

BHSEA Meeting, 14th December 2009

BHSEA Vice-Chairman, Ed Friend, opened the meeting by welcoming members and the speakers. The Secretary reminded members about the AGM on Monday and added that the HSE address would be given by the new HSE Head of Division, Rosi Edwards. Apologies were received from Bob Cole, Gerry Mulholland, Tony Hall and Bill Parker.

Provision of Industrial Lighting

(Presentation by Graham Archer and Curtis O'Donnell, Dexeco Solutions.)



Graham Archer; Curtis O'Donnell

Curtis O'Donnell started the presentation with a brief description of his firm's activities. The Dextra Group comprised Dexeco, involved in Conservation and Dexreco, for the related activity of recycling. In addition they have a large manufacturing unit that can complete customer orders within 5 – 10 working days, supported by an in-house CE testing facility with a ½ hour turn-round time!

Curtis went on to say that it was essential to follow a systematic process by asking the searching question “Why to replace your existing lighting?” It could be “Not fit for purpose because of a stroboscopic, effect on machine tools; or lumen maintenance is reduced by aging; or may be its quality of light is poor; or maybe the luminaire uses High Frequency control circuits. He then showed us an example of poor quality of light, in the before and AFTER photos, below: -



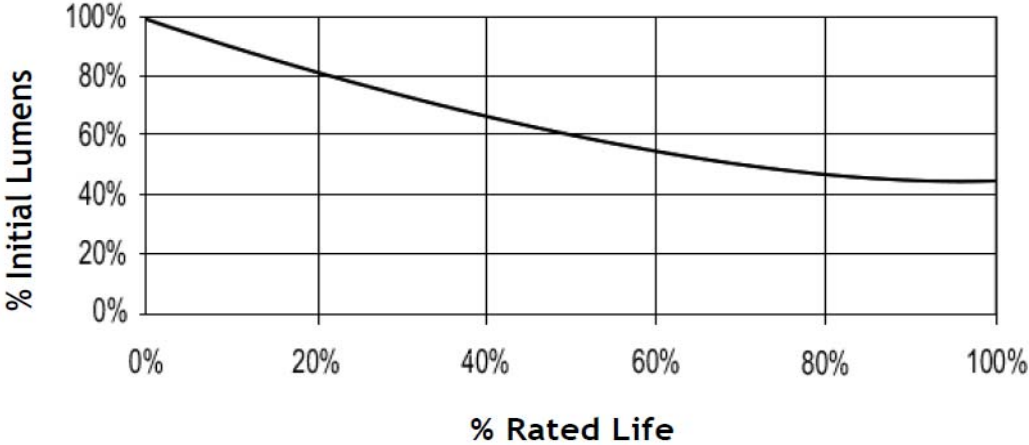
Before



After

The factor that made a difference in these shots was simply colour rendering, because the luminaires were still in their original positions, which were dictated by the warehouse racking. The difference was achieved by using Metal-Halide luminaires, instead of Sodium vapour lamps.

Lumen Maintenance



With the aid

of the above graph, he explained how the lumen output reduced by 60 % over the full life of the luminaire. This effect can be reduced by using the T5 control for reduced loss and the deterioration goes largely un-noticed. there is also instant light at switch-on with the T5!

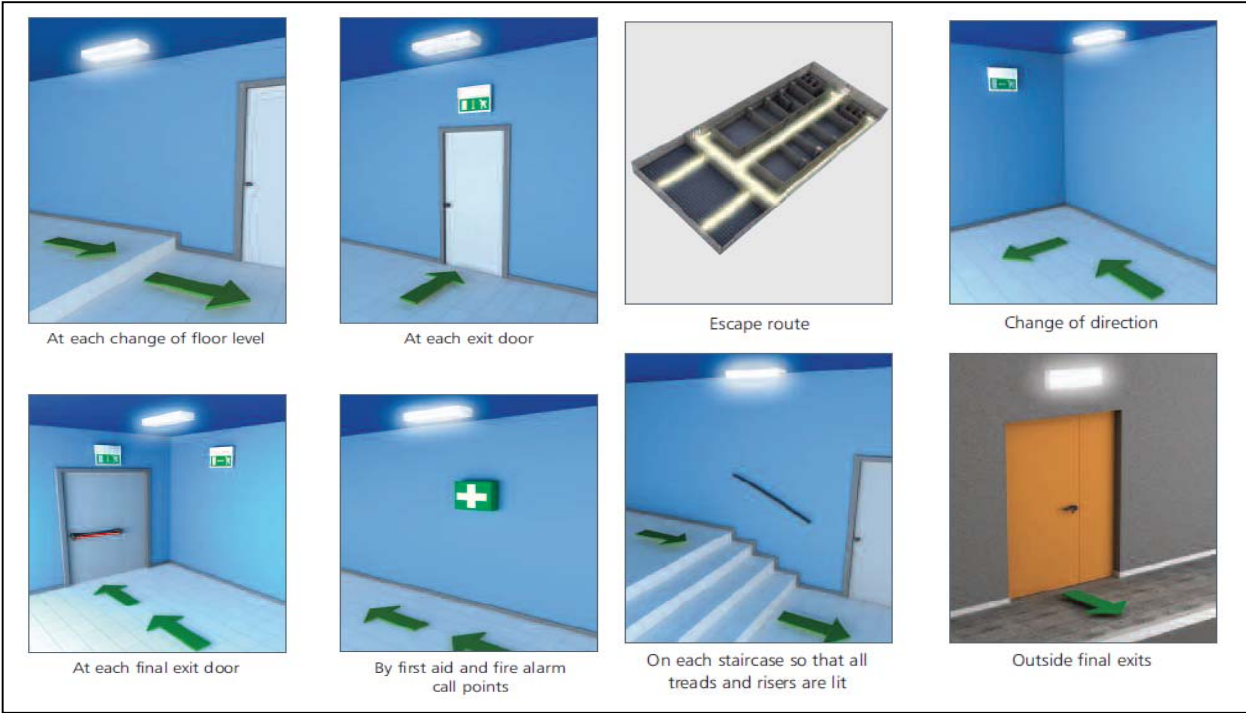
Curtis added that Dexeco’s UK salesforce could help customers through this process by carrying out Lighting Surveys, Lighting Design and Energy Analysis. This support service takes account of Chartered Institute of Building Services Engineers (CIBSE) guidance and specification, together with Health and Safety standards and specific task lighting requirements. All of this information is uploaded into a Computer Aided Design (CAD) programme which is capable of demonstrating the performance and effect of any new lighting scheme, that can also be compared to the existing arrangements.



