

mondo ^{arc}

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The Core: Great and Green Lighting Design

LIGHTING CONTROL • LIGHTING DESIGN TOOLS • ARC 06 PREVIEW



arc

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* front cover picture: the core @ the eden project, cornwall by adam parker



Welcome to the ARC 06 edition of mondo*arc, our biggest yet. I'm particularly pleased to be able to show you the result of Minds eye's work at The Core at The Eden Project in Cornwall. I managed to make the long trek from Manchester to St Austell just before Christmas for my first visit to the site. I was blown away. The scale and philosophy of what they are trying to do there is to be congratulated and the addition of The Core will be a valuable asset. The lighting of The Core unearthed a number of interesting questions when Minds eye were asked, in the true spirit of The Eden Project, to establish the sustainability of lighting products that were to be used. In response, Minds eye drafted a questionnaire for prospective manufacturers to establishment their commitment to sustainability issues. The results were disappointing to say the

least. Only a handful of manufacturers looked beyond the obvious (energy saving and recycling) to tackle issues such as packaging, transportation, handling of waste materials and traceability of materials. Funnily enough, the companies who knew what they were talking about with regards to these latter points, got the job. Certainly something for a lot of manufacturers to think about. If you are reading this before February 13th when ARC 06 begins then I urge you to attend if you can, so you can see for yourselves the improvements we have made since ARC 05. As well as a number of high quality participants such as Louis Poulsen, Trilux, Sill, Whitegoods, Mike Stoane, Fagerhult, ERCO, Philips, GE and Microlights, there will be a number of fascinating features that gives extra value for your lucre (not

that you have to pay to get in, anyway). We're delighted to have Speirs and Major's brilliant 'Made of Light' exhibition on display as well as New London Architecture's 'London Lights' photographic exhibition which will be held in the ERCO Gallery on the main showfloor. Other educational features include the Lighting Designers Gallery and a comprehensive lighting seminar programme (many of which are RIBA CPD accredited). For a bit of fun we have also secured the presence of the winner of the Fagerhult Cow Parade competition before it has to be whisked away to join the herd. And for those of you that can't bear to be away from the web, there will also be a free internet area sponsored by LightingDirectory.com. I look forward to seeing you there!
Paul James


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DAIMLERCHRYSLER HQ, MILTON KEYNES

One of the factors in the stunning success of DaimlerChrysler's main UK headquarters in Milton Keynes is the bright, elegant and modern lighting solution that works harmoniously with the clean and open nature of the new building. Mechanical and electrical design consultants and project managers Building Services Design (BSD) have created an inviting new reception, vehicle show-room and office block that unites perfectly with the existing buildings around it.

DaimlerChrysler UK is responsible for the import, marketing and sales in the UK of Mercedes-Benz passenger cars, vans and trucks, the Maybach luxury saloon, the Dodge, Chrysler and Jeep ranges of vehicles, and of the innovative and iconic smart car product range. The headquarters site at Milton Keynes comprises offices and general staff facilities, a training centre, a vehicle delivery centre and the main parts distribution hub for the UK, delivering more than 20,000 vehicle parts every day for distribution throughout each brand's retail dealer network.

In 2004 BSD were appointed by DaimlerChrysler to act as client's agent and mechanical and electrical designers for the construction of a new building, to link existing offices and provide a new focal point for visitors to the site. As well as being the main reception location for the whole site, the new building was to include open plan vehicle display areas, meeting rooms, a coffee shop, open plan office areas and new office and boardroom suite for the CEO and his staff. The building has an internal area of approximately 3000sqm spread over three floors, and a height

of 11.5 metres.

