

LIGHTING EQUIPMENT NEWS

MAY 1993

Lighting for life

The new Science For Life exhibition at the Wellcome Centre for Medical Science is designed to highlight the achievements of biomedical science, explain the nature of research and underline areas for future exploration. As such, its designers, MET Studio, were faced with the challenge of taking what can be a dry and dusty subject and making it interesting. This they have certainly achieved and much of that success is due to the extensive and innovative use of light throughout the exhibition.

The lighting systems were designed and built by Light Works, using a number of new techniques to provide the appropriate effects in the various display areas, as well as in the exhibits themselves. It was important that this design provided each area with its own identity, while at the same time providing a smooth transition from one area to the next. The theme of the first area, for example, is the history of medicine and has a bright clinical feel to it. The next area, however, represents the inside of a cell and provides a dark and close atmosphere. The move from one to the other, therefore, is eased by

a gradual reduction in lighting levels, making effective use of fibre optics beaming across the floor at the entrance to the cell.

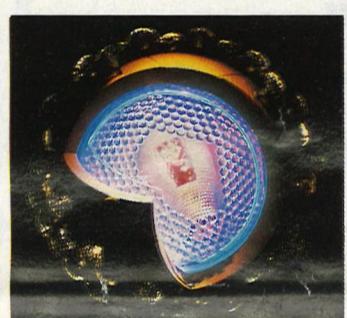
This 10m wide model of the cell forms the centrepiece of the exhibition and is packed with models representing the various structures to be found within the cell, magnified a million times. These are painted in various subtle shades and illuminated by ultra-violet floodlights to add to the realism. Cracked optical fibres represent internal message cables and stroboscopic flashes of light show the intermittent passage of energy through the cell. All of this combines to evoke an atmosphere of mystery.

Model light

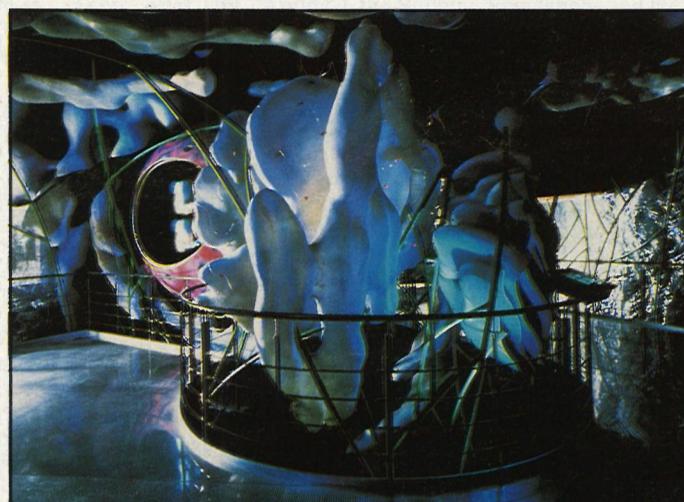
Light is also an essential part of many of the exhibits and one of the features of this exhibit is a model of a mitochondrion, the 'powerhouse' of the cell. The challenge here was to represent this energy and Charlie Paton of Light Works experimented with a number of effects before deciding on the solution that now immediately attracts the visitor's attention. At the heart of the model is a standard neon tube, packed with

short sections of glass tubing. This has the effect of breaking up the flow of plasma in the tube, so the current is continually following different paths through the bits of glass.

On leaving the model cell, the visitor is greeted by a row of carved acrylic pictures, again representing parts of the cell. Each of these is made up of two separate acrylic sheets, illuminated from beneath with high frequency fluorescent tubes to avoid flickering and excess heat. Use of different colour filters along the lower edge of each sheet meant that each picture could employ two colours to enhance its visual effect. The ballasts for the fluorescent tubes are



A replica of the AIDS virus, on show



The giant 'walk through' cell exhibit

located under the floor so as not to detract from the display itself.

Light is also a vital element in the 'funding machine' – an animated optical model which uses cogs, belt motors, mirror projectors, graphics and miniature people to describe the process by which medical funding is gathered and distributed. In this display, light represents the resources which flow through the system, being collected, focussed, reflected, coloured by various influences and sometimes switching on and off.

While the whole of the exhibition is visually impressive visitors will be particularly struck by the model of the HIV virus which forms part of the area representing 'unanswered questions'. The model uses screwed-up neon tubes at its centre to represent the genetic material in the virus, surrounded by a layered series of cold cathode shapes. Around the surface of the model are tufts of optical fibres, which also presented Charlie Paton with some fun and games. The final effect was eventually achieved by stripping the fibres back and then pushing them out to form the tufts with a fine steel mesh shaped rather like a miniature tea strainer.

The HIV model was originally specified as a hologram but this would have proved too expensive and appeared a little grainy. Like most projects, this financial

aspect was important and certainly influenced some of Charlie Paton's designs. At the end of the 18 month project, however, the total lighting costs amounted to £27,000 less than the original £90,000 budget, including 56 recessed emergency lights which are also used as cleaners' lights.

Running costs were also taken into account, though this was of secondary importance to achieving the right effects. In fact, Charlie Paton found that he could often obtain those effects by using less lights. "The strength of many of the effects comes from what you take away rather than what you put in," he said. The cell exhibit, for example, uses only five lights to create the required atmosphere. As a result, the original target of around 100kW was reduced to a total installed capacity of only 45kW. Not only does this reduce lighting costs, it also lowers heat loads so that air conditioning costs are less.

Specific interest

The Science For Life exhibition is not intended for the general lay visitor, being pitched at people with a more specific interest. The fact that it combines this specialist approach with the depth of knowledge required while still retaining a high degree of clarity is a tribute to its designers and to the way light has been painstakingly used to enhance their efforts.

Reader Service No 150
The HIV model was originally specified as a hologram but this would have proved too expensive and appeared a little grainy. Like most projects, this financial

In brief...

● Manufacturer of low voltage lighting transformers, IBL, has introduced a five year fully backed warranty on its standard range of electronic and toroidal transformers.

Reader Service No 151

● Supashades Ltd, the Cramlington-base lampshade manufacturer is expecting a new phase of growth following investment in the company by capital group 3i.

Reader Service No 152

● Electronics, with electrical engineering, is now Britain's second largest manufacturing industry with sales of £30 billion a year, according to the Confederation of British Industry's recent Manufacturing Bulletin.

Reader Service No 153

● Shawe Lighting Ltd has achieved certification to BS5750 (Part 2) for its manufacturing facility and will now seek assessment for Part 1 to cover its design function.

Reader Service No 154

● Low voltage lighting transformer manufacturer ILP Electronics has further strengthened its UK sales network with the appointment of six nationwide agents.

Reader Service No 155

● Public Lighting company David Webster Ltd has launched a new division, Weblight, which will specialise in the installation and maintenance of internal lighting systems, appliance and electrical testing, refurbishment of existing lighting systems and the design and installation of new energy efficient systems.

Reader Service No 156

● Kaufel Group Ltd, the parent company of Emergi-Lite Safety Systems Ltd, has agreed in principle to acquire three French companies from Dale Electric. The companies, Comptoir General Impex SA, Ratec SA and Elaul SA, have a combined annual sales of FF80 million.

● JSB Electrical has gone on tour with a mobile demonstration unit which is equipped with a range of both mains and emergency lighting.

Reader Service No 157

Lighting a path through time

Next time there's a powercut pour a bit of cooking oil into a saucer, place a piece of string into the oil and dangle the end over the lip of the saucer, and light it. This way you can illuminate your house in the style of the Greeks, Romans and other assorted ancients.

Just how people used to light their homes in times gone by must be of interest to lighting engineers – judging by the attendance at this year's Charles Marques Memorial Lecture at the Royal Institute in London.

Engineers packed into the lecture theatre where Faraday himself once lectured to hear Brian Bowers, senior curator, lighting & electrical engineering, at the science museum, take a whistle stop tour through lighting history.

In Jane Austen's time the social calendar was arranged around the phases of the moon, with the full moon most popular for parties – how else would the guests be able to see their way home?

A hangover from that era is the printing of the phases of the moon in diaries, and newspapers still carry this once important information in the back pages.

It seems as if time stood still in lighting terms for thousands of years, with only changes in kind in technology. Torches and candles – made from materials such as rushes, beeswax and whale oil – only began to be replaced by gas lighting in the 19th century.

Mr Bowers stole the limelight, literally, by showing how the addition of Calcium Oxide to gas lights created the bright spotlight effect needed for theatrical performances.

Electric revolution

But gas, a revolution in itself, was not to be long lived. As far back as 1675 Picard, carrying his barometer around at night (for some reason), had observed a glow from the mercury inside it.

The first electric method of lighting to be used in practice was the electric arc. In 1828 a light based on this technology was installed in London. And in 1840 Groves developed an incandescent lamp, but this was not taken up at the time because of

various design problems.

In 1881 the lightbulb was truly born. Edison, Fox, Maxim and Swan could all claim, with justification, to be its inventor, and the various models were on show to the public in Paris. Versions were tested and compared in terms of candle power/horse power – which is not too dissimilar from lumens per watt – and were found to be broadly similar.

From then on the story is well known, and Mr Bowers demonstrated some of the latest developments in lighting. The most up to date of these was the induction lamp. This is a radio frequency powered lamp which is expected to have a life of 60,000 hours, or in English, will last from now until the next century.

Congratulations must go to the Institution of Lighting Engineers for organising the seminar, and to Mr Bowers, not least, for managing to pull off all the demonstrations of archaic equipment without (too many) problems. Most impressive of his show pieces was the Roman 'cooking oil' candle, which burned quite effectively throughout the presentation. No more candle buying for me!

involved a partnership between Marlin and a specialist electronics design consultancy. The intelligent self-regulating transformer incorporates innovative circuitry which is the invention of Multiload Technology Ltd.

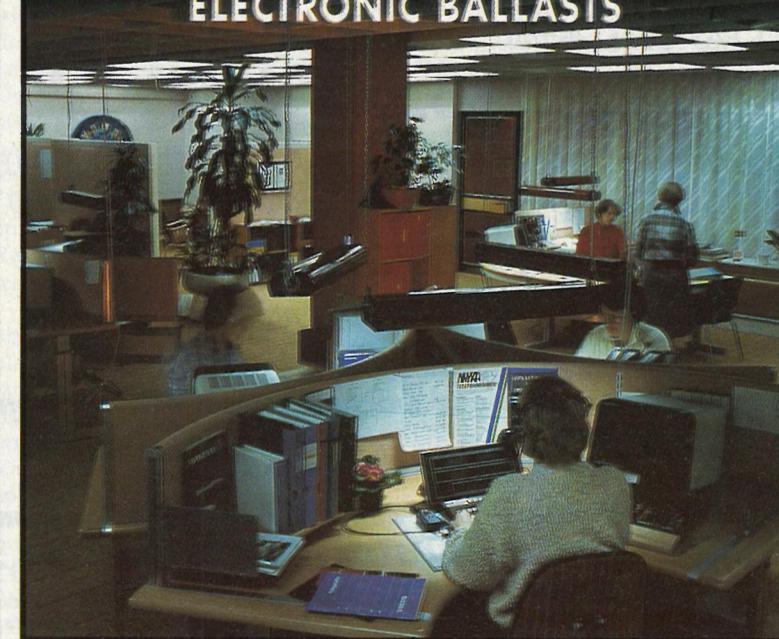
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Blackbox

Following the Blackbox article featured in the April issue of LEN, we would like to point out the development of Blackbox

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Reader Service No. 1

DIARY

MAY Centre. Details from 051-227 4262.

19

Interior Lighting Design Practice. Seminar in London organised by the Mid Career College. Details from the College, 0223 880016.

20-24

Intel '93. 13th International Electrotechnics and Electronics show in Milan, Italy, including a substantial lightshow. Details from 0039-2-3264282/3/7.

26

Lighting '93. One-day conference and exhibition at Heathrow, London, organised by ERA Technology, looking at: new lighting requirements, environmental issues, control solutions and lamp solutions. The event has the support of LIF. Details from Laura Christie, 0372 374151.

26

Modern Office Lighting. IEEIE

organised lecture in Bournemouth. The speaker will be C Hunt of Thorn Lighting. Details from 071-836 3357.07.

JUNE

6-10

Interior Design International '93. Exhibition in London, including interior lighting companies. Details from Nicola West, 071-486 1951.

12-16

Euroshop '93. To be held in Dusseldorf, Germany, for shopfitting, display and merchandising – including 120 lighting companies. Details from Eva Rugenstein, 49 211 4560 541.

17

Sign UK '93. Exhibition at the NEC, Birmingham, expected to attract over 3,000 buyers, specifiers, designers and signmakers. Details from Maurice Hoare, 081-302 8585.

22-24

Energy. Conference and exhibition in London including equipment suppliers as well as power providers. Details from 071-370 8207.

JULY

1

Emergency Lighting – Design and Practice. Seminar in London organised by the Mid Career College. Details from the College 0223 880016.

AUGUST

3

Elenex Australia '93. The definitive exhibition for the electrical and electronics industries in Australia, to be held in Sydney. BEAMA have obtained DTI financial support for an official British group there. Details from Rosie Lewis, 071-487 5831.

CIBSE

The Chartered Institution of Building Services Engineers

The outdoor environment

It sometimes comes as a surprise to specifiers, and some others in the lighting community, that the Lighting Division of CIBSE, where the B stands for Building, concerns itself with lighting for exteriors. This is a legacy from the former Illuminance Engineering Society which dealt with anything and everything to do with light and illumination.

The last decade has seen a change in the order of priorities that designers and specifiers apply to outdoor lighting installations. The overall annual running costs are no longer associated purely with capital outlay and energy charges. Present-day trading pressures, financial stringency and lower staffing levels are forcing all businesses and organisations to be much more judicious in the use of resources – human, financial and energy. On the other hand, the benefits for the purchaser of night-time exterior lighting now extend far beyond the simple experiences of pleasantness, amenity and the stimulation that come from an attractively lighted nightscape, both for private and public organisations.

A large part of the responsibility for the provision and operation of outdoor lighting rests with the local authorities. Many authorities now have special problems related to the night-time environment that warrant urgent and serious consideration. Very many of these authorities stand to gain significant benefits from improved exterior lighting. Increases in the incidence of crime and anti-social activity in the inner city and urban residential areas have emphasised the pressing need for improved amenity, safety and security.

On the brighter side, towns and cities are now being given a new lease of life with shopping malls and large zones totally free from vehicular traffic. Architects and planners have the scope for building a new and exciting character into these new areas, with emphasis on increased attractiveness, coupled with safety and security, encouraging a sense of local pride and well-being.

