

Lighting Tools

for the future



office

industry

traffic

shopping

public

sports

by

siteco

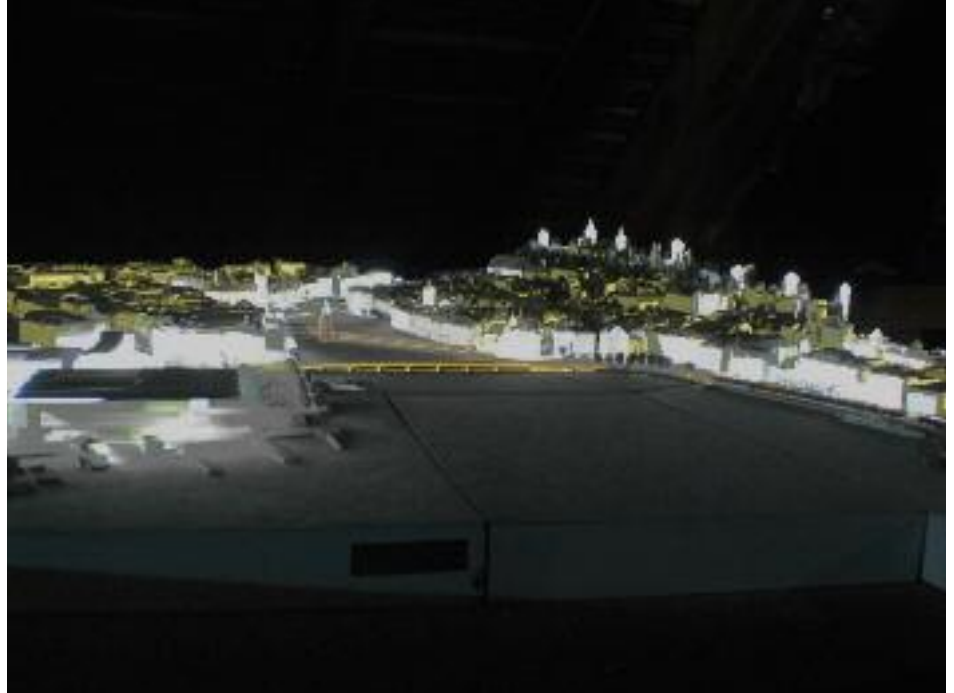
AN OSRAM BUSINESS

Lighting projection for an environmentally
conscious implementation of master lighting plans

Projection lighting – technology offering for urban lighting planners



- + a complete solution with consistently high quality
- + no light spill
- + optimal glare protection
- + energyefficient process
- + permanently weather-resistant
- + long maintenance intervals
- + simple, precise scene modifications
- + Metal halide lamps with long service life
- + 'warm' projection light from 3000K



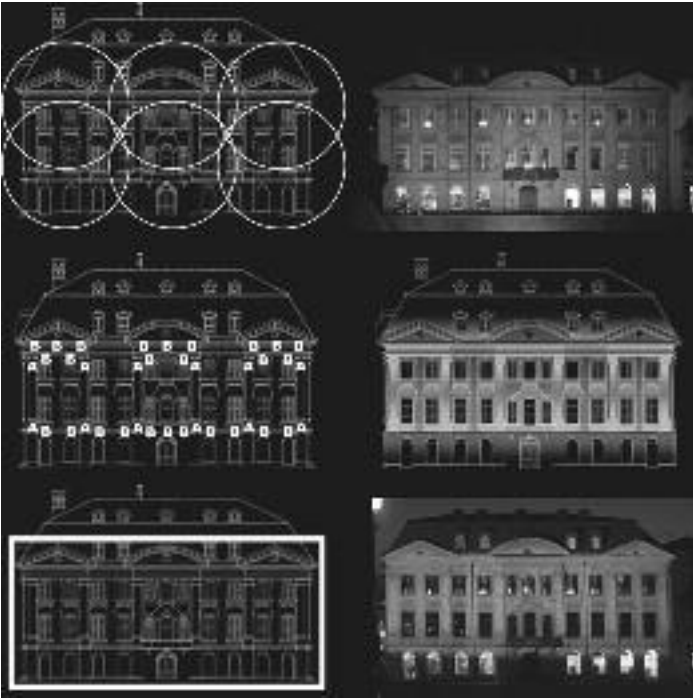
The scope of tasks for lighting in the public sphere has been subject to a process of continuous change in past years.