BSD captured the true essence of the Client's brief for the building which was to incorporate as much natural daylight as possible, to act as a beacon for visitors entering the large main car park of the site, and to provide physical links between the two existing adjacent buildings to encourage the social interaction of the various departments and group business entities based on the site. BSD demonstrated their design concepts with computer generated 3D walkthroughs to the DaimlerChrysler board. This revealed how the planned



(right) Discreet yet powerful metal halide Holophane Prismatron high bay luminaires provide actual working plane illumination. These are supplemented by Trilux suspended pendants (left) Encapsulite sticklights are used in the corridors (far left) Trilux 3x26W fluorescent TCD luminaires in general areas complement the suspended pendant luminaires in the surrounding full height spaces

J A P A N E S E

Milton KeynesにあるDaimlerChryslerのイギリス本社ビルが素晴らしい成功を収めている要因のひとつは、新しい建物のクリーンで開放的な雰囲気、明るく、エレガントでモダンな照明がうまく調和していることである。

機械・電気関係のデザイン・コンサルタントであり、プロジェクト・マネージャーでもあるBuilding Services Design (BSD)が、感じの良い新しい受付、車のショー・ルーム、そして周囲を取り巻く既存の建物と完璧に一体化するオフィス・スペースを創り上げた。

2004年にBSDは、DaimlerChrysler社により、顧客エージェントとして、また既存のビルにつながる、訪問客にとって活動の新たな焦点となる新しいビルの建設における、機械・電気関係のデザイナーとして任命された。BSDは、Milton Keynesの敷地内にある同社の様々な施設の景観をつなげるというDaimlerChrysler社の指示に添って、現代的でダイナミックな空間を完成させ、

C H I N E S E

2005年9月のオープン以来、社員にも訪問客にも非常に好評を得ている。建物は、Milton Keynes敷地内における明確な活動の中心部となっており、ビル内の照明システムも、うまくデザインされ、控えめでありながら効率が高い。

C H I N E S E

DaimlerChryslerのMilton Keynes英国总部获得巨大成功，其原因之一是新建建筑明亮、优雅、现代化的照明方案与周围清洁开放的环境浑然天成，和谐统一。建筑设备设计 (BSD) 的机械与电气设计顾问和项目经理创造了与周围的现有建筑完美结合的漂亮的新接待区、汽车展厅和写字楼。

2004年，由DaimlerChrysler指定的BSD作为客户代理人和新大楼建设的机械与电气设计师，使新大楼与现有的写字楼相连接，

为现场来访者提供了新的视觉焦点。BSD为DaimlerChrysler提供了一个现代、动态的空间，满足了驻Milton Keynes机构各部门之间便捷联络的需要。自2005年9月开放以来，它受到了员工和来访者的广泛认可。这栋大楼为Milton Keynes提供了一道亮丽的风景线，其内部灯光系统设计巧妙、朴实无华，并且效率很高。

F R A N Ç A I S

L'un des facteurs qui ont conduit à l'extraordinaire succès du principal siège de DaimlerChrysler du Royaume-Uni, situé à Milton Keynes, est la solution élégante et moderne d'éclairage qui s'allie de façon harmonieuse au style ouvert et net du nouveau bâtiment. Building Services Design (BSD), consultant en conception mécanique et électrique et directeur de projet, a créé une nouvelle réception

attractive, une salle d'exposition des véhicules et un immeuble de bureaux s'intégrant tous parfaitement aux bâtiments existants. En 2004 DaimlerChrysler a offert à BSD les fonctions de représentant du client et de concepteur mécanique et électrique chargé de la construction d'un nouveau bâtiment qui servirait de liaison avec les bureaux existants et constituerait un nouveau point de convergence pour les visiteurs. BSD a créé pour DaimlerChrysler un espace contemporain et dynamique qui a rempli sa mission d'unir les divers aspects du site de Milton Keynes et a été extrêmement bien reçu tant par le personnel que par les visiteurs depuis son ouverture en septembre 2005. Le bâtiment constitue un vrai point central sur le site et ses systèmes d'éclairage sont bien conçus, discrets et efficaces.



