



# AMBIENT LIGHTING

Solar powered lighting products for  
parks, gardens and residential areas

A tall, white, solar-powered street lamp stands in a grassy area. The lamp has a solar panel on top and a vertical LED strip. The background shows a residential street with houses and a church tower under a cloudy sky.

# Sunlight empowers

in pursuing our customer's sustainability by ensuring sight for orientation & guidance

## Our vision

Our aim is to contribute to a sustainable future by efficient use of energy, while maintaining the sense of safety and/or ambience of an enlightened environment.

We value our customer's independency and having a certain extend of freedom in light design. Thinking of the grid's future function, we believe that the common centralized electricity grid should not be the obvious choice for public lighting. Especially for non-urban locations, where the grid besides for lighting is redundant. All without compromising aesthetics. The SWISS LED product line is a clever designed, innovative off-grid lighting solution - ready for a sustainable future.

During daytime, sunlight is converted into electric energy by solar panels. The energy is stored in a battery, which is the energy source for the highly efficient LED luminaire at night. This robust stand-alone outdoor lighting solution is designed for a sustainable future, in both rural and urban areas. In an early stage is key in finding an optimum in the design!

## Our lighting products

SWISS LED provides a high quality and sustainable solution for autonomous public and ambient lighting. Our solar lighting columns, or popularly called solar masts, generate all the energy needed for illuminating the environment by high-quality European produced solar panels. As well as our solar lighting bollards and ground spot. Solar panels are deliberately mounted vertically along four sides of the column or levelled in the ground surface. The vertical position prevents the accumulation of dirt and has a positive effect on the seasonal variation in the angle of sunlight irradiation. Produced energy is high efficiently stored in a durable and recyclable battery, under supervision of the in-house developed control unit's charging program. Additionally, the control unit monitors the condition of the complete system and acts upon it to maintain a high efficient (>97%) and reliable way of lighting your environment.

The clever design of the product serves the quality and lifetime of the complete system. For example: In the bollard, the natural air flow guided through the interior which limits the operation temperature and positively effects the solar energy generation, or the foundation box which replaces the regular concrete foundation and at the same time contains a compartment for the battery underground, which limits temperature fluctuations and increases the lifetime expectancy of the battery.

In conclusion: SWISS LED is sustainable in use of energy, but also in use and total costs of ownership due to its clever holistic design, robust, low maintenance construction and long-lasting components.



### Off-grid

Functioning fully off-grid and focus on light performance.

### Sustainable

Solar powered and designed with high quality materials.

### Reliable

Selection of the best (proven) technology.

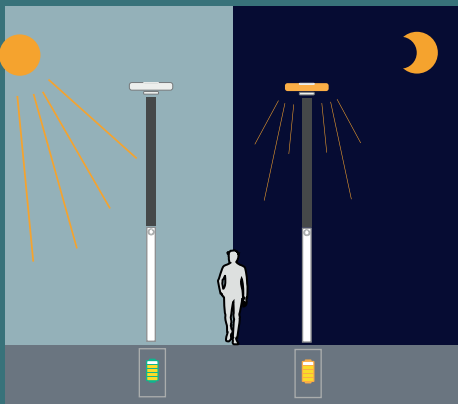
## Basic principle

The SWISS LED product line is 100% autonomous and ready for the sustainable future, we all prefer.