It is important for the designer to note therefore that although the expression 'functional outdoor lighting' may be used to describe any type of exterior lighting that is intended to do a task rather than for its visual effect, a design with empathy will almost always produce an overall enhancement of the visual environment.

If we accept that there is an awareness that much of our present outdoor lighting practice, particularly in the more sensitive areas, is no longer acceptable, there is now a challenge for the lighting designer to ensure that his knowledge and skill are utilised fully for the benefit of the entire community.

CIBSE's basic objectives in regard to outdoor lighting are to promote safety and security at night, enhance appreciation and enjoyment of the surroundings and, by giving a sense of belonging, help people to relax. To achieve these objectives, adequate and properly distributed light of suitable colour is needed to display the form and characteristics of principal features in a satisfying manner, reveal clearly such hazards as changes of level, illuminate dark and potentially dangerous areas, and enable full advantage to be taken of opportunities for entertainment, culture and leisure.

Often a small amount of light can fulfil the needs, indeed the effects may be spoilt by having an excess. The desirable balance between the various lighted areas is a matter of subjective judgement rather than engineering expertise; an appreciation of the visual effects is called for both on a large scale and when lighting individual features.

The designer's task first is to identify clearly the objectives of the proposed lighting project and then to consider how these can be met by applying the principles described.

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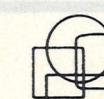
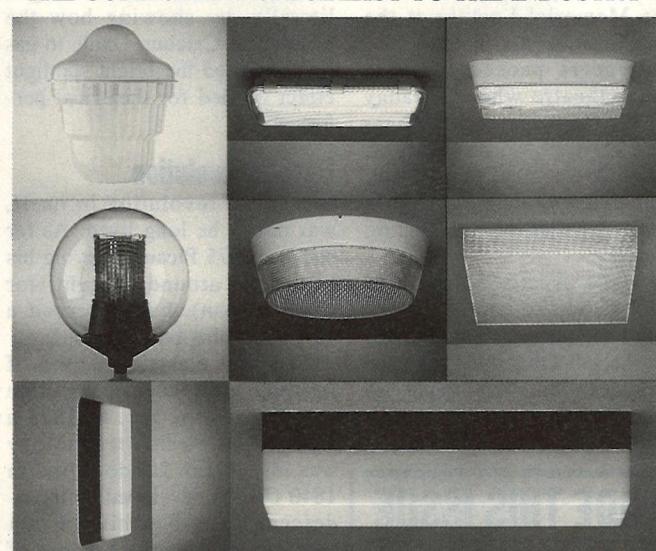
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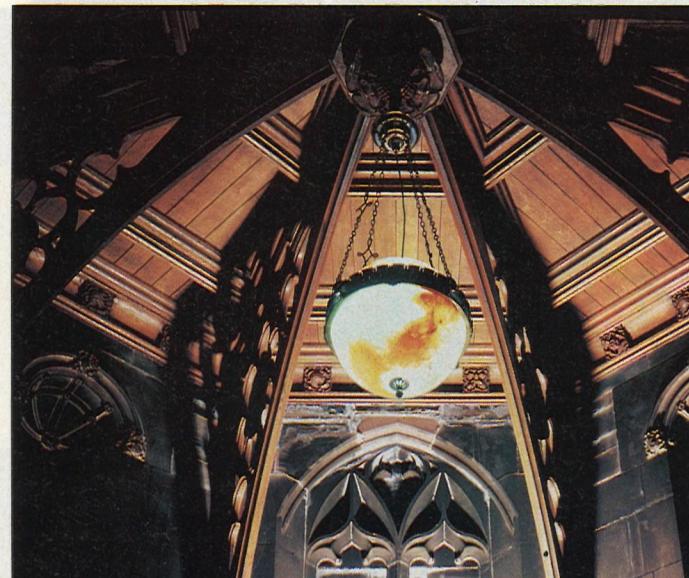
NEWS

Low energy for Gothic library

Some of the earliest working electric light fittings in the country, manufactured in the last century, have been restored and fitted with low energy lamps and control gear. This work, carried out by Chelsom, was part of a first phase refurbishment of the John Rylands Library, described as one of the finest examples of Victorian Gothic architecture in Europe.

The library was one of the first buildings in Manchester to have electric lights and, until 1950, these were powered by electricity from a diesel generator originally made in America. Providing a supply of 110V, the system powered 1450 carbon filament 16 candle-power lamps.

There were three types of fitting: a marble bowl with metal gallery, marble pendant fittings with metal rings and plates, and flush fittings with alabaster bowls. The contract called for all of these to be refurbished, so each had to be dismantled into its component parts for cleaning and



selective polishing to retain the antique patina of the metalwork. Missing and damaged metal parts were replaced and new alabaster shades and marble bowls were sourced from Italy.

An essential part of the project was to end up with a low energy system. Chelsom specified the 36W Osram F lamp because of its 217mm length with a 2800 lumen output, installing two lamps in each socket.

Previously, the marble bowls had impaired the light output, reducing downlight by as much as 60%. The renovation and cleaning, along with conversion of several fittings to up/down-lighters served to greatly improve the performance of the system. With the new lamps the light output increased from 250 lux (achieved with three 100W lamps) to 5000 lux per fitting.

Reader Service No 165

subsidiaries which began a year ago when the development, manufacturing and distribution operations were consolidated onto the original Silvertown site in Braintree, Essex.

The combining of the Silver-

town and Hitech product ranges is said to enable the company to offer complete lighting solutions supported by a comprehensive package of commercial and architectural fluorescent fixtures, uplighters and both mains and low voltage display and effect luminaires.

Reader Service No 166

Silvertown and Hitech merge

Silvertown Lighting and Hitech Lighting have amalgamated into a single company called Silvertown Hitech Lighting Ltd.

This formal amalgamation completes the phased integration of the two Whitecroft plc

LETTERS

The sky at night

Dear Sir,

The British Astronomical Association's Campaign for Dark Skies (CfDS) is working towards a goal: that of good-quality lighting marching into the future hand in hand with the reduction of unnecessary skyglow. We have recently been encouraged by the realisation that the lighting industry on the whole shares our aims.

The reduction of waste light above the horizontal from luminaires in both public and private lighting, in order to preserve our heritage above for coming generations, and the saving of energy by sending the right amount of light only where needed, are worth working towards; sounds familiar? These are not just the astronomers' aims, but also those of thoughtful members of the industry whom I met in large numbers at the recent Euro Light Show '93 at Earl's Court.

Imagine then my dismay on reading 'LIF Line' in the March 1993 issue of Lighting Equipment News. The anonymous author has, it seems, misinterpreted our message. The British Astronomical Association (there is, to my knowledge, no "Astronomers' Society" in the U.K.) has never campaigned for the suppression, removal or switching off of outdoor lighting serving a useful purpose.

In spite of the opinions of some who have perhaps never met an astronomer, we are in the main normal, democratic human beings who have the same need for security and the benefits of modern lighting as everyone else. I certainly value well-lit streets and carefully-illuminated areas for myself and my family, just as I

earnestly desire that my children, if they choose, may be able to appreciate the beauties of their total environment - which includes the night sky - as they grow.

We all have the right to whatever both environment and expertly-applied modern technology can offer: the stars and quality lighting are not mutually exclusive. The minimising of sky glow is supported by many who do not observe the night sky:

"From an energy efficiency point of view we want to light up the streets, not the sky" - David Maclean, Environment Minister;

"If not properly controlled, obtrusive light could present serious problems for future generations" - ILE Guidance Notes for the Reduction of Light Pollution;

"Pollution can be obviated by well-designed installations.... together with the lowest intensity light source that can achieve the requisite luminance performance" - J. Knowles MIEE, MILE in AME briefing sheet;

"Because sky glow is caused by reflected and direct light from the installation, restricting design illuminances to the minimum necessary for the application will provide additional mitigation" - CIE Obtrusive Light Limitation Guide 1991.

"Light above the horizontal should be minimised as it is wasteful and increases sky glow" - BSI British Standard 5489 Part one 1992/Section 5.9.

Add to all this the references to the prevention of light pollution to be found throughout the literature of the lighting industry, and it seems that those astronomers are not alone - and their allies are many.

The lighting engineers and industry professionals to whom I have spoken fill me with hope that the future development of lighting techniques and of amateur astronomy in this country will profit from their expertise, from their desire as trained problem-solvers and from the knowledge that they are working for the whole community.

CfDS, the dominant national movement to preserve the night sky for all our children - and I use their name not as a gratuitously emotive insert but because sky-glow is not going to be minimised for many years yet - has achieved its first aim of bringing the issue to the attention of the wide public, to Government and to the industry.

The recovery of the night skies which those of us born before the 1960's can still remember is the final aim; and more power to those in the lighting world who will use their talents to help achieve it.

Let there be light - and, to quote the title of one of our publications: "To our Children, The Stars".

Bob Mizon F.R.A.S.
Co-ordinator,
BAA Campaign for Dark Skies.

Safeguarding the public

Dear Sir

Your 'LIF Line' article of January contained suggestions that cause me to reply in respect of the Building Control view point.

The first concerns the stated hope that the Department of the

New life into old show

This year's IDI Exhibition (6-10 June) at Earls Court is set to change the rather poor image that the show has developed over the last few years. This will be the second IDI since the exhibition was taken over by Andry Montgomery and the company intends to inject new life into it.

Part of the strategy involves the commissioning of Rashied Ali Din of DIN Associates to design the interior. His design will include the use of activity areas across walkways to break up the monotony of the standard exhibition layout. "We intend to bring back the personality and character of IDI," he said.

The exhibition will be divided into product groups, each having an arch designed to represent the nature of the products exhibited there. At the time of writing the exact design of the lighting arch had not been finalised but was expected to involve a display of lamps. At the centre of the hall will be the Reilly arch, denoting the position of the top 100 products nominated for the Reilly prize.

The organisers are not perturbed by the existence of other exhibitions. "We believe that other shows complement IDI, rather than compete with it," said Sandy Angus of Andry Montgomery.

Further information can be obtained from IDI on 071 486 1951.

COMMENT

Following the January LIF line on the fire resistance of diffusers and optical controllers and the letter on this subject in the March issue, we have received much comment on the whole subject. Indeed, the debate continues, as evidenced by one of the letters in this issue.

What is clear is that the industry has been handed an extremely hot potato, if you'll excuse the pun, by having to face up to the demands of the Building Regulations and the EC Directive on office lighting at the same time. It is very difficult to satisfy both at reasonable cost.

First of all, we need to be clear about the terminology and avoid the pitfall of referring to everything as a diffuser. I am reliably informed that diffusers, the opal sheets of plastic that merely diffuse the light, represent only about 5% of the market and are a far cry from the prismatic lenses that dominate the market. These latter sheets of plastic control the direction of the light and are therefore useful for complying with the CIBSE Code on office lighting. With the right prismatic lenses the light can be kept within the CIBSE guidelines, namely that light levels beyond 55° from the vertical should not exceed 200cd/m². This cannot be achieved with diffusers if the light levels in the working area are to be adequate.

Now comes the problem. It has been implied that the only plastic panels that comply with the fire regulations are the PVC diffusers referred to above - but these cannot meet the EC Directive. Also, PVC is not a suitable material for making the prismatic lenses that can provide the required control of light. It's from this that we get the suggestion that it is difficult to satisfy both sets of regulations. There are, however, several ways in which this can be done.

It is possible to fit fire boxes around integral luminaires to maintain the fire integrity of the ceiling. However, not only would these obstruct the routing of other services within many ceilings, this remedy would also prove very expensive. Another option is to use only surface mounted fittings, but these will not necessarily match the decor of the building.

Another option is to use prismatic lenses that do meet the fire regulations. Contrary to previous suggestions there are materials that will satisfy most requirements. There is available a polycarbonate prismatic controller that has TP(a) approval, making it suitable for use just about everywhere except on stairwells. There is also a fire retardant polystyrene which meets the even higher requirements of Class 1 rating. This material has in fact been classed 1Y, which indicates that it gives the statutory 30 minutes protection but undergoes some softening.

To further complicate matters, the fire rating of these materials may vary with the stage of production at which they are tested. LEN has a copy of an independent fire test carried out by SGS Yarsley on a PVC white coloured light diffuser. The test was carried out to BS 476: Part 7: 1987 - and the diffuser failed spectacularly.

The problem seems to be that a plastic tested in its normal sheet form may behave differently after it has been vacuum formed. The very nature of vacuum forming will inevitably change the molecular structure of the polymer being used. So it is important to ensure that fire ratings relate to the finished product.

So there are a number of ways of overcoming the problems mentioned above but one can't help thinking this conflict should never have arisen. The content of the EC Directive has been known for some time, so why was it ignored by the Department of the Environment? With a little more thought and consultation this whole problem could have been avoided.

Paul Haddlesey

LIGHTING EQUIPMENT NEWS

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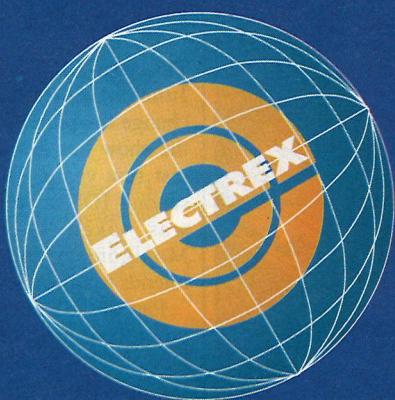


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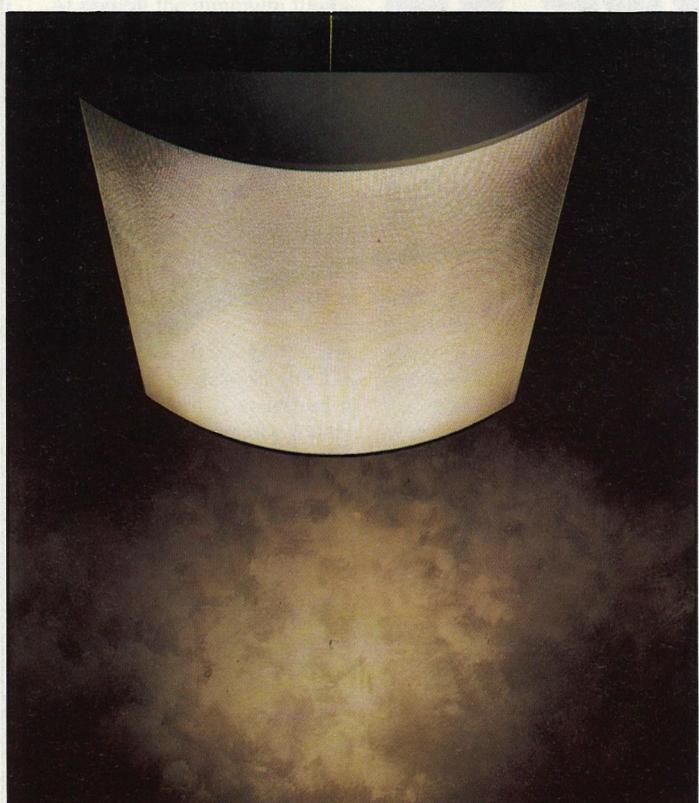
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Moorlite's Aerofoil indirect/direct luminaire conceals an efficient ceiling washing uplighter within its freely curved body shape. This indirect light component is balanced by a subtle direct component emitted through microperforations in the body, resulting in minimal contrast between ceiling and luminaire as required in a VDT application.

