Light promotes sales
Lighting for the retail sector

Light is OSRAM
Appealing lighting solutions for good business

Better presentation of goods with professional lighting tools

Premium goods, attractive prices and friendly service make customers loyal. Atmosphere and a sense of emotion though are becoming ever more important for the long-term success of the fixed retail sector. People perceive 80% of their surroundings with their eyes, and lighting during shopping plays an essential role: light creates atmosphere, arouses emotions, guides attention to goods and also aids customer guidance.

We at OSRAM have been working with light for over 100 years, and our lighting professionals from Siteco have a deep level of expertise with professional luminaires. With a very wide spectrum of professional lighting tools we offer lighting solutions from a single source that comply with the latest state of technology, feature long-life quality and also have appealing and functional designs.

We bathe your products in very advantageous light, whether with colour-true general lighting, brilliant spotlights or efficient light management systems, and offer ideal lighting solutions for any requirement and any sector. Our efficiency, flexibility and individuality lay the basis for your success.
Success factors

- Light quality
- LED
- Light control

Food retailing

- Fruit and vegetable section
- Meat and delicatessen counter
- Bread and cheese counter
- Fish and seafood counter
- Shelving aisle
- Gondola head
- Cold store
- Payment area

Specialist outlets

- Sales hall
- Campaign display
- Highbay racking
- Advertising panel
- Fitting room
Car showrooms

- Showroom 42
- Consultation area 44
- Workshop 46

Outdoor and logistics areas

- Parking spaces 52
- Facade 54
- Delivery zone and warehouse 56

Service

- Product application matrix 60
- Online tools 68
- LED check list 70
- Energy efficiency solutions 72
- References 74
Superior light improves success

Improving visual appearances with high quality of light

Daylight is and remains the ideal light for the purpose of viewing, covering the complete colour spectrum and uniformly illuminating rooms in a unique way. It is in comparisons with daylight that the quality of a lighting solution with artificial light comes to the fore, as only a very high light quality improves sales success.

**Lighting levels**
High levels of nominal illuminance brighten the atmosphere, and lighting levels can vary according to differing sales and display areas. Direct and indirect lighting elements are specifically and creatively combined to achieve good qualities of light.

**Light and shadow**
The interplay of light and shadow is stimulating and varied, and targeted effects with spotlighting and the throw of shadows serve to increase attention. They also highlight the design and style of goods.

**Colour rendering**
Good light sources always display colours as they would look in natural light. Optimal colour rendering is especially important in the fashion, sport and automotive sectors, highlighting the authenticity of brands and products.
Light colour

Specifying the light colour of a lighting system influences the spatial atmosphere and the effect of products. The colour characteristics of meat, fish, cheese, fruit and vegetables and also plants can be specifically emphasised.

Luminance distribution

Differences in luminance, i.e. the impression of brightness of an illuminated surface, structure the space and aid orientation. They also support the display of goods and a sense of drama in sales spaces.

Glare limitation

High quality lighting solutions avoid direct glare by transforming the high luminance levels of LEDs into homogeneous light, and also minimise reflected glare on shiny surfaces.
Innovative light enables design flexibility

Benefit across the board with high quality LED luminaires

Three letters that have triggered a technological revolution: LED. Light emitting diodes open up new possibilities for creative and sustainable lighting. But they also challenge and unsettle as new evaluation criteria come into play, new questions are asked and new suppliers force their way onto the market. OSRAM and Siteco are authorities offering superior LED components and benefit from a deep level of expertise with premium lighting technology.

Technology under control

High quality LED luminaire constructions are optimised completely according to semiconductor technology, and among other factors consistent thermal management increases the service life of modules.

Environmental protection

Good LED luminaires are already today the most efficient lighting solutions. They consume less energy than luminaires with standard lamps, and the resulting savings with greenhouse gases actively contribute to environmental protection.

A plus for your image

LED luminaires because of their high economic, ergonomic and ecological potential contribute substantially to a sustainable and environmentally friendly corporate and brand image.
Cost benefits

A major portion of energy costs in the retail sector is caused by lighting, and this consists of more than 50% on average in the non-food sector. This means that the savings potential with efficient LED technology is accordingly large, and in addition to energy costs, operating overheads can also be drastically cut with reduced effort for maintenance.

Flexibility

Good LED luminaires give creativity added flexibility, and smart solutions enable the integration into light management systems. Compatible LED solutions can also be developed for installations using conventional technology.

Protection of goods

LED luminaires only emit very low quantities of IR and UV radiation, meaning that fading with textiles and damage to heat-sensitive goods is reduced.

ZVEI creates a basis for the neutral evaluation of LED technology

How can LED luminaires be compared? What factors must be considered? What reliable evaluation criteria exist? It’s a fact that the new technology also brings with it new questions, and this is why the German Central Electrical and Electronics Association (ZVEI) with its members has drawn up a new system for evaluating the performance capability of LED technology. In the future this will be the basis when evaluating LEDs and LED luminaires uniformly and therefore also manufacturer-independently. As a member of the ZVEI we explain the most important points on page 70 of this brochure.
Intelligent light aids well-being and efficiency

Optimally coordinating natural and artificial light with daylight systems and light control systems

Without sunlight there's no life, and without light there's no well-being. Sufficient daylight also improves spatial comfort. It also increases the performance of body and mind, chokes production of the melatonin sleeping hormone and aids production of mood-lifting serotonin.

Innovative daylight systems from Siteco allow only diffuse cool daylight into the space without the need for darkening, for improving daylight distribution within. At the same time they reflect the hot direct sunlight back outwards and prevent excessive heating up of the room. Daylight systems are individually designed and usually permanently fixed into the fenestration.

They also reduce the energy consumption required for artificial lighting and air-conditioning.

Light management systems enable optimal lighting conditions throughout the installation thanks to constant illuminance levels, further greenhouse gas savings and even lower energy costs. The systems supplement daylight with the ratio of artificial light needed for the specific lighting task; the right type of light management depends decisively on specific building conditions and usage of the area.
**Luminous flux tracking**

Initial situation:
- continuous use of spaces
- no ingress of daylight
- examples: production halls, assembly halls

The lighting system is over-dimensional under consideration of the reduction in luminous flux to achieve the maintenance value at the end of the maintenance cycle. The luminaire is dimmed from the beginning though to achieve the precise nominal illuminance. The advancing reduction in luminous flux is continuously compensated for by increasing the power draw, and the effect of this luminous flux tracking is that illuminance remains almost constant and energy consumption is optimised.

**Presence detection**

Initial situation:
- non-continuous use of spaces
- no ingress of daylight
- examples: intermittently used stock areas

With sensors, the luminaire detects persons within a specific range. It switches from dimmed orientation lighting up to the required work lighting level. When the detection range is exited, the luminaire dims again after a pre-set delay period (T).

**Presence and daylight**

Initial situation:
- non-continuous use of spaces
- ingress of daylight
- examples: warehouse areas and workshops

Daylight entering the space is used for lighting. To ensure the required illuminance, the required quantity of artificial light is automatically supplemented when necessary but only when people are in the space.

The level of savings potential depends on:
- the maintenance factor (EN 12464-1)
- use of the hall (motion)
- constructional conditions (ingress of daylight)
Daily shopping has much to do with desire and enjoyment, and retailers supplying pleasant surroundings, freshness and shopping experiences come to the fore. With regard to very long opening times, LED luminaires score points in terms of energy efficiency, long service life and long maintenance intervals – but also as an example of “green” technology with a modern image.

Caring for food
Meats, cheese, fruit and vegetables benefit from LED technology as this emits only very low levels of IR and UV radiation at the light emission surface to protect foodstuffs and packaging.