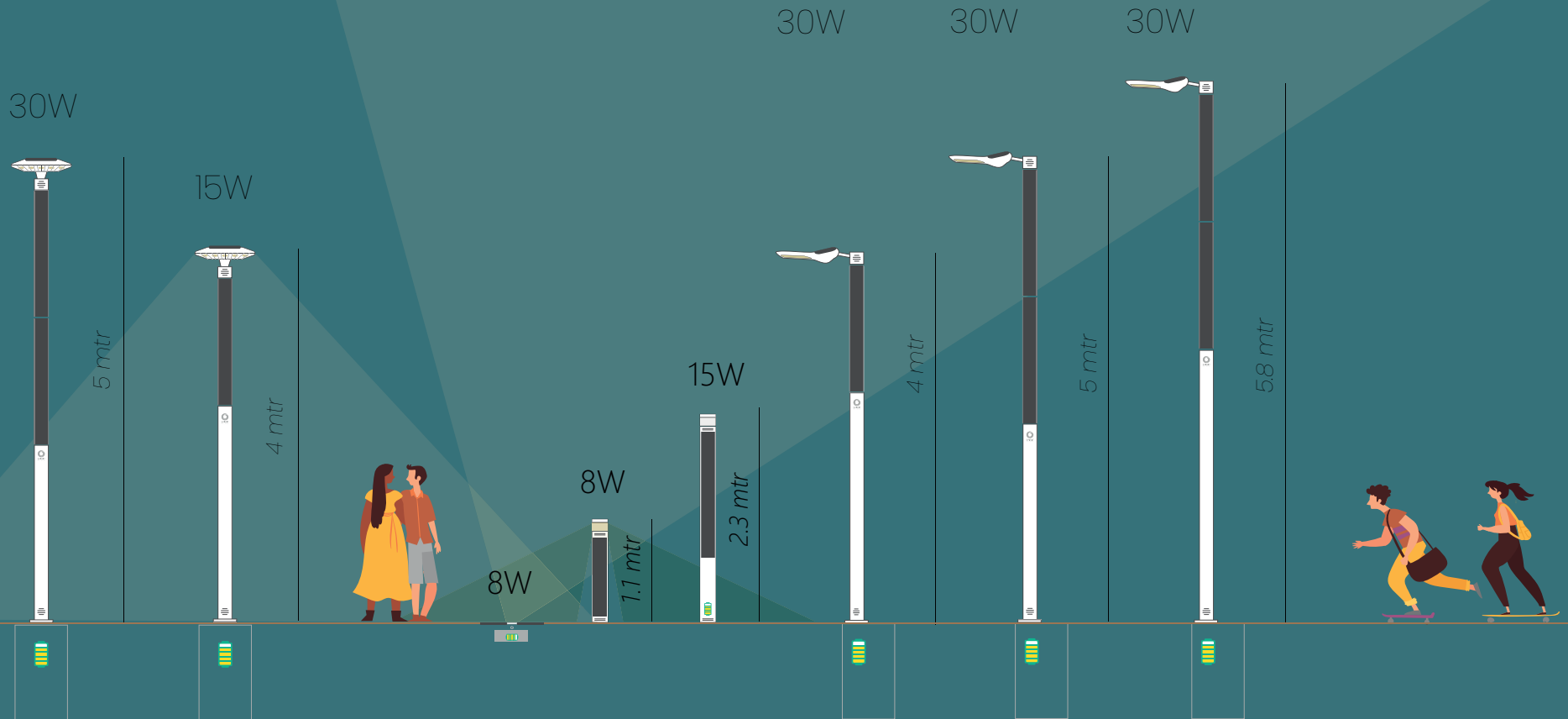
During daytime, sunlight is converted into electricity by photovoltaic technology – better known as solar panels. This energy is stored efficiently and safely in an integrated battery, which guarantees sufficient lighting by activating the efficient LED overnight – even with cloudy weather forecasts.

The condition of the column and its functions are monitored and controlled by an intelligent control unit, integrated in the column and accessible through the service hatch.

This robust stand-alone solution is designed for a sustainable and reliable lighting experience in both rural and urban areas.