The function of municipal light ranges from an aid for nocturnal orientation and the establishment of (traffic) safety to the fulfilling of design tasks as part of the urban landscape at night. In addition, lighting tasks today must also be defined and implemented under consideration of economic, energy and environment-related criteria.

In order to be able to administer and coordinate such approaches, many towns and cities in the last few years have drawn up master lighting plans. These focus on aspects such as light pollution and the sustainable use of energy, but design-related themes such as the care of the urban landscape via lighting design implementation are also considered. Technologies until now used for scenic lighting of public spaces have significant deficits in terms of precision and sustainability.

With the lighting projection process, a design medium has been developed in this regard that with sustainable technology both in terms of light pollution and the consumption of energy enables precise modulation of the urban landscape with the use of light and shadow.

The lighting projection process allows wide-area, multi-building lighting design to be conceived and realised that would not be financeable with other processes due to preparation costs and operating costs. The lighting design task to be achieved changes from being a townscape of individually illuminated buildings to being part of a complete, holistic concept.



Floodlighting process

Insufficient precision of lighting control, therefore strong glare and high light emissions

Multi-luminaire process

Significant energy requirements, strong light emissions, high effort required for implementing and supporting a multi-luminaire process.



Projection process

Low energy requirements, no light spill, no glare, maintenance and support is simple with the projection process.

Combination

A combination of conventional LED technology with the latest projection lighting unites the benefits of both processes. Brilliance achieved via LED luminaires for the facade and a discreet overall appearance via projection.

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Research and development

With a research budget of one million euros, the projection process has been brought to maturity.

An interdisciplinary, specialist advisory body was established to represent participating city planning authorities, preservation authorities, environmental offices and operators.

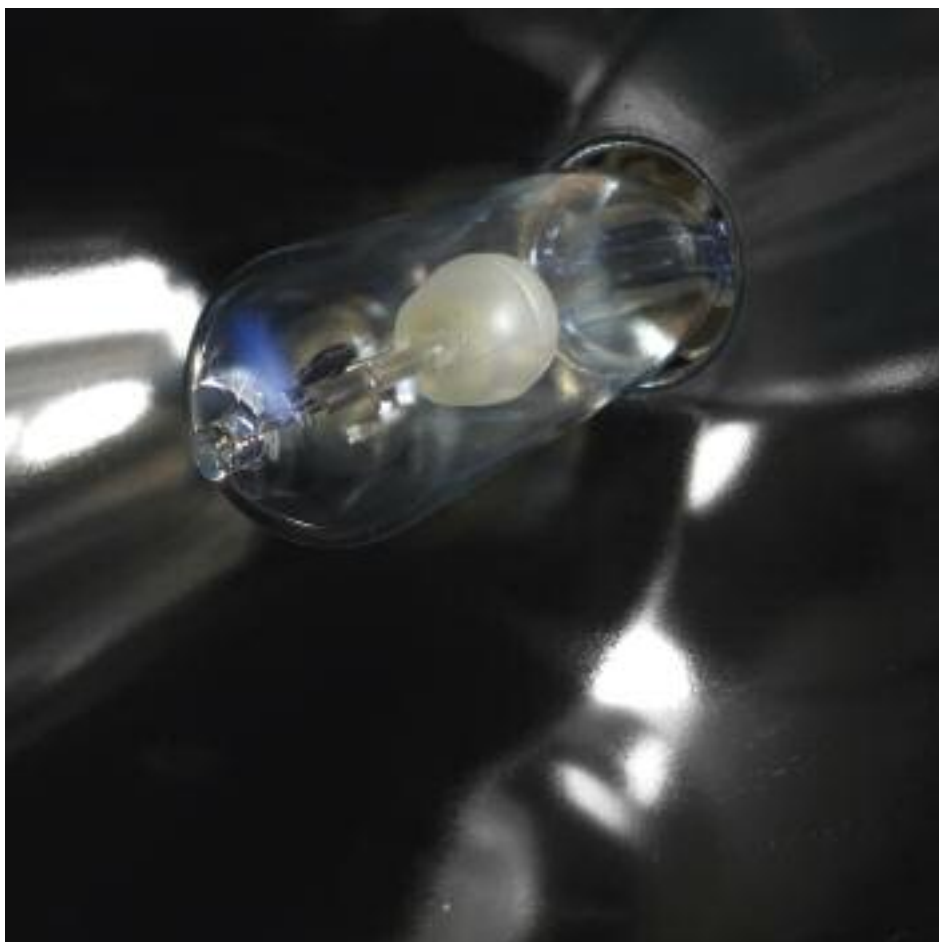
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 Gerd Graf, planning department, Basel
 Peter Baumgartner, preservation of monuments, Zurich
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 Alexander Schlatter, preservation of monuments, Basel