Stimulating the appetite
Juicy, fresh, cool – light colours trigger emotional impulses. Ideal are light sources with very good colour rendering and also product-specific light colours.

Targeted displays
Good light supports orientation, improves the pleasure of shopping and also sales success, and high precision optical systems guide light and attention onto specific products.
Transforming colourful vitamins into retail winners

Red-cheeked apples have a sweet taste and lush green salads offer the promise of crisp, crunchy eating – well-illuminated fruit and vegetable displays set signs in terms of exemplary freshness and high quality. Lighting solutions with good colour rendering invite shoppers to higher levels of wellness and vitality with health-oriented foods.

Fruit and vegetable departments in the food retail sector are not only for selling a specific group of goods, but also exist to slow down the walking pace of customers and create a pleasant atmosphere for shopping. The colour effects of fruit and vegetables are exploited: the saturated red of tomatoes, the juicy green of salads and the earthy brown of potatoes are all presented at their best with light featuring very good colour rendering ($R_a > 80$). Warm light colours (approximately 3000K) are especially suitable for fruit and vegetables. Vitamins and freshness are kept longer with LED solutions as goods are exposed to only low levels of infrared and ultraviolet radiation.
Product recommendation

**Lighting requirements**

- Very good colour rendering ($R_a > 80$)
- Warm light colour (approx. 3000 K)
- IR and UV radiation protection with LED luminaires or colour filters
- Accenting with the use of point light sources (narrow to medium beam angles)

- Lunis 2° surface-mounted LED downlight for ceiling surface-mounting or suspended mounting, wide distribution, LED
- Lunis® 2 Spot recessed downlight (directional spot), beam angle 2x24°, 2x30°, equipped with LED 900 lm/3600 lm
- Lunis® SL-T 3-phase track spotlight, narrow or medium distribution, equipped with HIT-CE 35/70 W or LED 2700/4500 lm
- LEDVANCE® Track L 3 phase spot, flexible beam angle 10°, 24°, 35° and 60°/20°, equipped with LED approx. 1300 lm
The promise of maximum quality and unhesitating enjoyment

Anticipating the enjoyment of spicy delicatessen products or juicy roasts should be aroused at meat counters. This sensation is supported by balanced red components in the lighting, and LED luminaires also minimise damaging IR and UV radiation.

The display of goods at meat counters is sales-promoting when illuminated by warm white lighting (3000 K). Additional filters that deter the blue and green colour spectrum can also specifically highlight meat and delicatessen goods. At the same time, balanced red light components emphasise the sensuous effect of the products.

LED luminaires are outstandingly suitable for fresh goods counters as they emit only low levels of IR and UV radiation, and no heat is generated at their light emission surfaces. This in turn reduces the danger of germs, and a positive side-effect is that the LEDs operate in cool surroundings especially effectively for longer operating durations.
As natural as possible: point light sources with wide light distribution avoid disturbing glossy reflections and illuminate products in the right light.

**Lighting requirements**

- Avoiding the generation of heat by using LEDs or correspondingly controlled illuminance levels protects from germs
- The use of special filters with balanced red components ensures more saturated colour rendering
- Reflectors with wide light distribution

**Product recommendation**

- Lunis 2® LED wallwasher, asymmetric wide distribution, equipped with LED max. 30 W
- Lunis 2® mini LED recessed downlight, symmetric medium distribution, equipped with LED max. 45 W or HIT-CE 70 W
- Lunis® 2 Spot recessed downlight (directional spot), beam angle 2x24°, 2x30°, equipped with LED 900 lm/3600 lm
- Lunis® SL-T 3-phase track spot, narrow or medium distribution, equipped with HIT-CE 35/70 W or LED 2700/4500 lm
The irresistible display of taste

Bread and cheese counters are also a feast for the eyes. Lamps with a light colour of approximately 3000 K emphasise the characteristic golden yellow appearances of baked goods and cheeses, and special reflectors underline this effect.

The smell of warm rolls and freshly baked bread is difficult to resist, and this factor is increased with breads and cheeses illuminated with warm white light colours. Gold or champagne-coloured reflectors give baked goods and hard cheeses an even more tempting appearance, and soft white cheese is given an ideal appearance with silver-coloured reflectors.

Bread and cheese are at home in cool temperatures, as excessive heat has a dessicating effect on the goods. LED technology is ideal for such applications as no heat development is generated at the light emission aperture. With standard luminaires, correspondingly lower levels of illuminance and sufficient distances avoid negative influences on sensitive goods.
Appealing: service counters look best when their brightness level is significantly higher than general lighting.

**Product recommendation**

**Lighting requirements**

- Protection from dehydration caused by damaging IR radiation with use of LEDs
- Use of suitable light colours (approx. 3000 K)
- Use of gold/champagne reflectors for bread and yellow cheese as well as silver-coloured reflectors for white cheese

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
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<tbody>
<tr>
<td>Lunis 2® mini LED</td>
<td>recessed downlight, symmetric medium distribution, equipped with LED max. 45 W or HIT-CE 70 W</td>
</tr>
<tr>
<td>Lunis 2® LED</td>
<td>wallwasher, asymmetric wide distribution, equipped with LED max. 30 W</td>
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<td>Lunis® 2 Spot</td>
<td>recessed downlight (directional spot), beam angle 2x24°, 2x30°, equipped with LED 900 lm/3600 lm</td>
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<tr>
<td>Lunis® SL-T</td>
<td>3-phase track spot, narrow or medium distribution, equipped with HIT-CE 35/70 W or LED 2700/4500 lm</td>
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The appeal of ice-cold foods

Freshness demands cold temperatures, and this sensation with the display of fish and seafood is ideally aroused with neutral white light colours. Effort and costs for refrigeration are reduced with LED luminaires as these only emit very low levels of heat onto displays.

From the depths of the ocean, fresh on the table. Freshness is a decisive quality criteria and of primary importance for purchase decisions. This means that the presentation of such foodstuffs is correspondingly important, and the sensation of cold can be specifically created: white fillets are better illuminated with neutral white or cool white light colours and warmer light colours are recommended for red fillets. Silver-coloured reflectors give the impression of an extra portion of freshness.
Glittering ice: narrow point light sources highlight the natural brilliance of displays.

Product recommendation

**Lighting requirements**

- For cold counters: point light sources, medium or wide distribution
- With cold stores: shelf-mounted, glare-free lighting
- Neutral white or cool white light colours or silver-coloured reflectors (> 5500 K) for white fish, gold/champagne-coloured reflectors (< 4000 K) for red fish

**Lumos® shelf luminaire** for sub-installation on shelf bases, asymmetric distribution, equipped with low-power LEDs 9–15 W

**Lunis® mini LED** recessed downlight, symmetric medium distribution, equipped with LED max. 45 W or HIT-CE 70 W

**Lunis® LED wallwasher**, asymmetric wide distribution, equipped with LED max. 30 W

**Lunis® SL-T** 3-phase track spot, narrow or medium distribution, with HIT-CE 35/70 W or LED 2700/4500 lm
From apple juice to toothpaste – displaying everything in the right light

Uniformly high illuminance deep into goods displays is achieved with continuous rows of luminaires installed in the centre of the aisle and parallel to shelf rows.

Visual attention should not fall onto aisles but onto goods displays in the shelving. Continuous rows emit highly homogeneous light, and their light control is designed to cover the standard configuration of common supermarket layouts, with mounting heights of 2.80 to 3.20 m, aisle widths of 2.00 to 2.40 m and shelf heights of 1.60 to 2.00 m.

With their good lumen to watt ratios, LED solutions offer major savings potential for quick amortisation, and a further benefit is their long system service life of 25,000 to 50,000 operating hours. This cuts effort for maintenance and costs in the long term. Integrating light management systems or daylight systems also achieves lighting precisely according to requirements and daylight levels, meaning that only as much power is consumed as is necessary.