The 1,250mm x 700mm Aerofoil luminaire is designed specifically to accommodate a 500mm ceiling module, as a continuously mounted through-wired installation. It is available with twin

1,200mm 36W triphosphor lamps, and uses HF control gear in a plug-in cassette for simple installation and replacement.

The construction comprises cast aluminium end-caps, around which is wrapped a microperforated white-enamelled steel sheet. To ensure an even glow over the whole body, and prevent a bright lamp image, an arrangement of an opal and prismatic twin-walled diffuser is used to line the body, ensuring it meets the CIBSE LG3 recommendations for indirect/direct lighting for VDT compatibility.

Reader Service No 170

The adjustable sensor gives 140° angle of PIR coverage and the dual fresnel lenses provide a 'sneak-by guard'. The HS5140 has a minimum range of 12m with variable lighting ON times of from 10 seconds to 15 minutes. Lens shrouds are included, allowing adjustment of the PIR arc as required.

A 500W halogen bulb is also supplied, and the floodlight is fully guaranteed for three years against electrical malfunction.

Reader Service No 171

Halogen floodlight with three-year guarantee

Steinel has introduced a PIR-controlled halogen floodlight, the HS5140, which is intended to be of special interest to security specialists and other professionals who require rugged construction and weatherproofing to IP54.



Security light with low glare factor index

The Permilite security light from Hubbell has an optical system with a 6:1 spacing ratio which makes it particularly applicable where effective lighting with low glare is desirable.

Typical locations for this luminaire are perimeter fences and many types of buildings such as stores and warehouses, car parks and similar vulnerable areas.

It has a robust body of heavy duty die-cast aluminium which provides long life and vandal resistance. The one-piece injection-moulded UV stabilised polycarbonate/acrylic door and prismatic lens is hinged for full front access. This luminaire may be wall-mounted or post top-mounted singly or back-to-back. A photocell control option is also available.

Hubbell supplies a wide range of other weather and vandal-resistant security lighting for commercial/industrial use and for residential developments.

Reader Service No 172



Corning Pyrex lenses

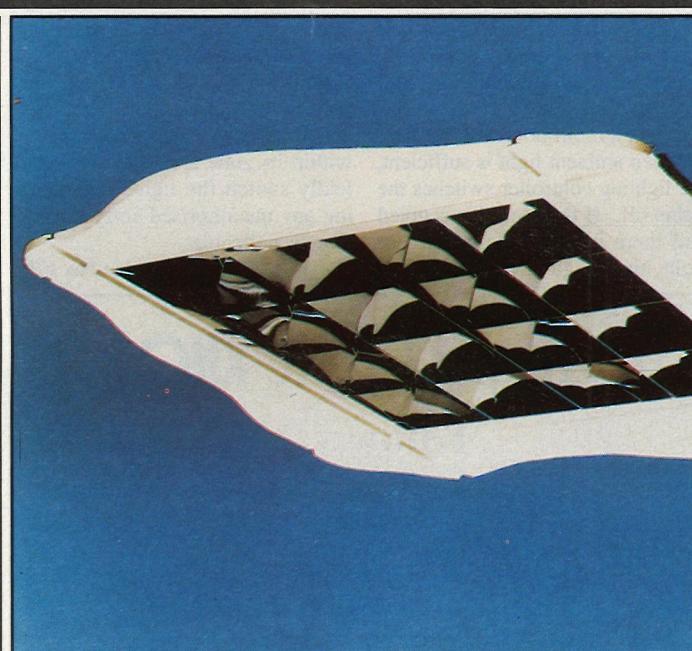
Four shock resistant Fresnel lenses have been produced by Corning for the studio and theatre lighting industries.

Manufactured in Pyrex 7740 borosilicate glass, the four lenses are the first in a planned range of new and optically designed lenses from the company. The new sizes are 120mm diameter by 90mm focal length, 152 x

100mm, 250 x 120mm and 250 x 150mm. Eventually Corning will produce a range of over 20 lenses in sizes from 80mm to 625mm diameter.

Already available are Pyrex lens blanks which are designed for polishing and are used in spot lighting, when high temperature resistance and good colour temperature are required, and also Pyrex Pebble convex lenses, designed for use in profile spotlights and available in diameters from 120mm up to 200mm.

Reader Service No 173



Louvre optic for compact fluorescent lamp

Moorlite Electrical has developed a louvre optic around GE Lighting's new F34W Biax compact fluorescent lamp, resulting in a surface brightness which is more visually comfortable than most higher loaded alternatives, claims GE Lighting.

The F34 is 535mm long and therefore ideal for use in a 600mm² modular luminaire. It fills the louvre giving even lighting in all cells with a comparatively low loading of 34W.

The new Broadsheet Compact achieves a 71% downward light

output ratio when utilising only two GE F34W lamps, and a space/height ratio of 1.7:1. This means that in a typical office environment, they can be spaced at 3 metre centres to provide uniform illumination within the 350-500 lux band as recommended by the CIBSE interior lighting code.

The Broadsheet Compact achieves a total lighting load of 9.6W/m² with switch start control gear or 7.9W/m² with high frequency control gear.

The variation in acceptable space/height ratios and high light output makes installation cheap and, with fewer luminaires required to light an office space effectively, significant savings can be made on lighting and installation, claims the company.

Reader Service No 174

LIF LINE

Public Monopoly = private profit

When God created the world he must have had a soft spot for the Electricity Boards! He obviously put the word out to all those who matter ensuring that this special breed be taken care of over the years.

Those of us with long memories recall the birth of Electricity Boards. From the days of the Electric Light Company - operating in war time Nissen huts - on coke-ash strewn bomb sites squeezed between the 3000 seater Havana cinema and the local brewery, only 100yds away from the nearest trolley bus stop; they were a hard working and unpretentious crew.

Once the Attlee Government decided to nationalise them it wasn't long before they started their phenomenal growth. With public funding behind them they quickly moved from their humble homes to purpose built complexes in newly created industrial parks, complete with all the trappings of success - receptionists, reserved parking areas, executive dining rooms, management grades and very generous pensions.

With the confidence that only financial stability and personal security can provide they became like a multi-national organisation, undertaking every aspect of electrical engineering superbly well, but like most giant organisations, perhaps lacking a little in attention to detail and customer awareness.

Then 40-years on - when the economic bubble had burst - when Thatcherite policies had decided that privatisation was the answer - they became Electricity Companies again. In a trice they ditched all the 'expensive unimportant things' (sometimes including staff) and immediately started to expand into new geographic regions. We now have East Midlands working in the Isle-of-Wight and South Western bidding for work in Norfolk. Their commercial realism is much more in evidence but they have difficulty in separating their private contractor status from the 'statutory authority tag' and at times these two elements make their actions questionable.

At a time when money for public services is severely curtailed and with our society going through a downward behavioural spiral local authorities are under social and moral pressure to provide increased lighting in the fight against crime and councils are frantically trying to keep their tens of thousands of street lighting points burning all night at off peak rates. In an effort to reduce their running costs they sensibly would like to 'shop around' for energy prices. However the monopolistic view of the Electricity Companies is clearly demonstrated by their uncompromising arguments that they really need a meter in the base of the column to measure the electricity used.

The fact that for 40 years there have been no meters and the 'average annual estimate' of consumption was considered perfectly acceptable to both parties is coolly ignored. As the saying goes currently: 'The goal posts have been moved'!

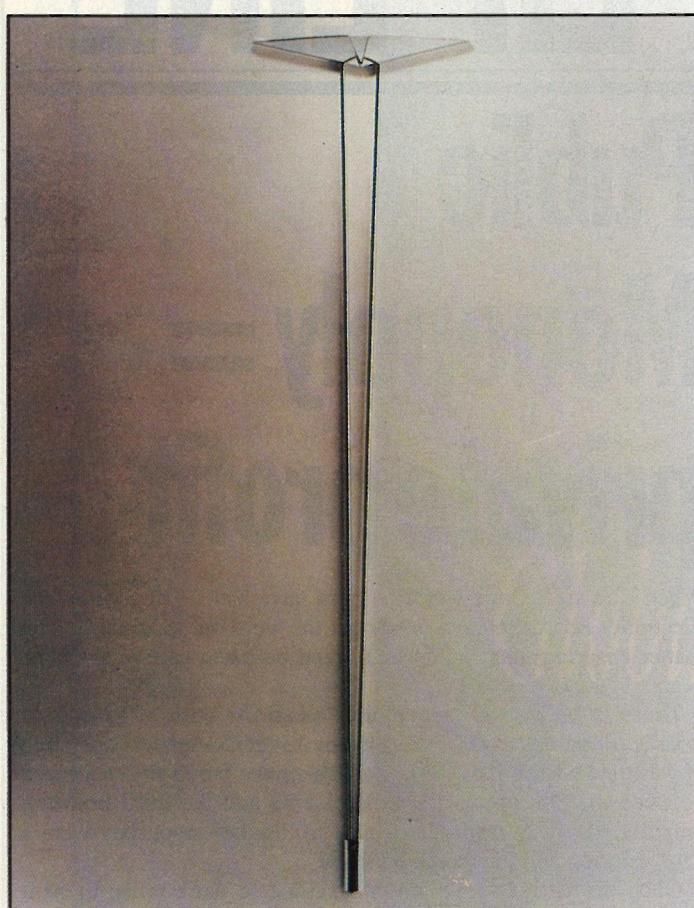
But they are prepared to negotiate by outlining a scheme whereby a council obtains a 7.5% reduction in current prices in return for a 'locked-in' all embracing service contract for five years.

Their connection and disconnection service for street lighting equipment on the old nationalised industry cable network is another area where they continue to enjoy favoured status. Only they are authorised to carry out this work because 'it is so specialist, technical and dangerous' but at times they offer a surprisingly indifferent service.

To add insult to injury they frequently demand payment in advance and in the case of one authority in the middle of a lighting improvement programme are currently holding £180,000 of pre-paid money without any promise of completion. With lighting equipment manufacturers and installation contractors prepared to accept payment on completion and subject themselves to penalties for poor performance it really is amazing that private companies prosper with such a strange attitude problem.

The County Surveyor's Society, The Association of London Borough Engineers, The Institution of Lighting Engineers and the British Parliamentary Lighting Group recently held a meeting with a Minister from the Department of the Environment in the House of Commons to discuss what measures could now be taken to correct this anomaly in private and public accountability. With the Citizen's Charter to support them and with rising crime, recession and unemployment to spur them on, the public sector are trying to break thus unfair and clearly anti-social monopoly. Maybe God has been kind to them so far - but the Electricity Companies have finally exhausted the patience of God's people.

NEW PRODUCTS



Wall-mounted uplighter

The Oxo M wall-mounted 300W halogen uplighter – designed by Daniel Bernard for Autographe of Paris and distributed exclusively in the UK by Into Lighting – is one of a family of luminaires which includes a floor-standing and two wall-mounted versions.

It has been designed for use where maximum flexibility is required. For this purpose the

lamp can be plugged into any wall socket, therefore reducing installation costs.

This particular model is complete with an integral dimmer control and is available in black, white, chrome, gold and grey. Oxo M measures 170cm high, 41cm wide and has a projection of 210cm.

Reader Service No.175

Suspended light fitting with reflector for VDU users

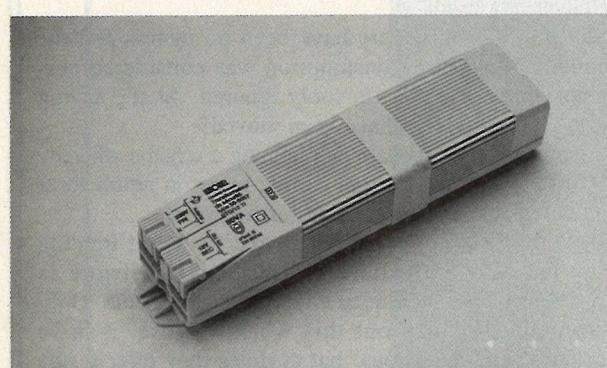
The H170 suspended fluorescent fitting is a new addition to Spectrum's lighting range. It is an elegant suspended fluorescent fitting which incorporates a polished aluminium parabolic reflector specially designed to meet the requirements of computer users.

The fitting is available with or without uplight, with 36 or 58W single or twin lamps and gives a

broad spread of light. It is manufactured from epoxy powder-coated sheet steel with a top machine perforated prior to assembly to give a subtle and even distribution of uplight on the ceiling to reduce glare.

The fitting is particularly suitable for use in areas where VDUs are used.

Reader Service No.176



This is a wire wound, laminated transformer incorporating resettable short circuit, electrical and thermal overload protection. Currently available in 50 & 60 VA versions, it is housed in a smart, low profile, V2 rated plastic housing with built-in cord grips. This transformer is double insulated and does not require earthing. It is designed and sold for installation into ceiling voids, direct mounting to furniture or other similar types of application, and need not be housed in an enclosure or luminaire. The transformer complies with European Standard EN60 742 and the requirements of the IEE wiring regulations with particular reference to the section 422 - PROTECTION AGAINST FIRE AND HARMFUL THERMAL EFFECTS & section 526 - ELECTRICAL CONNECTIONS. An environment that causes the transformer to overheat will cause the built-in resettable thermal fuse to operate. This type of fuse stops the transformer from overheating, which in excess could cause a fire.

This Transformer is suitable for mounting to appropriate flammable surfaces!

KNOBEL

- Transformers in a Class of their own

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Reader Service No. 5

Page 6

Aluminium enclosures with more space

Bernstein Coliprox – supplier of enclosures in aluminium, ABS and polyester – has modified the design of its Compact range of die-cast aluminium enclosures to provide more space for equipment.

The mounting brackets have also been changed, giving the user wider options for fixing, particularly in the more inaccessible locations. In the redesign, some of the internal dimensions have been changed.