Optical high-tech, developed for everyday use



IP65 with insulation class II

Projectors from opticalight have been developed for permanent use in all weather conditions. The stainless steel housings with pressure equalisation membranes achieve IP 65 protection. And with insulation class II the projectors can be integrated into existing public lighting networks without earthing. Design of the device components endures maintenance-free operation for up to five years.



Optically advanced system for metal halide lamps

A high lumen yield, low energy consumption and a very long service life are advantages that make high pressure lamps some of the most important light sources. With LP 250, opticalight offers the first projector for these light

sources with 250W. The light output ratio of systems is the key to the economic implementation of projectors. All components have been developed for maximum efficacy and have been optically coated.



i	Research and development
Operators of public lighting systems as development partners	
<p>The permanent use of the devices was optimised in cooperation with the operators of road lighting systems. The Zurich electricity works, Basel industrial works, Bern power stations and Luzern water energy authority all successfully operate projection systems since 2007 under everyday conditions.</p>	

Nano-precision on a large scale Projection systems from opticalight by Siteco



The wide range on offer guarantees maximum precision and consistently high quality of the systems.

Lighting planners have the benefit of the latest planning aids and the long-term experience of opticalight. Support from the idea until successful planning of a projection system is an integral part of our technology offering. All services from delivery of the units and the calculation of masks right up to commissioning are implemented by opticalight by Siteco.

The comprehensive offer guarantees maximum precision with construction of the system, calculation of the lighting masks and successful fine tuning. In this way a uniformly high quality can be assured, independent of the planning specialists. Freedom of choice with design, long-term experience with implementation.

Lighting masks for 400-fold magnifications

Conventional projection devices are optimised for image diagonals of up to 3m. 60m image diagonals are commonplace with lighting projection. A projection system is designed as a floodlight system is. A few high power projectors are positioned at a large distance from the object. Calculated lighting masks cover those zones where light is undesirable. With differentiated grey values, irregularities of light distribution can be corrected and desired brightness differences realised. These calculated masks are transferred with up to 400-fold magnification onto the object.



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Research and development

370 million pixels for light distribution

Conventional image carriers are characterised by an undesirable 'pixelling' of light transitions with required projection sizes. The glass plates used by opticalight offer 370 million pixels for the control of light distribution.

With 0.007mm dot size, the aluminium coating is processed to the very limits of what is technically possible. The specification of mask production was a part of the development plans.

A premier system at calculable overall costs



Research and development

Lumens per euro as a development plan

The economic use of projectors is measured according to the available luminous flux on the facade surface.

For the opticalight projectors, a nominal value of 2 lumens per euro was specified and achieved.



Maximum quality equipment for an economic complete solution.

In urban areas due to reasons of dense building construction, floodlights can often only be used to a limited extent. In this regard, the rojection process is the most economic solution for sensitive situations in terms of the complete cost calculation when all factors have been taken into account. Uneven light distribution from the positioning of projectors is corrected with the masks. In this way, existing sites can be used.

The use of lower performance devices leads to lower operating, maintenance and upkeep costs. Costs for site development, mounting, maintenance and upkeep are the critical points with conventional systems. With the planning of building illumination, costs for maintenance, operation and support are usually

underestimated. LED luminaires with maximum service life also need to be cleaned. The light output ratio of luminaires mounted conventionally to facades is often dramatically reduced due to soiling. Colour shifts and differing lengths of service life with standard light sources demand that these all be regularly replaced. The costs of a system depend upon the quantity of projectors used. In the case of the Berlin Town House, it was possible thanks to intelligent lighting planning to realise a projection with the low power consumption of less than one watt per square metre. With 25 euros per square metre and an average of 20 lux it was one of the most costefficient until now. The planning aids available at www.opticalight.ch enable dependable statements to be made within a few hours for the costs to be expected for a projection system.

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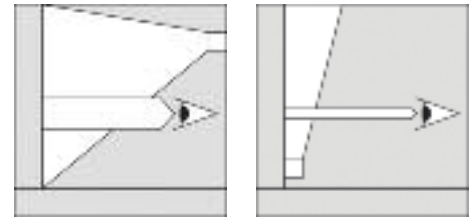
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Process technology as the key to energy efficiency

Lighting projection – nine times more economical than LED.

