Lighting tools

for the future

opticalight®

office | industry | traffic | shopping | public | sports

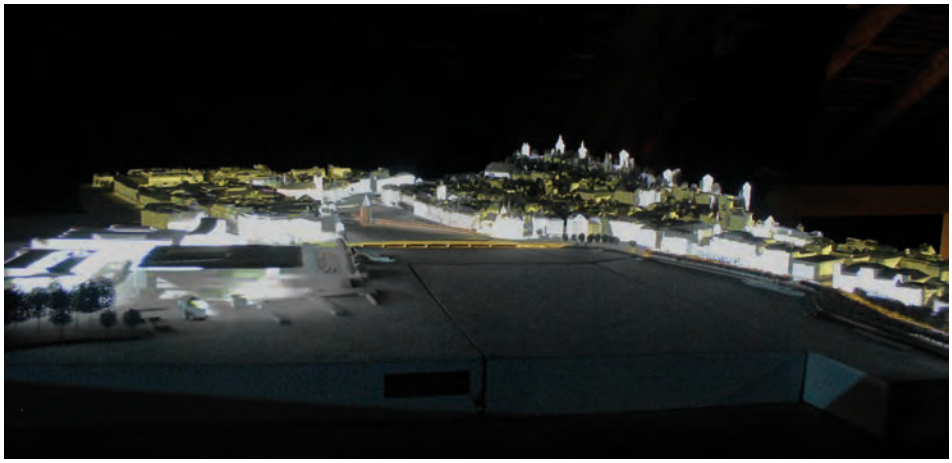
by

OSRAM

Projection lighting for the environmentally conscious implementation of master lighting plans

Projection lighting – technology offering for urban lighting planners

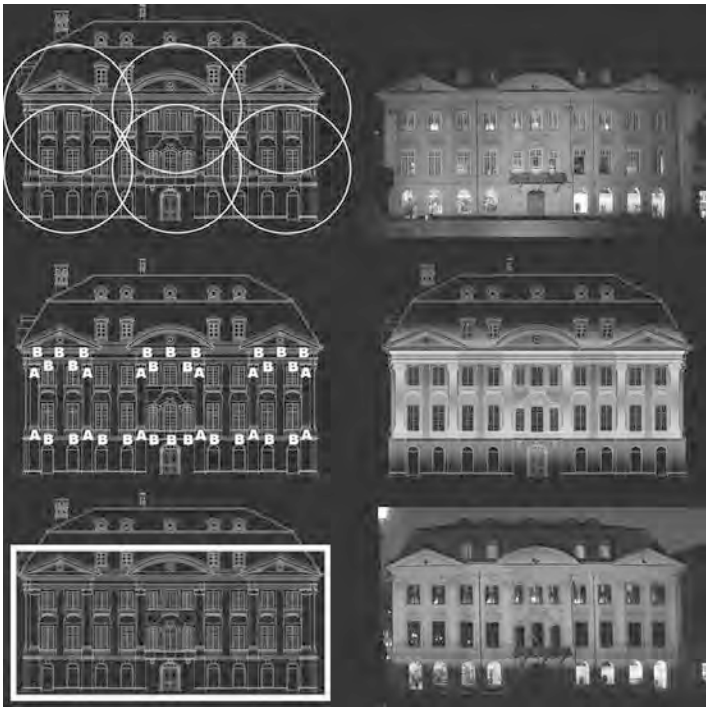
+ ecology
+ economy
+ planning security
+ acceptance and legal compliance
+ sustainability



scenic lighting in public urban areas

From nocturnal orientation, pedestrian safety and traffic security to aesthetics and design - municipal lighting has to fulfil various tasks. In addition, there's a growing demand for cost-effective and energy-saving practices with a low environmental impact.
Traditional technologies in use, especially those for scenic lighting, show significant deficits in precision, efficiency and sustainability. Therefore their applicability in urban areas is limited.

The projection lighting system is a design medium which has been developed in regards of providing sustainable technology, energy efficiency, limited light pollution and a highly aesthetic appeal. It's outstanding precision enables the detailed modulation of urban landscapes using light and shadow.