Suitable for housing electrical, electronic or pneumatic equipment, Bernstein's range of 33 compact aluminium enclosures have a stove enamelled or RAL 7001 synthetic resin finish. Providing IP65 protection, they are supplied with neoprene gaskets and are in accordance with VDE 0110 Group C standard for creep and clearance.

The new quick-release lid fixing system is being introduced to the aluminium range and is already available on a selected number. The system is quicker to use, enables printing and machining of the covers to be more easily carried out, and gives an immediate indication that the IP65 seal is complete.

Reader Service No.177



Decorative lighting for modern or traditional interiors

Beta Lighting has introduced Flotilla, an elegant decorative luminaire for modern or traditional interiors which is shallow in depth although being surface-mounted.

It is available with six levels of low energy compact fluorescent

light output, including GE Lighting's 2D lamps up to the 38W 2D, 2 x 18W PL and Osram's 36W F lamp. All models are available with emergency lighting options.

Flotilla luminaires also come with a wide range of unusual and

attractive diffuser options for wall and ceiling mounting. These include a disc, ring and 'T' bar.

Standard finishes are white and polished gold, and other finishes are available to special order.

Reader Service No.178

Energy-efficient light controller

The Magic Eye intelligent light controller from the Silverlight division of the Berkeley Invicta Group utilises highly sensitive passive infra-red detection and light measurement to constantly check an area's occupancy and light level.

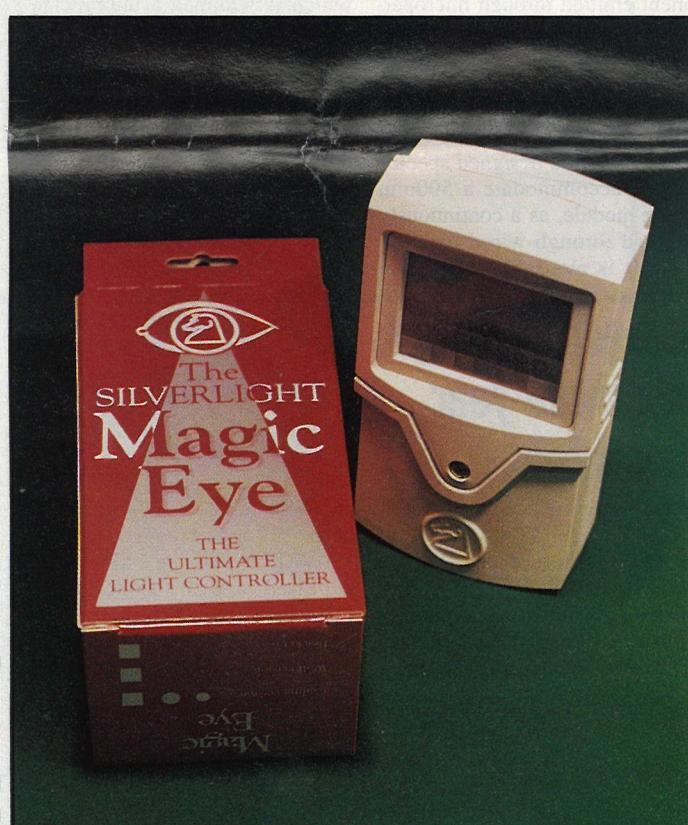
When a room or area is vacated, or when ambient light is sufficient, the lighting controller switches the lights off. If the room is occupied and there is insufficient ambient light, the Magic Eye will switch

lights on automatically.

A wall-mounted Magic Eye has a detection range of 18m in a free space and covers an area of up to 195m², while the ceiling-mounted version covers up 95m² at 3m. Installation of the compact unit is straightforward and it can be easily adjusted once installed. Energy savings of up to 70% can be achieved and over 40% where there is insufficient ambient light.

One additional benefit is the security aspect at night when the Magic Eye will sense occupancy within its zone area and automatically switch the lights on, making any unauthorised entry immediately noticeable.

Reader Service No.179



Temporary obstruction light

A low intensity temporary obstruction light has been launched by ADM-Delta, a member of the Delta International Contracting Group.

The TL/21 has been developed to meet the needs of the construction industry in situations where a moveable light is required during the growth of a structure.

The light is a temporary low intensity Group A filament light, that's robust construction makes it a 'go-anywhere' unit. Its universal mounting bracketry means it can be either bolted or tied to the structure, allowing it to be moved easily as the structure grows.

Standard features on the TL/21 include a 230/120V 55W long life (8,000 hours) lamp, 100 metres of 31838Y power cable

and a BS 4343 plug for either 240 or 110V.

Reader Service No.180



20 questions on emergency lighting for Europe

* Trevor Boxer, a member of several industry technical committees including CENELEC and ICEL, here answers many of the main questions about present and future European emergency lighting standards.

Q1 Why do we need a European Standard for emergency lighting and when is it likely to be enforced?

At present the minimum illuminance for emergency lighting in the various national Codes of Practice varies from 0.2 lux to 5 lux. The new proposal will result in a common standard and an increased level of safety in many countries. It is expected that a European Norm (EN) will be published in 1994.

Q2 How should emergency lighting schemes be designed in the meantime?

At present BS5266 is the requirement by law in the UK and this standard is specified in the Building Regulations for the countries within the UK. For buildings likely to be handed over after the commencement of the EN, the emergency lighting should be designed to the new illuminances.

Q3 Most lighting specifiers are familiar with the old standard, BS5266. Is the proposed EN more complicated?

No. The proposed EN is simpler than BS5266, the basic positioning of emergency luminaires to the EN will simply be a matter of referring to a spacing table. Manufacturers will provide luminaire spacing tables for 'defined escape routes' and also for 'anti-panic areas'.

Q4 What is 'escape route lighting' and how should it be illuminated?

Escape routes are usually corridors and other means of escape leading to the final exit. The UK negotiated a special national agreement such that if the defined escape route can be kept clear during an emergency, then it can be illuminated to a minimum of 0.2 lux on the centre line, which is the same as the existing Defined Escape Route in BS5266. If the escape route cannot be clear and unobstructed, then it should be illuminated to the 1 lux minimum requirement of the proposed EN.

Q5 What is an 'anti-panic area'?

Anti-panic areas are open areas such as offices or shops where the gangways are likely to be moved or obstructed from time to time. Anti-panic areas should be illuminated to 0.5 lux minimum.

Q6 Do the hazard points such as a fire extinguisher need to be illuminated?

Yes, in the same way as BS5266 the 'points of emphasis' should be illuminated to a minimum of 1 lux in a defined escape route including schemes designed to the UK special conditions of 0.2 lux and in anti-panic areas.

Q7 What is the new duration required?

Basically, this will be very similar to the requirements in BS5266. The minimum requirement is 1 hour. However, for sleeping risks, shopping centres and railway stations etc, the duration should be 3 hours. One hour is acceptable for offices, non-residential schools and factories. The premises may not be occupied, following a mains failure until the 1 hour duration is again available (ie after a full re-charge).

Retaining the 3 hour duration in all applications is therefore a way of permitting the re-occupation of the premises following a short mains failure.

Q8 Do exit signs have a viewing distance?

Yes. The viewing distance is now 200 times the height of the signs for internally illuminated signs. This ratio is very similar to that called up in BS5266 before the advent of the pictogram. For externally illuminated signs the ratio is only 100 times.

Q9 Do lift cars have to be provided with emergency lighting?

Yes. Although not part of the emergency escape route, the following areas need to be provided with emergency lighting; lift cars, escalators, open tiled areas such as toilets, plant rooms, external areas in the immediate vicinity of exits.

Q10 How quickly does emergency lighting have to operate?

It should be operating within 5 seconds and it should reach its rated light output by 15 seconds. Most emergency lighting systems already reach this standard but if generators are to be used then they would have to be specially designed. For High Risk Task Areas the response time should be 0.25 seconds.

Q11 Will central power systems still be acceptable for emergency lighting as well as self contained luminaires?

Definitely. The higher illuminances required may necessitate more extensive use of central systems to attain the illuminance required. Central power systems will be subject to additional requirements, a selection of which are as follows:

● Battery quality and performance is specified. The capacity has to have excess performance to

ensure it will still meet required output at the end of its design life.

● All lead acid batteries must have low voltage disconnection circuits to protect them at the end of their operational cycle.

● The charger must be matched to the battery and ensure the total system will recharge to 90% within 12 hours. This will require bigger chargers than are current in the UK.

● Monitors are needed to be more specific and easier to understand for non-technical users.

● Central inverters must be capable of cleaning any distribution fuses and not electronically shutting down.

● Inverters will have to be oversized by 25% to cope with accidental overload.

Q12 Do sub-circuits have to be monitored?

Yes. Emergency lighting must be activated not only on a complete failure of the supply to the normal lighting but also by local sub-circuit failure. Non-maintained self-contained emergency lighting should therefore derive their unswitched supply after the sub-circuit fuses.

Non-maintained central systems or generators must also monitor the local sub-circuits.

Maintained luminaires, self contained or central battery with slave luminaires do not need to

be treated in this way as the lamps are on by virtue of being maintained.

Q13 Is one emergency luminaire sufficient in an area?

No. At least two luminaires should be provided in any one area. Failure of either lamp will reduce levels but will prevent a total blackout.

Q14 What routine testing regime is required?

A monthly operation test and an annual full rated discharge. This annual test replaces the $\frac{1}{2}$ of rated duration specified in BS5266 in the initial three years and will ensure a higher degree of safety. Naturally test records should be kept in a log book for

inspection.

Q15 Are there any special requirements for hazardous areas in the proposed European standards?

Yes. For truly hazardous areas such as acid baths and large rotating machinery the emergency lighting should be 10% of the normal lighting or 15 lux whichever is the greater. This only applies in the direct vicinity of the machinery.

Q16 How have the proposed European standards been formulated?

Consultation with all the countries in Europe to obtain a consensus. The committee for emergency lighting illuminance in this

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Low mounted wayfinding emergency lighting systems can be as effective, if not more so, than conventional designs, especially in smoke. Paul Haddlesey reports

How low can you go?

Emergency lighting is designed to provide low levels of illumination to aid escape from a building in the event of mains failure or fire. The current minimum level is 0.2 lux but this is expected to rise to 1.0 lux under European standards.

Conventionally, these low levels of lighting are provided by emergency luminaires at ceiling or high level. A newer approach is to provide low-mounted guidance and signs along escape routes, to help people find their way out, especially in smoky conditions. Such systems are already widely used in aircraft, marine and offshore oil applications as well as underground train stations.

A number of systems have been introduced and these have been subjected to testing by various bodies. Most of them have been found to perform reasonably well in clear conditions but in smoke some of the results are alarming. In fact, referring to its Tech 13, Item 83.9 report, the Lighting Industry Federation (LIF) comments: "It's conclusion is significant insofar as the effects of smoke had not been appreciated to the full by prominent members of the Emergency Lighting profession."

Much of the testing has been carried out by the Building Research Establishment (BRE),

looking at the ways people behave under different conditions and with a variety of emergency lighting systems.

Part of the most recent BRE study compared the effectiveness of low mounted wayfinding systems in smoke-free conditions with conventional high mounted luminaires, which were installed to represent good practice for siting of luminaires to BS5266. The wayfinding systems tested were based on photoluminescent materials, electroluminescent lamps and miniature incandescent lamps. The results of this research were presented by Dr Gerry Webber at last month's Lux Europa conference.

Better performances

"Overall, on a level escape route with low-mounted systems providing visual guidance and illumination to a minimum horizontal illuminance of about 0.1 lux people can perform as well as or better than under an installation of high-mounted emergency luminaires providing the BS5266 recommended minimum of 0.2 lux on the centre line of the floor. On stairs, people can also perform well with low-mounted systems along the slope of stair providing a minimum horizontal illuminance at the stair nosings of 0.5 lux," reported Dr Webber.

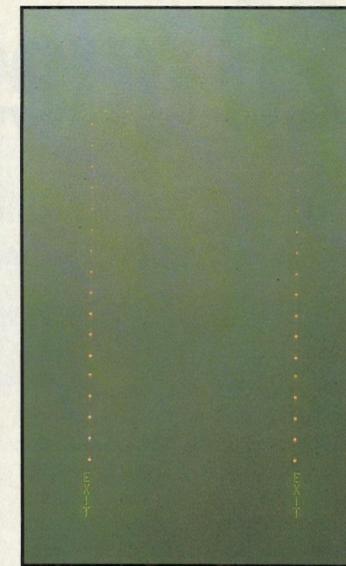
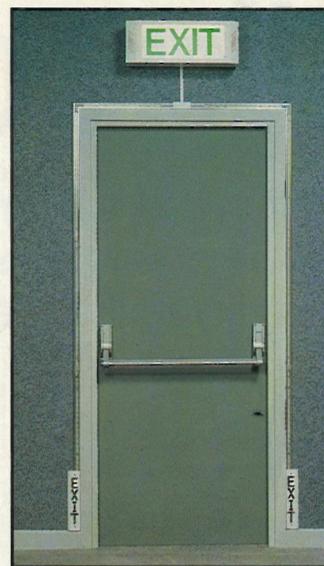
These findings support the results of an earlier BRE study by

C Aizlewood and G Webber. This report questions the use of illuminance as the only design parameter for escape route lighting in smoke-free conditions. It also suggests that wayfinding systems need serious consideration by the industry, designers and specifiers.

It seems, then, that in smoke-free conditions most systems available will get people out of the building. In smoky conditions, however, the value of wayfinding systems becomes more pronounced. The BRE study again looked at wayfinding systems and also assessed the ease with which various types of exit sign could be found.

The signs and systems used were:

- an externally illuminated pictogram sign, illuminated by a ceiling mounted emergency luminaire. The vertical illuminance at the face of the sign was 2 lux.
- a tritium sign with pale green letters behind a dark green stencil.
- an electroluminescent sign with dark green letters on a bright green background.
- an internally illuminated pictogram sign with a fluorescent lamp.
- a horizontal LED sign with bright green letters, picked out with 55 LEDs standing proud of a white background.
- a vertical LED sign with 32 LEDs.
- an LED track mounted on the



The Guide-Lite wayfinding system (see page 19) in clear and smoky conditions

floor and based on triplets of green LEDs, 20mm apart at three different angles. The triplets were repeated every 200mm and the track ended with the vertical LED sign on the door.

- an electroluminescent track with three intermediate direction signs and door frame marking. The lamps were green, about 5mm wide and continuous.
- an incandescent track and door frame marking.

