



*GE Lighting*

Dialog 2

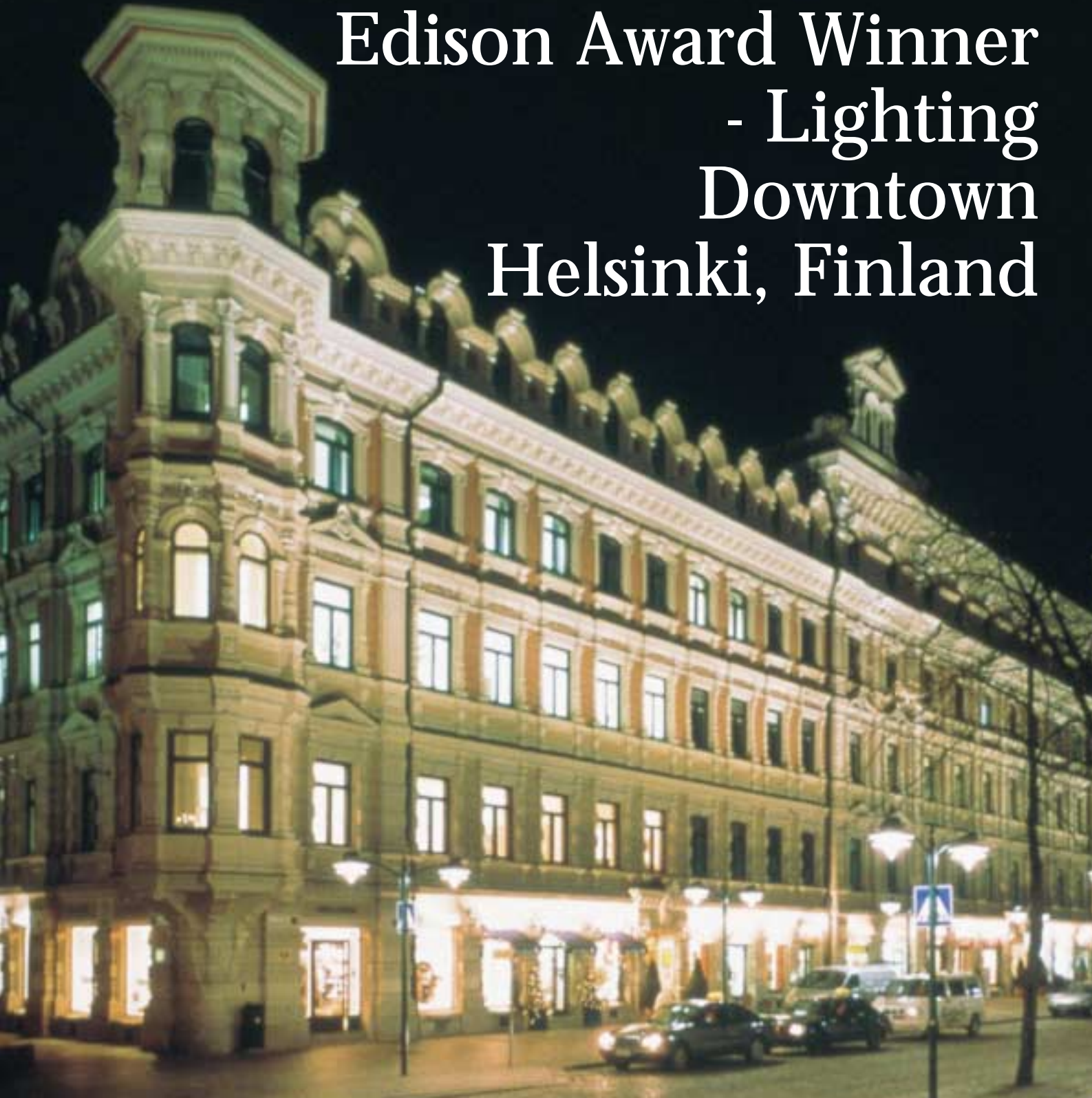
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# Edison Award Winner - Lighting Downtown Helsinki, Finland



# Introduction



Firstly, we would like to thank you for the encouraging feedback you have given us on Dialog 1. We hope that you will find more items of interest in our second newsletter.

