

LIGHTING EQUIPMENT NEWS

FEBRUARY 1993

Changes at Helvar

As part of a continuing development programme, Helvar has introduced a sales and marketing division, which will be headed up by Kelvin Lay. The division will be involved in the development of future generations of conventional ballasts, electronic ballasts and control devices.

Kelvin has been mainly resident in Finland for the past two years, where he has been developing the new department. During this time Michael Stott has taken over the responsibilities of Helvar Ltd.

As a result of these changes, Michael has now taken the position of managing director of Helvar Ltd UK, while Kelvin will take the role of marketing director. These changes are not expected to alter customers' dealings with the company.

Training winner

Huco Lightronic Ltd has presented with a 1992 National Training Award trophy by Secretary of State for Employment Gillian Shephard at a recent ceremony in London.

The Limavady, Northern Ireland based manufacturing subsidiary of Huco GmbH won the Award for carrying out a programme of structured training and personal development. The company also achieved BS5750 registration last year.

The company's managing director William Donaghy said: "We are now in a better position to offer our UK customers reliable, approved, high frequency electronic transformers and ballasts."

MAC acquisition

Morris Installations (Electrical) Ltd of Camberley, Surrey, has been acquired by MAC Services. The company management team is to be retained, with the exception of managing director D J Morris, who is retiring, and Mr Andrew Morris.

"The acquisition of Morris Installations will complement the services that we provide in the Greater London region and will provide a vehicle for MAC to expand," commented MAC Services' managing director Daniel McBrearty.

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Spaciousness from luminaires

Moorlite Electrical Ltd has created what is said to be an imaginative lighting configuration in a car hire area at Manchester Airport's Terminal A multi-storey car park.

The company's design team worked with Manchester Airport's technical services directorate and achieved a spacious effect within a relatively confined area using PLB Freestyle luminaires.

The car hire area comprises an entry lobby and a 25m corridor leading to the car hire kiosks. The ceiling height in both areas is barely over 2m. Semi specular louvred fittings are laid out in a random pattern around the lobby and unobtrusive luminaires in the corridor give a feeling of spaciousness despite its length and low ceiling.

In the kiosks, 300mm square

metal ceiling panels cut into 600mm square ceiling tiles house the PLB Freestyle luminaires. This light is supplemented at the desk by low voltage, dichroic, wide distribution lamps mounted on tracks.

The PLB Freestyle luminaires use single, energy efficient, compact source PL 24W lamps with semi-specular reflectors and microloss gear. They can be installed in various patterns, eg chevrons, stars and zig-zags.

Lighting in the corridor and lobby is time controlled directly from the airport. Each kiosk is metered separately and has a presence sensor which switches on the light on entry and switches it off shortly after the user leaves.

Reader Service No. 170

Contractors link up

A link up of electrical and heating & ventilating contractors has been announced by two leading contracting bodies.

The councils of the Electrical Contractor's Association and the Heating and Ventilating Contractor's Association have endorsed the merger of their respective major contractors board and national contractors group.

The new joint body will draw its initial membership from the six largest companies from each association. The two associations

have already established, along with the Electrical Contractors' Association of Scotland, joint contractual and European committees, and have been instrumental in forming the Specialist Engineering Contractors Group to represent the sector and lobby for better terms and conditions.

The majority of the companies concerned are members of both associations. The new arrangement will co-ordinate the views of these major companies and prevent duplication of effort.

unique show," he said.

ENERGY has also been given the thumbs up by Peter Rost, Chairman of the Major Energy Users' Council and a director of Energy Enterprises. "Our research showed that despite the importance and individual size of the British energy industry, no international platform currently existed from which to promote its many products and services. Of the major energy users we questioned, 81% wanted to see all suppliers at one event to cost and compare options available to them and a similar percentage said they would visit an exhibition which majored on the different ways of conserving and utilising energy.

The event will be held at the National Hall and Conference Centre, Olympia from the 22-24 June 1993. Further information can be obtained from Mark Jones at Philbeach Events on 071 370 8207.

More companies showing off

Over 150 exhibitors will display the latest in decorative and commercial lighting at the European Lightshow '93 taking place at Earls Court this month.

The show has grown to cover the complete spectrum of lighting, say the organisers, and 30% more companies will be exhibiting this year than last.

Running alongside the Lightshow will be a full seminar programme organised by the Light-

ing Industry Federation. Topics will include: a preview of the new CIBSE Code for Interior Lighting (Monday February 15); 'Lighting the Way to the Future' (Tuesday February 16); and the new Emergency Lighting Directives (Wednesday, February 17).

Advance tickets for the show and further information are available from the Lighting Association, Tel: 0952 290905.

Fashion re-fit

Light Industry has won a contract with Hobbs Fashion Retailers to re-fit its new outlets with a lighting scheme designed for energy conservation.

Hobbs was looking for an alternative light source to halogen, which would give good colour rendering while reducing heat output.

Light Industry designed and produced a prototype for Hobbs, which was approved. The product decided upon was a white son fitting which takes advantage of the latest cable technology.

The company also calculated detailed budget forecasts for Hobbs, to show the energy savings which will be achieved. Hobbs is now planning to convert all its existing premises to the system. Reader Service No. 171



Triumph of Merthyr Tydfil manufactures filing cabinets in pale and delicate shades such as soft beige, pale grey and pale blue. In order to identify cooler pastel shades, the company installed GE's new Kolorarc metal halide MBI-T lamp.

Kolorarc gives high efficiency levels of 76 lumens/watt, good colour rendition of Ra 70 and crisp white light, 4000-6000K.

Reader Service 173

Oldham buy-out

The specialist lighting firm Oldham Lighting, whose products illuminate Big Ben's clock, has been acquired by its management team in a buy-out.

The firm, which despite its name has always been London based, has been acquired for £500,000 from Torday and Carlisle plc by managing director Chris Richardson and colleagues with backing from Barclays Baronsmead Fund.

Reorganisation at ElectroTech

The 1994 ElectroTech Exhibition will take place at the National Exhibition Centre (NEC), Birmingham, from June 20 - 24. National Power plc has announced it no longer wishes to be involved in the organisational side of the exhibition and its shares in ElectroTech Exhibitions Ltd have been bought by ASEE Exhibitions.

The company is now fully owned by ASEE in partnership with the Federation of British Electrotechnical and Allied Manufacturers' Associations (BEAMA).

ElectroTech '94 comprises two exhibitions; Electrex - covering all types of electrical and electronic equipment, and PowerTech - covering power generation, transmission, research and development, energy efficiency, environmental technology and services to the industry.

Dual solution for Hays

Program Lighting has developed two solutions for the office lighting at Hays Distribution Administration Block, Milton Keynes.

Using a standard size 500 x 500mm luminaire body, Program designed both 36 and 16 cell louvres to meet the requirements of CIBSE Guide LG 3, categories 1 and 2.

The luminaires incorporated high frequency electronic control gear and had a full air handling capability. They were integrated into a Truline alugrid ceiling system. Reader Service No 172

Exports up

Lightgraphix, the Dartford based lighting company, has increased its exports by 100% this year. Exports now account for 60% of the company's orders and director Ian Boss expects sales abroad to increase still further next year.

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Reader Service No. 2

DIARY

FEBRUARY

16

Visual effects of light modulation from fluorescent tubes. Trotter Paterson Memorial lecture. Evening meeting in London held by CIBSE. Details from 081 675 5211.

Lighting the way to the future. Seminar on lighting in offices, to be held during the European Light Show, London. Details from CJ Mee, 071 215 0619.

17

Lighting and crime. Evening meeting in Nottingham arranged by CIBSE East Midlands region. Details from JG Bettison, 0629 580000.

The problem with controls. Evening meeting in Croydon organised by CIBSE London and SE region. Details from Colin Ashford, 0293 664288.

18

Lighting management and con-

trol in offices and industry. One-day course in London arranged by Mid Career College. Details from 0223 880016.

MARCH

3

Lighting legislation and commissioning. CIBSE Lighting Division seminar in London. Details from CIBSE, 081 675 5211.

16

Young lighters of the year. Presentations by and awards to the finalists in last year's scheme, to be held in London. Details from CIBSE, 081 675 5211.

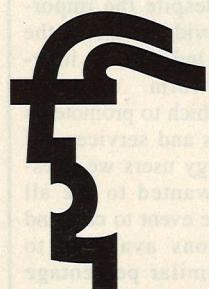
18-21

Interlight '93. Exhibition in Singapore. Details from Kuoni, 071 499 8861.

It's not often that one can speak of a truly illuminating experience. But the World Light Show is an exception. Once a year 400 exhibitors provide an overview of design trends and state-of-the-art lighting technology. Not only a forum for information, this event is clearly the lighting industry's main sales fair worldwide. In 1993 architects, planners and members of the trade and skilled crafts sector will again welcome the chance to gain insights into the entire spectrum of modern lighting technology. Visitors can also benefit from the display of installation technology for buildings. Here the spotlight will be on the latest electrical installation equipment and technical systems. All this – plus many other highlights – will await you at HANNOVER FAIR '93.

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Reader Service No. 3

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CIBSE

The Chartered Institution of Building Services Engineers

Lighting for churches

It is often unaccountable how certain lighting applications seem to 'peak' in interest at different times of the year. Church lighting is one which has been the focus of much interest: a CIBSE Lighting Division sessional meeting just before Christmas received the tablets of wisdom from Mark Wood-Robinson – an acknowledged leader in this field.

Here we give the views of another expert, Reg Wilson, a lighting designer with a great deal of experience of lighting churches and cathedrals:

My paper on the interior lighting of churches does not deal in great detail with such technical aspects as brightness patterns, aspect ratios or even the lumen method of calculation and the inverse square law: these are fully dealt with in the CIBSE Code. My concern is more with the 'desired effect'. In industrial and commercial schemes the desired effect is usually catered for in the main by a chosen level of illuminance as per the CIBSE Code. Obviously, there will be variations and modifications, but one does not need to get the same sort of 'feel' about those premises as in a church.

Church lighting is very different, not only because of the structure of the building. Usually you don't have much in the way of reflection factors, mounting positions are more limited and usually higher, resulting in poor maintenance, ie, if a lamp fails, replace it and clean the fitting at the same time perhaps! It could depend on the agility of the vicar or a church warden when this gets done.

Over the years I have gained a lot of experience in church lighting and find that the best way, if at all possible, is to visit the premises – not only to carry out a survey – but also to soak up the atmosphere. I suppose one could say to get to the 'heart' of the matter, by also talking to the client to find out whether the church is used solely for religious occasions or whether other functions such as concerts, Sunday school, etc, are held there.

You need to find out whether the incumbent wishes to have dramatic effects created, similar to stage lighting. Does he/she wish the highlighting of the pulpit, lectern and font to have similar or different lighting effects? Should any other parts of the church need to be dealt with similarly? Sometimes one can be asked to provide special lighting at certain pews if the persons using them are of particular importance.

The CIBSE Code does make recommendations for the lighting levels in various parts of the church and, within reason, one can work to these recommendations.

I feel it is wrong not to illuminate the upper area of a church if the ceiling or roof structure is sufficiently attractive. Many years ago, little or no upward light was preferred for ecclesiastical reasons. It is much more acceptable today and I feel that not only does upward light show the 'space' to advantage, but it also helps to show up faults in the woodwork more easily and quickly, eg woodworm, death watch beetle and damp.

Reducing downlighter brightness

Not a lot of light is needed and whatever there is will not necessarily contribute much to the general lighting if there is very little reflection from a dark upper structure. Only a glow of light is required to create a most pleasing effect which can reduce the apparent brightness of the downlighting luminaires.

It is interesting to sit in a church and watch the effect of daylight changing the shadows as the sun traverses from east to west. You will notice that the brightest light appears from the south side whilst from the north it appears much cooler and flatter in character and less in the amount of light.

It is an advantage to try and emulate this daylight effect, to some degree, with artificial lighting so that the congregation not only has the benefit of more light, but also the effect within the church appears natural to them. To do this you have to ensure the lighting from the south has more power than from the north. This can be achieved with higher wattage lamps or more lamps of the same wattage. Differing beam distribution can also be used, especially when using a floodlighting installation.

Care must be taken to minimise glare, both to the congregation and clergy, by positioning and careful aiming or concealment of the fittings high up in the roof structure. The floodlights should be aimed downwards, across and slightly forwards over the congregation, towards the east or altar end of the church.

Sometimes existing decorative chandeliers have to be retained, in which case perhaps the lamps can be changed to a more efficient type, probably compact fluorescent. This may necessitate supplementing it by another form, usually of a floodlighting type, eg, PAR lamps, floods. Here again is where new light sources can be an advantage, with the use of discharge lamps, HPS metal halide or white SON being the main ones. Fluorescent lamps and luminaires can be used in certain instances, but only rarely, unless in a modern style church.

The use of discharge lighting does depend a lot on whether running and maintenance costs are more important than initial ones. Also whether instant light is required and whether dimming is a possibility. Tungsten and T/H lamps are initially less expensive but very much costlier to run – especially with the higher lighting levels necessary today. Their lives are many times shorter than discharge lamps, but they do restrike immediately and can be dimmed. Obviously, having got all the facts pertaining to the scheme, it is necessary to begin the calculations to see which lamps and luminaires will provide this.