Highly precise illumination: reflectors direct light into the depths of goods displays and let the aisles 'take a back seat'
Product recommendation

**Lighting requirements**

- High illuminance values with narrow beam angles for increasing attention and distance effects
- Display of special offers and advertising
- Precise illumination of goods displays
- Vertical illuminance levels greater than 450 lux
- Standard retail layouts are with conventional optics

**Specifically for shelf lighting**

- The Modario® shop reflector was especially developed for this application

**Modario® LED module**
- Trunking system with reflector and prismatic optic, symmetric wide distribution, equipped with LED 4250/6200 lm

**Modario® LED module**
- Trunking system with reflector and prismatic optic, with special shop reflector for shelves, double vertical distribution, equipped with LED 4250/6200 lm

**Modario® trunking system**
- With aluminium reflector, wide distribution, with uniform illumination of the sales space, equipped with T16 35–80 W

**Modario® trunking system with special shop reflector**
- For shelves, double vertical distribution, equipped with T16 35–80 W
Making sure special offers get noticed

Gondola heads at the end of shelf systems have a much higher potential for attracting attention than standard shelf displays and are an important instrument for in-store sales promotions. They are correspondingly illuminated with significantly higher illuminance levels than their surroundings.

Gondola heads also have a control function, intending to reduce the pace of customers, draw them into shelf aisles and also set purchase impulses themselves. They are displayed with around 1000 lux for this purpose. This level of illuminance, significantly higher than general lighting, increases the level of attention and perception of products. The same principle applies to campaign displays positioned in aisles.

The light from high precision spotlight systems with standard lamps or LED technology contrasts well against wide-area general lighting. Alternatively, extremely slender Lumos® LED shelf luminaires can be directly installed into shelving with tight mounting situations, and with their special light control these illuminate complete displays uniformly from the front to the rear panel.
Product recommendation

**Lighting requirements**

- Orientation and light attraction point at the start of shelf aisles
- Increased attention
- 2x higher illuminance
- Vertical working plane

![Lumos® shelf luminaire](image1)
- Lumos® shelf luminaire for sub-installation in shelf bases, asymmetric distribution, equipped with low-power LEDs 13-18 W

![Lunis® SL recessed downlight](image2)
- Lunis® SL recessed downlight (directional spotlight), medium distribution, equipped with HIT-CE 35–70 W or HST-CRI 35–100 W

![Lunis® SL-T 3-phase track spotlight](image3)
- Lunis® SL-T 3-phase track spotlight, narrow or medium distribution, equipped with HIT-CE 35/70 W or LED 2700/4500 lm

![Modario® IP20 track insert](image4)
- Modario® IP20 track insert, narrow or medium distribution, equipped with HIT-CE 35/70 W or LED 2700/4500 lm
Giving fresh products even more vitality

Milk should have a cool and refreshing appearance, yoghurt healthy and delicatessen goods temptingly savoury. LED lighting systems are best for cold stores, and neutral white light colours bring out the best with cool product displays.

The range of products in cold stores is characterised by vitality, a sense of health, taste and enjoyment, and the appearance of packaging underlines such impressions. A cool, neutral white light colour (4000 K) and a high blue component in the spectrum enhance this effect, and glare-free displays and legible product information are also important. This in turn requires diffuse light distribution, as emitted by Lumos® shelf luminaires with a high quantity of low-power LEDs and innovative optics. In cool surroundings, LED technology exploits its inherent efficiency and features a system lifespan of up to 50,000 operating hours. It also prevents thermal radiation at light emission apertures.

Thanks to the streamlined construction, any heat generated by the luminaire is efficiently transported out of the cold store via the LED heat sink.
Uniquely illuminated: very slender Lumos® luminaires illuminate compartments to the back panels. This gives a continuously filled shelving appearance.

**Lighting requirements**

- Long maintenance intervals, high system service life
- Reduced energy/maintenance costs
- Optimal display of goods due to good colour rendition
- Protection from damaging IR/UV radiation due to LED technology
- Differing light colours according to goods packaging or packaging colours: 3000 K, 4000 K or 5000 K

**Product recommendation**

Lumos® shelf luminaire for sub-installation in shelf bases asymmetric distribution, equipped with low-power LEDs 9–15 W 3000, 4000, 5000 K

Lumos® head luminaire Extremely narrow distribution (along the front of the shelving) and wide distribution (for the upper shelf base), equipped with 9–15 W low-power LEDs 3000, 4000, 5000 K
Targeted lighting for efficient payment transactions

Payment areas are classic PC workplaces; computer screens are prone to glare and need suitable lighting. Luminaires with horizontal illuminance levels of 500 lux and good glare reduction values (UGR 19) are required.

Whether for large packages or small objects, all goods must be correctly registered at cashpoints, via price labels, manual input or barcode scanning. Lighting complying with standards for office lighting supports continuously high concentration.

Cashpoint areas represent a high potential for sales within very small areas, and often these are the locations for spontaneous buying decisions. This behaviour is optimally supported by targeted light control onto displays in cashpoint zones. LED luminaires with HDP® (High Definition Prisms) covers for glare-free and homogeneous light with good colour rendering are ideal, and these also feature very good lumen/watt ratios. LED luminaires also have long system lifespans and very long maintenance intervals for sustained cost benefits.

Easy cashpoint processing: card readers should be highly legible for card payment transactions.
**Lighting requirements**

- Legislative stipulations (500 lux, UGR 19)
- VDU workstation, glare control via CAT louvre or microprismatic system
- High illuminance levels to stimulate purchasing impulses

**Product recommendation**

- Lunis® R LED surface-mounted/suspended downlight, symmetric wide distribution, equipped with LED 3420/3720 lm
- Modario® trunking system with CAT reflector, wide distribution, equipped with T16 35–80 W
- Modario® HDP trunking system with HDP reflector, direct/indirect wide distribution, equipped with T16 35–80 W
- Modario® LED module trunking system with HPD cover with reflector and prismatic optic, symmetric wide distribution, equipped with LED 4250/6200 lm
Specialist Outlets
Our light transforms shopping into experiences

Lighting solutions for specialist outlets

In specialist outlets, customers take a stroll through the world of goods to experience trends, discover new products and conceive ideas. The specific presentation of goods is needed with a sense of variety and diversification. On-site specialist retailing has the unique advantage that goods can be inspected, held in the hand and even tried out, meaning that such locations become stages for products and services, presented optimally with suitable light.

Promoting well-being

For pleasant shopping: warm light colours enhance an atmosphere of well-being and the cool colour spectrum accentuates modern designs, with individual compositions of light for both general and targeted illumination.

Emphasising sustainability

The quality of goods and their presentation is ideally an amalgamation, and energy-efficient LED luminaires are the visible proof in such cases of sustainable corporate politics.

Underlining authenticity

Clothing and shoes must appear true-to-nature, with lighting systems featuring good colour rendering. LED luminaires with their low IR and UV light protect sensitive products and packaging from changes in colour.

Other applications

Specialist outlets have highly specific lighting requirements, as described on these pages. Further typical applications can be found on the following pages of this brochure:

- page 22: shelving aisles with shelf heights to 2 m
- page 24: gondola heads
- page 28: cashpoint areas
Simply helping to browse

Changing displays and assortments in retail halls are intended to give customers new inspiration, and lighting concepts not oriented to specific shelf layouts give required flexibility and also ensure uniformly high illuminance levels.

Some specialist outlets have specific requirements:

- Electrical hardware stores: diffusers, anti-glare shields and CAT louvres avoid direct and reflected glare on shiny surfaces and emphasise the modern designs of technical products.

- Building centres: dust-protected luminaires (with IP64 protection rating) are recommended for example for wood cutting.