The final results of the Edison Award and the Biax™ 2D™ Competition winners have demonstrated the momentum of innovative and creative lighting design across Europe. For the first time Europe has achieved success through projects such as city beautification in Helsinki and the historic revival in Chambord. The show must go on and we are convinced that our partnership with ELDA (European Lighting Designers' Association) will illustrate again GE Lighting's commitment to accelerating the development of new lighting concepts.

As a new medium the Internet is increasing its presence and is giving us more opportunities to illustrate the benefits of lighting. The new design and additional tools we are implementing on the web are now bringing us powerful material to support lighting development from the end user to the industry professional. As demonstrated at Light + Building 2000 in Frankfurt, the e-Experience will promote **growth and productivity with our partners.**

As a manufacturing company GE Lighting is focusing on two main areas. New product introductions with the launch of Starcoat™ T5 linear fluorescent lamps, an extended range of ConstantColor™ CMH lamps for exterior applications and a new 20 Watt mini, the Biax™ 2D™ Integral and many other innovations.

We have improved environmental protection with all new products and packaging, and our environmental policy has been rewarded with ISO 14001 certification and the "1999 Ally Award" in the United States.



Barbara Philipp-Borra

Vice President Marketing Europe Middle East Africa and India



Several members of ELDA visited the US and also enjoyed the Award Dinner.

## Annual Edison Award

The Annual Edison Award was presented this year at the magnificent Windows on the World restaurant in the One World Trade Center in New York.

A huge number of entries from all over the world flooded in for this year's event making it one of the largest in its history.

A prestigious panel of five judges selected this year's winner for its superiority in six judging categories: functional excellence; architectural compatibility; effective use of state-of-the-art lighting products and techniques; energy and cost effectiveness; and good colour, form and texture revelation. Ross De Alessi, Eero Metso and Erkki Rousku were announced as the winners and their work is featured in more detail on the next page. Our congratulations and thanks go to everyone who entered and took part in the competition. This year's winner was a European application and perhaps we may even have a European winner for next year?

Forms for this year's competition can be ordered from [Adrian.Kitching@lighting.ge.com](mailto:Adrian.Kitching@lighting.ge.com)





# Prestigious GE Edison Award granted to Lighting Design in Downtown Helsinki

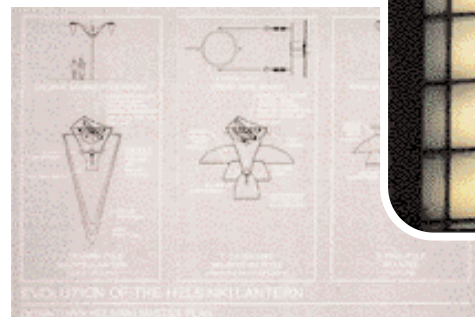
The beauty of the Esplanade and side streets in downtown Helsinki can now be enjoyed in a whole new light...thanks to the efforts of lighting designer Ross De Alessi, Eero Metso of Helsinki Energy and architect Erkki Rousku.

The integration of a new specially-designed, state-of-the-art lighting system with the exquisite architecture of the city has produced a flawless and dramatic effect – earning the team the prestigious 1999 GE Edison Award for excellence in lighting design.

Helsinki, well known for its neo-classic façades, is one of nine cities sharing the honour of “European Cultural Capital of 2000.” The goal of this lighting project was to rid the streets of visual clutter, such as poles, trusses and crosswires; improve visual clarity and acuity; and integrate the façade and area lighting into one system.



Ross De Alessi enjoying the celebrations at the Windows on the World restaurant on the 107th floor of the One World Trade Center New York.



To achieve the desired effect and adhere to Helsinki’s stringent lighting regulations, a systematic plan was developed. Now double head custom poles and luminaires line the Esplanade’s surrounding streets over a combined distance of 1.2 km. Crisp, white light, produced by GE’s ConstantColor™ CMH (Ceramic Metal Halide) lamps, was incorporated into the design to replace the more subdued light output offered by the original high pressure sodium system. State-of-the-art luminaires were also used to provide unique uplighting to the trees surrounding the buildings. As a result of this superb lighting design the overall goals have been accomplished. Architecture, parks and sidewalks are free of poles, trusses and wire attachments and the system operates with greatly improved efficiency.