PICS: CRAIG JACKSON, EXPOSURE

DEUTSCH

Einer der Faktoren für die enorme Popularität der kürzlich eröffneten britischen Zentrale von DaimlerChrysler in Milton Keynes ist ihre helle, elegante und moderne Beleuchtung, die hervorragend mit dem klaren, offenen Charakter des neuen Gebäudes harmonisiert. Die für das mechanische und elektrische Design sowie das Projektmanagement zuständige Firma Building Services Design (BSD) hat einen freundlichen neuen Empfangsbereich, einen Ausstellungsraum und ein Bürohaus geschaffen, die sich perfekt in die bestehende Gebäudeumgebung einpassen. BSD war 2004 von DaimlerChrysler mit Agenturfunktionen und dem mechanischen und elektrischen Design der neuen Zentrale betraut worden, die die bestehenden Gebäude verbinden und einen neuen Mittelpunkt für Besucher der DaimlerChrysler-Niederlassung schaffen sollten. BSD lieferte DaimlerChrysler ein zeitgenössisches, dynamisches Raumkonzept, das den Vorgaben entsprechend die verschiedenen am Standort

Milton Keynes vertretenen Organisationsbereiche miteinander verbindet. Die Eröffnung fand vergangenen September statt, und das Echo seitens der Mitarbeiter und Besucher war ausgesprochen positiv. Das Gebäude bildet einen klaren Mittelpunkt des Standorts in Milton Keynes, und die Beleuchtungssysteme sind gut durchdacht, unaufdringlich und effizient.

ITALIANO

Gli strumenti per il lighting design sono cambiati e migliorati costantemente nel corso del tempo e ora consentono al lighting designer di presentare la propria visione in modo semplice, comprensibile al cliente. Vale forse la pena ricordare quante cose siano cambiate dall'avvento della luce elettrica e quante possibilità e tecnologie sono state sviluppate per la creazione della luce in uno spazio. Così come dalle candele si è passati a installazioni luminose contemporanee, dinamiche e multicolori, gli strumenti per il lighting design hanno subito uno sviluppo comparabile: dai semplici schizzi a mano

e considerazioni geometriche sull'incidenza della luce all'utilizzo di modelli virtuali tridimensionali che fanno ricorso a dati luminosi fotometricamente corretti.

Due principi di modelli sono comparabili: prima di tutto, la rappresentazione delle idee dell'artista o del lighting designer sotto forma di schizzi manuali, immagini bi- o tridimensionali generate tramite computer, o film e, in secondo luogo, previsioni fisicamente corrette tramite simulazioni numeriche e calcoli, in combinazione con dati fotometrici, per creare un modello accurato della distribuzione della luce diurna e di quella artificiale.

ESPAÑOL

Las herramientas de diseño de iluminación cambian y mejoran constantemente con el paso del tiempo, y ahora permiten a los diseñadores presentar sus ideas de forma que faciliten la comprensión del concepto por parte del cliente. Merece la pena reflexionar sobre todo lo que ha cambiado desde la invención de la luz eléctrica y las numerosas posi-

bilidades y tecnologías que han surgido para crear luz en un espacio. Paralelamente a la evolución desde el uso de velas hasta las instalaciones de luz contemporáneas y dinámicas con cambios de color, las herramientas de diseño de iluminación han sufrido una evolución comparable al desarrollo a partir de sencillos dibujos a mano y consideraciones geométricas relativas a la incidencia de la luz, hasta el uso de modelos virtuales tridimensionales, gracias a unos datos de iluminación fotométricamente correctos.

Básicamente, se pueden comparar dos principios de modelos: en primer lugar, las representaciones de las ideas del diseñador de iluminación o del artista en forma de dibujos a mano, imágenes o películas bi o tridimensionales generadas por ordenador; y, en segundo lugar, predicciones físicamente correctas que utilizan simulaciones y cálculos numéricos en combinación con datos fotométricos para reproducir con precisión la distribución de la luz natural y artificial.



A Trilux T-200 track network was specified for the single height areas. All product sourcing and supply was provided by Storm Lighting Solutions

building was to meet the brief in various ways. Lighting concepts and storyboards were also produced by BSD to explain each stage of the design development.