Lumens per watt is one factor, required watts per illuminated surface another. Lighting projection is at the top of both key figures. With 100 lm/W, the discharge lamps used are more effective than standard LEDs. Thanks to projectors with efficiency ratios exceeding 40%, lighting planners have 40 lm/W at their disposal.

For projection, light is aligned as vertically as possible onto the surface for optimal effect. LED spots mounted onto the facade direct light mainly into the night sky. In this way a 4500W LED system refurbished with a 495W projection achieved energy consumption that was nine times less.



Projektion

LED



22 Projektoren, 5.9 kW, 1.6 W/m² für 500m Seeufer

Thanks to optimally implemented projection lighting, large parts of the Zurich master lighting plan can be achieved with a high level of energy efficiency. Only light is masked that is undesired and that does not contribute to the planned effect.



4 projectors, 1.1 KW for a five star hotel

With the discreet lakeside sequence of buildings, a concentrated system was able to achieve the demands of premier class addresses.

Finest light distribution without light pollution



From zero to one hundred in 20cm

Sharply delineated black-white transitions are recognised as dark-to-light gradations in 400-fold magnification on the facade. With normal configurations, light can be faded in or out within 20 cm. In this way light spill to windows for example is avoided. Light on adjacent properties can be precisely masked.



Greater quality with less light

With conventional systems, brightness differences in distribution must be corrected with additional effort. This requires very high illuminance levels. For good building illumination, a five-fold brightness compared to adjacent buildings is sufficient. Higher outputs are hardly noticed and cast surrounding surfaces into complete darkness.



From one hundred to zero at the building edge

The small country church near to Basel is illuminated with a device with 5 lux at 2500K. This low illuminance prevents excessive contrast to the unlit (and therefore glare-free) entrance area. 10cm from the building edge, light emission is already reduced by 97%

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Research and development

The development processes were accompanied by specialists for the avoidance of light emissions. Their survey came to the following conclusion:

"The potential assumed to exist in the beginning for potential limiting of unnecessary light emissions with completely correct implementation was confirmed. From a purely technical point of view, this system for the illumination of objects can be evaluated at present as BAT (Best Available Technology)."

René Kobler, Constructional Energy Institute IEBau, FHNW

An adaptable presentation of untouched facades

Die Beleuchtung denkmalgeschützter Bausubstanz ist mit Auflagen verbunden.

The lighting of listed buildings is subjected to constraints. Projection lighting in terms of monument preservation is the first choice. The desired nocturnal effect for buildings is achieved with discreet light distribution and without structural interventions.

With many situations the emission of light spill from conventional projectors cannot be accepted. Glare in useable and residential spaces, undesired reflections on fenestration and a reduction of traffic safety are possible consequences.

Installation of luminaires to facades and aligned upwards prevents glare in public spaces, but this result in massive structural interventions. Culturally valuable buildings suffer permanent damage with the mounting of luminaires and cable routing.

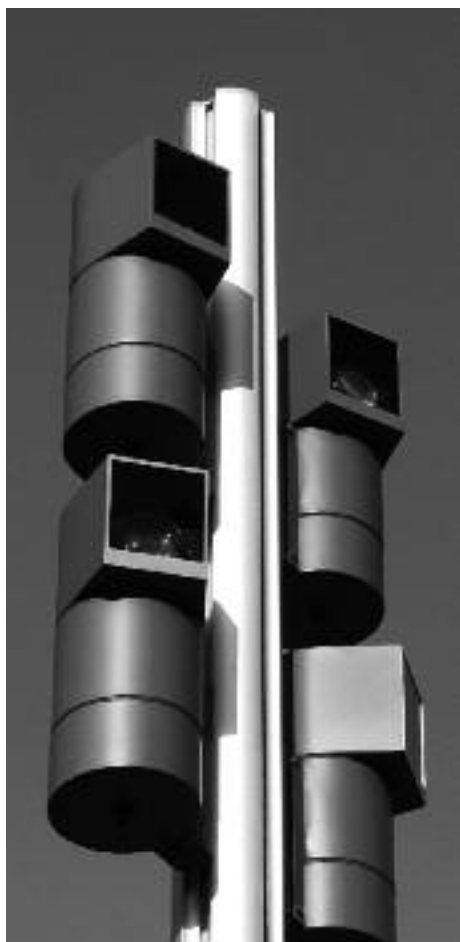


Seasonal lighting design with changing lighting masks

A patented system enables the precise, recurring modification of lighting masks.