It can involve many or few calculations depending on the particular church. Personally, I feel that experience can provide over 50% of the answers, the calculations being checks on the ideas formed when getting the 'feel' of the church.

Reg Wilson

LETTERS

Something rotten

Dear Sir

I am an avid reader of LEN and scan its pages as soon as I receive it, if only to compare what is being done in the UK with that which is being achieved abroad. This year I have travelled well over 50,000 miles on a holiday/study tour around the world and my conclusion is that, in certain fields, there is something 'rotten' in our present state.

As a nation we suffer from a malaise of 'why do it', 'can't do it', 'who wants it anyway' and 'let sleeping dogs lie'. And in certain municipal authorities the key note of success is apathy. Although we have a relatively lively lighting industry, as will no doubt be stressed in your next issue, there is sometimes a tendency for editorials to eulogise rather than be, where necessary, constructively critical.

Progressive improvement

Regarding the column headed LIF LINE in the December issue, mention is made of the progressive improvement of lamps and

the types which have been marketed since 1880. Having perused this list, I am wondering what happened to low pressure mercury discharge lamps, mercury fluorescent lamps, 'blended' mercury/tungsten lamps, metal halide lamps, high pressure sodium lamps, neon and other cold cathode discharge tubes and the latest 'electrodeless' lamp.

Apropos the last paragraph of the previous editor's comment, perhaps the following might qualify for the bottle of bubbly. One of the least exploited lighting markets is that relating to the after dark illumination of public gardens and parks and, in particular, of privately owned gardens which are open for fee paying customers during the day. Also, some councils operate open air museums (very popular in Romania) but these of course close late afternoon, before the sun has set. There is no shortage of appropriate lamps and lighting equipment readily available for outdoor use and we have an abundance of expertise as to correct usage, such

that projects concerned could be useful tourist attractions.

So my suggestion is, as an incentive for the selling of lighting equipment, electrical contracting services and electricity, that the three industries get together and offer a free complete package to an owner or guardian of a park or garden or open air museum. The entrance fees could then be passed to the firms and the electricity company concerned until the installation had been paid off. The lighting system would not be switched on if the weather was inclement.

Tourist attraction

The firms would receive publicity, the project would be a recommended tourist attraction and the Government could help by not charging VAT on the entrance fee. A perfect example of night time garden lighting, an installation of many years standing, is the Buchart Gardens in Vancouver.

J B Harris
Lighting Consultant

fittings and 70% of shoes are imported. £12bn was spent on foreign food that can be produced in the UK, while a further £10bn was spent on foreign holidays.

If the £10bn was spent on UK holidays, it would create 1.5 million jobs in UK construction, engineering, food and allied industries, thus cutting taxation for 1.5 million unemployment benefits. People holiday abroad for the sun – alas there is none for the unemployed.

I would add that I am not an economist – thank goodness. Economists are consistent – consistently wrong. The only one who ever got it right was Mr Micawber, my patron saint. As the joke goes: an economist is like an impotent man in a harem – he knows 50 ways to do it, but can't.

W J Ablett
Consulting Engineer

Stop that waste

Dear Sir

I write with reference to the article entitled *Stop That Waste* in your November 1992 issue. While one cannot but agree with the author when he associates himself with the ILE in attacking the light waste or light pollution and its resultant energy use, I am concerned at the implication of his first sketch. This sketch shows as 'correct', light from the top of a building shining downwards and 'incorrect', light from below shining upwards.

I am concerned that engineers may take this as the accepted wisdom – it is not – and results, when it is adopted, in some of the worst lit buildings seen in the city nightscape. Whilst trying to solve the problem of light pollution, this concept creates a much worse problem of glare seen from a distance outside the building and renders the building distorted by having its highest brightness at the top falling off towards the ground.

I would suggest that a more appropriate response is to conceal lights at the base or close to the lower storeys and direct them upwards, with good engineering design to reduce the spill light to atmosphere at the top. One can imagine the visual effect if Leeds Castle, the Tower of London or the Houses of Parliament had been floodlit with sources mounted at roof level.

There may be case in a new building for designing a section to accept overhead lighting but this would be the exception. I remain concerned that the sketch shown in this article leads engineers into what in most cases would be unacceptable solutions.

Since the author seems to quote the ILE for this advice I am copying this letter to them and they may wish to comment on whether this is really the way ahead, and one they now recommend to their members.

Derek Phillips
M Arch MIT FRIBA FCIBSE IALD
DPA (UK)
Consulting Engineers

COMMENT

Could do better

A report by the World Economic Forum last year ranked Britain in 20th place for the quality of its people skills. The term 'people skills' in this context refers to the skill levels of our workforce. Sadly, it seems these are lacking.

Clearly this has not always been the case, and it's probably not so long ago that Britain would have been amongst the top few countries in such a report. So what's gone wrong?

Apprenticeships and other forms of training play a very important role in raising and broadening the skill levels of a workforce. To get the best from those apprentices and trainees, however, they need to have been given the proper grounding before leaving school. Not in the specific skills they would need to do a particular job, but in the general skills that can be applied in a number of ways to do those specific jobs.

A lot has been said about the standard of teaching of Maths and English in schools, and quite rightly so. There's no point in only being able to use a calculator when the battery's run out and the shops are shut. Having the basic skill of being able to work things out with pencil and paper may be slow and unnecessary most of the time, but it's still useful to have it there to fall back on. It also helps to develop an understanding of the underlying principles of the calculation.

These problems have been addressed by recent changes in the education sector, but there is a serious danger of other skills being lost, or at least neglected, because of these same changes.

Many jobs require some level of hand/eye co-ordination, whether it's operating a press, using a screwdriver or drawing a diagram. Very often we take this skill for granted, but many of us will have honed it through some kind of sport or craft activity at school. Both of these subjects are now under threat in some schools.

Local management in schools has given head teachers control of their own finances, often very sparse finances. As a result, the prioritisation of these funds varies considerably from school to school. Maths, English and Science are generally fairly well resourced, because they are core subjects. Subjects such as physical education and craft, design and technology may not be given the same priority, and have the added disadvantage of requiring considerable capital investment for equipment. There is a legal requirement for a minimum amount of physical education, and many schools have adjusted their timetables to meet this minimum. This enables them to abandon certain sports which may be good for developing some of the skills those kids would find useful in the future. Other practical subjects may well suffer the same fate.

And the National Curriculum hasn't helped, with its poorly thought out emphasis on academic themes and parrot-fashion learning. Surely what's needed in this area is the provision of basic knowledge and the training to apply that knowledge to different situations. That was something the GCSE was designed to address, perhaps going a bit too far at times, but this is now reverting to the "learn this and regurgitate it at the appropriate moment" approach.

The UK needs a skilled workforce if it is going to compete effectively in Europe and with the rest of the world. It is this workforce that brings about and applies innovations and keeps companies at the leading edge of their industry. Unless the Government recognises that we are falling behind, and does something about it, we will never be able to out-think and out-do the competition.

Paul Haddesley

LIGHTING EQUIPMENT NEWS

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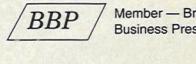
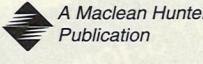
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NEW PRODUCTS

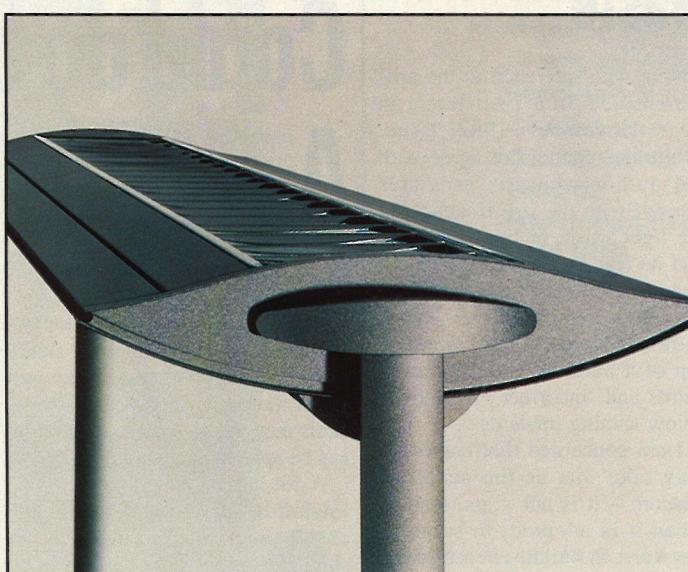
High performance floodlighting

Philips Lighting has kicked off the new year with the launch of four new products for applications ranging from floodlighting to office lighting.

The new MVF 024 high performance floodlighting system is an addition to the company's ArenaVision range, replacing the HNF002/HNF001 range.

Features claimed for the range include small size, light weight, excellent field efficiency and three different beam types. Improved optics may reduce the number of fittings needed to give the required level of lighting, and lower glare allows greater flexibility in positioning.

The lamp used in the fitting is a 2kW MHN/TD, said to be compact in size and long life. The range is said to be equally suitable for a small playing field or a



large stadium.

The new Nightguard bulkhead

is a security fitting offering a choice of long life lamps varying

in output from 18 to 50W. Benefits are said to include excellent light distribution, low energy consumption, ease of installation and a complete package of lamp, pre-wired gear and mounting accessories.

The company has also launched a new range of weather resistant kombipaks suitable for applications such as garage forecourts, loading bays, car parks and pedestrian underpasses. The Pacific range is available with either standard switchstart control gear or high frequency ballasts.

For offices, the company has introduced a new range of luxury luminaires. The Wings range is a modular office lighting system which features a high quality suspension system, a choice of high grade, low glare optics for both asymmetric and general use, and a high frequency operation with light output regulation allowing integration into daylight linking.

Reader Service No. 162



Smart spots

Lumiance has brought out a new range of spotlights to use with incandescent, halogen and PAR De Luxe lamps from 40 to 100W. The Tipto range combines less expensive, colour rendering and the easy lamp change characteristics of incandescent lamps with a modern, contemporary fitting which can be favourably compared to the smart halogen fittings.

The product has the new Lumiance swivel-looking adaptor so that the Tipto spots can be fitted into new or existing installations in a number of ways.

They can be mains connected through Lumiance's Picorail 2,

Microrail 2 or Monopoint systems, or through a variety of commercially available 3 way tracks by using the new track-point track adaptor. The plate versions can be connected directly to the mains.

The range includes Tipto mini for R50, 40W E14 lamps; Tipto medium for R63, 60W E27; Tipto major for R80, maximum 75W E27; Tipto major A for A60 60W E27; Tipto crown 10 for D-CS 45 maximum 40W E14; Tipto crown 15 for A-CS 60 maximum 60W E27; Tipto crown 20 for A-CS 65 maximum 100W E27 and Tipto standard for Sylvania Halogen De Luxe PAR 30 and PAR 38 maximum 100W E27.

Reader Service No. 163



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IMAGINE™ is an innovative new range of architectural lighting controls which combines to provide a complete system with truly startling 'scene setting' performance. And it comes from Electrosonic, with over 30 years experience to back it up.

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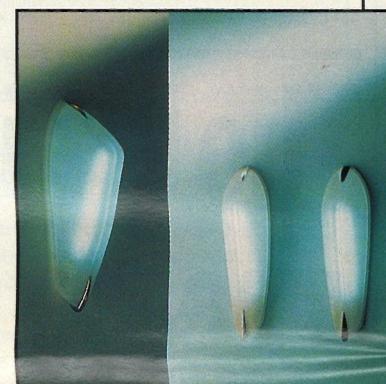
Reader Service No. 5

Page 4

Slim fittings

Feluca is a new, visually slim, fitting designed for use in hotel corridors and bedrooms, and with an IP44 rating, especially suited for use in bathrooms.

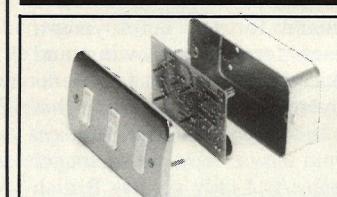
It is available in two lengths; 38mm or 48mm, and with three different light sources; halogen, incandescent or compact fluorescent. The fitting is manufactured by Tre Ci Luce of Milan and is distributed in the UK by Lumino Ltd. Reader Service No. 164



Quick timing

New from Chalmor is the ELT/NN 'no neutral' lighting timer, designed to quickly and economically upgrade a standard manual light switch into an energy efficient lighting system.

In its simplest form the ELT/NN circuit board is plugged into an existing gridswitch and the timer set. Or the company can supply a complete unit, including surface mounted grid system,



ready for wiring. Once installed the system uses only the live and switched live wires to control up to 1,000 Watts of fluorescent, or 2,000 Watts of tungsten lighting. Time programmes between 10 and 150 minutes can be selected and operated by a push button switch.

A conventional rocker switch operates any background lighting and is also used to switch off the timed lights before the end of the programme, if required.

Commissioning and testing times are reduced to under a minute and the 'no neutral' system eliminates the need to channel out plaster to install any additional wiring when fitting to an existing lighting scheme.

Reader Service No. 165

LIGHTING FACTFILE NUMBER 2

The trend of specifying period lighting in the contract leisure environment is particularly noticeable within the hotel industry.

At Arden Manufacturing we offer a wide range of light fittings specifically designed for hotel foyers, reception and dining areas, most of these fittings are capable of being converted to take the latest lamp technology including low energy.