"In non-toxic smoke conditions, powered low-mounted systems appear to offer more effective visual guidance than traditional luminaires. In the smoke, subjects were more confident in moving along the corridor with low-mounted light tracks than under high-mounted emergency lighting or an unlit corridor with exit door signs alone. Subjects were also more confident in finding the exit door with the door frame markings and wall mounted light tracks than with the externally illuminated or tritium signs," says the report.

It continues: "The low-

mounted wayfinding systems were felt by subjects to be considerably more satisfactory than the traditional emergency luminaires for an emergency smoke conditions.

"For exit door signs in unlit corridors, the longest visibility and recognition distance in smoke was offered by the high intensity LED sign with appropriate size of legend, followed by the high luminance fluorescent pictogram. In smoke, any other high mounted lighting, emergency or normal, or at the same time produces unnecessary scattered light and thereby reduces visibility of signs.

Unsatisfactory

The report also comments: "Most of the subjects felt that, for an emergency smoke condition, the British Standard emergency lighting system would not be satisfactory. Indeed, this is something that has been picked up before, when delegates from the Lighting Industry Federation (LIF) had similar experiences at

a demonstration provided by the BRE.

This is described in the LIF report Tech 13, Item 83.9. "The overhead lighting was useless and making it brighter worsened the situation. Various EXIT signs were shown and, with the exception of the LED EXIT they were all invisible at about 2 paces, the LED EXIT being invisible at about 3 paces. The change from discernible to invisible was very marked, just moving the head a little was enough to change from one to the other."

The delegates also found a wayfinding system to be useful: "The only way to move safely in the smoke was on hands and knees and here strip illumination was beneficial. The electroluminescent was quite visible on hands and knees and gave a good guide to the exit route. The filament strips were better than the electroluminescent on hands and knees and movement could be quite confident.

"Whilst there was some discussion on the detail of clear condition emergency lighting, it was generally realised that in smoke conditions conventional emergency lighting and EXIT signs were virtually useless," concludes the report.

It was agreed that there should be a standard for the provision of emergency lighting for smoke conditions, but two years on this is yet to be established. Work in the UK has been somewhat superceded by the taking up of this issue by CEN, although the appropriate working group has not yet issued any conclusions. At the same time, there is a BSI group working towards a standard for the application of low level emergency lighting for all conditions. This has just had its first full committee meeting and so is still at least two years away from an accepted standard.

the height of the room (ie. spacing height ratio should not exceed 4:1).

The 20 questions and the 10 step guide should give an insight to designing with emergency lighting, however, no responsibility can be accepted for information expressed or implied, and the author cannot accept any liability with respect to the use of, or damages resulting from the use of this information.

* Trevor Boxer is technical director at JSB Electrical plc.

20 questions

continued

case is CEN169 WG3 and the committee for the application of emergency lighting and for the central system product standard is CENELEC 62.8.

Q17 How has ICEL influenced the format of the proposed European standard?

Greatly. The ICEL product standard, ICEL 1001.2 for self contained emergency luminaires has formed the basis for the

European standard for emergency luminaires EN605982.22 and members of ICEL have contributed to the format and promotion of the European standard.

Q18 How can luminaires suitable for escape routes be recognised?

Luminaires for the UK market should be ICEL marked to show conformance with fire retardancy and photometric claims, as these two aspects are not included in EN605982.22. Luminaires so marked will also bear the British

Standard Kite Mark showing that they are tested and certified to BS4533.102.22.

Q19 Is the European legislation going to be retrospective?

Yes. Eventually all emergency lighting installations will need to be upgraded to the proposed standards. The time scale of completion of upgrading is likely to be by 1996.

Most manufacturers of emergency lighting have available spacing tables for their luminaires to give 1 lux for escape

route lighting and 0.5 lux in an anti-panic area. Where possible, schemes should be designed using the new figures from these tables.

Q20 How will existing installations for anti-panic areas be checked for conformity?

A simple practical technique for assessing areas is available. It is less accurate and therefore less economic than the spacing table but it does offer a convenient way of checking that the 0.5 lux minimum is met or exceeded. This

technique involves checking that there is at least 5 lumens/m² in the relevant anti-panic area according to this formula:

$$5 \text{ lm/m}^2 \geq F \times \text{DLOR} \times N$$

Where:

F = lamp output in lumens
DLOR = downward lighting output ratio of luminaire for emergency lighting.

N = number of luminaires

A = area in m²

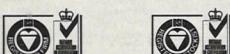
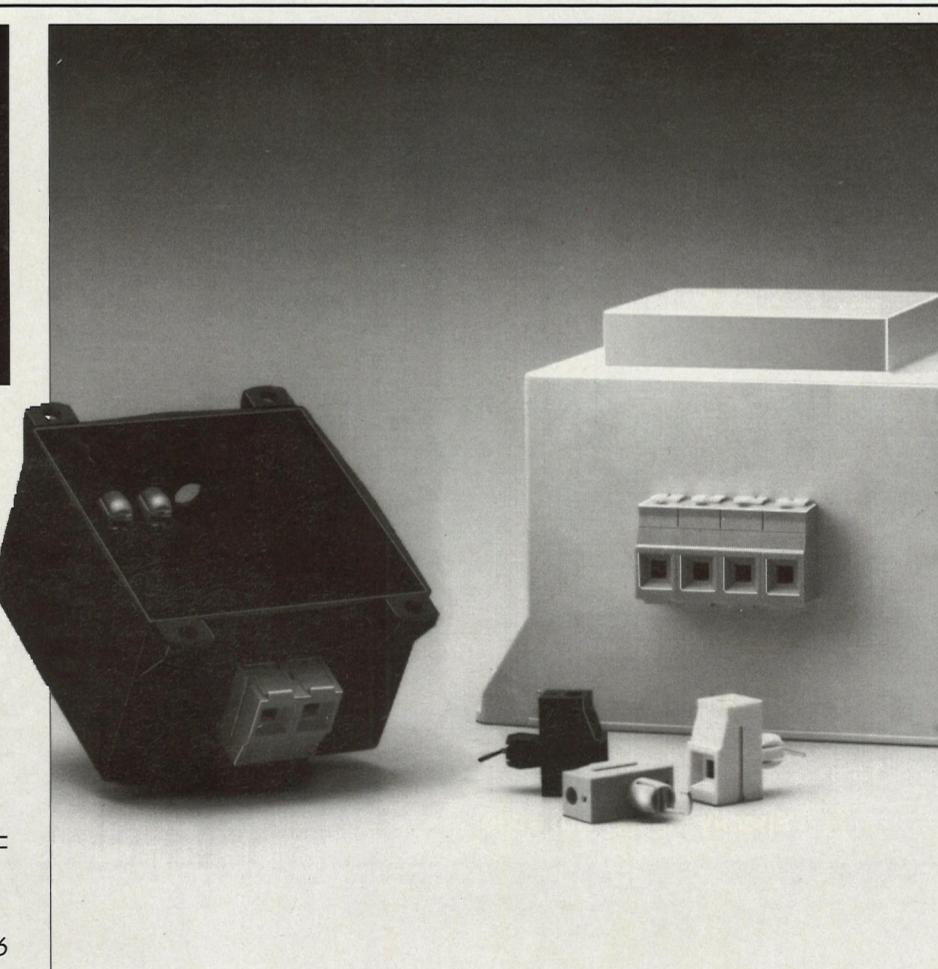
Note: Luminaires should not be placed apart further than 4 times

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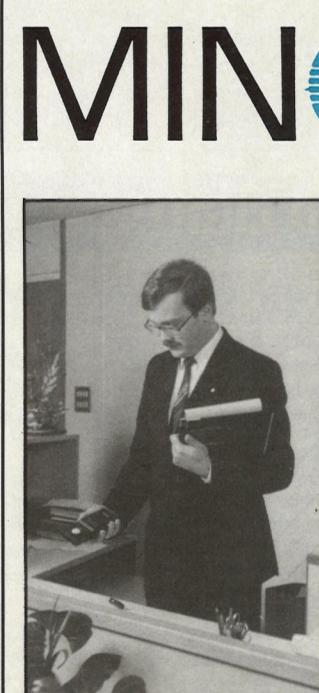
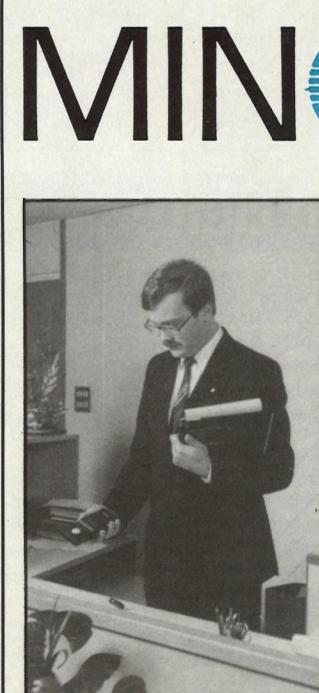
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MINOLTA - MEASURING UP TO YOUR STANDARDS

Reader Service No. 9
Lighting Equipment News, May 1993

The right address

The development of a fully automatic, analogue addressable centrally powered emergency lighting system helps to meet the new European requirements for emergency lighting. *Alan Daniels explains

The harmonisation of European standards is expected to place greater emphasis on the need to undertake thorough and regular checks on the performance of each emergency luminaire. The new 'Workplace Directive' (89/654/EEC), partially introduced at the start of this year, sets out the requirements for emergency lighting in the UK and its scope encompasses any building where people are employed. Thus, it goes well beyond the scope of factories, shops and offices.

What is most significant is that the Directive is retrospective and not confined merely to all new buildings. All existing buildings will have to comply with the Directive, so many systems, even though they may conform to the current national standard, will have to be upgraded.

It is the increased emphasis on the regular testing of each emergency lighting installation, including the power supply, that has motivated Chloride Bardic into developing a comprehensive addressable system. What makes this system different from any other on the market is that it has the capability to monitor slave luminaires and can be installed in any building where centrally supplied powered emergency lighting

systems are the preferred option. As a result, it is suitable for installation in established building complexes, such as factories, hospitals and schools, where there are a number of buildings, each fitted with different emergency lighting systems.

The new system comprises two units; an Analogue Addressable Monitor System (AAMS) and a Programmable Automatic Test System (PATS). The first of these will monitor the AC or DC power supply to each luminaire and its correct functioning. In addition, the charger and inverter system will also be fully monitored. In a discharge test situation the system will indicate when the mains supply failed and when it was restored and whether the battery is fully discharged to indicate battery condition as well as correct functioning.

Complying with BS 5266

PATS, the second element of the system, sets up the comprehensive luminaire test programmes and can be run in accordance with the requirements of BS5266 and all other regimes. It is this element that offers the premises maintenance manager, or elected fire safety officer, the facilities to fully comply with existing and impending legislative changes on

luminaire testing. With PATS, operators have the option of testing both zones and individual luminaires.

Under the terms of the Workplace Directive, every emergency luminaire has to be subjected to a routine inspection and test. Tests will have to be performed at daily, monthly, six-monthly, annual and three-yearly intervals, with the checks being of differing time durations. In a large building, or multi-building location, manual checks of this nature become both time consuming, expensive in terms of staff hours and potentially disruptive to production.

Being an addressable system means that each and every luminaire can be monitored and tested individually. In the event of failure, the identification of relevant luminaire is highlighted visually on the monitor's control panel and by an audible signal. The system will also detect the cause of the failure, this being printed in a report message. Only when the fault is corrected can the reset button on the monitoring module be activated.

The scope and capacity of the system is illustrated by the fact that it has been developed to accommodate up to eight individual loops, with each loop taking

126 devices. In theory there is no limit to the number of loops and, therefore, number of luminaires that can be accommodated.

Of major significance is that the automatic test facility can be designed and programmed to meet the end user's specific requirements. As a result, it can be readily incorporated into any design of emergency lighting system and testing regime so that it is dedicated to that system.

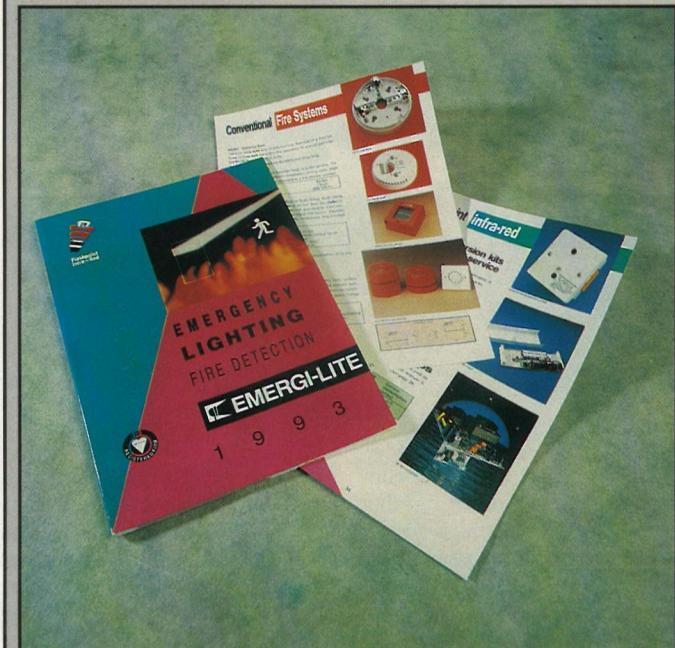
More often than not it is desirable to carry out tests at times of the day, week, month or year when premises are either unoccupied or not fully operational. Bardic has equipped the new system with powerful software that will accept the most complex of procedures and will allow users to establish programmes that can run for a number of years. It is almost a matter of 'set and forget'.

Automatic testing

Once a test regime has been established, the system will automatically put this into action. Only in the event of luminaire or power supply failure is human intervention necessary. On the completion of each routine inspection and test, the system will produce a printed management report detailing the information required under the terms of the relevant standard.

It is worth noting that in developing this system, Chloride Bardic has considered the opportunities that lie in the move towards 'clever' buildings and the importance of total building management. In the drive for greater plant and production efficiency, many companies require daily management reports on all facets of their operation.

The addressable system is equipped with RS232 and 484



The new 60 page catalogue from Emergi-Lite is a showcase of emergency systems which includes the latest systems for public buildings, industry and commerce as well as a full range of aesthetically pleasing options for corporate and hotel interiors. The catalogue gives a breakdown of each product and includes illustrations of self-contained emergency lighting systems, conversion kits for mains lighting, central battery systems, infrared testing and fire detection systems. It refers to the latest European standards, has information on installation requirements and all products.

Reader Service No. 209

interfaces, permitting link up with a management PC for integration into a LAN (local area network) if required. To further extend its capabilities a number of systems, each controlling lighting or fire detection installations accordingly, can be linked to a common Bardic Advance Alarm System Co-ordinator (AASC) housed in a remote location.