# Ambient lighting Line-up



**XS2.11**

**XS1.11**

**GROUND SPOT**

**BOLLARD 1.6**

**BOLLARD 1.1**

**XS1.11**

**XS2.11**

**XS2.11**



	Ground spot	Bollard 1.6	Bollard 1.1	XS1.11	XS2.11
<b>Construction</b>					
Height (in meters)	zero – in ground installation	1.1	2.3	4	5 or 5.8
Rectangular column dim.	oval   730 x 530 mm, 28 kg	Rectangular 165 x 165 mm   24 kg	Rectangular 165 x 165 mm   47 kg	150x150 mm	150x150 mm
Material & finishing	Casted aluminium, dark anodized	European quality steel construction and aluminium fixture. Double-layer powder coating, standard colour RAL 9010 (Pure white).		European quality steel (type S355) hot-dipped galvanized, durable powder coating RAL 9010 (white) – other colours optionally. All exterior mounting elements and locks are stainless steel (AISI 316/A4). Standard colour RAL 9010 (Pure white)	
Installation	Mounted in-ground in coarse gravel (all plug-and-play)	Mounted on in-ground steel foundation, incl. battery storage compartment (all plug-and-play)		Mounted on in-ground steel foundation, including battery storage compartment (all plug-and-play)	
Lifetime expectancy	20 years, produced in accordance to NEN-EN 1090 EXC.2			40 years, produced in accordance to NEN-EN 1090 EXC.2	
<b>Energy use</b>					
LED-luminaire	Integrated SWISS LED-luminaire, spot light positioned in angle 30°	Integrated SWISS LED luminaire-box with 4 x 8 high-efficient LED's		On-top and side bracket (single and double) possible for XS-types.	
Max. power*	up to 8W   1200 lm	up to 8W   1200 lm	up to 15W   2200 lm	up to 15W	up to 30W
System voltage	12V DC	12V DC	12V DC	24V DC	24V DC
Lifetime expectancy	15 years				
<b>Energy generation</b>					
solar panels	High-quality Monocrystalline Silicon Solar Cells (IK 08)				
Wp total	30	72	128	128	256
Lifetime expectancy	20 years – 80% performance				
<b>Energy storage</b>					
Battery technology	Valve regulated lead acid				
Capacity (Wh)*	>250	>250	>670	>670	>1500
Lifetime expectancy	7 years at operation temperature 25°C in battery box at DoD 30%				
<b>Smart control &amp; monitoring</b>					
Autonomy	2/3 days standard				
Charging	Maximum Power Point Tracking on four sides and temp. compensating charge technology				
Efficiency	>97%				
Monitoring	Decentral datalogging, history available on request via low energy bluetooth				
Control	Designed for plug-and-play; using GPS+astronomical calendar combined with SWISS LED's smart energy programs. Standard: dimming protocol.				
Remote communication	Standard; Low energy bluetooth (IoT). Optional; monitoring and control via secure protocol.				
Protection	IP67-rating for connectors; all electronics are encapsulated (resin mixture)				
Lifetime expectancy	10 years				

## Bright light

Energy management is one of the main challenges of solar powered public lighting. All energy produced by the integrated solar panels is to be treasured and used as efficient as possible. The efficiency of the system, and in particular the efficiency of the luminaire is key in optimizing the complete system. We strive for the best lumen per watt ratio.

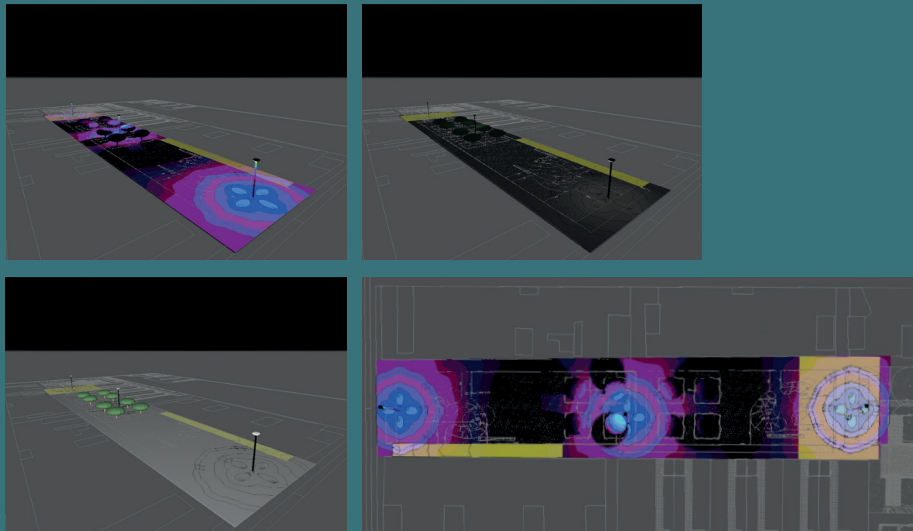
The number of outdoor luminaires is excessive. Almost all functioning on 110/220/230 Volt alternating current (AC). And that, together with the lack in urging to be as efficient as possible, is exactly the reason why the choice for luminaires compatible for solar powered lighting columns is poor – these use direct current (DC) 12/24 Volt. From solar to battery and from battery to LED. Energy is generated, stored and used, all in DC, so conversion losses are eliminated.

Detailed examination of high quality and very efficient AC luminaires, mostly integrated. The best LED's in combination with a variety of optics, for parks, gardens and plazas, all with their own design and aesthetics.