- Garden centres: protection from dust and humidity (IP64 protection rating) is needed. Spots above display areas effectively highlight plants.
**Lighting requirements**

- Flexible lighting systems for changing goods displays
- Homogeneous lighting patterns without fixed reference points
- Uniformly high illuminance in all areas

**Product recommendation**

- **Modario® trunking system**
  with highly specular aluminium reflector, medium distribution, equipped with T16 2x 35–80 W

- **Modario® LED module**
  Trunking system with HDP cover, symmetric wide distribution, equipped with LED 4250/6200 lm

- **NJ700 LED Highbay luminaire**
  For ceiling surface-mounting or suspended mounting, narrow or wide or asymmetric distribution, IP65, equipped with LED 10700/22500 lm

- **T16 highbay luminaire**
  For ceiling surface-mounting or suspended mounting or to Modario® rails, narrow or wide/ extremely wide distribution, IP20/IP65 equipped with 4x T16 35 W–max. 80 W
Placing classics and newcomers in the limelight

Credibility and authenticity are core elements of successful branding, and faithful and realistic presentations are important particularly with clothing, shoes, sports articles and jewellery. Lighting systems are required featuring optimal colour rendering.

Distinctive colours, fashionable designs and convincing appearances of quality determine the acceptance of products, and so natural-looking displays for fashion and beauty make sense. These should approximate daylight as far as possible with good colour rendition values.

LED luminaires with precisely defined cut-offs set visual accents on campaign displays, giving products a special brilliance, attracting attention and also creating a sense of dynamics without detracting from the naturalness of the products. A major advantage is that thanks to their very low levels of damaging IR and UV radiation, the risk of colour fading or changes on surfaces is reduced.

Looking good: general and spot lighting in balanced compositions generate inspiring plays of light and shadow or else a pleasant atmosphere in fitting areas.
Lighting requirements

- Accenting of discounted goods and special offers
- Double the illuminance levels of ambient or general lighting
- Reduced fading due to controlled luminance levels or LED technology

Product recommendation

Lunis® SL recessed downlight (directional spotlight), medium distribution, equipped with HIT-CE 35–70 W

Lunis® SL wallwasher, pan-and-tiltable, asymmetric narrow faceted distribution, equipped with HIT-CE 35–70 W

Lunis® SL-T or Modario® IP20 spot insert, track insert, narrow or medium distribution, equipped with HIT-CE 35/70 W or LED 2700/4500 lm

Traxon Cove Light AC HO linear LED luminaire for cove lighting or backlighting, with high efficiency with various colour temperatures
Perfect looks from the top to the bottom

Highbay racking areas in retail outlets are sales areas and stocking combined. Narrow distribution luminaires emit the requisite illuminance down to floor level.

Highbay racking in building centres for example are used for the direct withdrawal of goods up to a height of two metres, and areas above this level are for presentation purposes and storage. Vertical illuminance of 300 lux is ideal for such multifunctional applications, and to achieve this level at floor level, narrow or extremely narrow distribution luminaires are suitable according to height.

Narrow distribution trunking systems with good colour rendering are ideal, and the optimal display of goods combined with a logistical purpose is thus achieved. Low-maintenance and long-life LED systems minimise the effort required for installation and maintenance with luminaire mounting heights up to 15 metres.
Always visible: high vertical illuminance levels ensure that all products on the front side of shelves are easily recognisable, while avoiding a constricting tunnel effect.

**Lighting requirements**

- Guidance and orientation for customers
- Lighting systems designed for shelving with high vertical illuminance
- Homogeneously illuminated aisles
- Colour-true goods presentation

**Product recommendation**

- Modario® Power Module for mounting to Modario® trunking rail, direct/indirect distribution, equipped with T16 4x 35–80 W
- Modario® trunking system with highly specular aluminium reflectors, medium distribution, equipped with T16 2x 35–80 W
- Modario® trunking system with aluminium reflectors, extremely narrow distribution, equipped with T16 1/2x 35–80 W
Communicating positive signals from afar

Advertising banners have to be highly legible from a distance, and this in turn requires uniform illumination, supplied by asymmetric distribution trunking systems or wallwashers with suitable light emission characteristics.

Printed on vinyl or other glossy materials, rear panels and large-format advertising banners present a challenge for lighting, and their purpose is to communicate to customers whether desired brands or searched-for products are on location. Asymmetric distribution trunking or wallwashers with suitable light distribution patterns supply the required homogeneous illuminance, and correct luminaire mounting heights and suitable distances from banners should be specifically defined. If only individual posters, displays or special information such as prices or discounts are to be highlighted, directional spotlights or downlight wallwashers are ideal, with illuminance levels four to ten times higher than the surroundings. Good colour rendering is always important for underlining the effects of brand logos for example.
An aesthetic overall concept:
the illumination of advertising services should blend into the overall appearance of a store.

**Lighting requirements**

- Accenting of advertising messages and articles on vertical display surfaces
- With large banners: use of asymmetric distribution continuous rows or reflector inserts and wallwashers
- With small displays: high illuminance levels from narrow distribution point light luminaires
- Compliance with optimal mounting heights and distances to banners and wall shelving

**Product recommendation**

- **Traxon High Resolution Media System**
  scalable display for advertising messages, indoors/outdoors

- **Lunis® SL-T**
  3-phase track spot, narrow or medium distribution, equipped with HIT-CE 35/70 W or LED 2700/4500 lm

- **Modario® trunking system**
  with wallwashers specifically for wall shelving, asymmetric distribution, equipped with T16 35–80 W

- **Modario® LED module trunking system**
  with reflectors and prismatic optics, asymmetric distribution, equipped with LED 4250/6200 lm
Transforming shopping into experiences
debut allows you to present fashion in a new light. The dynamic LED lighting paired with an intelligent media system from the OSRAM subsidiary Traxon Technologies transforms your fitting rooms into personal virtual spaces.

Whether it’s an evening outfit for a new restaurant, business attire for the office or beachwear for a sunny holiday, everything can be tried out under real lighting conditions. Real environments are filmed, the lighting conditions measured and then rendered in the fitting room. Take your customers on a fascinating fashion trip with individual backdrops – it transforms trying out into real fun!
OSRAM debut not only transforms trying out to becoming exclusive shopping experiences but also supports purchase decisions.

- The number of returns is reduced because certainty increases with purchase decisions
- Your exclusive service strengthens customer loyalty
- Brand consciousness is strengthened
- Cross-marketing options are generated
- Customers stay longer in the shop

For unique shopping experiences:
With debut, the OSRAM subsidiary Traxon Technologies provides an innovative concept for your fitting rooms. Various environments can be simulated in fitting rooms such as beach, office, party etc. using the new Cove Light AC RGBW and an intelligent software. Bring the outside world of experience into your retail outlet to inspire your customers.

Product recommendation

- Traxon Cove Light AC HO RGBW Linear LED luminaire for cove lighting or backlighting with wide colour spectrum
- Scenes are specified via a tablet PC and convenient touch screen user interface.

1. Desired surroundings are filmed and light measurements taken.
2. Scenes are specified via the tablet.
3. Your customers try out their outfits in the simulated environment.
The sound of a new motor, the smell of an untouched interior and the feel of instruments is still far away, but we already have such images in our heads long before we sit in a new car and press the accelerator. Selling vehicles is based on expectations and depends on emotions, and presentations and displays are designed according to this. Showrooms become unique worlds of experience, and modern LED technology provides the ideal lighting tools.

**Highlighting details**

Both the brand and individual vehicles are displayed with suitable components. Good lighting solutions provide support for corporate lighting and also emphasise details.

**Emphasising quality**

It’s all about quality – the colour-true display of shiny surfaces underlines the high inherent quality of vehicles and the authenticity of brands.