Floodlighting process

Few floodlights with high output illuminate out of distant positions – Insufficient precision in light distribution, high amounts of wasted light and glare

Multi-luminaire process

High number of low output fixtures, mounted on the facade – Significantly energy inefficient, strong light emissions, highly effortful implementing and support

Projection process

Few light projectors with high output illuminate out of distant positions, projected masks cover sensitive areas and highlight wished ones – Energy efficient, no light spill, no glare, cost-effective, simple maintenance and support

Combination

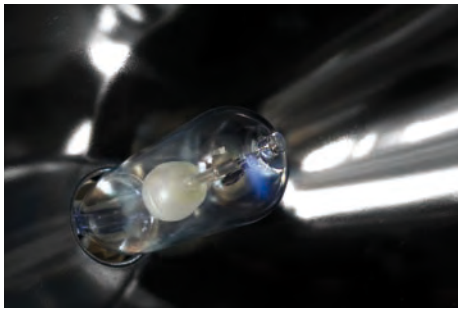
A combination of conventional LED and projection lighting technology unites the benefits of both practices. Brilliance is achieved via LED luminaires for the facade, the completing overall appeal via projection.

i Research an developement

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

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

Optical high-tech for everyday use



Optically advanced system for metal-halide lamps

The light output ratio of a system is the key to economic employment of projectors. The high lumen yield, the low energy consumption and the very long service life (15‘000 hours in average) are the advantages of high pressure lamps, which are considered to be one of the most important light sources.
With an output ratio of up to 50% opticalight offers the most powerful projector for high pressure lamps. All components have been developed for maximum efficacy and are optically coated.

IP65 with insulation class II

Projectors designed by opticalight have been developed for permanent use in all weather conditions. IP 65 Protection is achieved through chromium-nickel-steel housings and pressure equalisation membranes. The insulation class II projectors can be integrated into existing public lighting networks without being grounded. The device is designed to operate wihtout maintenance for up to five years.

+ output ratio up to 50%
+ optically coated components
+ weatherprooof IP 65
+ optimised for public lighting
+ 15‘000 h average service life

i public lighting installations

Operators of public lighting systems as development partners

In cooperation with road lighting systems experts, our devices were optimised for permanent use. Zurich electricity works, Basel industrial works, Bern power stations and Luzern water energy authority all successfully operate projection lighting systems under everyday conditions since 2007.

Nano-precision on a large scale – projection lighting systems from opticalight by OSRAM

Lighting masks for 400-fold magnifications

Conventional projection devices are optimised for an image diagonal of approximately 3 m - for opticalight projection lighting installations image diagonals greater than 60 m are normal. Like a floodlight installation, a few high output projectors positioned at some distance light the area up. Precise masks are calculated to cover zones where light is undesirable. And with high accuracy, different grey values are used to correct irregularities, adjust the brightness and accent details. The masks are then transferred with up to 400-fold magnification on the object.

+ 155 megapixel
+ image diagonals of up to 60 m
+ lightfast masks > 6 years

The comprehensive offering and a wide range of experience guarantee maximum precision and constant high quality

Lighting planners benefit from the continuously refined products and opticalight's longterm experience. Our offering includes assistance from the first idea throughout the successful planning of lighting projection installation. From the delivery of the equipment to the mask calculation, the instruction of operators and the initial commissioning: all services are implemented by opticalight.

The comprehensive offering guarantees maximum precision in construction, calculation of the lighting masks and successful fine tuning. Constant best quality does not depend on the planning specialist. Your choice of design meets our knowledge.

i Resolution and durability

155 million pixels for light distribution

At a 400 fold magnification, an undesirable 'pixelling' of light transitions characterises projections of conventional image carriers. The development of an image carrier providing the required accuracy was a formidable challenge. The glass plates designed by opticalight provide 155 million pixels for the highest precision of light distribution, limited by the dot size of 0.007 mm, the technical limit of the aluminium coating. Even after 6 years, no signs of fading or wearout has been found.