The building is fully comfort cooled to cater for up to 1000 people, yet still complies with the UK's stringent carbon emission energy efficiency regulations. To aid this compliance the majority of the lighting is provided with daylight monitoring and presence detection control systems to maximise energy efficiency.

The concepts behind the lighting design for the ground floor full height display areas is twofold – to provide discreet yet powerful metal halide high bay luminaires mounted at roof level to provide the actual working plane illumination, supplemented by suspended feature pendant luminaires that appear to be providing all of the actual illumination to the space. Emergency illumination is provided via separate halogen lamps within the highbay luminaires.

The high bay luminaires are manufactured by Holophane, from their PrismaTron range. The glass reflector's prism arrangements closely control the distribution of the light downwards, to minimise nuisance glare from the luminaires to surrounding office areas. This was a critical factor because of the need to avoid distractions to occupants of the upper floors of the building, which all have full height glass walls looking onto the areas lit by the Holophane luminaires. A small amount of light passes directly upward through the prism reflectors of the luminaires to create a wash of light on the ceiling above. The Holophane fittings are controlled in pairs by dimmable ballast units, linked to daylight reading photocells so as to maintain a minimum illumination of 300 lux at ground level. As the Holophane luminaires are effectively self-cleaning, maintenance has been reduced to lamp changes only to minimise health and safety concerns resulting from the 11 metre mounting height of the fittings.

The feature suspended pendants were provided by Trilux, from their TCD range. These were chosen for their clean lines and bright mirrored chrome finish which works well with the chrome details on the vehicles being displayed. The mounting heights of the pendant and all other luminaires in the full height display areas have been closely coordinated with the Mercedes-Benz range of commercial vehicles, to ensure adequate clearance above the cabs of trucks and similar when they are moved and displayed within the space.

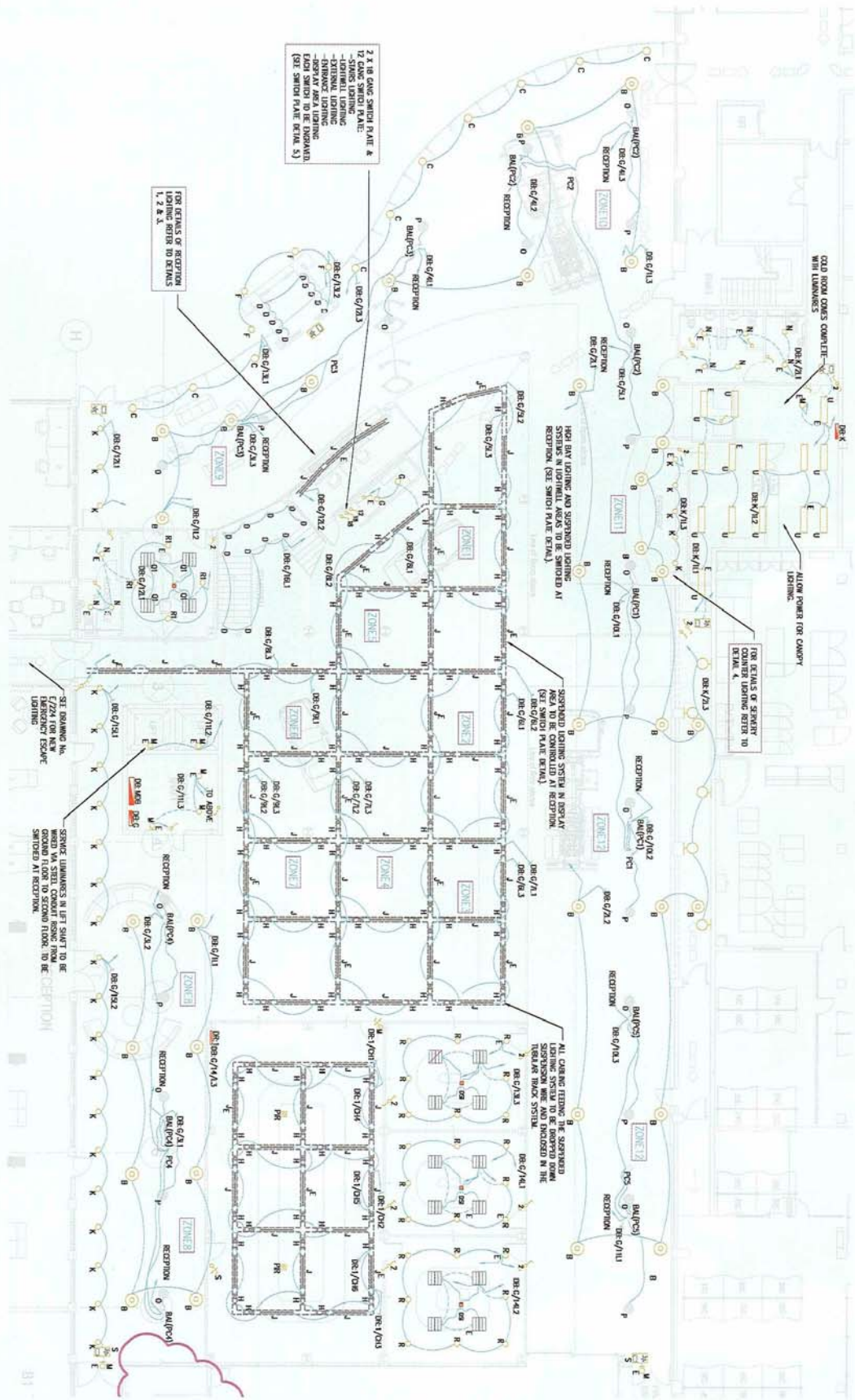
Within the remaining single height display areas of the ground floor the client's brief was that the space would primarily for vehicle display, with occasional use for large meetings or presentations. This called for the lighting to be able to provide strong accent lighting so as to brightly light display vehicles, as well as providing even general illumination for other times and uses. To achieve both of these requirements a Trilux T-200 lighting track net-