**Communicating images**

The technological superiority of products is reflected in displays featuring state-of-the-art LED technology, which in turn communicates core messages such as sustainability, efficiency, aesthetics and a positive lifestyle.
Brilliant displays enhancing fascination and lifestyle

Uniform and low-reflection general lighting is ideal for highlighting glossy coatings and glass surfaces in showrooms. Good levels of colour rendering are important, not only for triggering purchase decisions but also emphasising the authenticity of brands.

High-gloss coatings, brilliant glass surfaces and innovative designs are vital but also a challenge for presentations, communicating brand images in the automotive sector. The display of technical expertise and strength of innovation is best emphasised by the implementation of state-of-the-art LED technology, which in itself communicates core messages such as sustainability, efficiency, looks and a positive lifestyle.

Track systems and wide distribution downlights emit homogeneous and low-reflection all-purpose lighting, and an alternative is indirect lighting via ceilings from spots. Supplementary accent light highlights design elements using light and shadows, and spotlight systems are flexibly installed to enable the adaption of model launches or seasonally changing showroom concepts. All lighting tools should feature very good colour rendition values.

Light according to needs:
Ideally, artificial general lighting supplements the ingress of daylight. Light management systems enable uniform illuminance levels and also optimise energy consumption.
**Lighting requirements**

- Low-reflection all-purpose lighting
- Flexible spot system for adaptable showroom concepts
- High colour rendering ($R_a \geq 90$)

**Product recommendation**

- Lunis® mini LED recessed downlight, symmetric medium distribution, equipped with LED max. 45 W or HIT-CE 70 W
- Lunis® 2 Spot recessed downlight (directional spotlight), beam angle 2x24°, 2x30°, equipped with LED 900 lm/3600 lm
- Lunis® SL recessed downlight, symmetric wide distribution, equipped with HIT-CE max. 70 W
- Lunis® 2 Track 3-phase track spot, flexible beam angle 2x12°, 2x25°, oval, equipped with LED 1700 lm/2600 lm
Creating well-being and fulfilling desires

Vehicles as an expression of personal lifestyles should be able to fulfil individual customer desires, and consultation zones must make sure of sufficient discretion. Warm light colours and coordinated illuminance support an atmosphere of well-being.

Customer requests concerning individually adapting cars to personal styles are decisive, and such important negotiations between customers and dealers are best conducted in discrete environments. Calm and distraction-free atmospheres are needed so that consultants are able to comprehend such desires and communicate suggestions. Office lighting with warm light colours supports the well-being of customers and also facilitates such confidential discussions in consultation areas, and lower illuminance levels compared to the surroundings take away any concern of customers of being in exposed situations.

Customer zones with computer screens, displays and advertising media require uniform, glare-free lighting solutions with good rendition of contrasts as this is optimal for perceiving various types of media. Corporate lighting also has its part to play in customer areas with regard to colours and logos as well as communicating the concepts of technology and brands, and an important task is to coordinate and match areas for presentation and areas of information.
Lighting requirements

- Warm light colours (3000 K) for consultation areas
- Neutral white light colours for service desks (4000 K)
- Workstation lighting with 500 lux
- The matching of homogeneous light for information media, and display elements for corporate lighting in the customer zone

Product recommendation

**Lunis 2® mini**
recessed downlight, symmetric medium distribution, equipped with LED max. 45 W or HIT-CE 70 W

**Lunis® 2 Spot**
recessed downlight (directional spotlight), beam angle 2x24°, 2x30°, equipped with LED 900 lm/3600 lm

**Lunis® 2 Track**
3-phase track spot, flexible beam angle 2x12°, 2x25°, oval, equipped with LED 1700 lm/2600 lm

**Novaluna® P LED**
suspended luminaire with ELDACON® indirect/direct distribution, equipped with LED 5160 lm/3000 K LED 5890 lm/4000 K
Giving professional service
the ideal background

The quality of a manufacturer is put to the test in workshop areas, and appealing marketing as part of sales has to keep its promises. Professional workshop areas need sufficient illuminance levels and lacquerwork also requires superior colour rendering.

The positive and high-profile impression of display areas has to be in line with well-illuminated workshops, and comfort and practical use are based on a sophisticated technical foundation.

Usually no daylight is available for precise work, and mechanics require illuminance of at least 200 lux. Trunking in the specific work areas is ideal, and damp-proof luminaires for car washing areas.
**Lighting requirements**

- Work areas with at least 200 lux
- Luminaires with higher protection ratings (IP65) for car wash areas
- Vehicle hand-over with lamps/light sources with $R_a > 90$

**Product recommendation**

Modario® trunking system with HDP reflector, direct/indirect wide distribution, equipped with T16 35–80 W

Modario® IP64 trunking system, wide distribution, equipped with T16 49–80 W
Parking lots, facades and entrance areas should be visible from afar. With such applications lighting is an important image carrier, giving the first impressions of a company and thus also of quality as well. Just as important is functional lighting for delivery zones and storage areas, facilitating simple work processes and making sure of optimal security.

**Communicating brand messages**

The largest brand communicator for a business is the facade it presents, ideally adapted in style to the entrance zone and interior design. LED solutions with high system lifespans minimise follow-on costs.

**Creating trust**

Uniformly illuminated parking areas prevent accidents and communicate a feeling of safety. People between vehicles are easily seen with neutral white light.

**Enabling continuous operation**

Outdoor luminaires for delivery and traffic zones prevent danger caused by delivery processes. Luminaires should be wind and weather-proof with low maintenance and high protection ratings, and reliable in continuous operation.
Arriving safely and driving home without stress

Well-illuminated parking areas and car parks reduce the risk of accidents and communicate a feeling of personal safety. They also contribute to a pleasant start with shopping, as well as problem-free driving home.

The appearance of traffic and parking areas influences customer evaluations far before they enter a retail space. Extensively illuminated external parking lots or in car parks increase traffic safety, and children between cars for example can be seen more easily. Areas without dark spots also increase the feeling of personal safety.

Mast luminaires are a very efficient lighting solution in outdoor areas, and offer high visual comfort with high quality optics and neutral white light colours (4000 K). Streetlight 10 LED luminaires are ideal, and their high-efficiency light control means that the number of light points can be reduced to a minimum. Siteco mast luminaires feature a high level of economy and simple maintenance, and the efficiency of LED luminaires can be further optimised by integrating control technology.

Product recommendation

Lighting requirements Parking garage*

- Safety and orientation for pedestrians and drivers
- Illuminance: to 300 lux in entry and transit areas
- Entrance and exit routes (day): \( E_m \geq 300 \text{ lux}, \quad \text{GRL} \leq 25, \quad U_o \geq 0.4, \quad \text{CRI} \geq 40 \)
- Entrance and exit routes (night): \( E_m \geq 75 \text{ lux}, \quad \text{GRL} \leq 25, \quad U_o \geq 0.4, \quad \text{CRI} \geq 40 \)
- Traffic routes: \( E_m \geq 75 \text{ lux}, \quad \text{GRL} \leq 25, \quad U_o \geq 0.4, \quad \text{CRI} \geq 40 \)

Product recommendation

- Modario® IP64 trunking system, wide distribution, equipped with T16 49–80 W
- Monsun® 2 LED damp-proof luminaire, direct wide distribution, IP65, equipped with LED 1/2x 24 W
- SiCOMPACT® A2 MINI/MIDI floodlight with wall fixing, direct asymmetric distribution, equipped with A2 MINI: LED module 41 W A2 MIDI: LED module 98 W

*Excerpts from DIN EN 12464-1 and DIN EN 12464-2; During planning, the DIN or corresponding recommendations for traffic route road lighting should be observed for more precise determination of lighting requirements in relation to the application.
Goodbye to relamping: the long system lifespan of the Streetlight 10 LED (up to 50,000 operating hours) reduces costs for maintenance.