# Design the **light**

While planning public lighting, we advise to execute a photometric study to assess the result on the urban environment. For each situation, there is a suitable fit. SWISS LED Anne is perfect for illumination of plazas and parks; SWISS LED Alexia for parks and residential areas, but also for efficient road lighting.



Examples of photometric studies to determine the quantity of columns needed.

On the right: project executed.





## In conclusion

### 100% autonomous

All configurations and standard products of SWISS LED are designed as 100% autonomous. This means that all units are off-grid and independent of any electricity grid. Every energy facet is and is being examined and optimized by us: -generation (solar), -storage (battery) and -use (LED) with the elimination of conversion reductions by the DC-electrical design.

### Smart system

The intelligent control unit is the mastermind of the mast. It monitors and controls the unit to actuate and manage the energy ecosystem of the mast, but also maintain the lifetime of the total system. Optionally, remote monitoring and control is available.

### Optimized and modular

All configurations are modularly built, based on the sun irradiation and lighting requirements. The selected models are the most optimized in combination of luminaire, solar panels and batteries, to provide the best lighting effects on illumination, uniformity and glare. An additional advantage of this modularity: solar panels and batteries are easily replaced if necessary.

### Designed for extreme conditions

Heat, wind, dust, salt and sand, or other harsh (weather) conditions has no or little impact on the units. All units are produced and finished in high quality. Some examples: The units are designed for wind speeds up to 160 km/h, produced from European steel, hot-dipped galvanized and finished with a durable two-layer powder coating. Colour is standard RAL 9010 - other colours are optional. Also the electrical system is being protected by a continuous airflow through the column - all connectors are IP 67. The condition of the battery is constantly monitored by the control unit and acted upon if required.

### Complete and plug-and-play

The units are complete plug-and-play. The actual basis of the mast is the foundation, which also includes a battery compartment, on which the mast is mounted. After erecting the column, the system can be electronically activated by plugging the connectors. The control unit ensures defining the location and so actuates the correct lighting program.

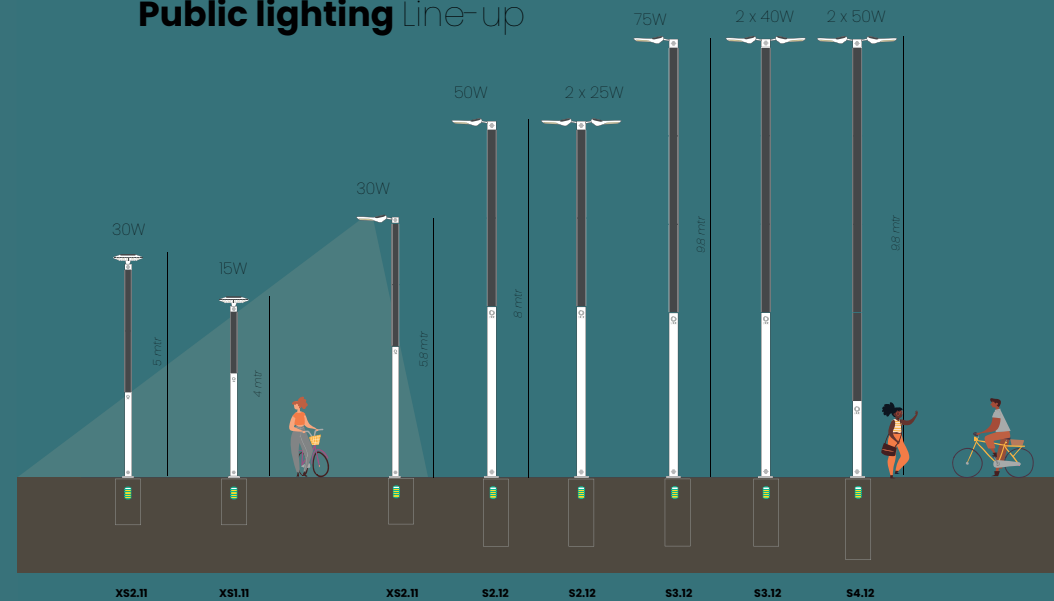




## Complement: public lighting

Besides ambient lighting, we have an additional set of public lighting products. These have the same high standards in quality and design for illuminating roads and residential areas (streets, parks, parking lots, etc) with heights varying from 4 up to 10 meters.. All for sight and safety.

### Public lighting Line-up



Ask for the separate brochure to view all of our public lighting products.