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Reader Service No. 6

Lighting Equipment News, February 1993

NEW PRODUCTS

Siemens launches Sinova

Siemens Lighting Ltd has launched a new, versatile lighting system onto the UK market, which is said to be suitable for installation in a variety of settings, including offices, shops, entrance halls, galleries and studios.

The Sinova system features aluminium sections, in either standard or customised lengths, which are suitable for one and two lamp housings. Various modules can be installed in the sections, including spotlights with a universal track adaptor, downlight units with dichroic reflectors, or a point outlet for a single spotlight.

The system incorporates extended or flush-fit louvres with a number of light control variants for direct or indirect light (or both), symmetrical or asymmetrical light, or as a wall washer.

Interchangeable specular louvres and upper and lower optics



can be fitted, and later removed without taking the luminaires out of service.

Sinova can also be ceiling mounted or suspended by a tubular-stem hanger or steel cord. Up to six fittings can be connected

through a junction block which contains all the necessary electrical cabling.

Standard and dimmable electronic control gear are the main operating systems for Sinova, providing economic, fully elec-

tronic control of fluorescent lamps. The system can be integrated with a building management system and the profile provides space for telephone and data lines.

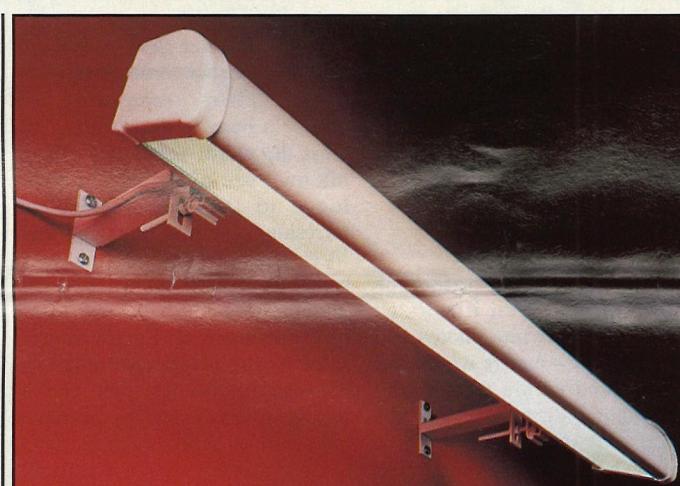
Reader Service No. 151

some direct illuminance has been provided. This has been achieved by perforating a slot in the lamp housing and edge lighting with a decorative glass that follows the curved line of the fitting.

Special effects can be created by changing the transmitted colour through the slotted housing and decorative glass. A wide choice of external paint and chrome finishes are available, enabling the uplighter to be completely colour co-ordinated with other design elements of a building's interior.

Advanced reflector systems have been incorporated for use with the complete range of compact metal halide lamps - which give high light output and accurate colour clarity. All the necessary circuit control components are housed in the uplighter's backbox, and, if required, a tungsten halogen lamp can be supplied to operate automatically during run-up of the discharge lamp or if the mains supply is interrupted.

Reader Service No. 152



Shadow free signs

A new downlight for sign illumination has been added to VT Plastics' range of lighting equipment for signmakers.

The Troughlight is claimed to be an easy-to-install system which gives shadow free illumination and pinpoint accuracy and definition for any continuous

length of outdoor sign.

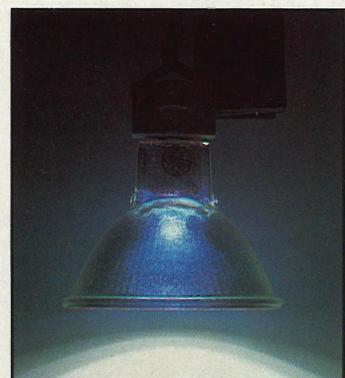
Said to be economical to run, VT Troughlight is made of aluminium with prismatic styrene diffuser panels. It is produced in standard 6m lengths which can be joined together. It is supplied ready to use, with brackets, cables, end caps and fixing instructions.

Reader Service No. 153

Balanced illuminance from uplighter

A new wall uplighter from Kotzolt Lighting incorporates an asymmetric reflector which is said to give very good light projection into a room, with a balance of illuminance directly against the wall it is mounted on.

To further reduce the contrast between the surfaces above the uplighter and the room below,



particularly with high temperature usage and this can cause colour variation over the lamp's life. The company claims that ConstantColor overcomes this problem.

Reader Service No. 154

Key switch timing

CP Electronics Ltd has added a key switch timer to its range of energy-saving timers, designed for use by authorised key holders only.

The unit, designated MRT16-KS, covers four timing periods between 0 - 7.5 minutes and 0 - 2 hours, and will switch loads of up

to 16 Amp resistive or 6 Amp Fluorescent. Longer timing periods are also available.

The unit fits onto a standard single gang switch box and is supplied with two keys. Other timers available in this range are: push-button, pull-cord, touch, remote slave switch operated, and weatherproof.

Reader Service No. 155

In brief...

● Emergi-Lite Safety Systems Ltd has launched what it describes as a 'budget priced range' for 1993. The V8 series is a three hour duration, 8W emergency bulkhead in ABS plastic with a polycarbonate opal diffuser. It is said to have the style and shape of many more expensive products and the entire range meets the requirements of BS5499. Reader Service No. 156

● The new WG-A3 solid state relays from Gunther switch three phase line voltages direct from a single low voltage control signal. Available from Granville Components, versions are available for handling high inrush current lamp loads. Reader Service No. 157

● Glamox has extended its DeLight range with the P and PU pendant light fittings, designed for sloping ceilings and areas of visual interest. The new fittings have an oblong profile and are available in four versions to take either one or two 36W or 58W fluorescent lamps. The PU can provide uplight if required and interchangeable louvres for both

P and PU units provide the option for creating different lighting effects. Reader Service No. 158

● Tamlite Lighting has introduced a range of slimline fluorescent lighting fittings, said to be particularly suitable for use under kitchen cupboards, behind pelmets, in wardrobes and for displays. The fittings will butt connect together or can be spaced and connected with plug-in flexible linking cables. Reader Service No. 159

● Hewlett-Packard has added two electrical CAD products to its electrotechnical computer aided draughting system, DDS-C.

The first is for low to medium complexity electrical CAD applications and the second is an add-on product for existing HP ME10 mechanical CAD users.

Reader Service No. 160

● Simplex Lighting's Trimpak range has been extended with the introduction of High Frequency and Emergency versions. Trimpak luminaires are supplied complete with lamps and include a clip-on cover tray, a range of optical attachments and a continuous mounting options.

Reader Service No. 161

LIF LINE

Emergency legislation

European Community Legislation and Directives, some of which have already been incorporated into UK law, will dramatically affect the design and installation of emergency lighting systems in the UK. In addition, these tough new standards will not only apply to buildings where emergency lighting is already provided, it will also extend the requirement for such systems into areas not previously protected.

Open areas

Current UK regulations: minimum emergency illumination in open areas (offices, classrooms, shops etc) of 1 lux average measured at points throughout the area. Draft European Standard Requirement: provision of 0.5 lux minimum measured at any point in the open area.

Defined escape routes

Current UK regulations: minimum emergency regulation of 0.2 lux, measured along the centre line of the escape route. Draft European Standard Requirement: minimum of 1 lux at specific points of emphasis and areas of normal rise. (0.2 lux will be sufficient for permanently unobstructed escape routes only in the UK).

High risk areas

A new category of risk, this includes such locations as acid baths, rotating machinery and restricted exit routes, such as turnstiles. Draft European Standard Requirement: 10% of the normal illumination shall be available in 0.25 seconds. This can only be practically achieved by a large tungsten or a maintained fluorescent luminaire. Of course, many of these areas are adequately covered for safety reasons. It is important, however, to consider the implications of updating installations for future requirements such as those detailed in the Draft European Standard.

Maintained lighting

At present, maintained luminaires are only required in areas where lighting is dimmed (e.g. cinemas and theatres) and where alcohol is served. In addition to reconfirming these requirements, the current Draft European Standard requires that maintained emergency illumination should also be provided for exit signs in areas of a building where people unfamiliar with the building's layout may be present.

Emergency lighting testing

Current codes of practice only recommend emergency lighting testing procedures and compliance with these appears to be, at best, inconsistent. If implemented without any further amendment, the current Draft European Standard will make testing of emergency lighting systems a legal requirement. By law, tests will have to be executed monthly and annually and records of these tests will have to be made and retained for inspection.

Design considerations

Unless it is feasible to completely switch off the normal lighting to conduct a test, consideration should be given to the provision of adequate test and indication facilities. The results of new test schedules will also have to be logged and recorded and, therefore, it is essential that appropriate facilities are provided. If these considerations are not fully observed at the time of installation, considerable cost and disruption will result at some point in the future from actions required to meet these requirements.

Planning for change

By being aware of what the new standards may require, in terms of siting and performance requirements, specifiers and designers can develop emergency lighting system layouts which may be simply upgraded in the future, whilst minimising the impact on both short-term and medium-term costs.

Maintaining quality assurance

It is vital that any safety equipment is manufactured in accordance with adequate quality standards. In the UK only companies registered to BS5750 are entitled to attach the British Standard Kitemark to their products. Regular, random inspections by BS inspectors ensure that quality procedures and product quality levels are being maintained. It is worth noting that, presently, under other European national schemes only initial samples are tested. It is hoped that EC legislation will enforce the application of adequate quality standards to ensure a consistent level of protection throughout the whole Community.

Retrospective implementation of the standards means that currently complying system designs may have to be upgraded. Of course, the authorities responsible for implementing and policing them will have to provide time for the additional work needed, but it is unlikely that this period will be extended beyond the end of 1996. So, it is clear that future emergency lighting systems must be designed with care and foresight, otherwise building owners and operators could face considerable additional costs and disruption in the not too distant future.

PUBLICATIONS

Theatre Lighting from A to Z

by Norman C Boulanger and Warren C Lounsbury

(University of Washington Press, Seattle & London)

This 198-page ring-bound encyclopedia of lighting terms provides definitions of essential equipment, techniques and concepts for all levels of theatre, from school performances to community and professional productions. The aim of the authors is to provide a publication which, they hope, will help those who need quick and easy solutions to their lighting requirements.

It is intended that the A to Z be used especially in community theatre as this area 'must be recognised as a high level of amateur recreational endeavour deserving of a high level of light-

ing', say the authors.

All terms – nearly 1,200 of them – are clearly indicated in bold type for easy reference and cross-reference, and there is liberal use of attractive black and white diagrams and illustrations, 350 in all. The definitions are crisp and succinct, and because it is an American publication the occasional spelling outside the province of standard English is easily forgiven.

Topics covered include safety procedures and legal requirements; the adaptation and incorporation of computer technology into theatre lighting practice; planning lighting design around the specific demands of different theatres; overall formulas or methods on which lighting design

THEATRE LIGHTING
from
A to Z

Norman C. Boulanger
Warren C. Lounsbury

for a show can be based; colour symbolism and the various uses of colour; types of lighting instruments; and historical background on early lighting equipment and techniques.

'Theatre Lighting from A to Z' is an expanded treatment of lighting technology covered in briefer form in the authors' book 'Theatre Backstage from A to Z'.

Reader Service No.180

The ABC of Stage Lighting

by Francis Reid
(A&C Black – £9.99)

This handy pocket reference encyclopedia – well illustrated with black and white photos and line drawings – covers words and phrases used within the lighting equipment industry, plus many which are no longer in current usage. The latter, however, often still influence today's lighting procedures.

The publication is intended for use as a quick reference guide for those seeking answers to specific queries, but anyone interested in the subject will find it useful as a source to dip into in order to extend his or her knowledge.

Reader Service No.181

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Reader Service No. 8
Page 6

Lighting for Industry and Security

A Handbook for Providers and Users of Lighting by Stanley Lyons

(Butterworth-Heinemann Ltd – £55.00)

A 410-page hardback book, Lighting for Industry and Security provides extensive information on all aspects of the industry including security considerations, installation, safety of lighting installations, the effects of lighting on safety, and hygiene.

Stanley Lyons has written the book in short, fully indexed and cross-referenced sections to enable the reader to study various aspects of any topic. As well as serving the needs of practising lighting engineers and specifiers – such as architects, building services engineers and interior designers – it can also be a helpful reference book to lighting industry newcomers due to its plain-language explanations of

technical terms and concepts.

Arguably one of the most 'in-demand' sections of the book will be the 'Buyer's Guide to UK Lighting Suppliers' (Appendix H). This short section gives the name, address, telephone and fax number of lighting industry suppliers, all in alphabetical order.

To aid understanding of the subject matter, clear line-diagrams and illustrations are included together with 14 black and white photos bound in the centre.

The author recommends that the book be read in conjunction with the CIBSE Code for Interior Lighting, the related CIBSE technical memoranda, and the publication 'Interior Lighting Design'. The text refers to UK practice, and many British Standards and CIBSE publications are cited, but the author points out that because of the extensive harmonisation of standards, in general the practices will be in accord with those of other EC countries.

Stanley Lyons has long experience as a lighting engineer and consultant.

Reader Service No.182

In brief...

● RAM Electronics has issued a brochure detailing its comprehensive range of electronic transformers and dimmers for low voltage lighting.

Reader Service No. 183

● The CIE (International Commission on Illumination) has produced a number of new lighting publications. *Electric Light Sources State of the Art – 1991* prepared by technical committee 7-07 covers new developments since 1987.