# Lighting Applications

## Interview with Mr Javier Martín from Años Luz regarding the lighting of the “Palacio de la Comunidad de Madrid”



**Question:** Based on the Comunidad’s initial request for new lighting what concept did you suggest?

**Javier:** The idea was to try and maintain and enhance the architectural features of the building. We used illumination to emphasise the mouldings and ceilings and also to create a warm atmosphere. The fittings we used were very small and discrete in order to keep them hidden.

**Question:** How did you manage the concept in reality?

**Javier:** The solution was to use groups of small uplighter fittings to project indirect light to obtain warm and soft ambient lighting and to avoid dazzling and harsh lights.

**Question:** Why did you use discharge lamps and specifically ConstantColor™ CMH ceramic metal halide lamps?

**Javier:** We used discharge lamps because maintenance in the rooms had to be kept to a minimum to avoid disruptions and also for security reasons. The fact that this was a new product was one of the reasons for choosing ConstantColor™ CMH lamps and we wanted to offer the Comunidad de Madrid lighting innovation for their most significant installation. We used ceramic metal halide lamps to obtain a constant colour temperature throughout life as it is fundamental to keep the balance of light all over the building.

**Question:** What was the reaction of the Comunidad when you suggested using this new lamp technology?

**Javier:** First of all we did several tests which satisfied us all. The results of the tests were sent to the Technical Office of the “Comunidad de Madrid”, they reviewed and approved the project and after their approval we went ahead.

**Question:** When the project was finished what was the reaction of the Comunidad de Madrid?

**Javier:** The Comunidad was completely satisfied. From the beginning they understood that it was important to have technical advice from a specialist, although at first they were reluctant to incorporate new ideas and products.



But gradually as the work progressed and the results appeared, they were delighted. In addition, another public administration office wants a complete ConstantColor™ CMH lighting project for the front of their main building.

**Question:** Have you talked to the people responsible for the installation maintenance and have they had any problems?

**Javier:** Up to now they have had no problems at all. I have not had direct contact with the people in charge of maintenance, but I talk quite often with the person responsible for all the technical aspects of the building and he is completely satisfied and there are no problems at all with the lamps and fittings.

**Question:** After finishing the project what was the main interest of your colleagues regarding the lighting design?

**Javier:** The biggest interest was in the lighting of this particular building which is different from all the other buildings, it is complicated to illuminate but the results have been a success.

**Question:** This project aside, have you used ceramic metal halide technology for any other lighting design?

**Javier:** Yes, we used this technology on the walls at Pedraza, near Madrid, which were built in the Middle Ages.

**Question:** With the new lamps we are introducing - 4.200°K, PAR 20, PAR 30, etc. - do you think that you will use them in new lighting projects for both exterior and interior lighting?

**Javier:** Yes of course, especially the PAR 20 and PAR 30 lamps. I think these have the best future. When we explain ceramic metal halide technology to our clients they understand the advantage of these lamps immediately.



## Office Lighting

Good lighting **enhances the appearance of an area**, provides a pleasant environment and helps to create the right atmosphere.

Lighting should be **energy efficient** and use the minimum of electricity to produce the required lighting level.

Electric lighting in the office represents a significant cost and the consumption depends on the built-in load and the operating hours.

The built-in load depends on **the illuminance values required** for different visual tasks and these values can be found in international and national standard recommendations.

For a given design illuminance, the built-in load also depends on the lighting equipment (lamps, ballasts, luminaires) the design and maintenance.

**Operating hours** are determined by the frequency of occupancy, available daylight, switching patterns and lighting controls used. Daylight makes an important contribution to lighting levels and may provide sufficient illumination for substantial periods in some offices, avoiding the need to use electric lighting. Daylight in an office building is determined primarily by the type of building and its windows, factors fixed at the design stage of a major refurbishment or a new building.

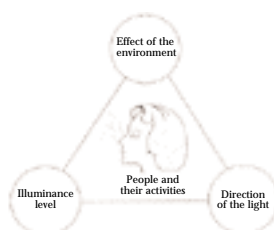
This means that good lighting design for an office building is team work, in which everybody – from the owner and operation manager of the building to the designer, lighting and maintenance experts – should be involved.

There are no universal answers to office lighting, or the lighting of any other work area. It is only possible to provide general guidance to be taken into consideration when designing the lighting of a new or refurbished office. The most important factor is that the lighting should allow employees to carry out their work safely, efficiently and in comfort, without stress or fatigue.