work was specified, containing two separately switched lighting systems. When the space is used as a vehicle showroom linear T5 fluorescent tubes within each section of the track are illuminated to provide general up and down light components, as well as 70W metal halide directional spotlights to provide specific spotlighting on the details of the vehicles. When the space is used for meetings and presentations, only the linear fluorescent up and down light sections of the track are used to provide even background illumination. Again, the setting out and mounting heights of the luminaires were closely coordinated with the DaimlerChrysler vehicle range so that the tailgates of vehicles could be safely opened without damaging the lighting track or luminaires. The glass front façade of the building is illuminated by buried 150W metal halide luminaires, from Holophane's Hydrel range. The uplights have been installed along the curve of the façade, set out evenly between the supporting 'fins' of the

LIGHTING SCHEME DIAGRAM BY BSD

LEGEND

- A** PENDANT UP/DOWNLIGHT C/W
3x25W TCD LAMPS
*TRILUX 5393N PS6/TC026.
- B** PENDANT DOWNLIGHT C/W
3x25W TCD LAMPS & WIRE SUSPENSION KIT
*TRILUX 5393PS/TC026 & 05390SN
SUSPENSION KIT & 05390K BACK COVER TRIM.
- C** HYDREL RECESSED IN-GROUND UPLIGHTER C/W CLEAR
150W METAL HALIDE T-6012 BASE. BLUE LIGHT SOURCE.
*HOLOPHANE M9700 150MT6FL.
- D** BURIED LED UPLIGHTER C/W 4 BLUE LED'S & FLOOR
FIXTURE AS 'ARES' 027527 & 19 BASE.
- E** DENOTES LUMINAIRE C/W 3 HOUR EMERGENCY FACILITY.
- F** HYDREL RECESSED IN-GROUND UPLIGHTER C/W CLEAR
150W METAL HALIDE T-6012 BASE. WHITE LIGHT SOURCE.
*HOLOPHANE M9700 150MT6FL.
- G** SURFACE MOUNTED BUKHEAD LUMINAIRE C/W 28W 2D
LAMP. ASD AP/MP728U5.
- H** TRACK MOUNTED 70W METAL HALIDE SPOTLIGHT C/W
GLASS CERAMIC COVER.
*TRILUX 5951 HO/HIT 70
- I** TRACK MOUNTED LINEAR FLUORESCENT UP/DOWN LIGHT
LUMINAIRE C/W 2x35W T5 LAMPS.
*TRILUX 5931 RPX/2x35E
- J** SUSPENDED TUBULAR TRACK SYSTEM C/W JOINTS & END
COVERS AS NECESSARY
*TRILUX T-200 SYSTEM.
- K** RECESSED DOWNLIGHTER C/W 1x25W TGT LAMP. HYDREL
SJ3422/018
- L** SURFACE MOUNTED BUKHEAD LUMINAIRE C/W 28W 2D
LAMP. ASD AP/MP728U5.
- M** RECESSED DOWNLIGHT C/W OPAL POLYCARBONATE