A comprehensive alarm and graphics reporting system, AASC provides total supervision and control of fire, emergency lighting, plant and security alarm networks. Comprising graphics terminals and data highway concentrators, the system offers constant alarm monitoring and provides critical information display and control procedures in the event of an emergency.

Chloride Bardic also offers an emergency lighting assessment service. Under this scheme, the company's engineers will undertake an analysis of a building's current adherence to the new standards and advise on any modifications that should be considered.

Reader Service No. 210
*Alan Daniels is technical manager at Chloride Bardic

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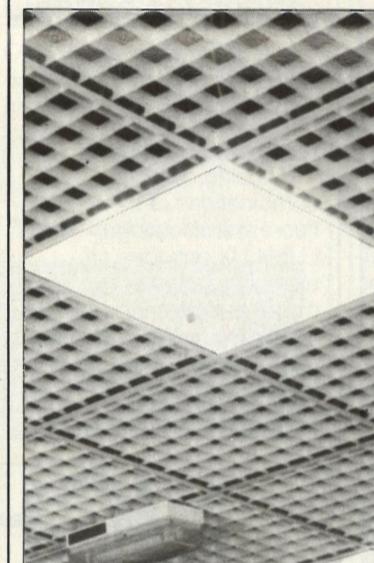
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Lighting Equipment News, May 1993



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Avoiding aesthetic anathemas

*David Horn considers some practical aspects of integrated emergency lighting

To the architect the self-contained emergency lighting 'brick' (sometimes known disparagingly as a lunch box) is an aesthetic anathema. It has its place, but for commercial lighting, architects and users now prefer to specify emergency lighting which is integrated into the standard mains operated luminaire.

While it is common to think of emergency lighting in conjunction with escape from fire, any failure or interruption of the mains supply supports the need for emergency lighting. Luminaires for integrated emergency lighting are designed to provide a published performance and conform to safety standards. For this reason most luminaire manufacturers provide, or authorise, emergency conversions which will maintain performance based on stringent testing. All too often, however, conversions take place on site either for ill-informed financial reasons or to supplement an inadequate emergency lighting scheme.

The ease with which emergency luminaires can be modified can encourage installers to convert standard luminaires to emergency mode. However, there are several reasons for proceeding cautiously:

1. Conversions may lead to disputed responsibilities. Who (installer, contractor or manufacturer) is responsible for problems experienced with fixture operation under mains conditions?

2. Has the conversion been fully thermally tested and approved? There is a limiting temperature placed upon the batteries and inverter module. In the UK (but not throughout Europe) a full three hour operation is required. Three hours may be achievable upon commissioning of an installation but, untested, it may mean a reduction in battery life over time or a decrease in lumen output.

3. Approved manufacturers of emergency luminaires are visited by BSI/ICEL to ensure compliance with good manufacturing practice. Surveillance samples are taken to confirm that the safety and performance on luminaires satisfy the EN/BSI specification requirements.

Emergency luminaires supplied and tested by recommended manufacturers are often 'modified' on site. The most common request is for instructions to extend the 1m cable provided, pre-wired between the luminaire and the battery/inverter box. If this is done the assembly is no longer considered to be a self-contained unit and requires different cable specification and protection. This is because a one metre limitation on cable length avoids fire situations which render the supply box inoperative while the luminaire is seemingly undamaged.

Extended cables can prevent the lamp from striking due to the over-long distance between lamp and supply box. For example, installers have been known to substitute the cable for a longer length of MICC (which has a high resistance to fire). MICC can have a capacitance effect due to the proximity of other cables or an earthed housing. This effect reduces the power to the lamp and delays ignition. In the worst case scenario (i.e. a cold lamp in an unheated building) the lamp may not strike at all. Again, the advice must be to tread cautiously – longer lengths of cable have been shown to work on installation but over time can degenerate.

The role of the luminaire manufacturer is to supply the market-place with products which perform to the highest standards and look aesthetically pleasing. Marlin's Opaline, for example, has long been available as an emergency luminaire using a remote battery/inverter box. Development of the fully integral

Opaline, however, was not possible for a long time.

This was because of the limiting temperature placed on the batteries.

Now, the introduction of high temperature batteries, with an operating temperature of 57°C, has altered the future of fully integrated luminaires. Even the smallest Opaline can now be used as a fully integrated luminaire.

While the ballast is the hottest part of the luminaire to the touch, it is the lamp which generates the greatest wattage. Careful configuration of components and a slightly increased backplate volume have solved the thermal problems. While fully integrated products are not intended for every installation, they provide an ideal solution for solid ceilings, stairwells and refurbishments.

Lastly, the emergency scheme does not finish at the 'Final Exit' door. Provision should be made for evacuees to reach a safe place which may not be immediately outside the building. Emergency lighting in car parks or amenity areas is necessary to instil a sense of security if the mains supply fails, not least to comply with the BS 5266 Code of Practice.

New technology is the driving force behind the improvements in emergency product design but it is the specifier's responsibility to ensure that emergency lighting

Key terms used for emergency lighting

Non-maintained: a single lamp used only for emergency illumination.

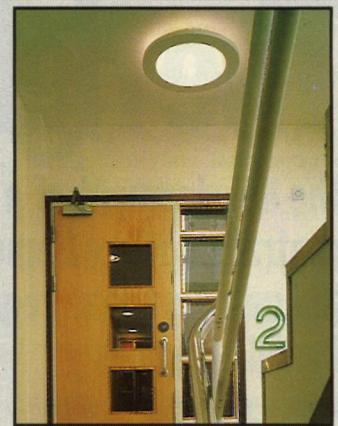
Combined or sustained: two lamps, one used for general mode and the second used in the emergency mode.

Maintained: a single lamp used in both general and emergency modes.

Self-contained – integral: all elements are housed within the luminaire.

Self-contained – remote: batteries and inverter are mounted in a remote box due either to space or temperature limitations. To be self-contained the box must be mounted with a linking cable of not more than one metre (When

conforming to the latest recommendations, is always part of the 'means of escape' strategy.



Marlin's Orbit Halo installed in a stairwell at Queen Mary & Westfield College

the batteries and inverter are mounted more than one metre from the luminaire, the system is called a central battery system).

Reader Service No 211

*David Horn is technical support manager at Marlin.

There is always more

...more choice, for example, with the LUMILUX range, OSRAM's brand name for triphosphor fluorescent tubes.

Triphosphor technology has brought fluorescent lighting into the 90's. Compared to conventional halophosphate tubes they give higher light output, improved lumen maintenance (and therefore longer useful life), and very good colour rendering (Ra 85). Where colour rendering is of prime importance, the LUMILUX DE LUXE range, with excellent colour rendering, is available.

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BIOLUX fluorescent tubes were among the first

fluorescent tubes to accurately recapture natural sunlight thanks to a small additional component of UV light.

They have excellent colour rendering and have LUMILUX performance in terms of energy consumption and lamp life.

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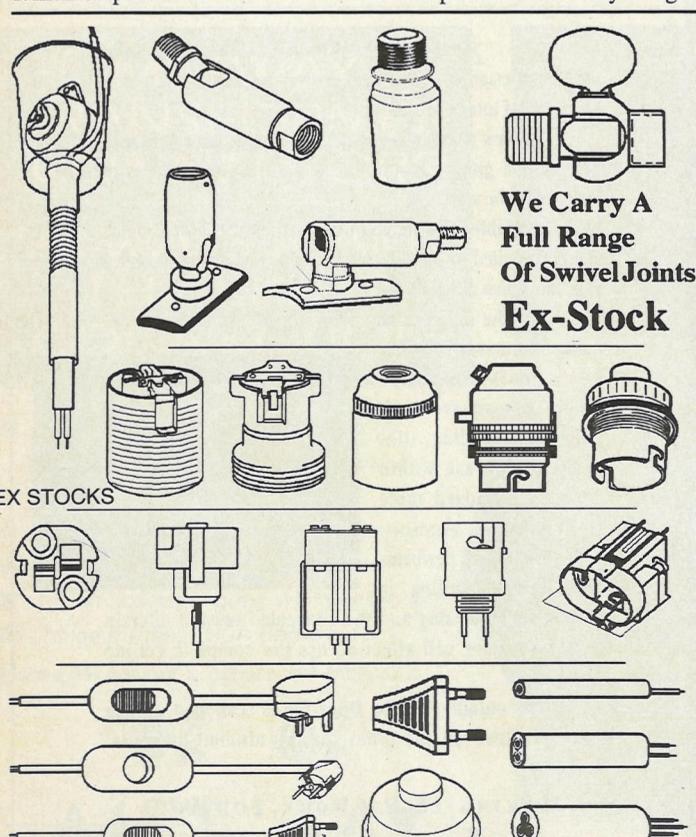
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Reader Service No.20

Reader Service No.21

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LUMILUX® Daylight

LUMILUX® Cool White

LUMILUX® White

LUMILUX® Warm White

LUMILUX® INTERNA®

Lighting Equipment News, May 1993

Cardiff City Hall lights-up for safety

Cardiff City Hall has recently undergone a complete re-fit of its emergency lighting. The 90 year old building is now equipped with a new Gent Maylectro system. *Bob Matthews explains.

Cardiff City Hall was completed in 1905 to a design produced by Lanchester and Rickards, one of the leading architectural teams in its day. Constructed in ornately carved Portland stone, with marble staircases and panelled chambers it was, like so many other buildings of its type and age, conceived without the safe evacuation of the occupants.

Innumerable changes in the structure of local government over the intervening years, and the resulting changes to the layout and use of the building have merely worsened the problem. Added to this, the extensive holly-inlaid oak panelling and the seemingly endless voids between the panelling and the Portland stone structure can allow a fire to develop in a frighteningly quick space of time.

So, in addition to the constraints facing the designer of any emergency lighting system in a modern building, Cardiff City Hall

imposed three additional factors. The trunking and the emergency luminaires had to be unobtrusively blend with their surroundings and not detract from the architectural heritage of the building. The luminaire testing procedures needed to be especially reliable, considering the labyrinth of corridors and offices. Finally, the installation needed to work in tandem with the Hall's new fire detection system.

The solution was an installation based on the Gent Prestige range

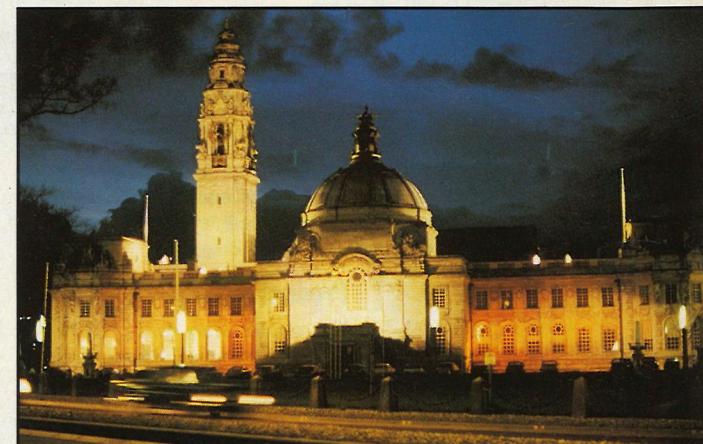
of emergency luminaires, controlled by one of the company's new Prestige Teletest central testing systems.

0.5 Lux levels

In total, the installation uses 291 luminaires from the much enhanced Prestige product range launched at the Light Show in February. With the exception of the computer suite, the 0.5 Lux level installation covers the entire building. It also takes in the

external perimeter of the building, and the heating and extract ducts which are an unusual feature of the structure.

Hot air generated in the basement is fed around the structure via a vertical shaft and horizontal service ducts on each of the three upper floors. These two-metre-plus high ducts also carry the electrical and plumbing services and so, in the event of a fire, are an escape route for engineers working on routine maintenance.



The 40 year old Cardiff City Hall

BS5266:Part1, the code of practice for emergency lighting.

The Prestige Teletest controller allows any building to be divided into up to 10 zones. On the City Hall project, the installation is divided into eight, leaving two spare. Each zone can monitor up to 100 luminaires. However, this particular model of Teletest allows just a single zone to be retested without having to resort to retesting the entire installation, should one or more of the luminaires fail during a test.

The normally five-to-ten minute testing procedure can be instigated at any time, although six separate testing programmes can be set into the timer. This pre-programming allows, for example, testing to take place automatically at a set time on a specific day of each week so minimising the disruption to the Council staff and officers.

In keeping with all the Gent emergency luminaires used throughout the building, they are of the cost-efficient, non-maintained type which operate from an emergency power source should the mains supply fail.

In certain areas, the existing chandeliers and some of the pelmet-concealed fluorescents have been converted to operate as emergency luminaires. This has been achieved by the on-site incorporation of central battery inverter systems. While being a more aesthetically acceptable solution, this additionally saved on wiring costs. Exits are indicated by brass Gent Prestige Bladelites powered by 300mm long 8W fluorescent lamps.

All of the emergency luminaires are interfaced to a new and unique Prestige Teletest 2010 central test programmer. This enables the City Hall installation to be remotely tested for its full duration in accordance with

Both systems are major contributing factors to the safe evacuation of City Hall, and the prompt fighting of any outbreak before it has a chance to reduce yet another building to ashes and rubble.

* Bob Matthews is national sales manager of the emergency lighting division at Gent.

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Feature continues on Page 19

with OSRAM...



High frequency electronic control gear

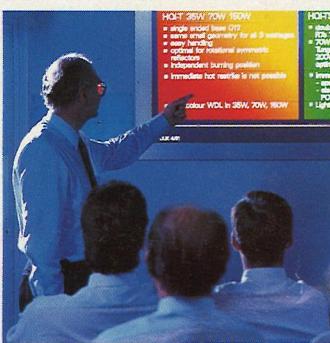
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The new OSRAM Lighting catalogue

OSRAM have launched the definitive reference work for the industry on light sources and electronic control gear. For your copy please circle the reply number.

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For further information on any subject mentioned in this feature circle the appropriate reply number or contact the OSRAM Marketing Department on 081-904 4321

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Lighting Equipment News, May 1993

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REGISTERED TRADE

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Preaching to the converted

* Chris Watts discusses the use of conversion kits to combine standard and emergency lighting in one luminaire

Conversion kits have been around for some years and have proved themselves to be a valid and cost-effective way of providing emergency lighting in a wide variety of applications. They enable standard fluorescent fittings to be converted into self-contained battery powered emergency luminaires, giving completely unobtrusive emergency lighting without the need for additional lighting points.

They are particularly effective for:

- large areas or where ceilings are high, as they offer high light output.
- hiding emergency fittings, as

they are often part of the normal luminaire.

