



Innolumis

BETTER VISIBILITY WITH LESS ENERGY

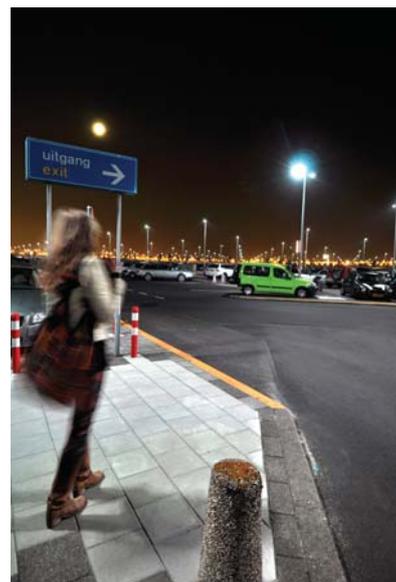


Innolumis



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Innolumis

company profile

Better visibility with less energy

Innolumis public lighting has developed a pioneering concept for the illumination of public spaces. With sustainable LEDs we create light which perfectly matches the sensitivity of the human eye in evening and night-time vision. This way less energy is needed compared with conventional lamps, while at the same time better visibility is provided.



Innolumis is known for its innovative products. We integrate knowledge of visual perception with the latest LED and lighting technologies – a Dutch invention which has brought about a breakthrough in sustainable public lighting. We are specialists in optimizing the light spectrum for the human eye and our luminaires focus the light where you want it, with no waste and with no light pollution. Our products are designed in the Netherlands and continuously tested in our in-house laboratory, which has the availability of the most exclusive measurement equipment.

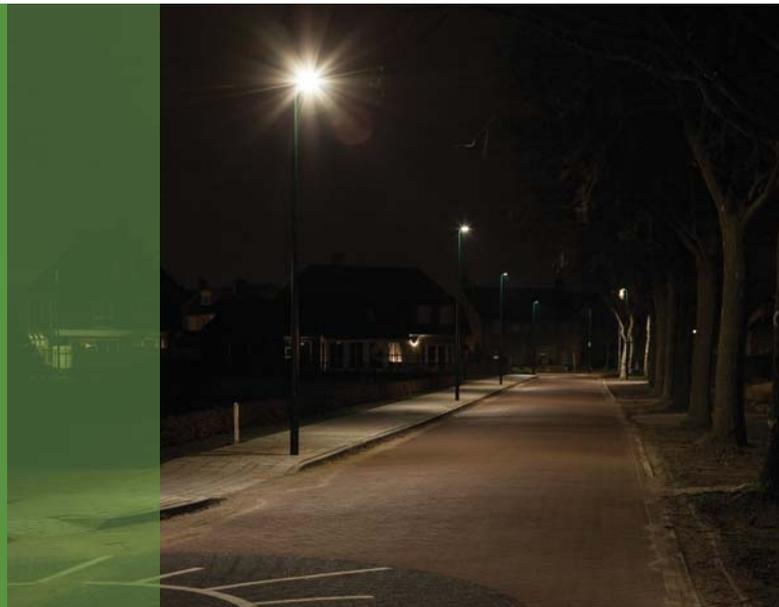
Our lighting systems offer a considerable contribution to sustainability, energy conservation and the reduction of

CO₂ emissions. Wasteful public lighting is history once and for all. Innolumis LED lighting is applied in residential neighborhoods, alongside roads, in parks and in parking lots. In short, anywhere where public space is used in the dark. Our lighting creates a unique atmosphere in nature and rural areas where light pollution needs to be reduced to a minimum.

Our mission

Innolumis strives for an accelerated transition from conventional lighting to a sustainable and high-quality alternative, based on LEDs. As a company, we wish to be a symbol of the transition to more sustainable and suitable lighting systems world-wide.

Benefits of Public Lighting



Safety for road users

Research has shown that the use of Public Lighting has a positive effect on the safety of road users. Especially with vulnerable road users such as pedestrians, cyclists and motorcyclists. By lighting roads (especially the ones which were not lit before) the amount of accidents reduces significantly. Also the use of LED streetlights instead of traditional streetlights contributes to this reduction of accidents.

Social safety

Besides the positive effect on safety on the road, public lighting also influence the social safety. According to Dutch research there is less criminal activity in environments with a higher illumination level than in environments where it was almost dark. Another important result is the perception of people that they feel much more safer in luminated areas.