This photograph shows a typical output from this programme. Designs also take into account issues such as light obstruction by filing cabinets, racking and machinery. Another factor is glare, either direct or reflected, particularly when travelling from one area to another, and contrasts in lighting levels. Curtis added that provision of dedicated task lighting could significantly reduce the need for general area

lighting and, hence the overall capital and running costs!

Another feature built in to this programme is a provision for maintenance of the lighting system. This is important because of the deposits of dirt and dust, either on the luminaires or the surrounding structures may have an even more marked effect than the natural fading of light output. This effect is most noticeable when comparing requirements in offices, to those in factories.



Near each intersection



Near fire fighting equipment

Another significant area of lighting design is Emergency Lighting, which is treated as an individual requirement. The photographs show the salient positions for locating the luminaires, once the escape routes have been determined in accordance with the Building Regulations and the Fire Risk

Assessment. As a general rule, anywhere >8m² needs to have emergency lighting and this also applies to key areas in larger rooms.

As in all other things in business, there is always an associated cost and Dexeco Solutions laid emphasis on the balance between Energy Costs and the minimal health and safety requirements.

(Contd./.....)

The chart below shows how alternative options are presented for a range of energy options to deliver varying savings in terms of cost and CO₂ savings.



Present Costs		Projected Costs				
Gear Type	Quantity	Gear Type	Quantity	Quantity	Quantity	Quantity
400W SON	100	4X80W T5	100	100	100	100
Gear Description	400W SODIUM	Dexeco Product code / Gear Wattage	VRT480 DS(E) R14	VRT480 DS(E) R14	VRT480 DS(E) R14	VRT480 DS(E) R14
Load per lamp (inc. losses) in Watts	434.00	Load per lamp (inc. losses) in Watts	344.40	344.40	344.40	344.40
Total Load	43.40	Total Load	34.44	34.44	34.44	34.44
Maximum hours per day	24	Maximum hours per day	24	24	24	24
Days per week	7	Days per week	7	7	7	7
Days per year	365	Days per year	365	365	365	365
Maximum hours run per annum	8760.02	Maximum hours run per annum	8760.02	8760.02	8760.02	8760.02
Level of occupancy*	100%	Level of occupancy	100%	80%	60%	40%
Actual hours run	8760.02	Actual hours run	8760.02	7323.38	5571.38	3819.37
Annual consumption KWh utilising Presence Detection	380185.04	Annual consumption KWh utilising Presence Detection	301695.23	252217.21	191878.16	131539.12
Percentage of Daylight Saving	0	Percentage of Daylight Saving	15%	15%	15%	15%
Annual consumption KWh utilising Presence & Daylight Control	380185.04	Annual consumption KWh utilising Presence & Daylight Control	256440.94	214384.63	163096.44	111808.25
Unit rate (£)	0.090	Unit rate (£)	0.090	0.090	0.090	0.090
Annual Electricity Cost	£34,216.65	Annual Electricity Cost	£23,079.68	£19,294.62	£14,678.68	£10,062.74
		Annual Saving (£)	£11,136.97	£14,922.04	£19,537.97	£24,153.91
Annual Tonnes of Co2 Produced	204.16	Annual Tonnes of Co2 Produced	137.71	115.12	87.58	60.04
		Annual Saving Tonnes of Co2 Produced	66.45	89.03	116.58	144.12

Lighting needs can be predicted in individual areas and each lighting unit can be adjusted to suit needs, such as lower output near windows, in order to boost savings. The design programme is flexible enough to allow for differing levels of occupancy parameters, to give payback over 3 to 4 years. There are also government grants for differing Carbon Sources and a Capital Cost Allowance from the Carbon Trust. (<http://www.carbontrust.co.uk>)

At this point Graham and Curtis demonstrated a luminaire controlled by a movement sensor and commented on the smooth start-up characteristics. This is another means of economising on energy costs.

Some useful information: -

CIBSE LG7 Guide: www.lg7.info

BSEN 1838:1999 Lighting Applications. Emergency Lighting

BSEN 12464 – 1 2002 Light and Lighting Indoor workplaces

BS 5266 – 8: 2004 Emergency Escape Lighting

HSG 38 Lighting at Work

After this demonstration Ed Friend closed the meeting and thanked the speakers for their presentation and the members added their thanks in the traditional way.