DIFFUSER & 2x25W TCD LAMPS.
HACEL SJ4120
- N** PRISMATRON 1.2:1 HIGH BAY LUMINAIRE C/W 400W
COATED 3700K PROTECTED CERAMIC METAL HALIDE LAMP,
4M LINK CABLE (PTN1W4M) & 100W TH EMERGENCY LAMP.
*HOLOPHANE PTN4000MDP.1240.G0.Y01
- O** PRISMATRON 1.2:1 HIGH BAY LUMINAIRE C/W 400W
COATED 3700K PROTECTED CERAMIC METAL HALIDE LAMP &
4M LINK CABLE (PTN1W4M).
*HOLOPHANE PTN4000MDP.1240.G0
- P** PENDANT DOWNLIGHT C/W
1x55W CIRCULAR LAMPS & ELECTRONIC HIGH FREQUENCY
DIMMABLE BALLASTS. THORN #42284DM.
*D1 REFERENCE FITTING - SAME AS ABOVE WITHOUT
ELECTRONIC DIMMABLE BALLASTS
- Q** RECESSED DOWNLIGHTER C/W 2x25W LAMPS &
ELECTRONIC HIGH FREQUENCY DIMMABLE BALLASTS.
HACEL SJ43783.
- Q1** *R1 REFERENCE FITTING - SAME AS ABOVE WITHOUT
ELECTRONIC DIMMABLE BALLASTS.
- R** WHITECROFT LUSTER MODULAR RECESSED CLEAN ROOM
LUMINAIRE C/W 2x36W T8 LAMPS.
- R1** MAINTAINED EURO RUNNING MAN PICTOGRAM EXIT SIGN,
PHILIP PAYNE CYLINDER RANGE WALL MOUNTED, STAIN
CHROME.
- S** *S DENOTES CEILING MOUNTED VERSION C/W SUSPENSION
KIT.
- S1** AUTOMATIC LEVEL CONTROLLER FOR PRISMATRON
LUMINAIRES SET AT 300 LUX.
*HOLOPHANE PTP1.
- S2** REMOTE MOUNTED ELECTRONIC BALLAST C/W EMERGENCY
SUPPLY TO 1x100W TH LAMP. PC1 DENOTES BALLAST
CONTROLLED BY AUTOMATIC LEVEL CONTROLLER PC1 VIA
0-10V SIGNAL CABLE.
- PC1** *HOLOPHANE PRISMATRON PTN62L400.Y01
- BAL(PC1)** SINGLE WAY LIGHT SWITCH. *X DENOTES NO. OF GANGS.
FLAT PLATE STAINLESS STEEL.
- X** PUSH BUTTON LIGHT SWITCH.
- X1** TWO WAY LIGHT SWITCH. *X DENOTES NO. OF GANGS.
FLAT PLATE STAINLESS STEEL.
- X2** INTERMEDIATE LIGHT SWITCH. *X DENOTES NO. OF GANGS.
FLAT PLATE STAINLESS STEEL.
- DR-1** DENOTES 0-10V NETWORK CABLE.
- M** DENOTES 4M/6M HOLOPHANE LINK CABLE LINKING
HOLOPHANE HIGH BAY LUMINAIRES TO BALLASTS.
- S** DENOTES SWITCHED LINE.
- DR-1** DENOTES CIRCUIT LINE.
- DR-1** INDICATES WHERE LUMINAIRES ARE SWITCHED FROM.
- M** B CHANNEL DIMMING RACK. 'LEAX CONTROLS'
SCENEMASTER 8000.
- S** SCENE SWITCH PROGRAMMING PLATE.
LEAX CONTROLS LXS 8808
- PK** SCENE SLAVE PLATE.
LEAX CONTROLS LXS 8806
- PK** PARTITION KEYSWITCH.
LEAX CONTROLS LXS8840
- PIR** OCCUPANCY DETECTOR.
LEAX CONTROLS LXS8901.
- DR-1** HACEL 150W METAL HALIDE UPLIGHTS REF
WL401-MHL-150.