Road Lighting as an Accident Countermeasure includes an analysis of 62 lighting and accident studies from 15 countries.

Maintenance of Indoor Electric Lighting Systems describes the parameters influencing the depreciation process in lighting installations and develops the procedure for estimating the maintenance factor for indoor electric lighting systems.

Lighting Education (1983-1989) summarises the work done by the CIE over the period and concludes that insufficient work is done in this area and proposes several steps to remedy the situation.

Reader Service No.184

● The Lighting Research Centre, New York, in collaboration with the US National Lighting Product Information Program, has published a specifier's report on occupancy sensors. It includes manufacturer-specific performance data presented in easy to

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read tables. It is intended to supplement the *Guide to Performance Evaluation of Efficient Lighting Products*, published in June 1991.

Reader Service No. 185

● A product data sheet on type 180 glass tubing used in the manufacture of halogen lamps is now available from GE USA Components Marketing and Sales Operation. It compares the properties of type 180 with other candidate materials for use in the high pressures and temperatures of the application.

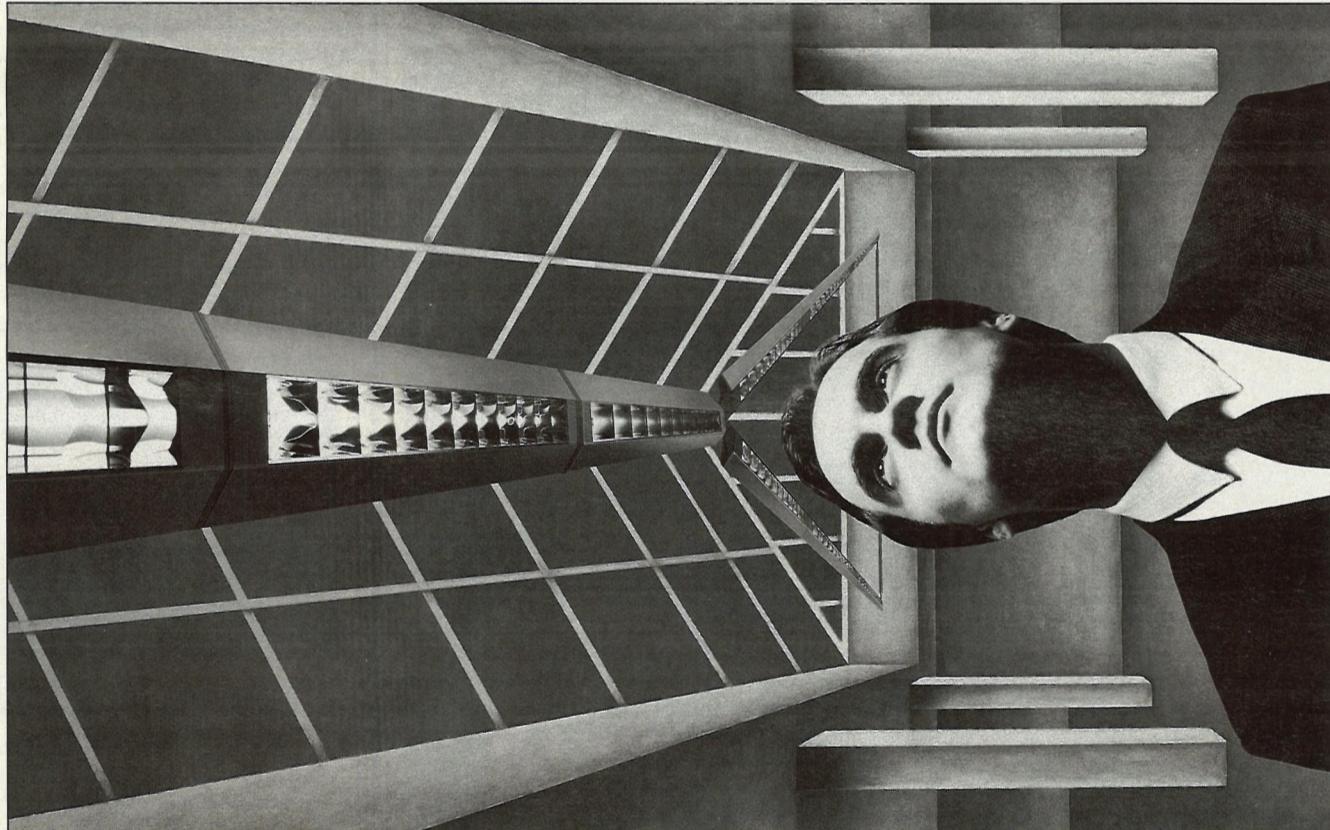
Reader Service No. 186



Correction

The Brick Paver lights above are available from Michael John Lighting Ltd and they are not the Menvier products indicated in the last issue.

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Archimedes heading for a dip at the Eureka museum

Eureka! It's bright

Lighting plays an important part in establishing the right atmosphere at a childrens' museum in Halifax

Bold use of colour at the new Eureka museum for children in Halifax meant that the combination of natural and artificial lighting should provide the most accurate colour rendition possible. Specification of appropriate luminaires and lamps by William E Hannan & Associates and Building Design Partnership, therefore, was an important part of the project.

The Eureka museum is designed to be a voyage of discovery for youngsters, who are greeted as they enter the building by a model of Archimedes plunging into a bath to discover his Principle. Other areas of the museum include working models to demonstrate the functioning of

the human body, a miniature supermarket, a bank and a scaled-down garage. The emphasis of the displays is on education through demonstration and interaction, and the bright colours go a long way to establishing the right atmosphere for kids (including the grown-up ones) to get the most from the museum.

Inside and out

Staff Lighting's products have been used extensively both inside and outside the building, including recessed downlights, spotlights, floodlights and architectural bollards. DZ Rocket luminaires were used for exterior illumination and two special colour combinations were manufactured for Eureka; a yellow post with red and blue bands and a green post with yellow and blue bands.

Inside the building, Solartron low voltage spotlights, which feature a separate lamp housing and transformer, were widely used. These are said to be particularly suitable for museum and other display use because of their compatibility with coolbeam reflector

lamps which keep the installation temperature low.

In the areas of the building which are functional rather than display orientated, such as the bank, recessed downlights from the Downlight 2000 range are used. These make use of a polycarbonate reflector to give more downward distribution and reduce interaction between lamps in twin-lamped luminaires, providing maximum output and optimum distribution from low wattage compact fluorescent lamps.

Miniature recessed downlights

from the Starlight range were also installed in the bank to provide accent lighting to architectural features. In the supermarket area, energy saving floodlights using two 18W compact fluorescent lamps supplement the downward illumination by providing a wall washing effect.

Since its opening last July, the Eureka museum has already provided a well-balanced mixture of pleasure and education to over 200,000 visitors and looks likely to carry on providing this service to thousands more.

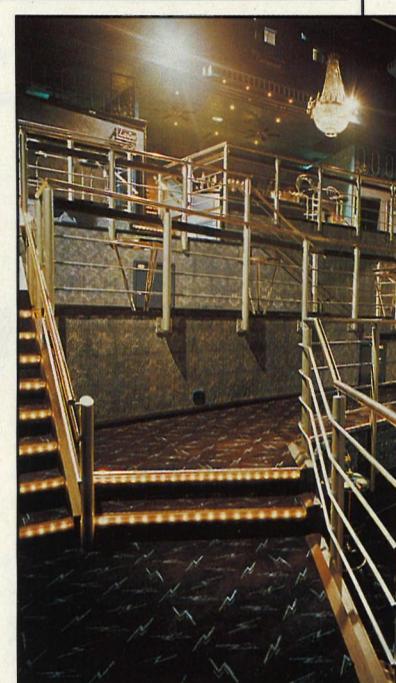
Reader Service No 200

Clear nosings for clubbers

High ceilings at the Princes Nightclub in Wigan made the use of a standard emergency lighting system in the club unsuitable. To overcome this problem, Lynx Electronics has supplied its Lynx-line illuminated nosings, which provide both effects and emergency lighting on walkways and stairways. An additional safety feature is the anti-slip tread insert.

With an operating voltage of 24V ac/dc, the system is operated in the maintained mode from five separate central battery systems. A total of 250 linear metres of clear nosing is installed, with a total load of 1400W.

"Using the Lynx low voltage lighting system within the clear nosing RN718L proved to be an ideal solution for emergency lighting at Princes Nightclub," said Lynx managing director Paul



Special emergency lighting from Lynx is well suited to nightclubs

Baker. Reader Service No 201

Healthier hormones with near-daylight

Health and fitness clubs can now benefit from daylight-colour quality light - with the new Activa full spectrum fluorescent lamp from Sylvania. The lamp is said to give near daylight conditions and achieve excellent colour rendering performance.

A particular feature of the lamp is its ability to combat light deprivation conditions such as seasonal affective disorder (SAD).

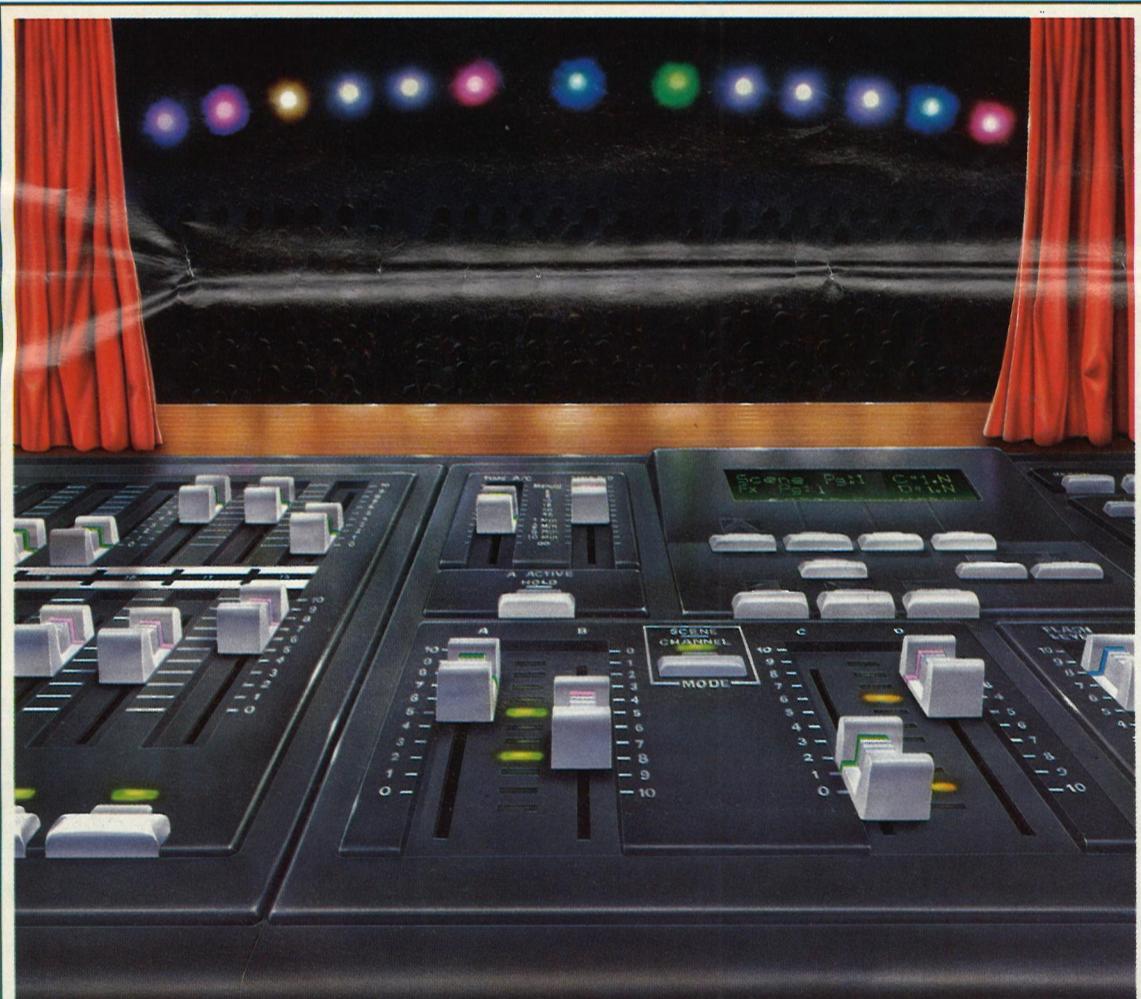
By maintaining a continuous spectral output using near ultra-

violet and far-infrared frequencies, the artificial daylight produced can help hormone secretion to follow normal daily patterns, which under standard lighting conditions might otherwise be disturbed.

This applies to melatonin, secreted normally at night which, if disturbed, can lead to sleeplessness and daily fatigue, and serotonin, which regulates carbohydrate consumption and in the event of disturbance can cause excessive carbohydrate intake and possible obesity.

The discreet UV content is said to be safe - continuous exposure to Activa for 250 hours would produce the same effect as two hours sunlight.