In this way various light distribution patterns can be used for seasonal differences, special occasions or changed requirements. Defective masks can be replaced without further adjustments.

Projectors by opticalight



The projectors from opticalight have been optimised for precise, wide-area light distribution onto buildings in outdoor areas. Where possible the highest performance devices are specifically used. In sensitive environments and if a further niche is to be illuminated with low output, smaller, lower performance devices can be implemented.

Housing technology

1mm V2A housing, welded stainless steel. Powder-coated according to RAL or wet coated according to NCS without surcharge. White glass optically coated and thermally hardened.

Electrics

All electrical components with module can be replaced, and with insulation class II can be integrated into lighting networks without earthing. Connection with IP65 plug contact. Internal air-handling. Conventional ballasts with thermal fusing. Fully power-factor corrected.

Lighting technology

Optical system with variable light distribution curve. Fixed objective with 2x20° angle for maximum 40° conical projection. Triple axis keystone correction for inclined projections from 90° to 15°. Single fine adjustment in inner housing for precise mask replacement.



i Research and development

The Swiss company opticalight is a technology provider and responsible for the economic implementation of the research and development results.

Since 2010 an exclusive sales agreement exists with Siteco. You get the best of both worlds: long-term, international sales experience with lighting technology, and 'top of the line' projection technology from the market leader.

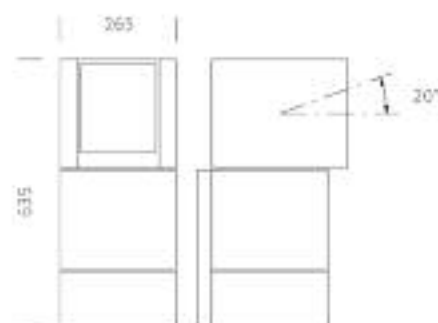
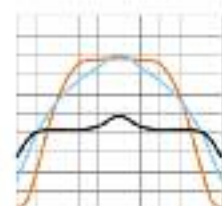
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This brochure and the latest planning instruments and product documents are available at www.opticalight.ch

**LP 250 40/30**

Powder-coated V2A housing (RAL) or wet coated (NCS).
 Insulation class II
 Protection class IP 65
 Weight 19 kg
 Mounting position vertical or horizontal

LDC, keystone correction and focus at works

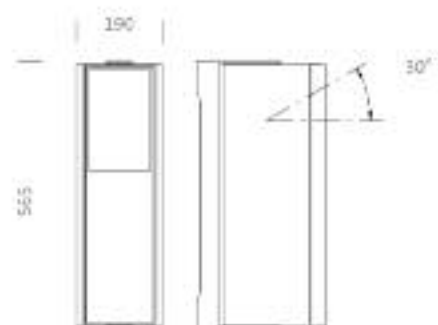
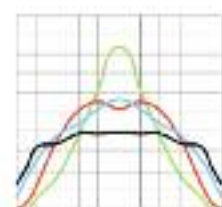


Objektiv	Lichtverteilung	LVK	Lumen	Bezeichnung	Bestückung	*K	h
40°	normal Mitte		8'500	LP 250 40 NM	Philips CDM-T 250	4200/3200	6'000
40°	Spot Mitte		9'800	LP 250 40 SM	Philips CDM-T 250	4200/3200	6'000
30°	Spot Mitte		7'000	LP 250 30 SM	Philips CDM-T 250	4200/3200	6'000

**LP 150 40/30**

Powder-coated V2A housing (RAL) or wet coated (NCS).
 Powder-coated aluminium front
 Insulation class II
 Protection class IP 65
 Weight 15 kg
 Variable mounting position

LDC, text correction and focus at works



Objektiv	Lichtverteilung	LVK	Lumen	Bezeichnung	Bestückung	*K	h
40°	normal Mitte		6'500	LP 150 40 NM	Osram HC/T 150	4200/3000	12'000
40°	Spot Mitte		6'300	LP 150 40 SM	Osram HC/T 150	4200/3000	12'000
30°	normal Mitte		5'200	LP 150 30 SM	Osram HC/T 150	4200/3000	12'000
30°	Spot Mitte		3'600	LP 150 30 SM	Osram HC/T 150	4200/3000	12'000

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