⊗ planar glazing, calling for close co-ordination with perimeter trench heating also installed here. The luminaires have been fitted with blue dichroic glass filters, to make the front of the building appear to glow with the DaimlerChrysler corporate colour. These luminaires were specified because of their high quality construction and water ingress protection, as the high water table on site has led to buried floodlights filling with water on past occasions. Also their double lens arrangement means that there was no concern with the fronts of the fittings becoming too hot. In the meeting areas of the building, the lighting has again been designed to afford the maximum amount of flexibility for the varying uses of each room. Main meeting rooms are again provided with networks of Trilux T-200 lighting tracks, connected to Leax dimming systems to provide preset lighting scenes for each type of room use such as seminar, meeting, display and social event. General areas and circulation

spaces on the upper floors are illuminated via surface mounted Trilux 3x26W fluorescent TCD luminaires, to complement the suspended pendant luminaires in the surrounding full height spaces. These provide a bright down light component with a 'halo' effect ceiling wash to provide visual interest to the clean ceiling lines of the building. The link corridor on the first floor has been designed as the main 'artery' of the building, and provides a direct route both actual and visual through the new building to link the existing buildings on either side. The area is very visible to visitors as they enter the building, being sited just above the main reception area. It was decided to light this key space with royal blue coloured 'sticklights' manufactured by Encapsulite, again to highlight the corporate colour of DaimlerChrysler and to provide visual interest on the solid ceilings above. Finally, within the staircases at either end of this corridor, each stair tread houses two 'Ares' buried uplighters complete with blue LEDs to fur-

ther enhance this theme. In the open plan office areas, the lighting installation has been designed in accordance with the recommendations of LG3, with Lumitron 'Retino' recessed modular up/down light type luminaires being used. These are provided with dimmable ballasts, connected to daylight linked and occupancy sensing PIR control units. BSD have provided DaimlerChrysler with a contemporary, dynamic space that meets their brief of linking the various aspects of their organisation in the Milton Keynes site, and has been extremely well received by staff and visitors since it opened in September 2005. The building provides a clear focal point to the Milton Keynes site and the lighting systems within it are well designed, understated and efficient - the same core qualities of the vehicle marques contained within the DaimlerChrysler family.  >>>www.buildingservicesdesign.co.uk >>>www.stormls.com



(top left) Lumitron 'Retino' recessed modular up/down light type luminaires are used in the meeting rooms (above) Hael wall mounted uplights are featured in the coffee shop area

technical information

Project Management and Main Design: Building Services Design
Lighting Design: Building Services Design
Product Sourcing/Supply and Design Assistance: Storm Lighting Solutions
Lighting Specified: Holophane, Trilux, Lumitron, Encapsulite, Philip Payne, Leax, Hael