Reader Service No. 202



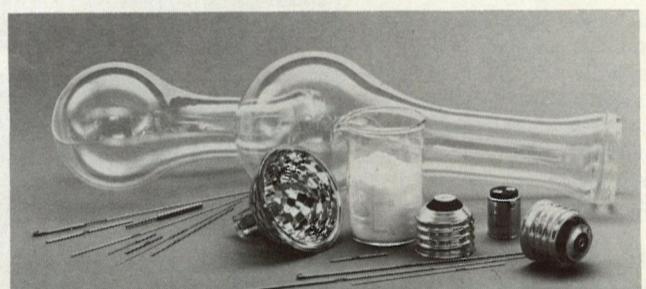
On stage



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Special lighting in new video technology

Changes are taking place in the world of video projection – the up and coming technology uses a Liquid Crystal Display (LCD) and lamps, instead of the conventional camera tube.

An LCD video projector works roughly like a slide projector, except instead of a slide there is an LCD controlled by remote signal. The compact projector can project an image measuring up to two metres or more diagonally, widening entertainment possibilities.

ties in home video, school work, product presentations etc.

But the real breakthrough for LCD projection will be in the age of high definition television (HDTV). To be accepted in the highly broken up television picture of cinema format, picture diagonals measuring 1.3 to 1.5m are necessary.

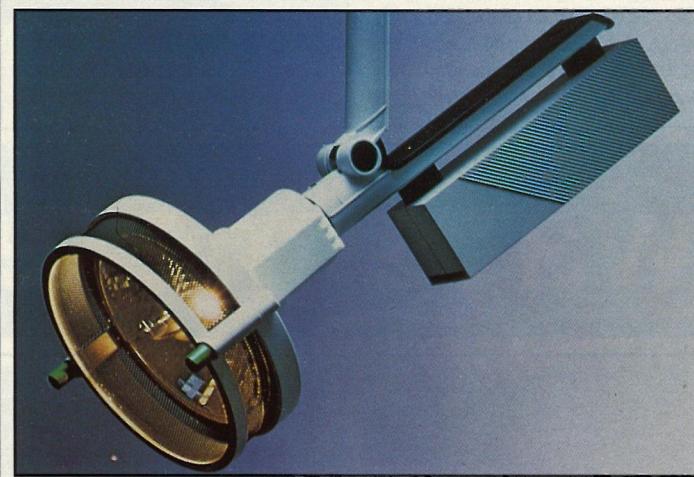
At present, this can only be done with machines with front or back projection. This can be done with conventional tube technology.

But LCD projection is said to give more compact, lighter and longer lasting machines which are both easier to use and cheaper.

One of the major components of the LCD projector is the lamp, which greatly influences the brightness and colour accuracy of the picture.

With expertise in the field of halogen metal halide technology, Osram has developed a family of lamps specially for the purpose of video projection. The VIP (video projection) lamp features: a spectrum which specifically brings the three basic colours of red, green and blue into use, high density light and a 2,000 hour life expectancy.

Reader Service No. 203



Spotlight programme

The Dancer spotlight programme from Staff Lighting features three groups, each with one common body and a number of interchangeable heads. The bodies and heads get progressively larger across the groups to accommodate larger lamps.

Micro-dancer, the smallest of the three, may be used with low voltage track and therefore without transformers; if an integral electronic transformer is used Micro-dancer is naturally compatible with mains voltage track.

Dancer 25 is compatible with both single and three circuit mains voltage track and incorporates a transformer on the luminaire arm for use with a wide range of low voltage and tungsten

halogen lamps up to 100W. Dancer 33 is compatible with three-circuit mains track and larger lamps such as double-ended metal halide, double mains voltage tungsten halogen up to 150W and economical 26W compact fluorescents.

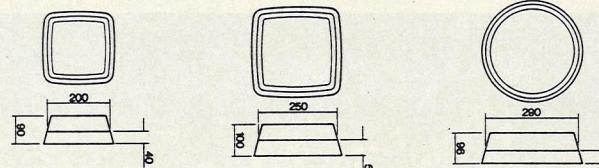
Dancer's stem design is hinged to allow its use as a luminaire support arm or to facilitate down-lighting. Manufactured in a combination of high quality die-cast aluminium and high temperature resistant recyclable plastics, every part carries its own marked code to permit simpler and more efficient recycling when required.

All Dancer reflector systems are enclosed with glass ceramic UV reduction filters which protect the reflector system against dirt and give light free of UV radiation, suitable for use, for example, in museums.

Reader Service No. 205

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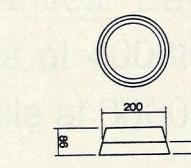
ACRILUX fully enclosed units are moulded in vandal resistant UV stabilised polycarbonate. Flame retardancy = UL 94-V2 or UL 94-V0. These units are suitable for use with incandescent or fluorescent light sources.

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New floodlighting for motorshow and Liverpool FC

Philips Lighting has recently added the Birmingham NEC motorshow and Liverpool Football Club to its list of floodlighting customers.

Philips ArenaVision floodlighting was used at the motorshow to light up the cars, and it was the first time this floodlighting – used previously at sites such as the Olympics and the World Cup – was used for accent and display illumination.

The Vauxhall stand at the motorshow used 33 MVF 406 ArenaVison luminaires with 180W MHD double-ended metal halide lamps. Fittings were suspended from a height of 14m.

The lamps give a crisp white light (CCT 5.600K) and a good colour rendering (RA: 90) to a level of 2500 lux. Throughout Europe the luminaires will become part of a General Motors Exhibition Kit.



Philips' ArenaVision helps Vauxhall to stand out at the Motorshow

120 MNF307 luminaires, roof edge mounted with 60 per stand. Lamps used are 2kW HPI/T and there has been no increase in the overall load.

Reader Service No. 204

AMK Berlin

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Lighting Equipment News, February 1993

Reader Service No. 12

Reader Service No. 13
Page 9

Tight limits for stadium lighting

Ensuring appropriate levels of lighting at Gateshead International Stadium provided the designers with a demanding brief. A survey at the ground had revealed that the existing towers were unsound and needed to be replaced. The stadium, however, is built on a landfill site and there were no extra finances for excavating either deeper footings for bigger towers or more foundations for additional towers. In installing floodlights, therefore, Thorn's lighting engineers were not only limited to the existing mounting positions, they were also restricted to a tight windage specification on each tower. The chosen solution was the 2kW Metaline fitting which is said to combine high output with low weight and low windage.

The new scheme uses 82 2kW Metaline floodlights mounted on the towers and along the stand roof. The central field and pitch is lit to 350 lux, the track to 250 lux and the finishing straight to 1000 lux. The latter is achieved by mounting the floods in banks on the stand roof. Spill light also



uplights the roof and provides spectator lighting. One of the stadium towers also has floods aimed outside the ground to provide security lighting for the car parks.

The indoor sports hall is lit with 90 low bay Radpak fittings with a switching system to provide two illuminance levels, 250 lux and 500 lux, to suit the partic-

ular sporting activity. The Radpaks are mounted in pairs and the system enables half of the fittings

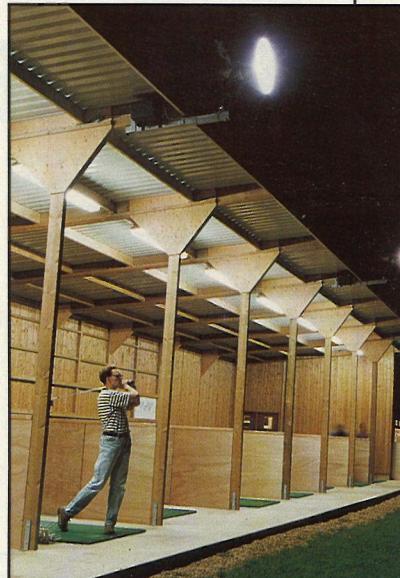
to be switched off without affecting uniformity.

Reader Service No 206

A driving force

loodlighting at the Sherdons Golf Centre's driving range makes use of six 1000W MBI Powerbeam luminaires from Simplex Lighting. The Powerbeam offers narrow, medium and wide beam options and this is said to have been fundamental in the choice of these units. Four narrow beam Powerbeams provide illumination to 50 lux vertical at 200 metres on the driving range, while two wide beam luminaires provide a bright, even spread of light in front of the driving canopy.

"The floodlighting of the range is excellent and is proving to be a very popular facility for our golfers," commented Richard Chatham, partner at Sherdons. "The MBI fittings provide a crisp white light and the beam options of the Simplex Powerbeam has enabled us to meet all our light-



ing requirements from one range of fittings," he continued.

Reader Service No 207

A lighter break

Snooker players playing at Wembley's Starlight Snooker Club are now benefiting from Osram's Circolux El lamps, which are said to be giving an even spread of high level light to the club's tables.

The Circolux El energy efficient compact fluorescent lamp, designed for hanging pendant shades and covered luminaires, is said to radiate virtually all of its light downwards.

The club is also enjoying significant energy savings as a result of the installation. The lamps give the same level of light output as incandescents yet use up to 80% less electricity.

At the Starlight Club, each of the 19 tables is lit by 32W Circolux El lamps, replacing three 150W incandescents. Total energy savings are therefore

Reader Service No 208

6726W which, when multiplied by 10 hours per day and 364 days per year, could well translate into a yearly cost saving of £1,836, based on an electricity cost of 7.5p per kWh.

Lamp replacement has dropped too. Before, at least one incandescent lamp was replaced every day. In the first three months since the new installation, not one lamp had failed.

Senior manager at the club, Andy Gornall, said: "With the installation of Circolux El lamps we are now undertaking a careful study of our electricity and lamp replacement costs. If, as we expect, this shows major reductions in costs it is very likely that Osram energy efficient lamps will be used in other of our parent company Planned Amusements' other leisure establishments."

Reader Service No 208

There is always more

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Reader Service No. 20

Reader Service No. 21

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Hot news about dichroic lamps

* Stanley Lyons examines the disturbing phenomenon of fires caused by display lighting

During the recent Christmas shopping season, there were many minor fires in shops and stores due to the heat from display lighting igniting flammable material such as fabrics, and many instances of plastic and paper Christmas decorations getting scorched or set on fire. Fires in retail stores were reported to have occurred in displays of mattresses, bedding and camping gear; linens and garments of various kinds were ignited in many separate incidents. In some cases the cause of fire was established or suspected as being due to spotlights being placed too close to the merchandise.

The usefulness and effectiveness of low-voltage tungsten-halogen (LVTH) dichroic lamps encourages their ever-increasing use in retail establishments both for general lighting and for display

lighting. As they are able to relocate and realign these versatile lamps easily, window dressers and stores display experts may become a little overconfident in their use of these sources; maybe they are falsely reassured by the words 'low voltage' which seem to imply that these lamps are safer than actual experience indicates.

The author talked to members of staff in several large retail

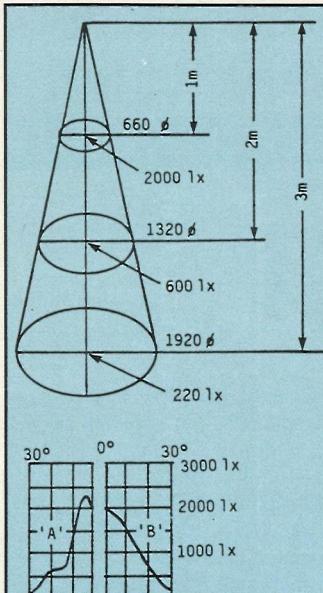


Fig. 1 either curve 'A' or curve 'B' could apply to the cone diagram above

stores, and concluded that amongst those interviewed, few who were responsible for setting up and lighting displays of mer-

chandise knew about the BS4533 requirement for 'F'-Marking on projector luminaires (which sets the limit to the proximity of flammable displays to the lamp), and most were not aware that flammable materials in displays could be ignited by the heat in the beam of a 12-volt dichroic lamp. Several imported luminaires seen by the author in one retail store were clearly much too hot to be touched, yet did not carry a notice as required by BS4533 to give warning of their unsuitability for mounting on flammable surfaces. It is apparent that the message about the benefits of specifying only BSI Kitemarked luminaires has not got through to some shopkeepers.

It would seem that there is a general need to educate users about the use of luminaires with directable beams. Luminaires employing crown-silvered lamps, PAR lamps or LVTH lamps have beams hot enough to ignite flammable materials, and they should be used with care so that the temperature of the illuminated surface does not exceed 90°C. BS4533 stipulates that the minimum permissible distance (in metres) between the lamp and the illuminated surface shall be marked on the luminaire with the 'F' Symbol.

As ranges of different LVTH lamps may be physically interchangeable, the correct power rating of lamp to be used should be

at the distance under consideration.

The performance of the LVTH lamps in a batch is rarely very uniform, and there may be wide discrepancies from batch to batch. If the type of lamp under discussion has a transverse filament, the actual distribution over the specified planes may be far from uniform, as is indicated in a typical 'dartboard plot' of illuminances from a typical lamp shown in Fig.2. For many lamps on the market in the UK today, the illuminance claims are quite fictitious. Some lamps present a 'Polo Mint distribution' with a marked 'inverse peak' at certain distances.

Even distribution

To try and smooth out the irregularities in the light distribution, various patterns of faceted, stepped, stippled or semi-matt reflectors are employed in LVTH lamps, while some lamps are fitted with front glasses which may have optical facets or a diffusing pattern. Incidentally, it would seem that if LVTH lamps are used in open luminaires in premises where food is prepared, eaten or sold, only lamps with shatter-resistant cover glasses should be employed in order to comply with the Food Hygiene (General) Regulations. Indeed, following the author's distressing experience of rendering First Aid to a baby in her pram who had

with OSRAM...