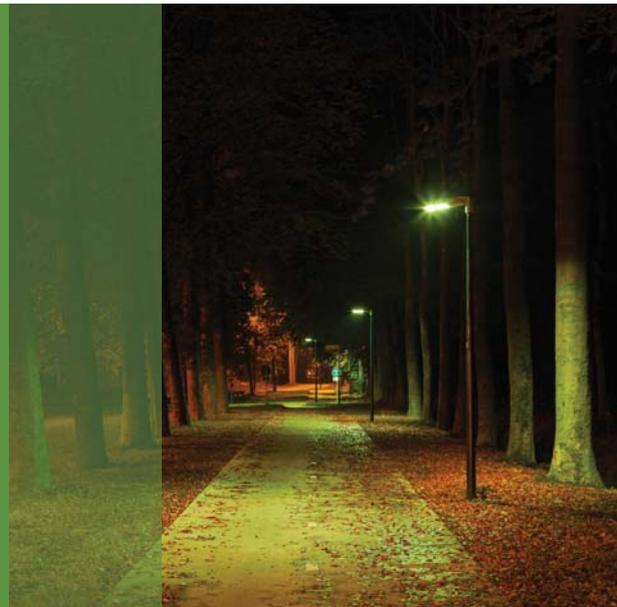
Improvement way of life

Public lighting does not only creates safety, it also improves life standards. It extends the hours of the day, which leads to more activity. Certainly in areas where artificial lighting is not common use.



Lighting concepts

Mesopic & Photopic



Working of the human eye

The relationship between light and visibility is more complex than one might think. Colour temperature and the interaction between light wavelengths affect our vision, our alertness and our sense of well-being. Consequently, Innolumis dedicates a lot of research into which light wavelengths work best for the human eye.

Our eyes have two vision systems: one for daytime and one for the dark. These light-sensitive cells (rods and cones) work best at other separate wavelengths. By choosing LEDs that stimulate exactly these wavelengths, our eyes see more efficiently, and both vision systems can reinforce each other. We call this ‘mesopic vision’, and this phenomenon is what allows us to deliver our promise ‘More vision with less energy’.

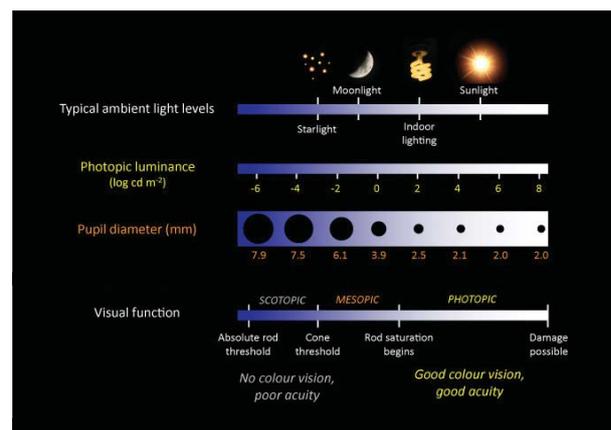
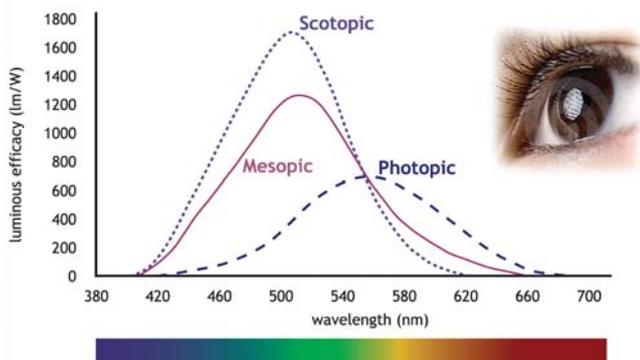
S/P ratio

The S/P ratio is a characteristic of a spectrum and is defined as the ratio between night vision (scotopic) and daytime vision (photopic). Public lighting with a high S/P ratio enable us to see much better when the light intensity is low, it also requires less energy to obtain the same level of visibility. More visibility with less energy.

We combine knowledge of visual perception with the newest LED and lighting technologies. Innolumis offers different concepts which can be used depending on the environmental circumstances.

1) Mesopic concept

The mesopic light sources in Innolumis luminaires are red, green and blue LEDs. With this RGB concept, an optimal light spectrum is developed so that excellent vision is obtained with little energy. At the relatively low light levels provided by public lighting of up to 10 lux (about 0.6 cd/m²), our eyes are primarily sensitive to green and blue light. This can be noticed, for instance, from the fact that people can still see by the bluish shine of the moon. For this reason, Innolumis lights contain relatively much green and blue which improves visibility in the night. Red is added for improved colour recognition. In this way we have developed three light colours, each one optimal for its own application. The basic principle is a high S/P ratio for maximum energy savings and clear sights. The Innolumis mesopic range is perfectly suited for rural areas, where it’s very dark and hardly any influence of other lightsources. >





Three mesopic light colours

Innolumis mesopic LED lighting are available in three spectrums, or light colours: Golden Green, Moonlight and White Moonlight. Golden Green is made with green and red LEDs and has a golden-green hue. Golden Green is mostly used in environments where the green character is accentuated, such as in parks and in the countryside. Moonlight is our ‘intensified moonlight’ and is made with blue, green and red LEDs. Moonlight provides white light with a slightly greenish hue. White Moonlight is the whitest of the Innolumis mesopic light colours and is made with blue, green and red LEDs. White Moonlight is at its best in urban areas.