**Lighting requirements Parking areas**

- Entrance and exit routes (day): $E_m \geq 300$ lx, $GRL \leq 25$, $U_v \geq 0.4$, CRI $\geq 40$

- Entrance and exit routes (night): $E_m \geq 75$ lx, $GRL \leq 25$, $U_v \geq 0.4$, CRI $\geq 40$

- Traffic routes: $E_m \geq 75$ lx, $GRL \leq 25$, $U_v \geq 0.4$, CRI $\geq 40$

- Parking lot: $E_m \geq 10–50$ lx, $GRL \leq 50$, $U_v \geq 0.25$, CRI $\geq 20$

- Traffic routes/traffic surfaces/passages: $E_m \geq 5–50$ lx, $GRL \leq 45–50$, $U_v \geq 0.0$, CRI $\geq 20$

**Product recommendation**

- **SiCOMPACT® A2 MIDI floodlight for mast mounting, narrow wide distribution**
- **Streetlight 10 mini LED mast luminaire, asymmetric distribution**
- **Streetlight 10 midi LED mast luminaire, asymmetric distribution**
Giving brands their own identity

Innovative outdoor lighting is becoming an ever more important instrument for marketing, and when displayed professionally a business facade strengthens the image and appearance of the company. Using long-life LED luminaires ensures long burning durations and extended maintenance intervals.

Large logos and corporate colours on building facades are the messages of a company and its services. An illuminance level (1500 to 2000 lux) higher than for traffic areas attracts attention to the entrance zone, and convincing exterior presentations enhance the presumption of convincing consumer ranges within. The use of LED technology makes sense with facade lighting, as high building heights and inaccessible areas mean much effort and extra costs if maintenance is required. Such overheads are minimised with LED luminaires due for example to their high system lifespans of at least 50,000 operating hours, and LED systems with suitable control technology are ideal for the innovative use of coloured light and spectacular colour chases.
For extravagant brand presentations:
The OSRAM subsidiary Traxon e:cue develops sophisticated RGB and white light solutions based on LED technology. Areas of expertise include custom-designed concepts from software and product development up to finished customer solutions.

**Lighting requirements**

- Accenting or illuminance of facades or architectural details with floodlights or wall luminaires
- Low maintenance lighting system with high system service life
- Higher illuminance at entrance areas (1500 to 2000 lux) for improved orientation and customer guidance

**Product recommendation**

- **CB 90** ground recessed luminaire
- **CL LED Linear Wall** linear system for wall mounting
- **Traxon Nano Liner Allegro** extremely slender linear light system in three pure white options, dynamic white and RGB
- **Traxon Dot XL** flexible media solution for creative, sophisticated projects, with 3, 6 or 9 LEDs in RGB
Making sure of smooth logistics

Problem-free delivery of goods, their correct booking and rapid transfer to inventory are the backbone of trouble-free retailing. Sufficient illuminance levels must be ensured in the various logistics areas for this purpose.

Lighting is designed according to specific demands, whether this be the correct reading of delivery notes, the safe use of tools and electrical fork lift trucks or the stable stacking of pallets and boxes. Climatic conditions of the space must be considered when specifying luminaires and light sources, because with low temperatures and humidity such as in cold stores, the luminous flux of fluorescent lamps usually decreases. LED luminaires on the other hand increase their efficiency in such situations and are able to exploit their good lumen/watt ratios. Their high level of reliability also make them ideal solutions for difficult-to-access areas.

Standard-compliant lighting is required for all work areas. Workstations with computer screens require at least 500 lux and good glare reduction (UGR <19), and at least 300 lux is needed for areas where delivery notes or warehouse documents must be clearly legible. A minimum of 200 lux is needed at other permanently manned work areas and at least 100 lux for canopied loading platforms and areas not continuously used.

**Lighting requirements for delivery zones**
- Safety for people and vehicle traffic
- Safe loading and unloading
- At least IP54 protection for luminaires installed below canopies and IP65 for exposed luminaires
- Illuminance of at least 100 lux

**Product recommendation**

SiCOMPACT® A2 MIDI Floodlight for wall surface-mounting, narrow wide distribution, equipped with LED 103 W
Lighting requirements for stock areas

- Standard-compliant illuminance of 100 to 500 lux in accordance with work tasks and other requirements
- Lighting concept dependent upon climatic conditions (temperature, humidity etc.)
- Damp-proof luminaires with high protection rating (IP65) for extreme climatic conditions

Product recommendation

- **FR 100**
  - Damp-proof luminaire, wide distribution, IP65, with T26 1/2x 36–58 W

- **Modario® IP64**
  - Trunking system, wide distribution, with T16 49–80 W

- **Monsun® 2 LED**
  - Damp-proof luminaire, direct wide and narrow distribution, IP66, with LED, 36.0 W (ECG), 37.3 W (DALI)

- **SiCOMPACT® A2 MINI/MIDI**
  - Floodlight for wall mounting, direct asymmetric, with A2 MINI:
    - LED module 41 W
  - LED module 98 W
Getting a project started and achieving the goal together

Service and consultation from the beginning

Thoughts are born in people’s heads, are formulated into ideas and grow to become solutions. The more heads used and the more knowledge, experience, creativity and passion brought into the processes, the better the result. Our customers are the experts for your specific requirements, and we have the requisite knowledge for lighting in specific applications as well as the necessary lighting tools. The best solutions come about when this know-how flows together as part of a continuous dialogue between experts.

In practice this means that you can count on us from the initial planning phase up until implementation. As part of the process a contact person is at your side for all requirements occurring during the course of the project. Whether this concerns luminaires, lamps, control units or sophisticated light management systems, our expert is on-site and will make sure that good light helps in achieving your goals.

Your on-site partner

You can reach us in Germany, Austria and Switzerland via our comprehensive network of sales subsidiaries, and there is almost certainly one in your area. This forms the direct contact to our lighting professionals. All addresses can be found on the rear of this brochure.
For optimal lighting specifications

### Food retail

<table>
<thead>
<tr>
<th>Service</th>
<th>Product Application Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit and vegetable section</td>
<td>Lunis® 2 surface-mounted and suspended LED equipped with LED</td>
</tr>
<tr>
<td>Service counter</td>
<td>14</td>
</tr>
<tr>
<td>Meat and delicatessen counter</td>
<td>equipped with LED</td>
</tr>
<tr>
<td>Bread and cheese counter</td>
<td>equipped with HIT-CE 35–70 W or HST-CRI 50–100 W</td>
</tr>
<tr>
<td>Fish and seafood counter</td>
<td>22</td>
</tr>
<tr>
<td>Shelving aisle</td>
<td>equipped with HIT-CE 35–70 W or HST-CRI 50–100 W</td>
</tr>
<tr>
<td>Gondola head</td>
<td>22</td>
</tr>
<tr>
<td>Cold store</td>
<td>equipped with HIT-CE 35–70 W or HST-CRI 50–100 W</td>
</tr>
<tr>
<td>Payment area</td>
<td>22</td>
</tr>
</tbody>
</table>
### Trunking systems
- Lunis 2® LED wallwasher
- Lunis R® LED surface-mounted downlight
- Modario® HDP
- Modario® LED module
- Modario® with aluminium reflector
- Modario® Shop Reflector

### Shelf luminaires
- Lunos® shelf luminaire
- Lunos® head luminaire
- Modario® HDP
- Modario® LED module
- Modario® with aluminium reflector
- Modario® Shop Reflector