Innovative design approach for modern architecture

The enhancement of urban structures via projection lighting

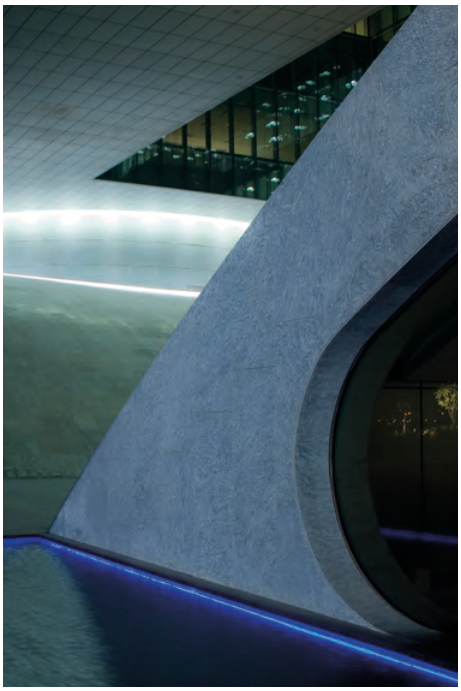
Supporting precise spatial definition, projection lighting inspires architects around the world. Opticalight's projection lighting system enables lighting design to truly shape a building's silhouette by emphasising architectural lines, surfaces and materials.
Providing infinitely variable brightnesses, projection lighting allows to set unique highlights.

Zaha Hadid, London
Emphasis of divergent structures: dark base, light superstructure, accentuated auditoriumt. Pièrre Vives, Montepellier, Frankreich.

Kaundbe Architekten, Schweiz
Consistent clarification from the bottom up. Lichtensteinisches Landesarchiv, Vaduz.

Netzwerkarchitekten GmbH, Darmstadt
Play of light and shadows with different materials. Logistikzentrale Gries Deco Company, nahe Frankfurt.

SOM Architects, New York
Sharp borderline of light at the base. Arcapita Bank, Manama, Bahrain.



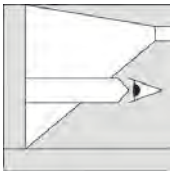
Key to energy-efficacy and cost-effectivness

Projection Lighting – many times more efficient than traditional methodes

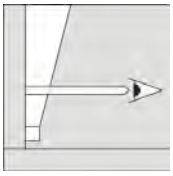
Lumens per watt is one factor, required watts per illuminated surface another. Projection lighting wins both.
With 100 lm/w, the discharge lamps in use are highly effective . Thanks to projectors with a luminance efficacy exceeding 50%, lighting planners have 50 lm/w at their disposal.

Cost-effective site development, mounting, maintenance and upkeep

In the planning the costs of maintenance and operation services are often underestimated. Traditional luminaires need to be cleaned for a maximum service life and the light emission ratio to facade of conventionally mounted luminaires is often dramatically reduced by soiling. Colour shifts and differing lengths of service intervals regularly result in the replacement of standard light sources.



projection
one position, 40% reflection



conventional
many positions , 10% reflection

+ 50 lumen per watt output
+ efficacy throughout vertical mounting
+ less positions, viable costs for mounting and upkeep
+ maintenance by operator

i Cost efficiency

Lumens per euro as a development plan

The efficiency of the opticalight projectors as measured by luminance efficacy reveals a nominal value of 1.5 lumens per euro.
The compact and concentrated system was able to achieve the demands of premier class addresses: 4 projectors, one position, 1.1 kw: a five star hotel brilliantly accentuated for 80€/m2.

Finest light distribution without light pollution

From zero to one hundred in 20 cm

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

+ light spill < 3%
+ accuracy > 0.3° or 3cm at 10m distance
+ no IR or UV radiation, minimal insect infestation

From one hundred to zero at the building edge

A small country church near Basel is illuminated with 5 lux at 2500 K. This low illuminance prevents excessive contrast to the unlit entrance area and reduces glare effects. 10 cm from the building edge, the light emission is already reduced by 97% .

Greater quality with less light

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

Protection against insect infestation

Opticalight projectors filter all invisible light and are therefor not infested by insects which are attracted by IR and UV radiation.

i Light emissions

The development processes were accompanied by specialists for the avoidance of light emissions.

René Kobler, Constructional Energy Institute IEBau, FHNW:

"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 be evaluated at present as BAT (Best Available Technology)."

International Darksky Association, Lighting Design Award Europe 2010

An adaptable presentation of untouched facades

The lighting of listed buildings is subjected to constraints

Projection lighting is the first choice for monument preservation. The desired nocturnal effect for buildings is achieved with discreet light distribution and without structural interventions.