Colour perception

Colour perception for mesopic LED light sources is difficult to express in the Colour Rendering Index (or Ra value) used for conventional light sources. Therefore we provide an indicative comparison of the perception of reference colours in daylight, in the White Moonlight of Innolumis and in high-pressure sodium (SON) light, a conventional alternative. RGB LED light sources have a higher degree of colour recognition.

Daylight (7395 K)



White Moonlight



High-pressure sodium (SON)



2) Photopic concept

Although the eye sensitivity varies between day and night, lighting standards are still based on photopic (daylight) standards. For these situations Innolumis introduced the photopic concept. The photopic light sources have got a high lm/w ratio and are available in three different colours. Especially in urban areas the Innolumis photopic solution is the best solution available.

Three light colours

Innolumis photopic LED lighting is available in three different colours; 730 (3000K), 740 (4000K) and 750 (5000K). The Color Rendering Index of the photopic lightsources is excellent which leads to a better colour recognition compared to the standard HPS lamps.

3) Specialties

Due to our knowledge and experience in creating different light spectra, we are able to create spectrum solutions for special purposes upon request. This has led to the following spectra solutions:

- The Golden Orange, this light source has been developed primarily for scenarios where green or white light is not desired. This would include areas like town centers and main roads and also winter sports resorts in the Alps. Soft orange light with a golden glow creates a cosy atmosphere, with excellent colour recognition (>80).
- The Bat lamp, which gives a monochrome amber colored light. This lamp has been designed especially for use around bat habitats. Bats are being disturbed by white light, by using only amber colored light sources bats will not longer be bothered by public lighting.
- The Bird lamp, which gives a blue colored light but still has a good color recognition. This special light is installed along the coastline in the northern part of the Netherlands. This spectrum does not interfere the birds while they are flying across the shore.

Sustainable



Long lifetime

The Innolumis luminaires have a long lifetime and require little energy and maintenance. Maintenance is limited to cleaning, because replacement of the light sources is not necessary. The LED light sources are from a very high quality and therefore have a higher efficiency and longer lifetime. LEDs, electronics and luminaires are designed and selected so that a lifespan of at least 80,000 hours is obtained.

Smooth surface

The surface of the Innolumis luminaires are all smooth and dirt repelling thanks to the special coating which is used. All these features prevents that the luminaire attracts dust, dirt, insects, etc. This is bad for the heat management as the lamp will get warmer and lifetime will be shorter. Usually the lamps needs to be cleaned once in a while, but with Innolumis products maintenance is hardly necessary.

No harmful materials

Innolumis works according to the RoHS guidelines. The materials that we use are long-lasting and have very little impact on nature. As part of the design and production process, Innolumis conducts 'life cycle analyses' of its products in order to determine their impact on the environment and to keep this as low as possible. For instance the complete luminaire is 100% recyclable.

No light pollution

Innolumis luminaires hardly create any light pollution. The way the luminaires are designed makes the light shine on the places which needs to be lit.

Total Cost of Ownership (TCO) and investment return time

Innolumis is delighted to provide Total Cost of Ownership calculations for its customers. This is a complete method for calculating costs, which takes into account not only the purchase but also lifetime, energy consumption and maintenance. Experience shows that an investment in Innolumis LED lighting earns itself back in a short period.



Our luminaires

Mini Nicole, Nicole & Maxi Nicole

See what must be seen: Our Nicole family

The Nicole luminaire is the most successful Innolumis retrofit product. Since the launch in 2012, many projects from car parks to roadways have been lit by this luminaire. This luminaire comes in capacities of 10 to 75 watt and in all light spectra. The Nicole is suitable for poles with a height from 4 to 10 meters and can be perfectly used for residential streets, car parks and roads.

The Mini Nicole luminaire is a retrofit luminaire that is suitable for lower lampposts. The luminaire comes in capacities of 8 to 24 watt and shares its design language and technology with the Nicole luminaire. The radiating pattern of the smaller light source compartment makes the Mini Nicole the ideal solution for lighting in residential areas, cycle paths, pedestrian areas and parking lots. The Mini Nicole can be used at poles with a height of 4 to 6 meters.