High frequency electronic control gear

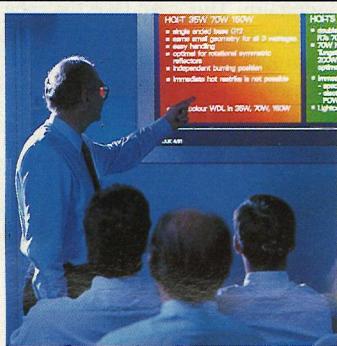
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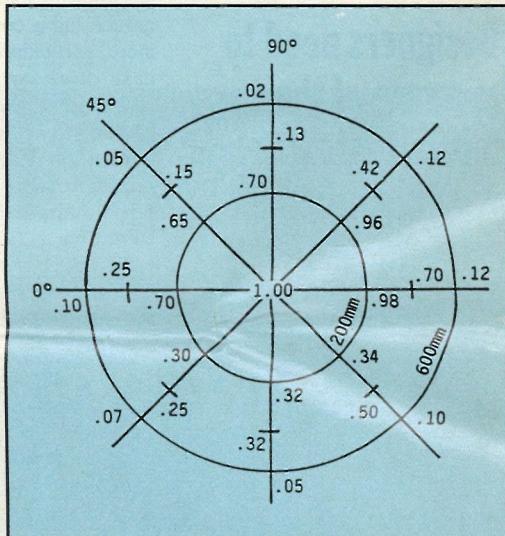
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OSRAM have launched the definitive reference work for the industry on light sources and electronic control gear. For your copy please circle the reply number.

ReaderService No.24

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

Fig. 2 a typical 'Dartboard' illuminance plot of a 12V 50W lvth lamp at a distance of 2.8m. The measurements are in relative units



clearly marked on each luminaire. Lamp life depends very much on the associated transformer being correctly loaded. If underloaded, the transformer output voltage may rise and cause premature lamp failures. If marginally overloaded, the transformer might be damaged by temperature rise, but the overload may not be large enough to trip its protective device.

Users also need reminding that the luminaires themselves are very hot, and that curtains and display fabrics etc can readily be ignited by contact or close proximity with them.

Misleading data

It is necessary to call attention to the misleading data about LVTH lamps which is published by some lamp manufacturers. Typically, distribution diagrams are provided in the style of Fig.1, which seem to imply that the stated illuminances will be achieved at the distances specified. Only actual testing will reveal whether the claimed illuminances are peak, average or minimum illuminances across the stated diameters, or if they are the illuminances to be found at the centre of the beam, at its edge, or anywhere else. The use of the conventional conical diagrams is misleading to non-experts, for the light is not distributed in a neat cone as drawn; the cone is merely a series of radii at which measurements are made - usually where the beam intensity falls to 50% of its peak or central value

been burned by fragments of a hot LVTH lamp falling on her, it is his strong recommendation that all LVTH lamps installed over areas where the public have access should have shatter-resistant cover-glasses (mechanically locked on to the reflector to avoid the 'flying saucer' effect when they pop out!), or should be employed only in a type of luminaire having a protective front glass.

Because of the manufacturing tolerances on lamps and luminaires, there are always discrepancies between claimed and achieved performance, even when the much superior axial filament design is employed. Indeed, it was when he was testing a series of these lamps recently, that Eric Chapman (Belvoir Lighting Consultancy, Nottingham) noted that there were significant departures from the claimed figures relating to many of the axial-filament lamps which he photometered.

In a significant proportion of the lamps he tested, he found that the axial filament was either located off-centre or was canted at an angle to the geometrical axis of the lamp. The beams are seldom accurately normal to the lamp rim.

It seems that users would like to have better quality LVTH lamps, and much better presentation of the manufacturers' photometric data. Perhaps lampmakers will reply in these pages to the criticisms made in this article.

*Stanley Lyons is a freelance writer specialising in lighting.

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TECHNOLOGY BROUGHT TO LIGHT

OSRAM

Tests indicate that positioning of air handling luminaires close to supply air grilles can lead to up to a 50% reduction in light output. **Paul Haddesey** reports

An airy problem

It has been known for a long time that the light output from a fluorescent lamp is related to the temperature of the coolest spot on the outer surface of the tube. This is because the light output depends on the amount of ultra violet light produced by the electrical discharge. Amongst other things, this depends on the mercury vapour pressure inside the discharge tube, which in turn depends on the lowest temperature of the inside of the glass tube wall – the cool spot.

Depending on the type of lamp, the maximum light output will be achieved at temperatures between 36°C and 45°C. This is not a problem with most luminaires but light output can be affected with air handling luminaires, which are drawing air over the lamps and cooling them. There can also be problems when supply grilles are close to a non-air handling luminaire and the cool supply air, using the Coanda effect, travels along the ceiling, into the luminaire and circulates around the lamp. Neither of these problems are insoluble but luminaire and installation designers need to be aware of the possible interaction of air conditioning and lighting so that problems can be avoided at the design stage.

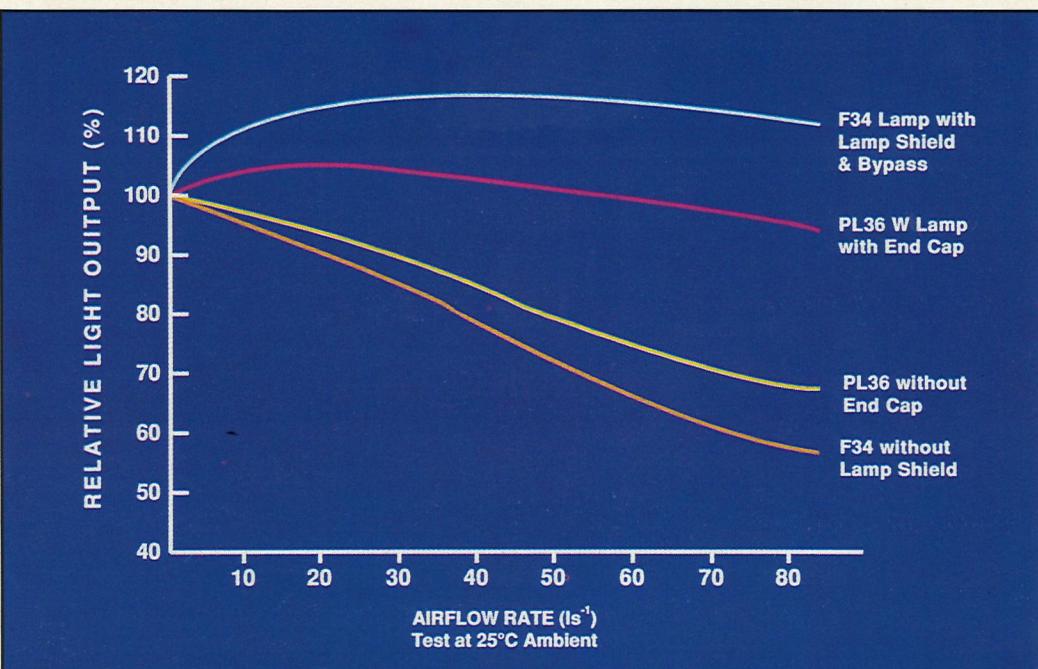
Air handling luminaires with compact source lamps are becoming increasingly popular. This is because they take much of the heat away from the lamps before it enters the room, thus reducing the cooling load. It also tends to reduce lamp control gear temperature, particularly important in the case of electronic control gear and emergency batteries, which can be sensitive to excessive temperatures. Use of this type of luminaire also reduces the number of air grilles that have to be installed in a ceiling, making them attractive to architects and

end users. A further, if minor, advantage is that drawing air over a luminaire's reflective surface has been found to minimise deposits of fine dust.

Air handling luminaires are manufactured with holes or slots in the casing, so that air can be drawn through the luminaire into the ceiling void. The size and frequency of the holes or slots will depend on the air flow required through the luminaire. There is also the potential to blank off some of the holes so that air flow can be adjusted when the luminaires are *in situ*. Air flow is achieved by the use of a fan in the ceiling void, creating a negative pressure in relation to the room below.

Improved light output

In a well designed system, the air that is drawn through the luminaires will be coming from the body of the room and will be at the comfort temperature of 20-22°C. This will not have an adverse effect on the light output and, in fact, could even improve it, except for situations where very high air (extract) flows are required. This is because without any air flow the lamps will tend to burn at slightly above their optimum temperature, because an area of hot air is formed around the tube. A bit of air flow at the

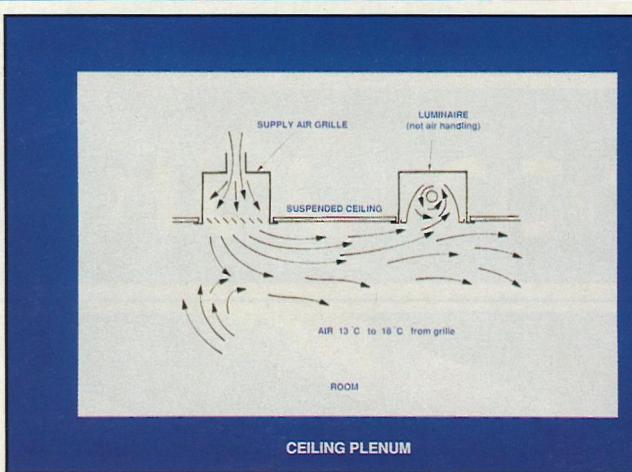


COMPACT SOURCE LAMPS IN A LUMINAIRE WITH AND WITHOUT LOUVRE SHIELD OR TRANSPARENT END CAP AT DIFFERENT AIRFLOWS

the right temperature, therefore, will take this hot air away, reducing the tube temperature to its optimum range. High air flows will over-cool the lamps, reducing their light output.

When supply air is introduced too close to the luminaires, however, a situation may arise where the supply air, at 13-18°C, is drawn directly into an adjacent luminaire. This may take the tube temperature well below its optimum and reduce the lighting sufficiently that design lighting levels are no longer achieved.

Tests carried out by Moorlite Electrical indicate that with a



very low temperature supply air the light output can be reduced by as much as 50%. Research and development manager, Bryan Rogers, points out that this is an extreme case and that a more typical figure would be 20-25%.

Compact problems

These effects tend to be greatest when high frequency ballasts and/or compact light sources are used. These double-limbed fluorescent tubes are becoming more popular with architects because they are less intrusive but if the same heat load is to be dealt with, the same volume of air has to be drawn through a smaller luminaire, often less than half the size of the equivalent linear lamp luminaire. This greater airflow through the luminaire increases the cooling of the tube, a factor

exacerbated by the fact that the cool spot on a compact source lamp tends to be at a lower temperature than the cool spot on a straight tube.

As was noted earlier, these problems are not insoluble. The cool spot on a compact fluorescent source, for example, tends to be at the U bend. Covering this with a plastic cap can help to reduce the cooling effect sufficiently to maintain lighting levels. Another possibility is to direct the air through the luminaire so that it flows across the middle of the tube, avoiding the U bend. With straight or double-limbed tubes, it is possible to direct the air around the side of the luminaire so that very little of it comes into contact with the tubes at all.

"The luminaires can be tuned to give the optimum light output for each situation," says Bryan Rogers. "This tuning can be achieved in the initial design of the luminaire or by adjusting the air flow through the units when they are installed, by blanking off some of the holes, for example."

Lamp sleeves

Normally, potential problems are identified during testing prior to installation. If, however, the system is already installed before problems are identified, it is often still possible to use lamp sleeves to prevent over-cooling and excessive loss of light output. This solution is appropriate to both air handling and normal luminaires which are too close to supply air grilles.

According to Bryan Rogers, these solutions are suitable for 80-90% of the problems. There are situations, however, when a greater than usual number of air changes are required. In these cases it may be a matter of sharing the extract air between the luminaires and bypass grilles, or not taking any air through the luminaires at all.