### Basic considerations for lighting designs

In the last decade, offices and workplaces have altered considerably. New styles – open plan and flexible working – have changed many working environments, the number of visual display units has significantly increased and the demand for structural changes in the workplaces is increasing. These new forms also result in the demand for changing traditional lighting.



The principle of office lighting design in the past did not pay enough attention to the quality of light and cannot be used any more. Designs should not only be based on the limiting curves of illuminance and glare, they should also consider:

- illuminance distribution in the area
- contrast distribution
- vertical illuminance distribution
- luminaire positioning – taking into account the visual tasks and the workplace.

To determine basic lighting conditions for administrative staff, computer operators or designers, eyes are the most important “working tool” and lighting is a significant environmental factor. People spend many hours at the office and good basic conditions should be provided.

# The Workplace

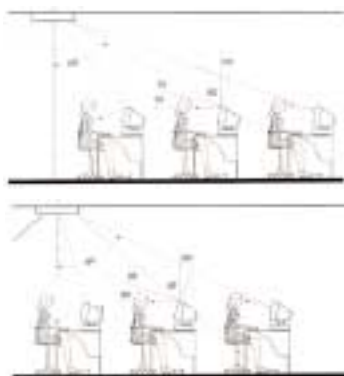
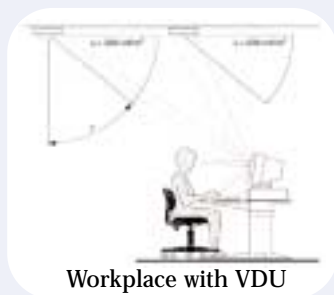
VDUs in the workplace can be classified by whether computers are used continuously or periodically. The difference is evident. In the first case employees who work continuously at VDUs need the most sophisticated lighting design. In the second case employees carry out many other tasks during the course of the day such as meetings or creative activities and therefore the computer is only used for parts of the working day. The lighting design for this kind of workplace would be quite different.



## Areas where VDUs are used continuously

The simplest situation is to put the VDU section of an office in a totally separate area (see diagram below).

When several workstations are arranged in rows, designing appropriate general lighting is a more difficult task.



### Classification of VDU workstations

Limitation of the brightness of the luminaire when monitors are turned  
 a) by 15°  
 b) by 20°

Previously, evenly distributed ceiling mounted luminaires were used for these types of offices (or sometimes “light strips” assembled from high surface luminaires with the louvres installed parallel to the windows). In these cases, depending on the light reflectance properties of the surfaces surrounding the office, illuminance values may often exceed the ratio of 1:10 valid for visual tasks in the office. The following table shows the optimal value of reflections from several parts of an office.

### Optimal values of reflection, illuminance and luminance of the general lighting for several parts of an office

Parts of the area	Reflection L (%)	Illuminance E (%)	Luminance
Workstation	0,8	100	100
Work Environment	0,35	100	40
Walls	0,5	50-80	30
Ceiling	0,7	30-90	30
Furniture	0,3	-	20
Floor	0,2	50-100	25

Even when luminance values measured at the output openings of a louvred luminaire comply with the glare limitation curves (Söllner curves), the ceiling-luminaire contrast can reach inadmissible values for visual tasks.

The colour of the workplace surfaces can affect an employee’s mood and therefore should be considered as an important factor. In summary, to design general office lighting, the integrated effects of space, illuminance level, direction of light and colour should be taken into consideration.

Optimum illuminance levels for visual tasks, according to international recommendations, are as follows:  
 E = 300 lx, 500 lx, but sometimes also 750/1000 lx.

The optimal luminance value depends on the viewing direction:

Eyes directed to	Luminance
1. keyboard	100%
2. screen	Chosen by the employee
3. documents to be read	100%
4. surface of the desk	30%
5. horizontal surfaces dividing the workplaces	10%

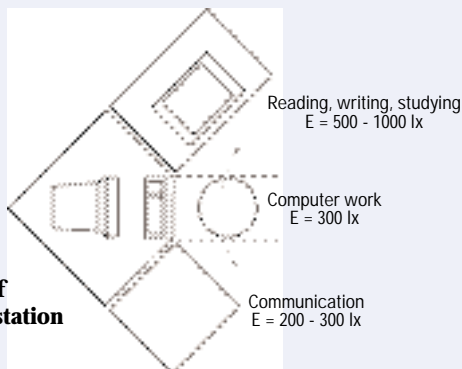
Today, luminaires specially designed for such lighting tasks are available. Directions from luminaire manufacturers should be followed during installation and the layout of the workplace should be taken into consideration.