Installations of luminaires to facades and aligned upwards prevents glare in public spaces, but require massive structural interventions. Heritage-protected buildings and cultural monuments would be damaged by mounting of luminaires and the routing of cables.

Exchanging lighting masks for seasonal lighting design

A patented system enables the precise, recurring modification of lighting masks. Various motives can be chosen for special effects, seasonal differences, special occasions or changed when requirements change. Defective masks can be replaced without further adjustments.

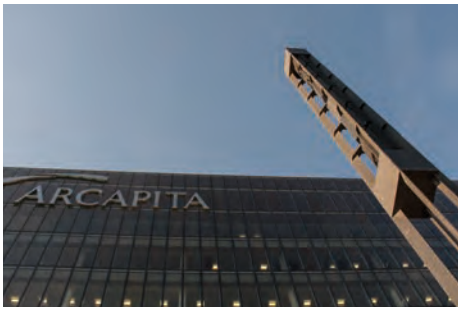
+ no structural interventions
+ exchange of lighting masks day or night
+ handling by operator

Black&white, grayscale, polychrome or fullcolour

With service life of over 6 years ensures our lighting masks are the ideal solution for exchangable effects. Black&White is used for to define and clearly differentiate the illuminated spaces. Grayscale allows to modulate the brightnesses. Single colours can be reached through colour filters, for complex colour concepts, special filters are available.

Customized production, specification and mounting

From the delivery of the equipment to the mask calculation, the instruction of operators and the initial commissioning: all services are implemented by opticalight. All projectors are individually factory set and are delivered prepared for assembly, ready for mounting. After the implementation the site is operated by instructed personnel.



Customized production

opticalight provides custom-made, powder-coated components, according to RAL without surcharge. Our standard components meet most requirements, special components for unique designs can be developed and delivered on request.

Keystone correction and focus

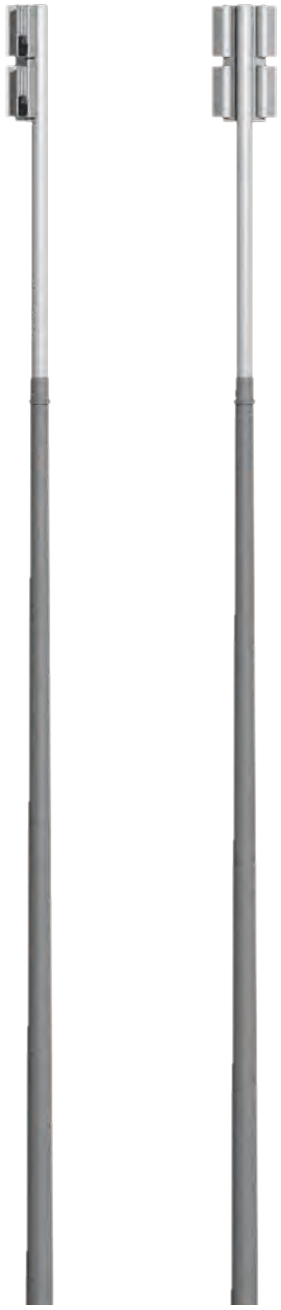
Every projector is custom-made and set for it's exact position. Technical planning and data collection provides the specification of light distribution, focal length and focus and is individually calculated for every single projector.

Electrics

All electrical components with module can be replaced, and with insulation class II be integrated into lighting networks without earthing. Connection with IP 65 plug contact. Internal air-handling. Conventional ballasts with thermal fusing. Fully power-factor corrected.

Data storage

All data are archived. Once calculated, the masks can be reproduced (if defective) or replaced by adjusted masks (for special events, seasonal occasions or new requirements).



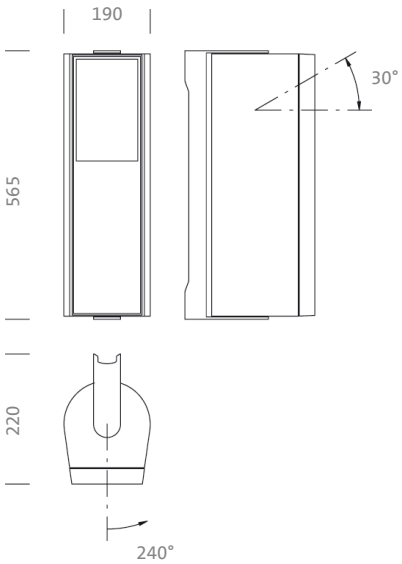
Mounting postions

Usually, existing sites can be used. opticalight projectors can be integrated into existing lighting networks and systems and require standard mounting parts.
No matter if upright, horizontal or tilted - every stable position is suitable for the installation of a projector: on the ground, on a pole, on a façade or on a roof.
If not vertically mounted, colour shifts must be taken into account.