Bryan Rogers emphasises that as well as being aware of the potential problems, it is important to have the facilities to test out possible solutions. Moorlite has recently extended its research

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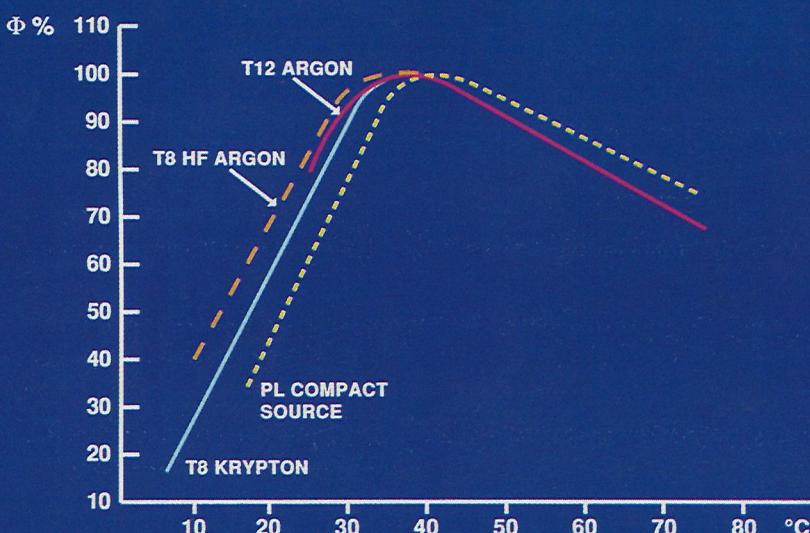
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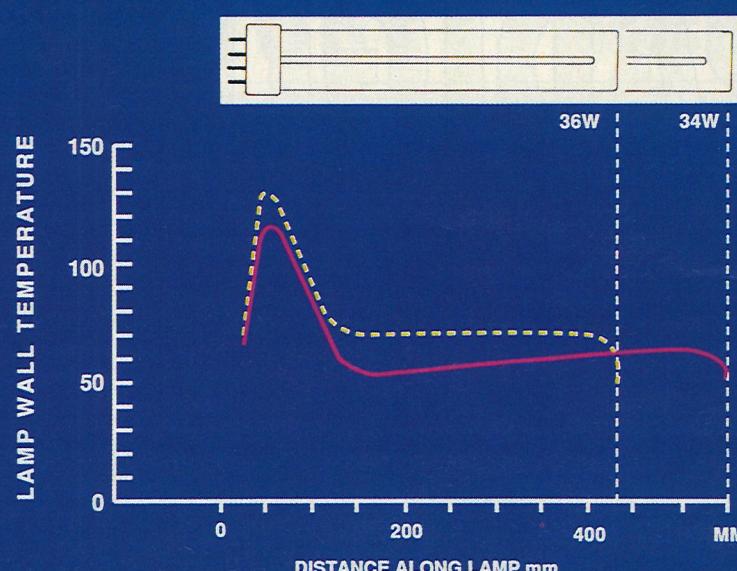
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Reader Service No. 28



TYPICAL LIGHT OUTPUT VARIATIONS WITH LAMP WALL TEMPERATURE FOR VARIOUS FLUORESCENT LAMP TYPES



LAMP WALL TEMPERATURE FOR 36W 415MM LONG AND 34W 540MM TWIN LIMB COMPACT SOURCE LAMPS

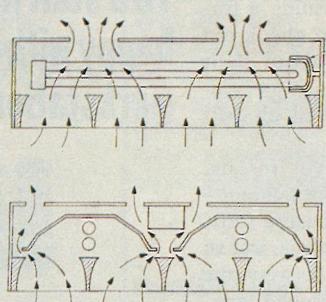
luminaires to be tested, so that different design solutions for particular projects can be compared. The advantages of using air

handling luminaires are becoming increasingly recognised, so their use is likely to rise accordingly. With the popularity of compact

light sources the potential for problems with light output is likely to increase. To avoid these difficulties, systems designers will

have to be aware of this potential and adjust their designs accordingly.

Reader Service No 209



'It is possible to use lamp sleeves to prevent over cooling'

facilities by building a test chamber to investigate this kind of problem. Mr Rogers believes that Moorlite is the only lighting company in the UK to have such a sophisticated test chamber.

Traditionally, testing has been carried out using an air calorimeter mounted in a normal room. At Moorlite the air calorimeter is part of the ceiling of an environmentally controlled room. This arrangement is said to make test conditions more realistic.

Luminaire testing

The chamber has two fan coil and heater units. One of these is used to control the temperature of the room part of the chamber. The other controls the air volume and temperature of the supply air. This arrangement allows different configurations of supply air and

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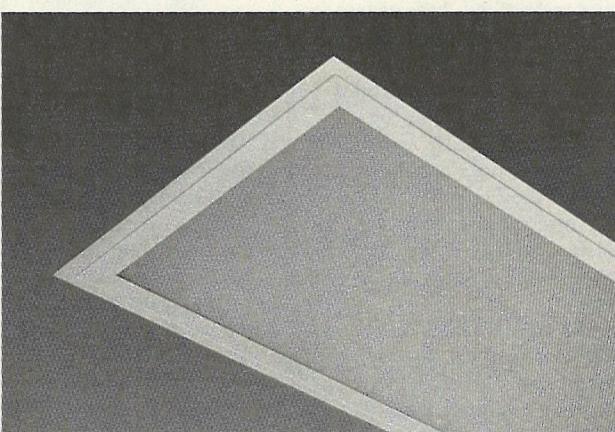
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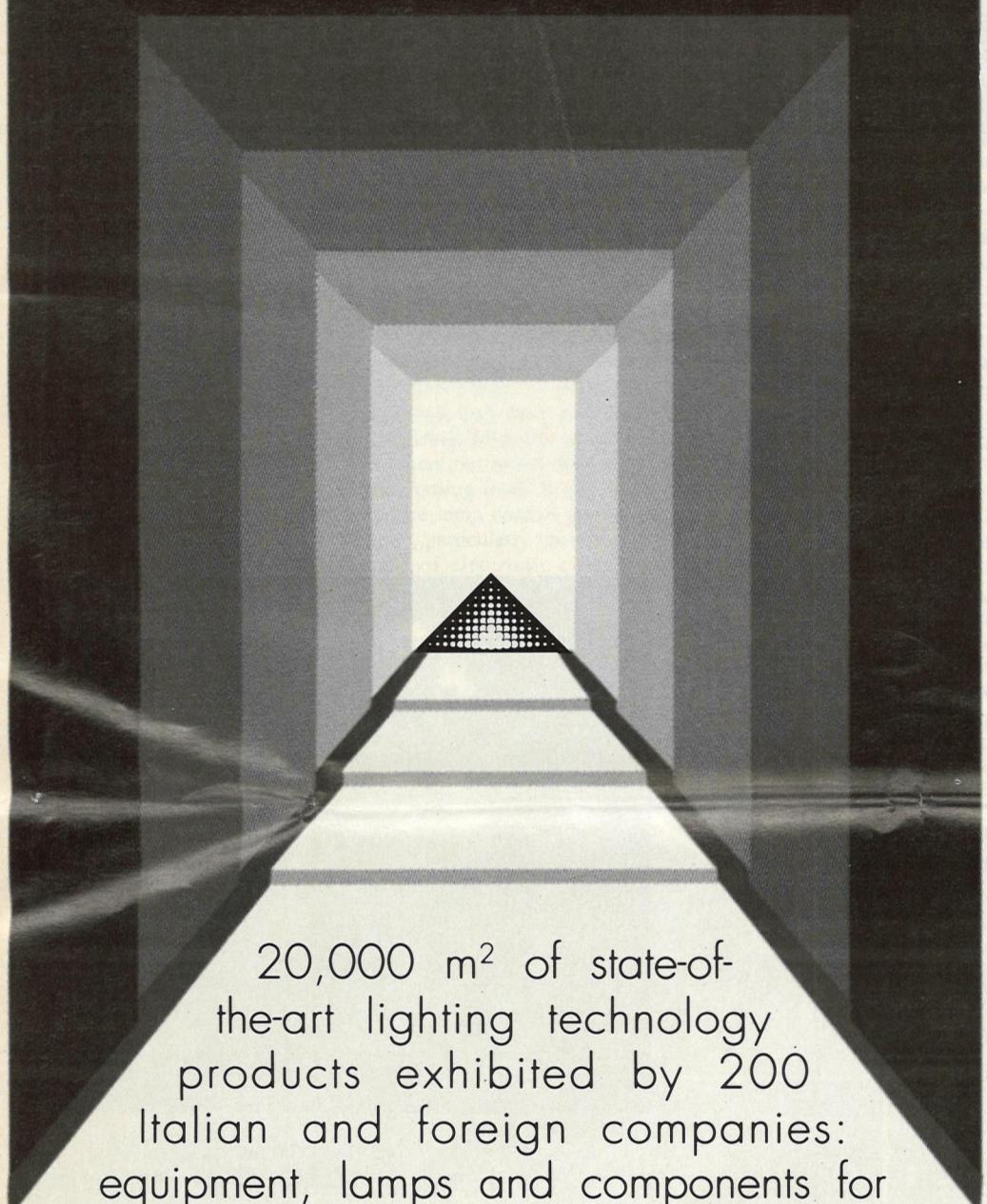
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HEALTH & SAFETY
On 31st December 1992, six new sets of health and safety at work rules came into force to meet EC directives. Chris Douglas, managing director of Ex-Or Ltd, tries to shed light on the ruling which has glaring implications for employers of visual display screen users

Shedding light on glaring problems

“All radiation with the exception of the visible part of the electromagnetic spectrum shall be reduced to negligible levels..."

The new Euro-requirement that employers must at least ensure that their workers can see what they're doing is not so daft as it reads. For the Health and Safety (Display Screen Equipment) Regulations say that there should not only be light, but that the light should be good in compliance with Directive 90/270/EEC.

Employers who have people working VDUs may be uncomfortably familiar with the concepts of RSI (Repetitive Strain Injury) and even WRULDS (Work Related Upper Limb Disorder), but the work-lighting rules of the directive have been overshadowed.

Now bosses are beginning to realise that they could be put on the spot when the new regulations come in. In fact, failure to

comply with the new directive could land employers with a fine of £20,000 per VDU workstation. Since 31st December, employers should have screened their VDU users, possibly by issuing a formal questionnaire to check out their staff's beefs about their workstation - including any complaints about light levels on their spot.

The EC directive insists: "Room lighting or spot lighting - work lamps - shall ensure satisfactory lighting conditions, and an appropriate contrast between the screen and the background environment."

"Possible disturbing glare and reflections on the screen ... shall be prevented by co-ordinating workplace and workstation layout with the positioning and technical characteristics of the artificial light source."

"Workstations shall be so designed that sources of light, such as windows and other openings, transparent or translucent walls, and brightly coloured fixtures or walls cause no direct glare and distracting reflections on the screen."

To ensure they meet the letter of the law under the new directive, employers must take early action to ensure their lighting systems are suitable. Failure to do so could mean the risk of unlimited fines. The key to meeting the EC directive is to ensure that employees have sufficient control over their lighting.

Ultrasonic technology

Ex-Or Ltd, leaders in the development of presence detection lighting control systems that use the latest ultrasonic and microwave technology, has made a special study of the needs of the directive. The company specialises in designing cost and energy saving microtechnology systems that automatically switch lights on when people are there, and off when they're not. Ultrasonic and microwave detectors mounted in ceilings detect the least movement of anyone in zoned areas.

Its remote control unit meets the specific needs of the directive by allowing users total control over their own lighting. Particularly useful in open plan offices, the remote units can be programmed so that people at each workstation are in control of their personally most comfortable, so probably more task-efficient, lighting levels.

Ex-Or says it is vital that employers look at their lighting provision immediately. Automatic and flexible lighting systems that give staff easy control over their individual workstation lighting help organisations to meet the directive requirements.

All employers will have to ask their VDU staff if they're happy

'All employers will have to ask their VDU staff if they're happy with their workstation'

with their work situation - and even if they are, bosses will only have a little longer to meet the minimum requirements under the new regulations. Employers will have to check out display screens, keyboards and desks, making sure they have a low reflectance surface, and even test chairs for stability, adjustability and tilt. Display screen equipment users will also be entitled to eye tests, and special spectacles if they're needed.

The new rules will cover any worker who often uses display screen equipment as part of normal work. They will take in equipment used for text display, numbers and graphics, regardless of the system on board.

The Health and Safety Executive has so far sent out 65,000 copies of its consultative paper on the document, and is currently fielding more than 30 phone calls a day from anxious employers and worker groups.

Reader Service No 240

'Employers must take early action to ensure their lighting systems are suitable ... or risk unlimited fines'

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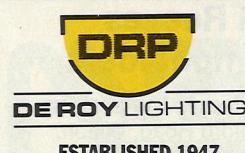
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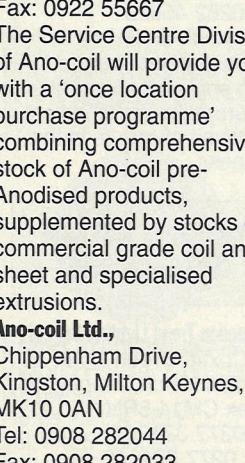
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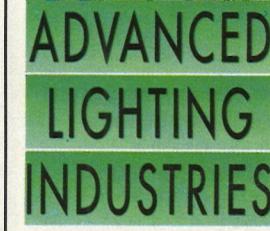
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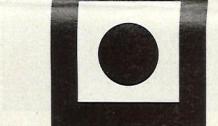
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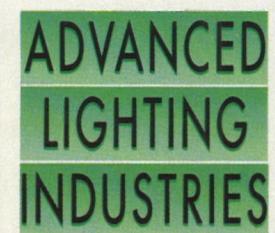
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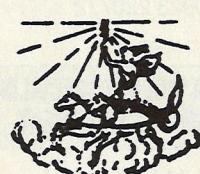
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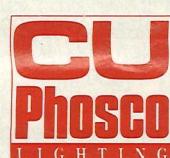
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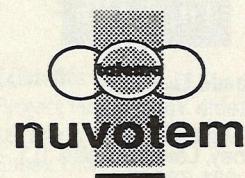
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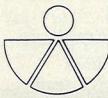
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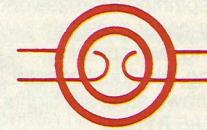
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The position offers all normal benefits and a very competitive salary/bonus package.

Please send your application in writing to:

Louise Abbliss
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18 Tallon Road
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SALES AGENT

High Technology Lighting & Heating Ltd are currently looking for experienced sales agents to further promote their highly successful de Facto range.

Products include a full programme of independently tested LG3 category luminaires meeting the latest E.C. V.D.U. environment directives.