## Workplaces using VDUs periodically

Tasks to be carried out by employees can be categorised as follows:

- reading, writing, studying
- computer work
- creative work requiring complete concentration
- communication with clients or fellow-workers



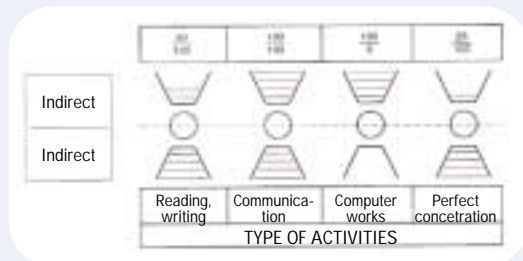
Daylight coming from the left is best for these workstations. Unfortunately daylight does not satisfy all needs and it is not available all the time. Sometimes daylight needs to be partially screened or even shut out. For this purpose shutters or blinds can be used. Horizontal blinds can control indirect daylight and vertical blinds or shutters control direct daylight.

Task lighting in an office should take into account:

- spatial distribution of luminance
- limiting glare
- controlling the effects of light-shadow, emphasising the shape of the space
- providing proper light colour and colour rendering
- providing adequate illuminance levels
- providing other psycho-physiological conditions of visual activities.

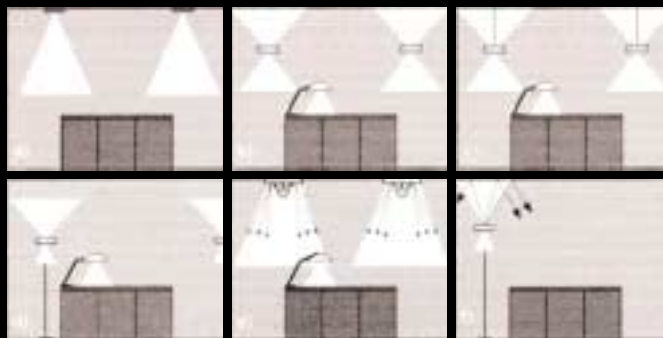
In the case of recommended or prescribed illuminance levels, the visual task needing the highest levels should be the starting point. Illuminance for such visual tasks can reach values of up to 1000 lx. The lighting in all rooms should meet the requirements of the various visual tasks and activities. Illuminance levels will differ depending on the activities performed in the offices.

### Illuminance levels for different visual tasks



The correct arrangement of the workstation is the most important factor (the top diagram shows an ideal example). It can help to provide higher qualitative and quantitative lighting standards and maintain high flexibility. For these applications instead of traditional luminaires, two lamp luminaires should be used which can help to control the direct and indirect components of the illuminance (if these luminaires are appropriate for the visual task).

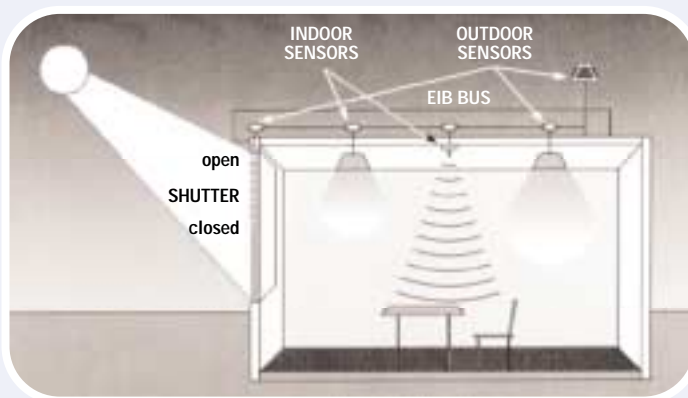
In order to fulfil individual requirements, lighting design will become more and more sophisticated and diversified. The following diagrams show several lighting arrangements which can be used for general and task lighting in the office.