Projectors – 7000 lumen

Lighting projector HCI 150 – up to 7000 lumen

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, keystone correction and focus at works
for permanent use in all weather conditions

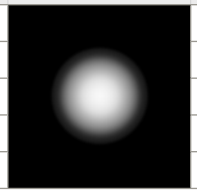


optical systems	30°	40°	50°
keystone correction	Triple axis keystone correction and focus		
depth:	580 mm		
width:	280 mm		
height:	186 mm		
weight:	15 kg		
150w discharge lamps	Osram HCI-T 150 W		
	830 WDL, 3‘000° K		14‘500 lm
	942 NDL, 4‘200° K		13‘700 lm
base	G12		
service life	15‘000 h	producer specification	
colour correction filters	ca. 2‘000° K - 5‘000° K		
	44 dichroitic colour filter on reuest		
housing	V2A powder coated, RAL		
front	aluminum powder coated, RAL		
vertical mounting	vertically adjustable +/- 30°		
	horizontally adjustable +/- 120°		
horizontal mounting	vertically adjustable +/- 120°		
	horizontally adjustable +/- 30°		

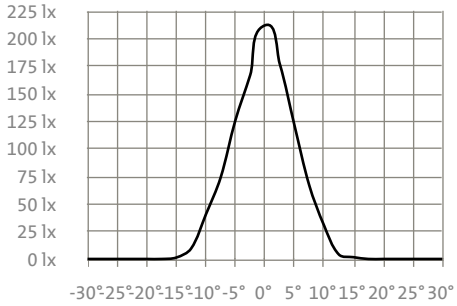
If not vertically mounted, colour shifts must be taken into account!

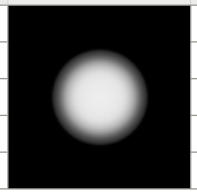
electrics	SKII		
	KVG		EVG
	165W		155W
	220V - 240V 50Hz		
supply	IP68 Kabeldurchführung		
	2* 0.75 mm^2	-55° C bis +155° C	
	hohe Ozon und Witterungsbeständigkeit		
	RKC 4/9	Lumberg	IP67
ambient temperature	- 20° C bis + 45° C		
	interne fan-cooling, IP 65 barrier		

LP HCI 150 30 – up to 7000 lumen

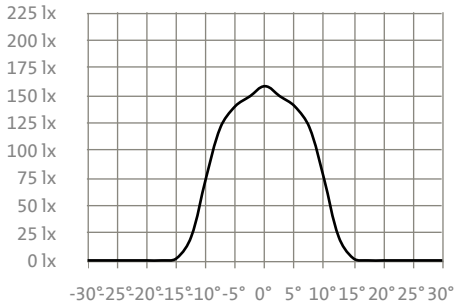
LP HCI 150-30SN				Efficiency / Efficacy
				31 %
30° Lens spot narrow				27 lm/W
m	ø 3%	30°	E (Lux)	Half-peak angle
15	6.0		377	12°
20	8.0		212	Cutoff peak diameter
30	12.0		94	0.40 x distance
50	20.0		34	Total Output
80	32.0		13	4'425 lumen

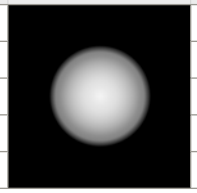
150-30SN 20 m distance



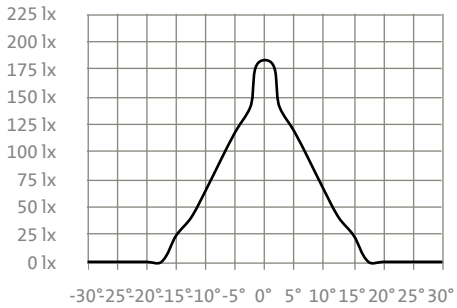
LP HCI 150-30SW				Efficiency / Efficacy
				43 %
30° Lens spot wide				38 lm/W
m	ø 3%	30°	E (Lux)	Half-peak angle
15	6.0		280	19°
20	8.0		157	Cutoff peak diameter
30	12.0		70	0.40 x distance
50	20.0		25	Total Output
80	32.0		10	6'224 lumen