The Maxi Nicole luminaire is the newest Innolumis retrofit product. It completes the Nicole family range and shares its design language. The Maxi Nicole comes in capacities of 90 to 170 watt. The Maxi Nicole can be used at poles with a height from 10 to 18 meters and is perfectly suited for roadways and highways.

Connect and aim

All luminaires, the Mini Nicole, Nicole as well as the Maxi Nicole, fit all lampposts, eliminating the need to replace existing ones. This is not only simple and convenient but also fits with our goal of sustainability and re-use of materials. The luminaires can be tilted in 5-degree increments and is made easy by the cogged coupling with the mast piece. By using an 'anti-fouling' powder coating, dirt build-up is prevented as much as possible.

Driver compartments

The driver compartment is easy to open and has got an IP67 rating. A rubber gasket keeps moisture and dust from entering the compartment. A special plug is used to make sure that the lightsource compartment is not accessible, so it is completely separate from the driver compartment. The LEDs are connected through a special Unicable® M12 plug.

The dimmable Mean Well® driver is IP67, cast in resin and SELV-Galvanically separated. The driver is exchangeable. There is also enough space to add a dimmer or a surge protection device.

The Mini Nicole features one compartment for both the driver and the light sources.

The light source compartments

Because LEDs are highly sensitive to dust and moisture, the light source compartment (the part containing the optics and the light sources) is IP67 and therefore completely dust- and moisture-free. There is no open connection between the driver compartment and the light source compartment. If the driver compartment is opened, for instance in order to place a dimmer, the LEDs are not exposed to dust or moisture.

LED light sources

Innolumis develops and produces its LED light sources in the Netherlands. The light sources make use of high quality LEDs. They have a high efficiency and long lifespan. Temperature management is crucial in terms of the lifetime of LED lights. The LED light sources are in direct contact with the entire luminaire and are never burning on their maximum but on their optimum. This way the LEDs are optimally cooled and a long lifespan is guaranteed.



Use of reflector technology

Thanks to the reflector technology in the Mini Nicole, Nicole and Maxi Nicole, the luminaires give a combination of direct and indirect lighting. This leads to a superb light distribution and hardly any glare (G6).

Constant Lumen Output CLO

The Mean Well® driver has a standard CLO. This driver ensures that the LEDs always receive the same quality of electricity, regardless of the delivered voltage and possible ageing of the LEDs. This way, the light sources provide the same amount of light during their entire lifespan.

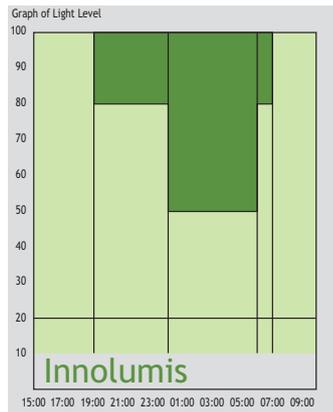
Dimming



Dimming is an interesting option for achieving additional energy savings. Innolumis luminaires are designed to be able to integrate this option. There is enough space in the driver compartment to add a dimmer and or a surge protection device. The special junction box makes it easy to connect these devices.

The drivers in the Innolumis luminaires (Mean Well®) comes with a standard 1-10V control. The dimmer can be adjusted to this so that it dims the installation perfectly and obtains the desired energy savings.

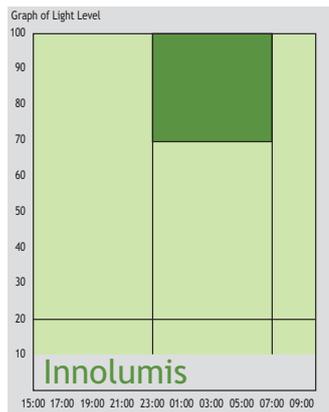
Innolumis can deliver luminaires with a pre-programmed dimming regime. The customer indicates which regime he or she desires, and Innolumis ensures that this is realised.



Regime I

- From turning-on time to 7 pm: 100%
- From 7 pm to midnight: 80%
- From midnight to 6 am: 50%
- From 6 to 7 am: 80%
- From 7 am to turning-off time: 100%

45% extra energy conservation



Examples of dimming regimes

Regime II

- From turning-on time to 11 pm: 100%
- From 11 pm to 7 am: 70%
- From 7 am to turning-off time: 100%

28% extra energy conservation



DE LANGE
SCHOOLSERVICE

DAG
EN
NACHT
SERVICE

ONTSTOPPEN • REINIGEN • ONDERHOUD
REPARATIE • VERNIEUWEN
CAMERA-INSPECTIE • STANKONDERZOEK

DAG
EN
NACHT
SERVICE

ALBERT
TOUW
WWW.

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