### Basic types of direct and indirect lighting for the workplace

- Direct lighting: luminaires (recessed luminaires with louvres) ceiling mounted
- Direct-indirect lighting: wall mounted luminaires supply task lighting
- Direct-indirect lighting: ceiling suspended luminaires supply task lighting
- Direct-indirect lighting: standard lamps supply task lighting
- Direct-indirect lighting: ceiling mounted luminaires with variable direct illuminance components supply task lighting
- Indirect lighting: standard lamps with decorative indirect illuminance components

By utilising daylight modern control methods can be used to provide economic lighting solutions for offices.



### Programmed control of office lighting utilising daylight

Daylight enters the room through shutters. Opening/closing of the shutters is controlled by sensors. The lighting system also has an indoor sensor which controls the illuminance level of the desk surface and a control and evaluation unit. The outdoor sensor measures the illumination level outside the room. Using this system optimum lighting parameters and considerable energy savings are provided.

## Energy Efficient Lighting in the Office

The most important considerations are:

- Optimise daylight
- Install more efficient lamps: replace 38 mm with 26 mm fluorescent lamps – replace incandescent lamps with compact fluorescent lamps – replace GLS lamps in display lighting with halogen or HID lamps
- Install high-frequency ballasts for fluorescent lamps
- Install more efficient luminaires
- Regular maintenance and cleaning of lamps and luminaires
- Use local lighting to supplement general lighting
- Switch off the light when lighting is not required because space is unoccupied or daylight is adequate and/or install automatic lighting controls

**For example, consider replacing ten 60W GLS lamps with ten 11W Compact Fluorescent lamps:**

	GLS lamp	Compact Fluorescent Lamp
Lamp Power	60W	11W
Lamp Life	1000 hours	12000 hours
Annual Operating Hours	2000 hours	2000 hours
Initial Investment (cost of a lamp)	10 x £0.50 = £5.00	10 x £8.00 = £80.00
Future Investment	11 x 10 x £0.50 = £55.00	0
Annual Electricity Consumption	12000 kWh	2200 kWh
Annual Electricity Costs (0,07 £/kWh)	£504.00	£92.40
Electricity Cost Savings (after 12000 hours)		£411.60
Net Savings		£391.60
Simple Payback		1.22 Years
Present Value PV (10%)		£65.27 x 4.35 = £284.27
Net Present Value NPV (10%)		£284.27 - £80.00 = £204.27

These lamp costs are example prices for the calculation and are not necessarily valid prices.

Calculated using **value\*light™** software.

### GE Polylux XL™, Polylux XLR™ Recyclable and Starcoat™ T5

Three-Band fluorescent lamps  
for General Lighting in  
– Open plan areas  
– Hallways  
– Meeting rooms



- Excellent colour rendering improving visual comfort
- 18% brighter than standard halophosphate tubes
- Up to 20,000 hours - excellent long life extending the time between relamping and increasing installation reliability
- Mercury content of less than 5 mg. Polylux XLR is designed to be more environmentally friendly
- GE Startcoat™ is a smaller and brighter fluorescent lamp. Only 16 mm in diameter the T5 gives greater luminous efficacy - as high as 104 lm/W - 5% higher than conventional triphosphor fluorescent lamps.

### GE Biax™ Compact Fluorescent Lamps including Biax™2D™

for Energy Efficient Lighting in  
– Corridors  
– Stairways  
– Emergency Lighting



- Wide range of 2-Pin and 4-Pin plug-in lamps
- 80% energy saving compared with standard GLS lamps
- Reduced mercury content (< 4 mg) is more environmentally friendly
- Compact fluorescent lamps are available in different shapes, in a range of wattages from 5W to 55W and various colours from extra warm white to cool white light.

### GE ConstantColor™ MR16 Dichroic Mirror Halogen Reflector Lamps

for Accent Lighting in  
– Meeting Rooms  
– Showrooms



- Precise optical control for accent and feature lighting with minimum light spill
- Long service time of up to 6000 hours helping reduce maintenance costs
- UV control to reduce damage to UV sensitive items
- Constant level of light (within 98% throughout life) and excellent colour reproduction
- Evenly lit surfaces for greater impact
- Range of wattages from 20W to 71W available

### GE ConstantColor™ CMH Metal Halide Lamps

for Display Lighting in  
– Receptions  
– Meeting Rooms  
– Showrooms



- Consistent, white light offering lamp to lamp uniformity
- UV control reduces fading or bleaching of lit objects
- Easy installation and retrofit into standard metal halide sockets and most types of fixtures
- Longer life offers reduced maintenance costs
- Up to 20% more efficient than traditional quartz metal halide lamps
- Single ended and double ended, PAR and tubular versions are available



# Lighting News



## Perfect Balance

GE Technologists have employed advanced lamp design, diagnostic tools and process modelling to produce a lamp with incredibly good colour control, reduced early failures, exceptional efficacy and a life of 20,000 hours.