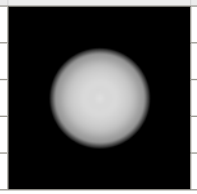
150-30SW 20 m distance



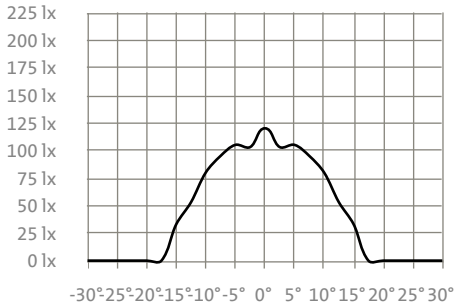
LP HCI 150-30RN				Efficiency / Efficacy
				45 %
30° Lens regular narrow				39 lm/W
m	ø 3%	30°	E (Lux)	Half-peak angle
15	8.1		325	15°
20	10.8		183	Cutoff peak diameter
30	16.2		81	0.54 x distance
50	27.0		29	Total Output
80	43.2		11	6'510 lumen

150-30RN 20 m distance

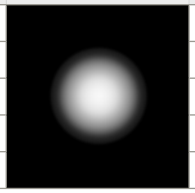


LP HCI 150-30RW				Efficiency / Efficacy
				49 %
30° Lens regular wide				43 lm/W
m	ø 3%	30°	E (Lux)	Half-peak angle
15	8.1		212	25°
20	10.8		119	Cutoff peak diameter
30	16.2		53	0.54 x distance
50	27.0		19	Total Output
80	43.2		7	7'036 lumen

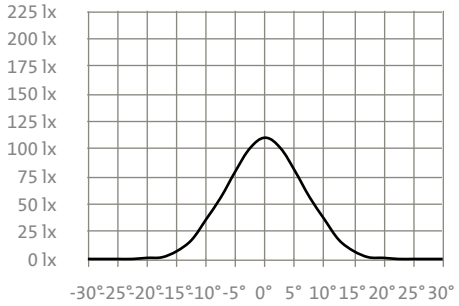
150-30RW 20 m distance

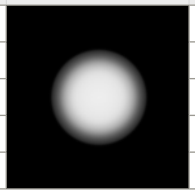


LP HCI 150 40 – up to 7000 lumen

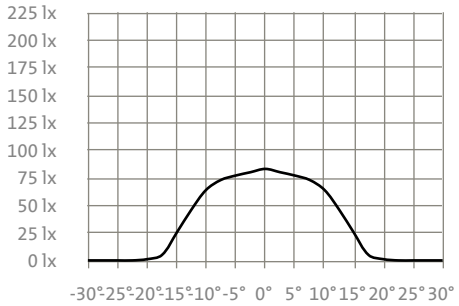
LP HCI 150-40SN				Efficiency / Efficacy
				27 %
40° Lens spot narrow				24 lm/W
m	ø 3%	40°	E (Lux)	Half-peak angle
15	8.1		195	16°
20	10.8		110	Cutoff peak diameter
30	16.2		49	0.54 x distance
50	27.0		18	Total output
80	43.2		7	3'920 lumen

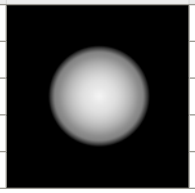
150-40SN 20 m distance



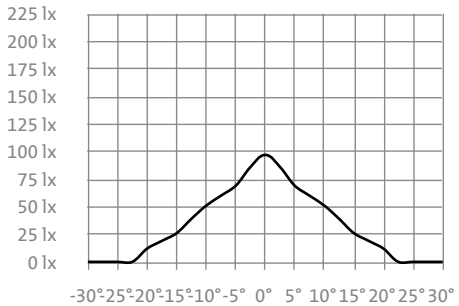
LP HCI 150-40SW				Efficiency / Efficacy
				40 %
40° Lens spot wide				36 lm/W
m	ø 3%	40°	E (Lux)	Half-peak angle
15	8.1		147	29°
20	10.8		83	Cutoff peak diameter
30	16.2		37	0.54 x distance
50	27.0		13	Total output
80	43.2		5	5'862 lumen