- lower maintenance, as there is only one type of lamp and luminaire to service.

Product quality

For conversion units, there are many potential dangers from incorrect components or installation. To ensure a satisfactory product, the following precautions should be taken.

1. The Luminaire selection should have been approved to BS4533 and meet the 'F' mark requirements.
2. The conversion kits must be approved and kite marked.
3. The installation should be performed to the ICEL standard

in a factory specifically approved to BS 5750 for conversion of luminaires.

To achieve that satisfactory conversion, the standards require that the first modified luminaire must be tested for 24 hours with thermocouples on temperature sensitive components of both the emergency and the original circuits. This ensures that they operate within permitted limits. Additional wiring needs to be of the correct grade to meet the high voltage starting surges. Each unit then has to be fully tested for operation. Finally, adequate records must be kept to ensure traceability in the future.

Some of the impending changes to emergency lighting

standards are likely to require increased levels of illumination in particular areas. In high risk areas, for example, draft European standards require that 10% of normal illumination with a minimum of 15 lux shall be available within 0.25 seconds of the normal supply failing. This can easily be achieved using fluorescent lighting with conversion packs containing ballast lumen factors in excess of 10%.

New European requirements call for verification of light spacing data and manufacturers are now producing spacing tables to enable specifiers and contractors to engineer the required light levels. Minimum light levels must be achieved at the end of the discharge with aged components and ignoring any wall reflection etc. Light output for a converted luminaire is obtained by multiplying the



The Autotest system from Menvier

original data by an emergency ballast lumen factor and applying derating factors.

Testing

In response to the tougher legislative testing requirements incorporated in BS 5266 and the new draft European standards, manufacturers are working on product enhancements and new systems to facilitate testing and monitoring procedures. Menvier's conversion kits are now available with an additional testing facility - Testcheck - which incorporates a local external display giving clear indication of the state of an individual unit.

In addition to individual product enhancements, complete control systems offering self-testing and monitoring are going to be of growing value to system designers anxious to avoid expensive retro-fitting demands from dissatisfied customers.

Design

Over the years a number of developments have taken place in emergency conversion kit technology: batteries, lamps and overall efficiency have improved, sizes have been reduced and standards have tightened. Menvier's latest technological enhancement to its range of Convertalite emergency lighting conversion kits is the availability of versions suitable for converting luminaires with high frequency ballasts without needing an additional interface.

One of the most noticeable developments of the last decade has been the introduction of new lamp types into normal lighting applications, including compact lamps such as the PL and 2D flu-

orescent types. The most suitable compact fluorescent lamp for emergency use is the four pin compact which can be used at high frequency and gives a very good light output due to its efficient phosphors.

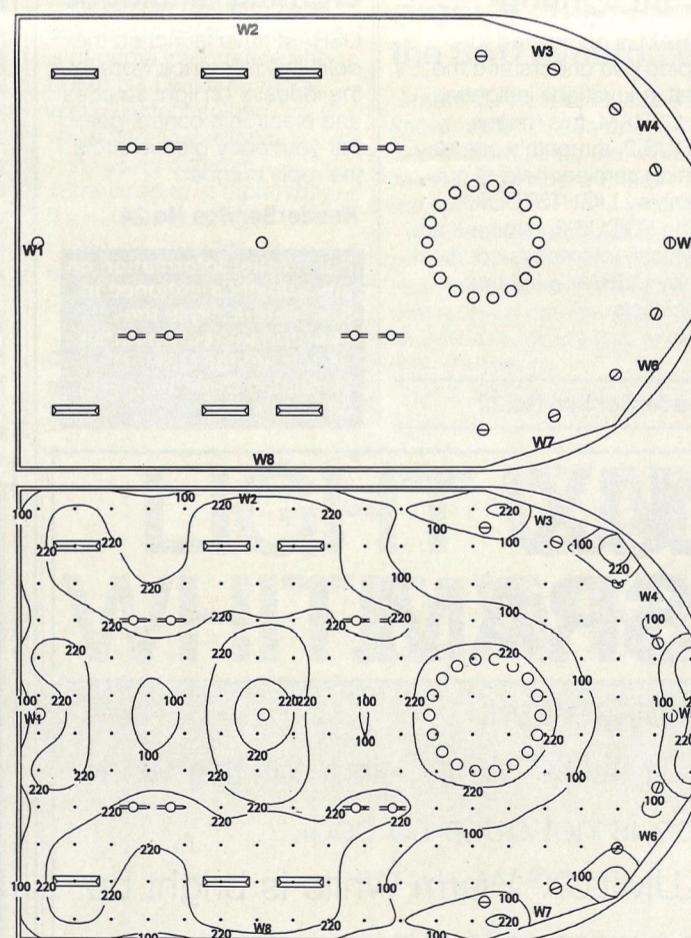
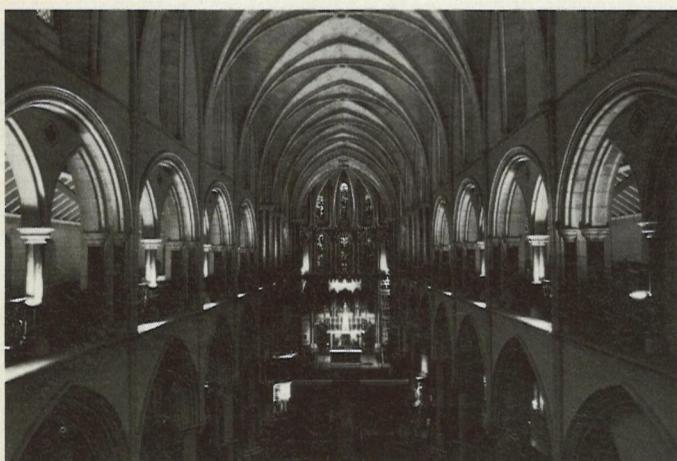
Because the lamp is compact, the luminaire is normally equally small, often being only just big enough to take the lamp and associated gear. Consequently, such luminaires often run too hot for the inclusion of emergency gear within the fitting. The traditional solution to this problem is to put some or all of the gear outside the luminaire. This then allows an ultra small conversion module to be made, often compact enough to fit inside the smaller luminaire.

Menvier has developed a combined mains and emergency and HF ballast. This unit has been designed to address the heat and size constraints of 'typical' compact lamp luminaires.

The application of the conversion module is different from the more traditional conversion kit in that it totally replaces the original mains gear with a single module containing ballast, charger, changeover, emergency ballast and batteries. Heat generation is kept to a minimum by the use of HF techniques both on the ballast and the battery charger. Size is reduced by the use of hybrid surface mounted electronics. Installation is simplified by putting everything in one module. The only additional requirement to the luminaire is the unswitched supply needed for all self-contained emergency fittings.

Electronic ballasts offer some benefits when considering linear fluorescent lamps and the more traditional conversion kits, such

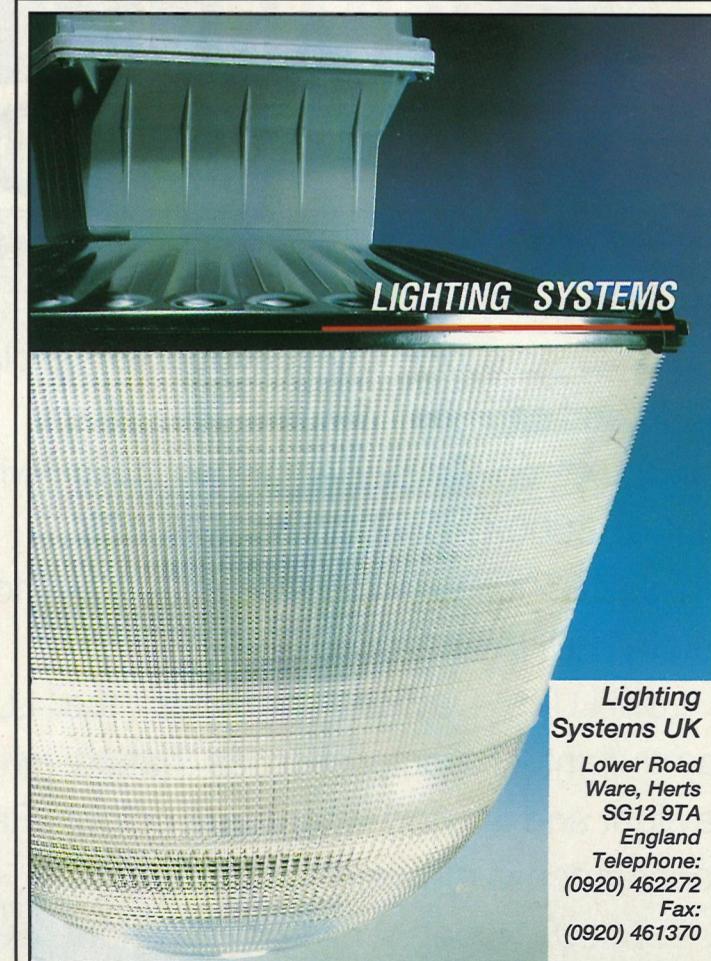
The lighting scheme that comes from a computer.



The computer game for serious light planners is called Lucy. This software package from ERCO allows a highly visual investigation of light planning.

The playing area: everything from rectangular, L-shaped, polygon, apse or quadrant. Even extremely sophisticated plans incorporating complex lighting arrangements can be effectively simulated so that architects and planners can check out and modify lighting designs prior to installation.

Of course, no complex lighting problem is child's play even with the existence of mouse-support and Windows interface. So, if advice is needed on how to progress with Lucy, an ERCO specialist is only a phone call away.



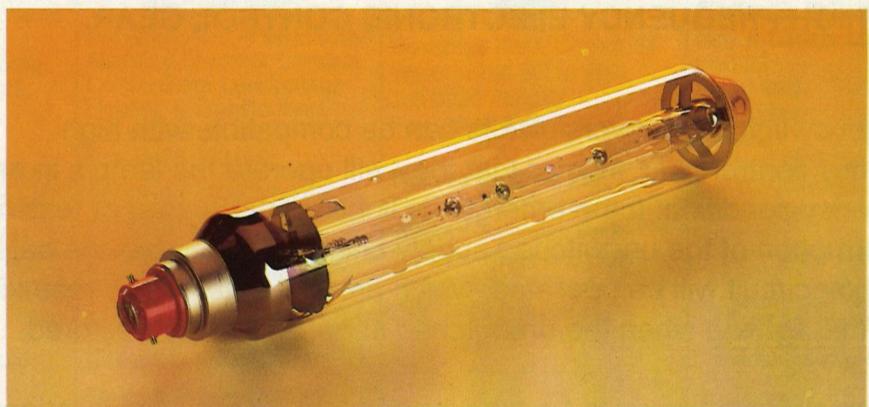
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PHILIPS



Menvier's Convertable conversion kit

as efficiency, light quality and low heat rises inside the luminaire. Earlier reliability problems have been largely overcome by using built-in protection circuits. Electronic ballasts do present some challenges in terms of size and compatibility.

The two circuits (mains and emergency ballasts) must be effectively isolated from each other. This is normally done by the use of an electro-mechanical relay sometimes coupled with the use of isolating transformers on the input and output of the emergency circuit.

The routing of cables and capacitance between wires can also have a bearing on compatibility. The solution to this is usually found in carefully following the correct wiring diagram and laying out the fitting in a logical fashion. It is good practice to switch both supplies off when testing the emergency circuits, if only to allow the emergency lamp to be viewed as operating.

The introduction of the low brightness luminaire involves another set of challenges for the emergency lighting supplier. The latest in sharp, cut-off controllers are so good that the light provided by the conversion kit is insufficient if minimum light levels are to be met. To satisfy these levels, more emergency fittings

are required, resulting in a higher than necessary installed lumen level coupled with increased installation costs. One solution is to provide lower light output conversion kits, effectively keeping costs down as much as possible. Naturally, there are limits as to how low you can go in light output and still achieve reliable striking.

The future

Dramatic improvements in the performance of lighting products continue to be made due to the use of new materials and the application of micro electronics. Consequent benefits passed on to the end user will be smaller, more efficient products, early warning of wear out or failure, self-monitoring and signalling to remote centres for maintenance.

As the industry matures, the design of buildings should improve to incorporate all the safety features required by legislation as an integrated package, rather than as something of an afterthought. Which is surely where the conversion kit started, integrating emergency lighting into the normal lighting scheme, rather than bolting on some extra luminaires after the rest of the design has been completed.

* Chris Watts is emergency lighting product manager at Menvier
Reader Service No 213

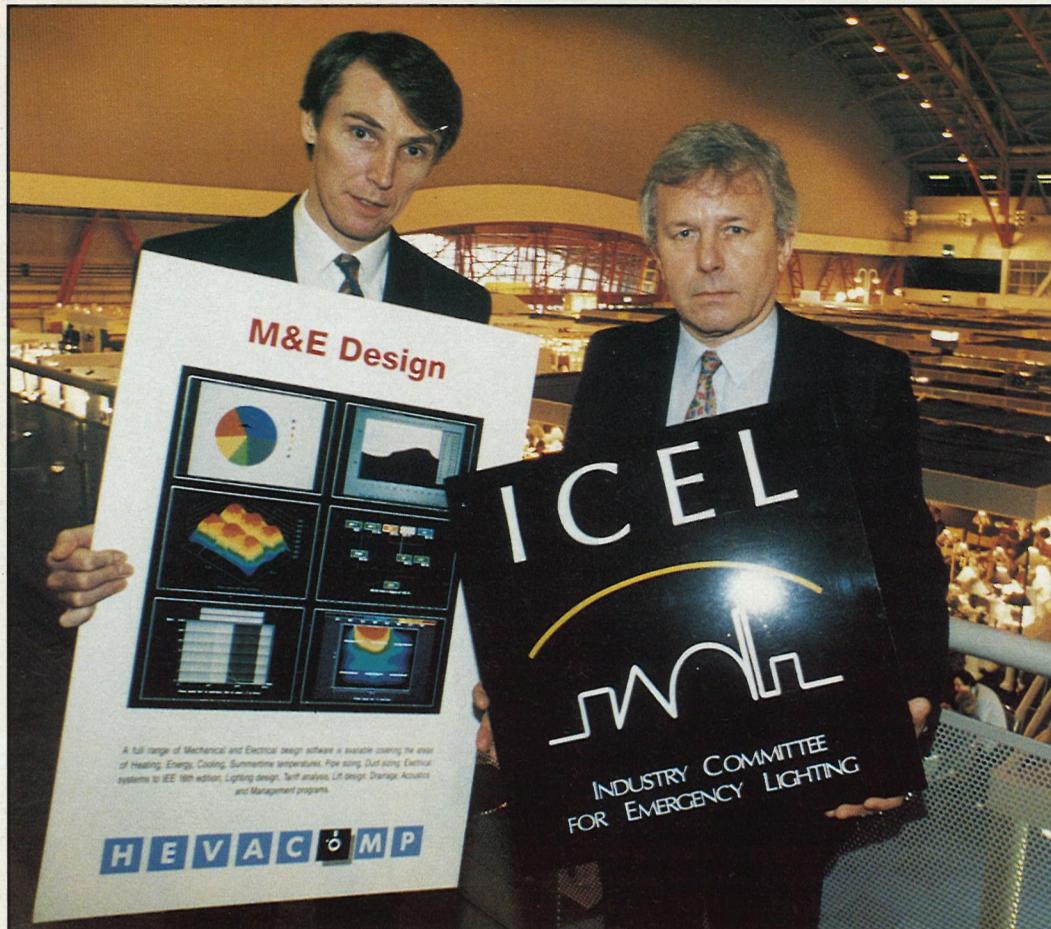
ICEL was originally created in 1978 from the Emergency Lighting sections of the British Electrical and Allied Manufacturers Association (BEAMA) and the Lighting Industry Federation (LIF). It was formed as a joint industry committee to respond to the need in the UK to formulate and promote standards for emergency lighting equipment.