<table>
<thead>
<tr>
<th>Lunis 2® LED wallwasher</th>
<th>Lunis R® LED surface-mounted downlight</th>
<th>Modario® HDP</th>
<th>Modario® LED module</th>
<th>Modario® with aluminium reflector</th>
<th>Modario® Shop Reflector</th>
<th>Lunos® shelf luminaire</th>
<th>Lunos® head luminaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>equipped with LED max. 30 W</td>
<td>equipped with low power LEDs 9-15 W</td>
<td>equipped with LED 4250/6200 lm</td>
<td>equipped with T16 35-80 W</td>
<td>equipped with T16 35-80 W</td>
<td>equipped with T16 35-80 W</td>
<td>equipped with low power LEDs 9-15 W</td>
<td>equipped with low power LEDs 9-15 W</td>
</tr>
</tbody>
</table>
For optimal lighting specifications

Specialist Outlets

<table>
<thead>
<tr>
<th>Sales hall</th>
<th>Point light sources</th>
<th>Trunking systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lunis® SL Directional spot</td>
<td>Modario® Power Module</td>
</tr>
<tr>
<td></td>
<td>Lunis® SL wallwasher</td>
<td></td>
</tr>
<tr>
<td></td>
<td>equipped with HIT-CE 35–70 W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>equipped with HIT-CE 35–70 W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>equipped with HIT-CE 35–70 W or LED 2700/4500 lm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lunis® SL-T or Modario® IP20 spot insert</td>
<td></td>
</tr>
<tr>
<td></td>
<td>equipped with HIT-CE 35–70 W or LED 2700/4500 lm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Campaign display</th>
<th>Point light sources</th>
<th>Trunking systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lunis® SL-T or Modario® IP20 spot insert</td>
<td></td>
</tr>
<tr>
<td></td>
<td>equipped with HIT-CE 35–70 W or LED 2700/4500 lm</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Highbay racking</th>
<th>Point light sources</th>
<th>Trunking systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Modario® Power Module</td>
<td></td>
</tr>
<tr>
<td></td>
<td>equipped with T16 4x 35–40 W</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Advertising panel</th>
<th>Point light sources</th>
<th>Trunking systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Modario® Power Module</td>
<td></td>
</tr>
<tr>
<td></td>
<td>equipped with HIT-CE 35–70 W or LED 2700/4500 lm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fitting room</th>
<th>Point light sources</th>
<th>Trunking systems</th>
</tr>
</thead>
</table>

Additional applications

The matrix on the previous double page shows information for lighting characteristics and selected lighting tools for shelf aisles with shelf heights to 2 metres, gondola heads and payment areas.
<table>
<thead>
<tr>
<th>Modario® wallwasher</th>
<th>Modario® with specular aluminium reflector</th>
<th>Modario® LED module</th>
<th>NJ700 LED</th>
<th>Highbay T16</th>
<th>Traxon Cove Light AC</th>
<th>Traxon High Resolution Media System</th>
</tr>
</thead>
<tbody>
<tr>
<td>equipped with T16 2x 35–40 W</td>
<td>equipped with LED 4250/6200 lm</td>
<td>equipped with LED 10700/22500 lm</td>
<td>equipped with LED 10700/22500 lm</td>
<td>equipped with 4x T16 35 W – max. 80 W</td>
<td>equipped with LED</td>
<td>equipped with LED</td>
</tr>
<tr>
<td>equipped with T16 1/2x 35–40 W</td>
<td>equipped with LED 4250/6200 lm</td>
<td>equipped with LED 4250/6200 lm</td>
<td></td>
<td></td>
<td>equipped with LED</td>
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</tr>
</tbody>
</table>
## For optimal lighting specifications

### Car Showrooms

<table>
<thead>
<tr>
<th>Area</th>
<th>Point light sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Showroom</td>
<td>Lunis® 2 Track directional spot equipped with LED 1700/2600 lm</td>
</tr>
<tr>
<td>Consultation area</td>
<td>Lunis® mini LED equipped with LED max. 45 W or HIT-CE max. 70 W</td>
</tr>
<tr>
<td>Workshop</td>
<td>Lunis® SL recessed downlight equipped with HIT-CE max. 70 W or LED 2700/4500 lm</td>
</tr>
<tr>
<td>Workshop</td>
<td>Lunis® SL-T equipped with HIT-CE 35/70 W or LED 2700/4500 lm</td>
</tr>
<tr>
<td>Linear luminaires</td>
<td>Trunking systems</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Novaluna® P LED</td>
<td>Modario® HDP</td>
</tr>
<tr>
<td>equipped with LED 5160/5890 lm</td>
<td>Modario® IP64</td>
</tr>
<tr>
<td>equipped with T16 35–80 W</td>
<td>equipped with T16 49–80 W</td>
</tr>
</tbody>
</table>

Service | Product Application Matrix
For optimal lighting specifications

### Outdoor and logistics areas

<table>
<thead>
<tr>
<th>Parking spaces</th>
<th>LED road luminaires</th>
<th>Floodlights</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Streetlight 10 mini LED</td>
<td>SiCompact® A2 Mini/Midi</td>
</tr>
<tr>
<td></td>
<td>Streetlight 10 midi LED</td>
<td>SiCompact® A2 Midi</td>
</tr>
</tbody>
</table>

- **Parking spaces**: 52
- **Facades**: 54
- **Delivery zones and warehouses**: 56

### Media solutions

- **Facades**: 54

- **Traxon Nano Liner Allegro**
- **Traxon Dot XL**
<table>
<thead>
<tr>
<th>Projectors</th>
<th>Trunking systems</th>
<th>Ground and wall luminaires</th>
<th>Highbay luminaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiCompact® R1 Mini S</td>
<td>Modario® IP64</td>
<td>Monsun®2 LED</td>
<td>FR 100</td>
</tr>
<tr>
<td></td>
<td>equipped with HIT-CE 35–70 W</td>
<td>equipped with LED 2000 lm</td>
<td>equipped with LED 10700/22500 lm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>equipped with HIT-DE-CE 70–150 W</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>equipped with LED 1/2 x 24 W or 1/2 T16 14 W – max. 80 W</td>
<td>equipped with LED 2000 lm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>equipped with LED 1/2 x 24 W or 1/2 T16 14 W – max. 80 W</td>
<td></td>
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<tr>
<td></td>
<td>equipped with T16 49–80 W</td>
<td>equipped with T26 1/2 36–58 W</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>equipped with LED 10700/22500 lm</td>
<td></td>
</tr>
</tbody>
</table>
Good light is achieved with precise tools

Smart tools for planning lighting installations

Precise information about technical characteristics and exact luminaire specifications are the preconditions for planning lighting to create not just good light but also components for your success.

Professional lighting is a highly complex interplay of various factors, and this is invariably not a cure-all but always the best solution for your individual needs.

To help you to simply and reliably plan individual lighting, we have developed a series of tools for your daily work for the planning of indoor and outdoor lighting installations, available for free on our websites.

**Siteco® lighting tool**

The software program developed specifically for Siteco helps to find all luminaires via the familiar catalogue structure as well as using individual characteristics. A special feature is the simple and convenient transfer of relevant data via drag and drop to RELUX and DIALUX.

[www.siteco.com//lighting-calculation](http://www.siteco.com//lighting-calculation)

**Indoor cost-efficiency calculator**

Which operating costs can be saved with new light? How is the emission of CO₂ reduced with LED technology? And how quickly is your investment amortised? The cost-efficiency calculator supplies all the answers – with comparisons of old and new systems as well as the download of PDF documentation.


**Modario® trunking configurator**

Plan comfortably, work successfully. With the Modario® trunking configurator, planning complex trunking systems becomes a simple exercise, and the program supplies information concerning availability, configurations and installation – simply, reliably and quickly. The Modario® trunking configurator is connected directly to the electronic catalogue.