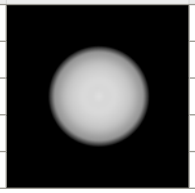
150-40SW 20 m distance



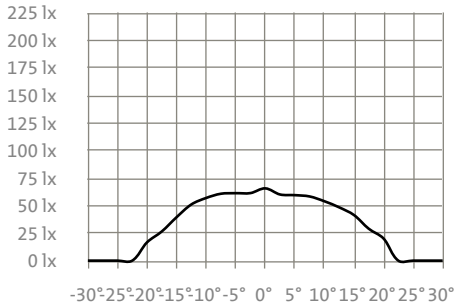
LP HCI 150-40RN				Efficiency / Efficacy
				40 %
40° Lens regular narrow				36 lm/W
m	ø 3%	40°	E (Lux)	Half-peak angle
15	11.0		171	20°
20	14.6		96	Cutoff peak diameter
30	21.9		43	0.73 x distance
50	36.5		15	Total output
80	58.4		6	5'863 lumen

150-40RN 20 m distance

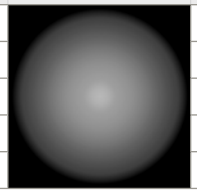


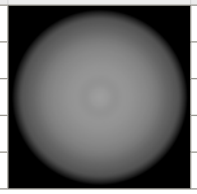
LP HCI 150-40RW				Efficiency / Efficacy
				49 %
40° Lens regular wide				43 lm/W
m	ø 3%	40°	E (Lux)	Half-peak angle
15	11.0		116	32°
20	14.6		66	Cutoff peak diameter
30	21.9		29	0.73 x distance
50	36.5		10	Total output
80	58.4		4	7'051 lumen

150-40RW 20 m distance

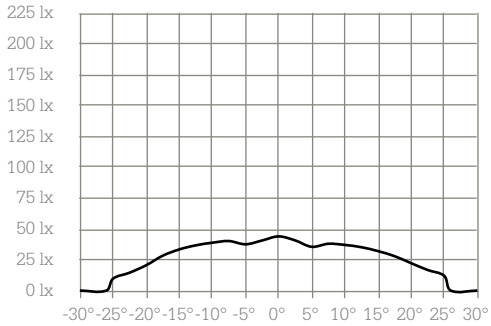


LP HCI 150 50 – up to 6800 lumen

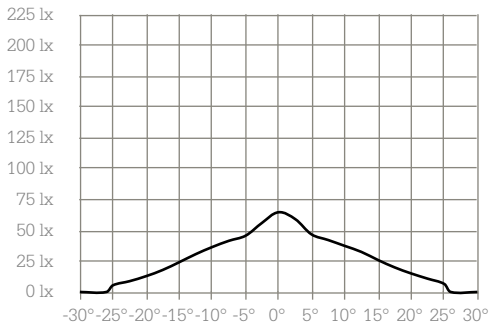
LP HCI 150-50RN				Efficiency / Efficacy
				39 %
40° Lens spot narrow				34 lm/W
m	ø 3%	50°	E (Lux)	Half-peak angle
15	14.0		115	26°
20	18.6		65	Cutoff peak diameter
30	27.9		29	0.93 x distance
50	46.5		10	Total output
80	74.4		4	5'663 lumen

LP HCI 150-50RW				Efficiency / Efficacy
				47 %
40° Lens spot wide				42 lm/W
m	ø 3%	50°	E (Lux)	Half-peak angle
15	14.0		79	44°
20	18.6		44	Cutoff peak diameter
30	27.9		20	0.93 x distance
50	46.5		7	Total output
80	74.4		3	6'863 lumen

