are about 20 sites with the new light. Alternatively, there are three sites in London where these luminaires have been installed and Marijn says that Innolumis is in negotiation with several Councils in the UK who are interested in the Lumis-LED. If you want to know more about the light or where you can see it on the street, you can contact Marijn van Dijk by email at marijn.van-dijk@peek-traffic.co.uk

Newcastle CC commmits to ELV

Newcastle's trial ELV site has recorded a 72% reduction in energy usage and has been judged a 'total success'.

When Steve Farrell returned from Intertraffic 2006, he came back with an exciting proposition. He had learned that Siemens were in the process of developing an Extra Low Voltage (ELV) traffic controller and had volunteered to provide a trial site.

Steve Farrell is the Senior Traffic Signal Manager for Newcastle City Council. Newcastle is the lead authority for the North East and Steve's patch covers Tyne & Wear, Northumberland and cities such as Durham, Darlington and Cleveland which means that he has within his overview roughly 1,000 signalised installations.

He says he was immediately interested in the ELV concept for two reasons. The first is safety. Within his area

accidents involving vehicles and signal poles or controllers are common – at least two a week – and between October and February there is usually an incident every day. While cases involving electric shock are rare, it remains a serious risk whenever high voltage equipment is deployed on the street. The option to replace this with equipment operating at 48V seemed just plain sensible, says Steve. 'When you get the voltage down to 48V you can touch the cable and not even feel it so whether an RTA or vandalism, you know that the public are perfectly safe.'

The second reason for looking at the ELV option was reduced maintenance costs. Putting in an ELV controller meant changing the signal heads to LEDs – a very attractive proposition for

Steve because it would mean fewer lamp failures, fewer inspections and a much reduced maintenance programme. 'With the current tungsten halogen lamps, we have a two-yearly programme of bulb replacement. Bearing in mind that we are looking after 1,000 installations, there was clearly a significant saving to made with LEDs which have a much longer life.'

Of course, the big benefit of using ELV is reduced energy consumption. When Steve first started talking to Siemens they were predicting energy savings of around 70%. In 2006 that was a very attractive proposition, but since then the whole issue of energy consumption has shot up the agenda. Newcastle City Council now has a Carbon Management Working Group which is looking at ways in which NCC can reduce its carbon emissions, an initiative which has brought energy usage into sharp focus.

At present the majority of signals in the North East are not metered and energy is paid for on the basis of an audit of the asset database by the electricity supplier. However, that is changing and there is now a requirement for all new junctions using more than 500W to be metered. This change came in about two years ago and has resulted in an important spin off for the ELV venture. Steve explains that where a junction uses less than 500W, the power would normally be supplied by the

city's street lighting department. It is an internal transaction with low installation costs. Where a meter has to be installed, the costs run into thousands of pounds. 'If we have to install a meter, this will be done by the local supply company and connection charges really are very expensive. So there is a real bonus for us if we use an ELV controller because this means that the usage at the junction is going to be well under the 500W limit.'

And he points out that there is also an advantage at the point of installation because less cabling is required on site for the ELV product. 'By standardising the design of the ELV products, Siemens have reduced the amount of cabling that is used which means these signals are easy and quicker to install.'

Newcastle's trial site went live last September. A medium-sized cross road junction was chosen that was close to the depot – not so important, says Steve, that it would have caused problems if it had failed and close to hand if it needed attention. A couple of technicians were sent down to Poole for training and came back very impressed with the system. The installation went ahead and was, in Steve's words 'a total success'. A year on the junction continues to work without a hiccup.

Power readings were taken before and after installation and these showed that Siemens' predictions were spot on – the Newcastle site recorded a 72% reduction in energy usage. Newcastle is now in the process of going 'Extra Low Voltage'. Current supplies of high voltage equipment are being used up and all future purchases of traffic controllers will be ELV. It is good news, says



Steve, that Siemens are now bringing out a ELV pedestrian controller which he says is going to be just as important as the traffic controller. He won't say that he'll never use high voltage equipment again but there would have to be compelling reasons. All new junctions in Newcastle will in future be ELV and a priority list is being drawn up which will target the highest energy using junctions in turn for refurbishment.

Steve is now busy spreading the word to make sure that everyone in the North East understands the benefits of ELV. He's written a report, and done briefings and at the end of August held a roadshow to really hammer the message home. He says there are so many benefits the argument is already won. 'It is true that the capital cost of

putting in ELV over standard equipment is a little more but when you take into account the reduction in energy costs and the lower installation and maintenance costs it all adds up to be a lot cheaper. So everyone is very enthusiastic. But at the same time they wanted to know more about the technology and its benefits which is why we organised the roadshow.'

Back in Newcastle, the Carbon Management Working Group has taken up the roll out of ELV as one of its projects and is looking into whether some funding is available from one of the government's low carbon initiatives to speed up the rate of installation. With 1,000 sites to upgrade, there's plenty to be done but, as Steve Farrell underlines, plenty to be gained.

Fenham Hall Drive – Newcastle's ELV trial site. A year on from installation the junction continues to work without a hiccup.

Siemens launch ELV pedestrian controller

Steve Farrell is not alone in looking forward to the introduction of a completely ELV pedestrian controller. With the rapid growth in the number of ST900ELV installations that have occurred since the controller was launched at Traffex 2007, Siemens' Keith Manston has been inundated with requests asking when a pedestrian version of the ST900 will be available?

Until now the answer has been that 'the development of an ELV pedestrian is planned', but with the unveiling of the new ST750 Pedestrian family at JCT in September this planning will become a reality. In common with the ST900 family, which embraces both LV and ELV traffic controller solutions, the ST750 family also offers both LV and ELV solutions, but optimised for pedestrian control. And the naming of the controllers also follows the familiar ST900 theme!

The ST750 is basically an LV controller, designed to switch incandescent and standard CLS LED based signal heads. Being derived from the successful ST700 it also retains its ability to directly drive ELV nearside equipment, making it a particularly efficient solution for standard pedestrian crossings.

The ST750 ELV on the other hand, owes much of its design to the ST900 ELV but in a way that has been optimised for pedestrian control. Not surprisingly it is designed to offer many of the same features as its successful larger brother, including:

- Total ELV implementation offering enhanced safety over traditional LV pedestrian solutions.
- Reduced power consumption
- Fully integrated lamp monitoring of both ELV LED traffic signals as well as associated nearside signals.
- Sort circuit protection of all phase outputs to minimise downtime in the event of street cabling faults

Both the ST750 and ST750 ELV are available in small and large cabinet styles and are both approved to TR2500.

With the introduction of the ST750 family it is now practical for traffic managers to consider implementing a total ELV policy for all new sites, both intersection and pedestrian, says Keith. And he adds he is confident that the numbers of ELV solutions supplied by Siemens will soon outstrip the more traditional LV solutions!