In simple terms, to be sure emergency lighting is up to the task, luminaires and modules must be manufactured to comply with EN 60 598.2.22 – the appropriate safety standard – and should be assembled in a factory employing recognised and suitable quality assurance procedures to BS 5750 Part 2. One of ICEL's key objectives has, and continues to be, the elimination of doubt concerning any of those parameters which ultimately will save lives.

Since 1978 ICEL has published five standards which have become well known and respected worldwide. Prior to the harmonisation of European standards for emergency lighting, ICEL standards currently form the basis of many national standards. Indeed, with the adoption by CENELEC of IEC 598.2.22, EN60 598.2.22 has become the harmonised European standard for the construction and performance of self-contained luminaires and associated equipment.

Improved standards

There remain a number of key areas in which this particular standard can be, and I believe eventually will be, improved. For this reason, ICEL maintains requirements over and above the basic standard. One important area of omission is in the area of photometric performance.



Tony Baxter, director of Hevacomp, (left) and Barry Hurst, chairman of ICEL, together at the Lightshow

CAD and ICEL step forward

The European Lightshow at Earl's Court saw the announcement that a CAD software specialist was to produce an industry standard Emergency Lighting Package in a joint development with ICEL (Industry Committee for Emergency Lighting). * Michael Kormanic explains the thinking behind this development

Currently, ICEL is working within CEN TC 169 WG 7 to produce a standard for the measurement and presentation of photometric data for all luminaires, including emergency lighting. For conventional luminaires this is simply to enable the correct use and comparison of product performance. However, in respect of emergency lighting, the verification of a luminaire's photometric performance is a critical consideration in the safety and design of an installation.

Accurate data

To enable an engineer to design a system, it is essential that consistent, accurate data is used, derated to allow for end of life performance and zero reflection. To this end, the ICEL photometric registration scheme launched in 1992 is designed to offer users invaluable assurance in this vital area.

Products registered under the scheme must be certified to EN 60 598.2.22; the manufacture of the product must be carried out in a facility operating a recognised scheme of quality assurance and the performance claims made for the product must be valid and representative of its typical application. For registration on the scheme, products must be independently tested and their photometric data logged with ICEL.

It is at this point that Hevacomp's expertise and involvement has been crucial. As a leading developer of CAD software for use in the building services industry, Hevacomp already has knowledge of the requirements of

the lighting industry. The company's TM software package is used throughout the lighting industry to analyse photometric data for indoor luminaires and to produce utilisation factor and glare tables directly suitable for catalogue production. Hevacomp has also pioneered the use of TM14 for electronic data transfer of luminaire data.

With the volume of photometric data logged with ICEL as part of the scheme, dissemination of that information in an accessible and user friendly format becomes essential. To this end, Hevacomp working jointly with ICEL has developed an industry standard photometric software package exclusively for use in emergency lighting.

Available in early summer 1993, the ICEL software package will be launched as a stand alone program containing ICEL registered photometric data. The package will contain a broad cross section of manufacturers' data which is not solely restricted to ICEL members so long as it meets the following criteria:

- data must be certified.
- the company must have BS 5750 Part 2.
- the luminaire must meet EN 60 598.2.22 and be certified to the same standard.

Quick schemes

In essence, the package will enable designers to create emergency lighting schemes using CAD in a quick and easily understandable format.

Once a luminaire type has been selected and room data defined,

the package estimates the number of luminaires required and their arrangement. The final luminaire layout is then automatically analysed using detailed point to point calculations.

Colour graphics of contour diagrams, shading and 3D distribution charts can then be produced. Using this CAD package also means that designers can calculate the effect of the smallest of design changes on an emergency lighting system quickly, easily and accurately. The library will be provided as standard with existing Hevacomp lighting design software and will be maintained by Hevacomp.

Legislation

In view of current and imminent European legislation, ICEL initiatives such as this latest development with Hevacomp, ensure that the British lighting industry continues to stay ahead with its products, design practices and application knowledge. The likely impact of European legislation is these areas means that users, specifiers and contractors can be certain that what happens today in Britain effectively anticipates any such changes. Registration on the ICEL scheme can provide this reassurance and give users and system designers the necessary confidence in a products reliability, quality and photometric performance to assist in preserving life in an emergency.

* Michael Kormanic is executive director of ICEL
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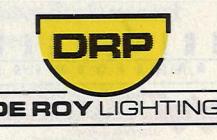
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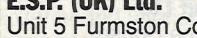
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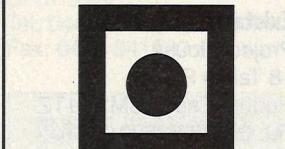
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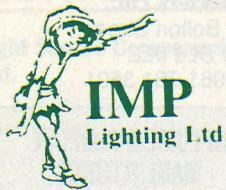
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Contact:

Nick Tavare, Managing Director,
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Please reply in writing to:

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Reference: Lighting Range

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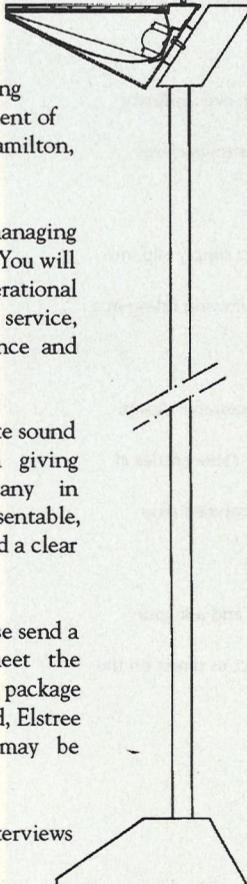
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If you can meet the challenges of this demanding role please send a current C.V. with a covering letter stating how you meet the specification for the position and details of your remuneration package to, Mr S Singh, Personnel Manager, THORN Lighting Limited, Elstree Way, Borehamwood, Herts WD6 1HZ. Relocation assistance may be offered to the successful candidate, if necessary.

Applications should be received by Monday, 24 May and interviews will be held on 3 and 4 June for short listed candidates.

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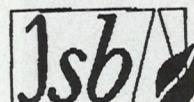
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An attractive salary plus bonus, company car and large company benefits will be paid to the right applicants.

Applications enclosing a full CV should be sent in the first instance to:

The Personnel Manager
JSB Electrical plc
Manor Lane
Holmes Chapel
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JSB Electrical is an equal opportunities employer

LIGHTING TECHNOLOGY

continued from page 11

Trailblazer

The Guide-Lite wayfinding system, manufactured by Existalite, uses incandescent lamps mounted on a printed circuit board. These are housed within fire retardant extruded polycarbonate modules of variable length. The lamps, which are the same as those used by the aircraft industry, are guaranteed to provide illumination for a minimum of 40,000 hours running at 30V. The Guide-Lite system, however, runs at a nominal 24V which, according to Existalite, increases lamp life to 150,000 hours.

The system is said to overcome many of the difficulties that designers face in using conventional bulkhead luminaires and exit signs to meet all the requirements of BS 5266 Part I. The ability to mount the 15mm deep extrusions at low level, for example, enables the system to take account of the possibility of smoke accumulation rendering high-mounted emergency lighting ineffective.

This is most readily appreciated by experiencing the effects of smoke on visibility. At Existalite's headquarters there is a mock-up of a hotel corridor which is equipped with the Guide-Lite system as well as the company's own 'lunchbox' luminaires at high level. This area can be thrown into complete darkness so that the systems can be compared. It also has the facility to introduce a vegetable smoke to simulate the effects of fire.

Existalite's staff are only too pleased to demonstrate this facility to visitors, they even make you feel they're doing you a favour by letting you have a go. It is a very worthwhile experience. In clear conditions, both systems provide sufficient visual information to find the way out.

Disorientation

As the smoke is introduced the situation changes dramatically. Initially, before the smoke reaches full density, the ceiling mounted luminaires are still vaguely discernible, as is the exit sign above the door. Within a few seconds, however, these are totally obscured and one becomes completely disorientated. On crouching down, the Guide-Lite system is immediately visible and, when combined with LED arrows, it guides the subject to 'safety'.

This demonstration uses cold, white vegetable smoke. It seems clear that this contrast would have been even greater with hot, black smoke which would have concentrated even more at the top of the corridor.

Another advantage claimed for Guide-Lite is its ability to provide even illumination. BS 5266 says: "Care should be taken to avoid abrupt changes between excessive dark and light areas on the floor of the escape route." This suggests a preference for large numbers of small luminaires, a requirement met by the use of small lamps spaced 100mm apart.

Another factor in emergency lighting systems is that the failure of any one luminaire should not further reduce the effectiveness of the system. Use of a parallel series circuit in Guide-Lite ensures that, in the event of lamp failure, only the lamps on that module (up to five) will fail.

Reader Service No 269

LIGHTING EQUIPMENT NEWS

'Studio 3' A system which knows when its time to turn the lights down low...



Studio 3, a system which is user friendly, allowing you to control various lighting scenes, in one building, at the touch of a button. A system which is so innovative it won the Electrotech Award and the IF Award at Hannover.

Studio 3, a lighting control system which can be programmed to give preset lighting levels, with up to 36 different scenes. A system which can create the right mood in the workplace, hotels, museums, art galleries, clubs and window displays, in fact anywhere.

Studio 3, a system with 180 Amps capacity, where the control circuitry is just two 12v wires.

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Home Automation

Reader Service No. 18

Shining examples of good design

A city square and a components factory were among the winners in the Lighting Industry Federation's Lighting Design Awards 1993.

The awards, presented by Dr Mary Archer at a ceremony in London last month, were given to new or refurbished schemes which "best exemplify excellence in all aspects of lighting design".

An independent panel of judges selected the winners and highly commended entries in five categories. Winner in the exterior category was Courthouse Square in Bradford. It now has an attractive lighting scheme which provides a high level of illumination over the whole square and complements the local yorkstone buildings. The scheme was designed by Kenneth Goodhall, City of Bradford.



Highly commended in this category were both the Albert Bridge in London and the North Bridge, Edinburgh.

The commercial category was won by Esso Petroleum Company Limited for the new lighting scheme at its Leatherhead headquarters. The building consists of two office wings on either side of a central atrium which houses sub-tropical trees and plants.

High output exterior floodlighting luminaires in pairs of 250W high pressure sodium and metal halide lamps have been mounted to achieve a well balanced spectral distribution, and good colour rendering. The lighting was designed by Engineering Design Consultants.

Efficient lighting

Highly commended in this category were Cranfield Institute of Technology, Tesco Stores, Bicester, The Galleries and the Harlequin Centre.

Centre Switchgear Ltd won the industrial category for the new, highly efficient lighting installation at its Telford factory. 400W HID lamps provide high levels of illumination with good colour quality and efficiency is 2.3W/m²/100 lux. This scheme was designed by Butler Taylor Brannell.

Highly commended in this category was Muirhead Vactric Ltd, which also won the Design Award for Energy Management. At its Penge factory, the recent refurbishment of the lighting has

reduced the power consumption by nearly 52% whilst considerably upgrading the quality of the lighting.

The scheme has given substantial cost benefits to the user and payback is thought to be achievable in under two years. Philips Lighting Ltd was responsible for the design of this scheme.

In both the civic and leisure categories no project was considered to have reached the high standards required to win an award, but there were several projects highly commended. The Forum, a meeting and conference hall in Bristol, was one of these in the civic category, together with the Church of St Colman in Lisburn.

The highly commended entries in the leisure category were The Nomura Room at the Tate Gallery, London and the World of Beatrix Potter in Bowness on Windermere.

Speaking at the ceremony LIF President Andrew Osmond said that he hoped the awards would give encouragement to both winners and specifiers.

"Modern technology lighting offers opportunities to everyone to save electricity, boost productivity, improve working conditions and whilst all of these things are highly desirable in their own right - for the most part they are a legal requirement on employers. So we should be pushing at open doors when talking to our own employers and the employers of others," he said.

Trade Publications in brief...

● To celebrate its 70th year in business CU Phosco has published the fourth edition of its Buyers' Guide. The anniversary issue covers lighting products and street furniture for use in urban and rural public areas, including lanterns, high masts and floodlights. **Reader Service No. 270**

● Moorlite Electrical Ltd has produced a 'Capability Brochure' which demonstrates in detail the breadth of the company's product range and the resources behind it.

Reader Service No 271

● 'Lighting the Commercial Environment' is a new publication from Siemens Lighting Ltd which explains how to ensure that lighting complies with the new legislation on visual display terminals.

Reader Service No 272

● A new technical data sheet is now available detailing the

Econolight energy saving system - designed to cut lighting electricity bills by 20%.

Reader Service No 273

● Forbes & Lomax Ltd, a small company specialising in unusual light switches, dimmer switches and socket outlets, has issued its latest brochure and price list.

Reader Service No 274

● A new 50-page report from ERA Technology entitled 'The EEC EMC Directive - Status as 1 January 1993' provides an up-to-date picture of the European electromagnetic compatibility regulations.

Reader Service No 275

The report gives the background to the Directive and its requirements, deals with the EN (European) standards which are in place or preparation, details the routes to compliance and looks at the current position regarding the CE mark.

Reader Service No 276

IN YOUR NEXT ISSUE

In the June issue of LEN we'll be updating you on light sources, with particular reference to the claims made for longer life with

some lamps. As usual, new products, case studies and news will also be very much in evidence.