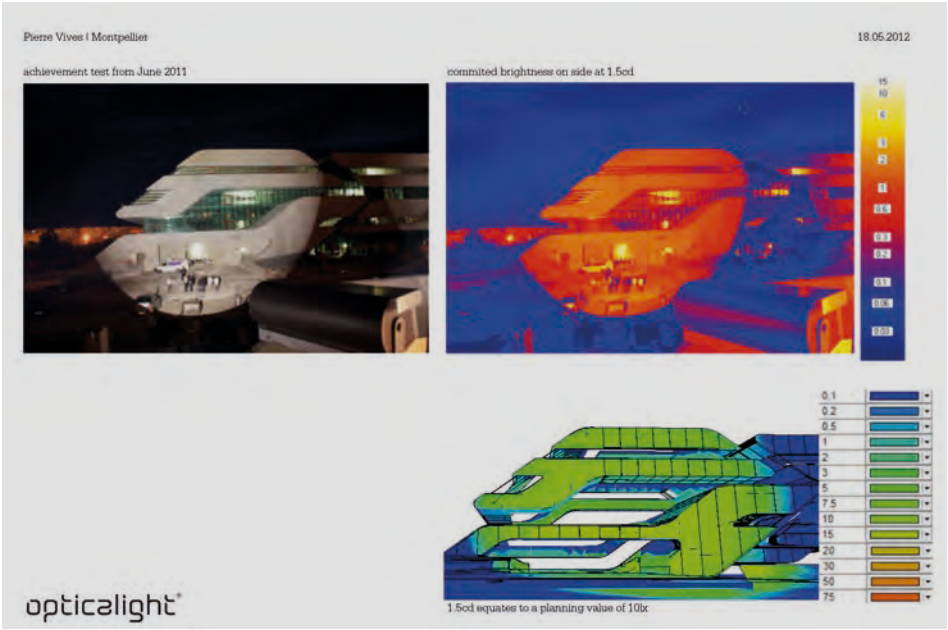
150-50RW 20 m distance



150-50RN 20 m distance



The accurate evaluation of perfomance tests ensures feasability and successful planning. On the left: desired brightness, right: Candela per m2 and the implications for the required luminance in lux above.



Quoted offering

Manufacturers of luminaires deliver projectors, opticalight delivers a complete solution. Technical know-how meets experience in public lighting and sense for aesthetics and design. Lighting planners, specifiers as well as artists and designers find assistance and support for all needs and wishes throughout the successfull realisation of their project. If conventional technology is insufficient, opticalight provides the next-low costing alternative.

+ constant high precision
+ omprehensive know-how
+ unrivalled services
+ planning-support included

Planning support and monitoring

A projection lighting installation is ambitious. Depending on the chosen products, very different, cost-relevant aspects have to be taken into account. opticalight has more than 10 years of experience with planning and implementation of projection lighting projects and this experience is at your disposal. Send us your lighting project or call us. Within three days you will receive our comprehensive technical approach to finding a solution with a quotation. We will establish the connection to our local sales person.

Feasability test

For many customers projection lighting is still a novelty. With a perfomance test at the location, the impressively low energy needed, the possibilities and limitations of projection lighting become visible. Our tests will be prepared together with our partners in consultation and is part of our offering. The feasability test can also be ordered separately.

Projectors

opticalight projectors are developed for permanent use in all-weather-conditions and are optimised for public lighting. The viable costs of 1.5 Lumen/€ for a IP65 device could only be made possible due to many years of research and development. To ensure that you get an optimally configured device, we will plan the whole installation in detail. For each projector, one of ten standard light distribution curves will be chosen. Distance, tilt and mounting height are specified case-by-case for the individual in-factory configuration.

Technical planing

Technical planning provides the specification of light distribution, focal length and focus and is individually calculated for every single projector. Mounting height and exact postion are calculated, the projectors can be mounted and set during the day. Every projector has it's serial number, position and comes with an individual mounting data sheet

Data collection

The projectors have to be mounted at their final position and set for to collect the date used for the calculation of the lighting masks. The mounting is provided in cooperation with local companies, instructed ba opticalight.

Calculation and production of lighting masks

When all data are collected, the lighting masks are calculated and produced. Planning-support and technical planning ensure that various designs can be realised. Different demands require individual manufacturing solutions. The patented system ensures constant high precision. The lighting masks are fixed on a carriage and can be implemented by instructed personnel.

First implementation

The first implenentation may be done through opticalight and is part of our offering.

Test of feasability with 30° luminance

opticalight®

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