- Improved efficacy reduces electricity and maintenance costs
- Long lamp life reduces lamp replacement costs
- High reliability allows for accurate planning of lamp replacement strategies

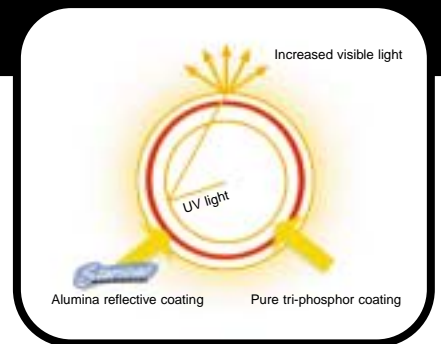
Starcoat™, a proprietary coating technology, eliminates the need for traditional lower quality halo-phosphor coating by reflecting UV light more effectively. This leaves a pure tri-phosphor coating for the best colour rendering and lumen maintenance possible. Starcoat™ T5 lamps have been developed specifically for use on high frequency ballasts.

Continuous ballast/lamp testing ensures GE can guarantee the performance of the lamp on a vast range of control gear used by fixture manufacturers. High frequency operation brings even more benefits to the lighting solution, such as automated dimming, reduced heat generation and flicker free operation.



## Specifically developed for better performance in every application

This summer, GE launches Starcoat™ T5, a comprehensive range of 16mm diameter tri-phosphor fluorescent lamps. These smaller, brighter and more efficient lamps provide fixture designers with opportunities to create slim, elegant luminaires far better suited to meet today's architectural and environmental demands. The lamps are constructed from 38% less glass and phosphor than standard T8 equivalents. Mercury content is tightly controlled to just 5mg.



# Lamp Technical Catalogue

In line with the huge migration of data from paper to electronic formats, GE's lamp data is now available on CD-ROM and the Internet.

Technical data for Compact and Linear Fluorescent, Halogen, and High Intensity Discharge Lamps is now available in an easy to navigate, on-line format. Lamp data is split into clear sections, for example, Lamp Dimensions and Thermal characteristics can be found under the PHYSICAL data tab. Information on a lamps electrical specification may be found under the ELECTRICAL data tab. There is also a section on OPTICAL data which contains spectral diagrams and light distribution curves.

A powerful search engine allows the user to define detailed searches based on a range of wattages, cap type and technology type.

There is also a vast amount of general lamp data including notes on lamp construction, approvals and ballast compatibility.

This initial version is available in German and English.

A full multilingual version will be available later in the year.

This catalogue is an ideal quick reference guide for anyone involved in the use of lamps.

Access the Technical Catalogue via GE Lighting's web site at [GELighting.com](http://GELighting.com).

Alternatively order a copy of the CD ROM by sending an e-mail to [Technical.Catalogue@lighting.ge.com](mailto:Technical.Catalogue@lighting.ge.com)



# Lighting On-line

## New Look and Feel for www.GELighting.com To Promote Improved and Innovative Lighting Solutions

GE Lighting has a new look and feel for its web site. Featuring interactive wizards such as the Product Optimiser for easy identification of the best alternative for innovative and efficient lighting, as part of the Lighting Solution Centre. GE Lighting also offers on-line interactive tools for lighting professionals.

Demonstrated at Light+Building 2000 in Frankfurt, both the Technical Catalogue and Interactive Catalogue allow selection and display of detailed information on GE Lighting products in a user friendly manner.

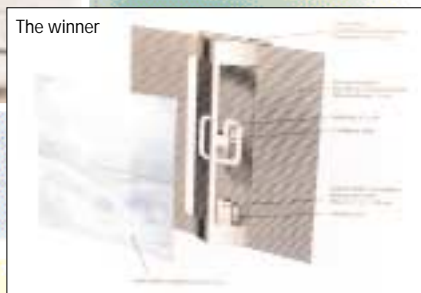
Virtual Home and Virtual Lighting Design tools are available to help understand and visualise the impact of lighting and identify the exact products required.