[www.siteco.com/trunking-system-configurator](http://www.siteco.com/trunking-system-configurator)
**Electronic catalogue**

The up-to-date reference work with all Siteco and OSRAM indoor and outdoor luminaires including all relevant data, ranging from product images and installation instructions to tender texts and photometric data, as well as plug-ins for light calculation programmes. Comprehensive, clear and user-friendly. A smart add-on: the Siteco rapid calculation tool as a random calculator for initial quantity estimations.

[www.siteco.com/indoor-luminaires](http://www.siteco.com/indoor-luminaires)
[www.siteco.com/outdoor-luminaires](http://www.siteco.com/outdoor-luminaires)
[www.osram.com/indoor-luminaires](http://www.osram.com/indoor-luminaires)
[www.osram.com/outdoor-luminaires](http://www.osram.com/outdoor-luminaires)

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**Sample systems**

Are there similar ranges of tasks to your specific requirements? How was the solution created? Our online sample installations have been calculated by our lighting experts to always be optimal in terms of compliance with standards, quality of light and system efficiency. To be used as sources of inspiration or for specific solutions.

[www.siteco.com/sample-projects](http://www.siteco.com/sample-projects)
Planning security and transparency thanks to new ZVEI designations for LED luminaires

The market for LED applications is rapidly expanding, and a large number of new and external market players are bringing products onto the market that do not fulfil their technical claims. This causes insecurity, misunderstandings and false impressions about product performances. To achieve safety and reliability when planning lighting installations it is however vital to use uniform and standardised (and thus comparable) quality criteria when evaluating technical statements.

The German Electrical and Electronic Manufacturers' Association (ZVEI), of which OSRAM and Siteco are members, has now drawn up a system of nomenclature that forms an obligatory basis for the evaluation of the technical performances of LED luminaires, and thus also enables uniform evaluations. The ZVEI work group recommends manufacturers to assume the following parameters and data for their technical information in the future.

**ZVEI nomenclature**

**Rated luminaire input power** $P$ (in W) (replaces power consumption) Effective power of the luminaire measured in watts (W) with nominal voltage.

**Rated luminaire luminous flux** $\Phi_v$ (in lm) Total lumen output of a luminaire emitted in the visible spectrum in all directions; new value of luminous flux emitted according to predefined operating conditions, measured in lumens (lm).

**LED luminaire efficacy** $\eta_v$ (in lm/W) (replaces luminaire efficiency) The quotient of the emitted rated luminous flux and consumed electrical rated power, measured in lumens/watt.

**Luminous intensity distribution of luminaires** Spatial distribution of light output from a light source; Luminous intensity distribution curves (LDC’s) in C levels (0–180/90–270°).

**Colour quality** The colour quality of white light is specified according to the following characteristics:

**Correlated colour temperature** $T_{cp}$ (in K) The light colour of white light is specified by the closest colour temperature; measured in Kelvin (K). The designations warm white to 3300 K, neutral white between 3300K and 5300 K and daylight white (>5300K) are used. Specification of the closest colour temperature is in 100K steps.

**Color Rendering Index** (CRI) Colour rendition is specified using the colour rendering index CRI. This measures the degree of similarity of a perceived object colour with its appearance using a specific reference illuminant.

**Colour tolerance** A classification of colour differentiation with identical colour temperature in 3/5/7 level MacAdam ellipses. These steps represent the measurement for colour difference. Light sources with a 3-step MacAdam ellipse colour difference differentiate less than two light sources with a colour difference corresponding approximately to a 5-step MacAdam ellipse.
Rated ambient temperature \((t_a)\)
The operating behaviour of a luminaire is influenced by the ambient temperature. A value of 25\(^\circ\) C requires no specification on the luminaire/ data sheet, but fluctuating values must be designated.

LED luminaire longevity criteria
The service life of LEDs is not only measured at the time of total failure but also with degradation, meaning that luminous output continuously reduces over time.

Rated life \((L_x)\)
The rated or useful service life \(L_x\), whereby luminous flux decreases to the component \(x\) of the original luminous flux, is used with regard to the luminous flux degradation of LED luminaires. Typical \(x\) values are for example 70 \(\%\) (\(L_{70}\)) or 80 \(\%\) (\(L_{80}\)) with a specific rated service life: e.g. 50,000 hours with an ambient temperature of 25\(^\circ\) C.

Taking account of lumen loss \((B_x)\)
The ratio of LED luminaires falling below a targeted luminous flux of \(x\) per cent (see \(x\) of \(L_x\)) at the specified end of lifespan (e.g. 50,000 h) is specified with the term luminous flux reduction \((B_x)\). The value of \(B_{50}\) for example means that 50 \(\%\) of a quantity of identical LED luminaires can fall below the declared \(x\) luminous flux level at the end of the rated service life \(L\). The \(B_{50}\) specification (the nominal value) is used to specify the mean luminous flux of functioning LED luminaires at the defined end of their useful service life.

Taking account of abrupt failure \((C_x)\)
The ratio of LED luminaires that have completely failed to the end of the rated service life \(L_x\) is specified with \(C_x\). LED luminaires with LEDs that only fail singly or LED luminaires where only single LED modules from several fail are not deemed total failures. For example the value \(C_3\) means that 3 \(\%\) of a quantity of identical LED luminaires have completely failed within their lifespan and thus no longer emit light.

Source/text ZVEI guideline (preliminary version 10/2013)
OSRAM energy efficiency solutions

The OSRAM team of experts is also available for consultation and implementation with the modernising of inefficient lighting systems.

Trust our expertise

We develop lighting solutions together with you that are characterised by maximum technical and design quality, and at the same time we integrate the complete spectrum of relevant economic and ecological aspects. You are able to benefit from our many years of diverse lighting expertise in all applications (industry, office, retail, road lighting, sports, hospitality, healthcare and many others), and of course our pioneering role with technology.

Energy-efficient lighting optimisation

As an energy audit partner, OSRAM provides energy-efficient lighting optimisation processes. The analysis and optimisation of existing lighting installations is focused upon. This comprehensive service, consisting of the evaluation, planning and implementation of the broad OSRAM product and service spectrum, has already been used by many partners to achieve significant energy and cost savings.
Steps for energy-efficient lighting optimisation

1. **Preparation:**
   You fill out a questionnaire that describes your project in more detail. OSRAM then analyses your data.

2. **Location analysis:**
   OSRAM inspects your site, analyses the existing lighting installation and draws up new and energy-efficient lighting concepts. Together with you we then decide on the optimal solution.

3. **Final report:**
   You see all investments, amortisation periods and possibilities for saving at a glance in a detailed final report.

4. **Implementation:**
   OSRAM accompanies you over the complete project implementation phase.

If you require more detailed information about energy efficiency solutions, then simply send an e-mail to the OSRAM team of experts: EES@osram.de
Our light is a global player

Successful projects and customer-specific solutions, the world over

Designs and concepts for the global retail sector are as colourful and diverse as the goods they sell, with a diversity of brand types, a diversity of product groups, the variety of the products themselves and the wonderful multiplicity of people and their individual needs. There is however a common denominator: light. And of course how it presents goods, how it aids orientation, how it determines atmosphere and how it mobilises people.

Lighting all over the world is a decisive factor for retail success, and our lighting experts in the highly diverse OSRAM network are experts for optimal customer-specific solutions, for lighting concepts best suited to particular requirements and of course for the very best solutions. A wide range of successfully implemented global projects documents this expertise and the inherent diversity of our customer-specific solutions.
<table>
<thead>
<tr>
<th>Supermarkets</th>
<th>Discount retailers</th>
<th>Retail drug stores</th>
<th>Specialist outlets</th>
<th>Building centres and garden centres</th>
<th>Furniture retailers</th>
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<tbody>
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<td>ADEG</td>
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