Please reply in writing, together with C.V. to:

The Managing Director,
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Due to the rapid expansion of our lighting divisions and their associated companies, we are now seeking experienced engineers for Manchester, Birmingham, Sheffield & Nottingham areas. We are looking for the best, in return we offer first class prospects and salary package.

Please reply to: The Marketing Manager, Tamlite Lighting

Pipers Road,
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A young experienced Production Manager is required for an ambitious Company in the low energy lighting industry. Applicants would ideally have an Electrical/Mechanical Engineering degree or equivalent qualification and have worked in the industry. The position will be responsible for the overall production facility, a staff of 20, the sourcing, ordering and storing of supplies and maximising the efficiency of the plant. The successful applicant would be expected to make a significant contribution to the Management team and the development of new and existing products.

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BOX NUMBER 1544, LIGHTING EQUIPMENT NEWS,
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We are currently looking to establish a limited number of specialist lighting distributors to promote an extensive, quality lighting range.

Distributors should have an active salesforce, to be fully supported by our marketing and technical departments.

Products particularly suitable for commercial and retail applications.

Full photometrics available.

Please reply in writing to:

Box number 1543, Lighting Equipment News, Maclean Hunter House, Chalk Lane, Cockfosters Road, Barnet, Herts EN4 0BU



LIGHTING DESIGN ENGINEER

JSB Mains Lighting

JSB Electrical's newest division is looking for an experienced Lighting Products Designer.

Experienced in the design of fluorescent and discharge lighting fittings the successful candidate will have experience in producing design drawings from initial concept through to manufacture.

They will be tasked with expanding and developing the existing range of products and producing designs for special fittings.

A thorough knowledge of BS4533 and the CIBSE Lighting Codes is essential and ideally the candidate should have experience of designing interior and exterior lighting schemes to clients requirements.

Experience in working in a BS5750 Quality environment is desirable, but not essential.

If you think you fit the bill and want to join a forward looking team at JSB then send a full CV to:

Personnel Manager
JSB Electrical plc
Manor Lane • Holmes Chapel
Crewe, Cheshire • CW4 8AB
Telephone: 0477 37773

JSB Electrical plc

Lighting Equipment News, February 1993



Ano-Coil Limited has recently moved to their new factory and Headquarters at Kingston, Milton Keynes as part of their expansion programme and are now looking to recruit a new member for their sales team.

TECHNICAL SALES MANAGER

An excellent opportunity exists for an individual with a strong sales and technical background in the lighting – OEM industries.

The successful candidate will have the responsibility for the development of the company's sales to specifiers and manufacturers in the UK and will be responsible to the Sales & Marketing Director.

The package will include a good basic salary plus an incentive scheme, 2 Litre car, pension and medical scheme.

Please apply in writing, enclosing a copy of your CV to:

Mrs D J Chick
Company Secretary
Ano-Coil Limited
Chippenham Drive
Kingston
Milton Keynes
MK10 0AN

National Sales and Marketing Manager

Electrical/Lighting Industry

The Company, which is part of a major British Group, has an extensive range of prestigious agencies covering a wide variety of lighting and electrical products and has an outstanding reputation in the Irish marketplace. Reporting to the Managing Director, the role will primarily focus on business development, expanding market share and formulating and implementing the future marketing and sales strategy for a top range product portfolio.

The requirement is for a sales/marketing specialist, probably aged 30/40, who can demonstrate a proven record of success within the lighting/electrical sectors or a closely related industry. A third level qualification in

electrical engineering would be an additional advantage. Essentially, the company needs a determined, innovative, self motivated individual with the confidence, inter-personal skills, presentation and approach to achieve credibility in a highly competitive marketplace and the capacity to contribute meaningfully to the overall development of the business. The remuneration package, which includes a company car, will reflect the skills and experience of the successful candidate and will be discussed at interview.

Please write, stating how you meet the requirements, to D.M. Hand, MSL International, Newmount House, 22-24 Lower Mount Street, Dublin 2, quoting reference LEN86025.

MSL International
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Concord Lighting is innovative, design-conscious and technically advanced. With a host of prestigious clients, we are a leading and highly successful international supplier of sophisticated lighting products for both architectural and commercial applications.

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Attractive Salary

The diversity of both our product range and skills base makes us the first choice for special designs - whatever the brief. Your role will be to augment our existing design team, bringing your conceptual thinking and flair to some of the most interesting projects in the lighting industry.

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You will enjoy an attractive salary and excellent level of benefits including company pension scheme. More importantly, you will find that our business will give you the opportunity to use your talents to the full.

Please send a full CV, quoting reference 505, to Andrew Brown, Human Resources Manager, Concord Lighting Ltd., Avis Way, Newhaven, East Sussex BN9 0ED. Or telephone for an application form on Newhaven (0273) 515811 (office hours) or Newhaven (0273) 512812 (24 hour answerphone).

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Our linear systems light many interesting places and are backed by BS 5750 Part 2.

We would like to appoint two Independent Electrical Distributors-one in the Nottingham area and one in East Anglia.

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Excellent commissions enabling high potential earnings

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Established British based specialist niche Lighting Manufacturer requires experienced sales representatives to promote new and exciting range already successfully launched in England.

All applicants should have proven contacts with Architects, Specifiers and local Authorities.

Please apply in writing with full CV and past results to:

Box no. 1546,
Lighting Equipment News, Maclean Hunter House,
Chalk Lane, Cockfosters Road, Barnet, Herts EN4 0BU.

SALES AGENTS

U.K. Distributor of a leading Italian Manufacturer of modern desk, floor and wall lights seeks agents for various areas of U.K. to promote sales to retailers, wholesalers, Architects and specifiers.

Contact: Ian Beards: Ambience, 273 Brighton Road, Sutton, Surrey, SM2 5SU Fax 081 642 1140

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Hilclare plc, a manufacturer of Industrial/Security lighting, Fire alarm and Burglar alarm equipment, require the services of two sales agents to operate in the Midland region, calling exclusively on Electrical wholesale outlets.

Please phone/fax or write to the address below, directing your response to either Keith Haydock or Shirley Hill.

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PLC

Dark Lane, Ardwick
Manchester, M12 6FA
061 274 3626
FAX: 061 274 3731

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Established Company having the resources of a major Group are rapidly expanding their UK Sales coverage and wish to recruit experienced Sales Professionals to promote the sales of Planned Lighting Maintenance, Lighting Refurbishment and Electrical Appliance Testing. Candidates ideally will be aged between 25-40, have a successful sales career pattern today, with experience in selling lighting maintenance services to retail, commercial and industrial sectors, with full knowledge of energy management aspects of lighting.

This is an exciting opportunity for enthusiastic, self motivated sales persons to expand their career with a large Group Company. An attractive salary plus commission will be paid, together with a car and usual large company benefits.

*Full CV, including earnings, in strict confidence to:
Sales Director, The Lighting Maintenance Company, Sovereign House,
2 Sovereign Park, Coronation Road, Park Royal, London NW10 7QP*

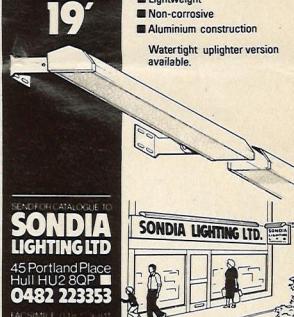
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The 'TYPE 19'



Sondia Lighting Ltd, Hull, light fitting manufacturers and sub contract sheet metalworkers have developed two sign illuminating products. The Type 18 weatherproof fluorescent uplighter and more recently the Type 19 which is proving very popular as a low cost continuous length aluminium downlighter: circle 91

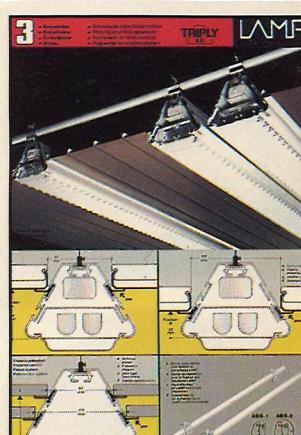
OUR FAX NO: 081-441 1361



Minolta is a world leader for the supply of light meters to measure the Luminance, Illuminance, Colour Temperature and Chromaticity of a whole variety of lamps and luminaires. All our meters have digital readout, are extremely portable and most will link to a data processor or logger: circle 92

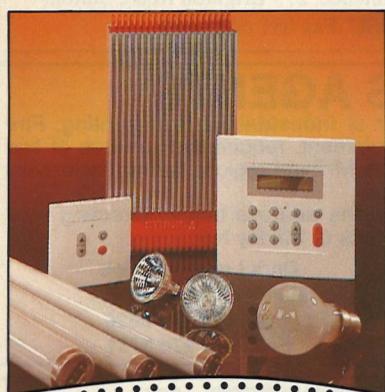


Rencol introduce Select-A-Size a new range of self assembly thumbscrew knobs. Unlimited uses, giving versatility without compromising quality. Easy to store, they can be used anywhere – particularly suitable for smaller production runs, R&D and general maintenance and repair. Three head shapes in seven sizes from 9.6mm to 45mm – three different colours and a choice of socket screw sizes from M3 to M10: circle 93



Triply: Versatile triangular can be fitted side by side, 1-up/2-down or recessed as shown, forming part of the ceiling, ideal compliment to slatted ceilings, as these units are all extruded aluminium profiles with continuous run of metal baffles, plain or perforated, with no blanks in between. All rail colourways: circle 94

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



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Tel: 0249 443422 Fax: 0249 443315

Reader Service No. 33

IMAGINE 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** for technical excellence.

IMAGINE 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.

IMAGINE a system with a 45kW capacity, where the control circuitry is just **two 12v wires**.

Studio 3 is all you've ever imagined.

Studio 3
SCENE SETTING PROGRAMMABLE
LIGHTING CONTROLS



luminaires from JSB's Brass Collection.

The hotel is a Grade II listed building on bank of the Irwell. Situated close to the Granada Studios Tour, it has impressive conference facilities and a subtle television theme running throughout. The lighting fittings installed conform to the relevant British Standards as well as enhancing the interior of the hotel.

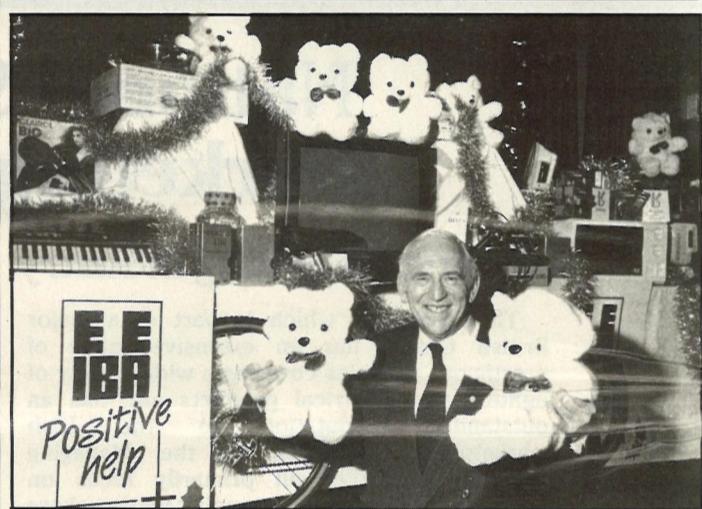
Reader Service No. 250

Emergency brass

JSB Electrical Ltd fought off stiff competition to supply emergency

lighting to the newly opened Victoria and Albert Hotel in Manchester.

Hotel owners Granada Group plc, in conjunction with electrical contractors Rashleigh Phipps, selected a range of emergency



Festive fundraising

Well over £2,000 was raised for charity at a Christmas luncheon organised by one of the regional branches of the Electrical and Electronics Industries Benevolent Association (EEIBA).

The grand tombola was the main fundraising attraction at the annual event organised by the Merseyside, Cheshire and North

Wales Branch of the EEIBA. Many companies provided an array of quality prizes for the lucky winners.

The money raised brings the annual total raised in the region by the charity to £25,000. The EEIBA raises funds for the less fortunate in the electrical and electronics industry.

Wholesaler's update

The Electrical Wholesalers' Federation has launched the 13th edition of its Installation Materials Standard Wholesale Catalogue IMC13.

The latest edition, improved and updated since the 1991-2 edition, provides detailed information on the products of over 70 manufacturers. It also includes a 50 page section giving the latest

technical information on product categories and incorporates a new section covering legal matters.

Over 30 electrical distributors have subscribed to the new catalogue and will be distributing it under their own personalised covers to trade customers nationwide. The number of copies published totals 50,000.

Reader Service No. 251

LIGS takes on the weather

The Lighting Industry Golf Society's 1992 Christmas Meeting took place at the RAC Woodcote Park Golf Club. 30 members and their guests battled away in driving rain for the coveted prize - the Lighting Equipment News Christmas Cup.

Taking the honours were: Tony Smith and Kengi Kamati (1st);

John Baron and G Cullen (2nd); and B Harvey and J Greenaway (3rd).

Captain Gordon Sugden introduced this year's captain, George Yendall, who will formally take over on the 9th of this month after the LIGS AGM, which will be held at the RAF Club, Green Park, London.

IN YOUR NEXT ISSUE

Everything from street lighting to passenger termini will be covered by our extensive feature on lighting for transport. Through a num-

ber of case studies we will be looking at lighting for almost every conceivable way of getting from A to B.