In addition, www.GELighting.com offers data, general information and training packages for improved service to the lighting industry and with new intuitive navigation.

Keep visiting www.GELighting.com to get the latest information.

## *Biax™ 2D™* LIGHTING FOR THE FUTURE



## GE Lighting's Biax™ 2D™ Design Contest Winners

The Biax™ 2D™ lamp has no other rival for its design, long life and efficiency, and in our Design Contest, professional designers and students were invited to submit detailed design drawings for new fitting concepts which would benefit from the distinctive shape and performance of the 2D lamp.

The contest was run throughout Europe and attracted nearly five hundred entries from fourteen countries. Final judging took place in Brussels with an international panel of designers, fittings manufacturers, journalists and GE Lighting managers. Each national winner received a cash prize of 500 Euros and the three overall winners were taken on an all expenses paid trip to New York which included a visit to the Lightfair exhibition and the Edison Awards dinner.

The winner was Bojan Klancar from Quadrant Design in Slovenia. Bojan's design idea was to emulate natural light flowing through a window. The fitting resembles a window frame and the lamp is concealed in the back – a 2D lamp being extremely thin and square, was the perfect choice.

The two runners up to the competition were also highly commended for their innovative designs. Emmanuel Lidberg, a design student from Malmo, Sweden, created a stylish fitting which allows shelves of light to be integrated into the design of contemporary bars, cafés and restaurants. The second runner up was Yves Evrard, a product designer from France, who presented a simple but striking screen light idea called OSKAR. The judges had a tough job to do and paid tribute to the quality of the other finalists' entries.

This contest has created many Biax™ 2D™ design ideas for fittings manufacturers across Europe.

## Focus on the UK

### Welcome to the UK Section of our Newsletter!



Since I have been involved with the UK team we have seen some great successes with sales and customer development. I have been particularly interested to hear from you, our customers, and I have already met with a great number of you. I look forward to meeting you all over the coming months to show you the exciting new products and tools we have available that will enable you to compete better in the marketplace, and that can help you to grow your own businesses.

Yours sincerely

**Tim Povall**

Managing Director - UK/Ireland/Nordic

### Don't let an accident cause an incident

That's the message with the new Cov-R-Guard™ lamps. These lamps were introduced recently and are a range of fluorescent lamps with extra protection in the form of a virgin polycarbonate sleeving. This will effectively contain glass fragments and phosphors if the lamp is broken at all. They are ideal for a wide range of industries including food service and processing, healthcare, groceries and restaurant sectors.



### Roll up for the Magical Mystery Tour.... ...Of our exciting new tool for Distributors



GE Lighting has just made available its Customer Web Centre especially for distributors.

It contains a host of value added tools that will make your life easier plus will also give you time to spend growing your business and not just managing it.

The web site is fast to download and contains really easy to use software that allows you to dial in and check the progress of any order you have placed with GE. Even out of office hours !

You can add items to your order on line when it is convenient to you.

The site also contains an interactive catalogue with all our products, this has images and text to help you find the right lamp (and deal with cross references).



**value\*light** is a tool to help with economic data analysis and basically allows you to compare the running costs of different light sources.

Visit GELightNet via our web site to join or please call Debbie Appleton on 020 8626 8500 to arrange for a local demonstration.



## New Products

### CovRGuard™

GE Lighting have launched a new range of fluorescent lamps that offer exceptional performance and versatility, combined with superior shatter protection. Cov-R-Guard™ lamps are wrapped in a casing of polycarbonate plastic that effectively contains glass fragments and phosphors if the lamp is broken. The casing allows for maximum protection with minimum light loss - keeping installations bright and safe.



### ConstantColor™ CMH

The new range of ConstantColor™ CMH ceramic metal halide lamps in both elliptical and tubular formats have been designed to provide the best alternative for city beautification and decorative exterior lighting. These lamps fit existing quartz metal halide and high pressure sodium sockets and fittings. As with the rest of the ConstantColor™ CMH range they offer crisp and vibrant white light, excellent colour rendering up to 90 Ra and two colours for flexible lighting solutions.



USA

[www.GELighting.com](http://www.GELighting.com)

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