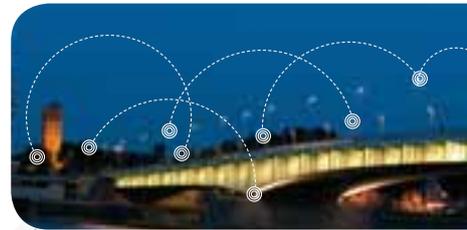
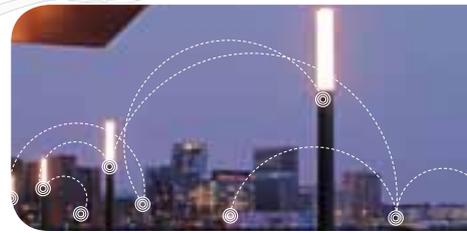


nightshift

intelligent digital streetlighting



The Owlet Telemangement system



Owlet is a telemangement system for monitoring, controlling, metering and managing outdoor lighting. Based on open technologies it saves energy, reduces greenhouse gas emissions, improves outdoor lighting reliability and lowers the maintenance cost.

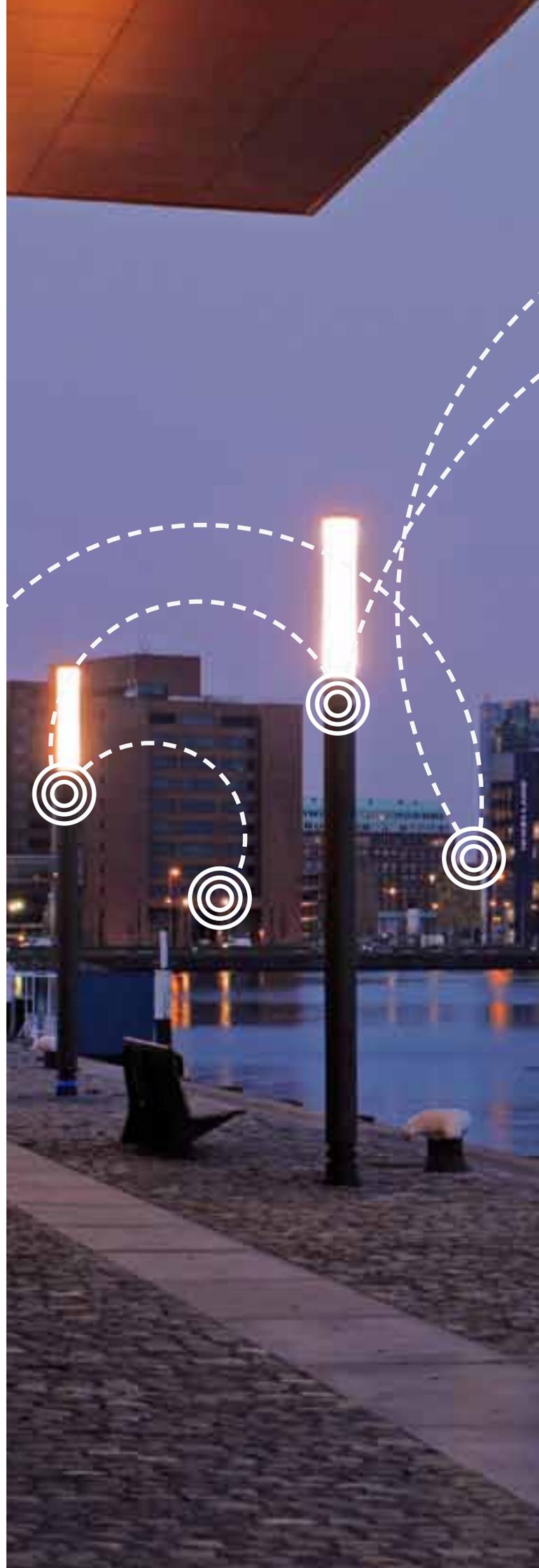
Each individual light point can be switched off/on or dimmed at any time. Operating state, energy consumption and failures are reported and stored in a database with exact timestamp and geographical location. Owlet helps public lighting managers to assure the right lighting level on streets while improving reliability of outdoor lighting and reducing operating costs.

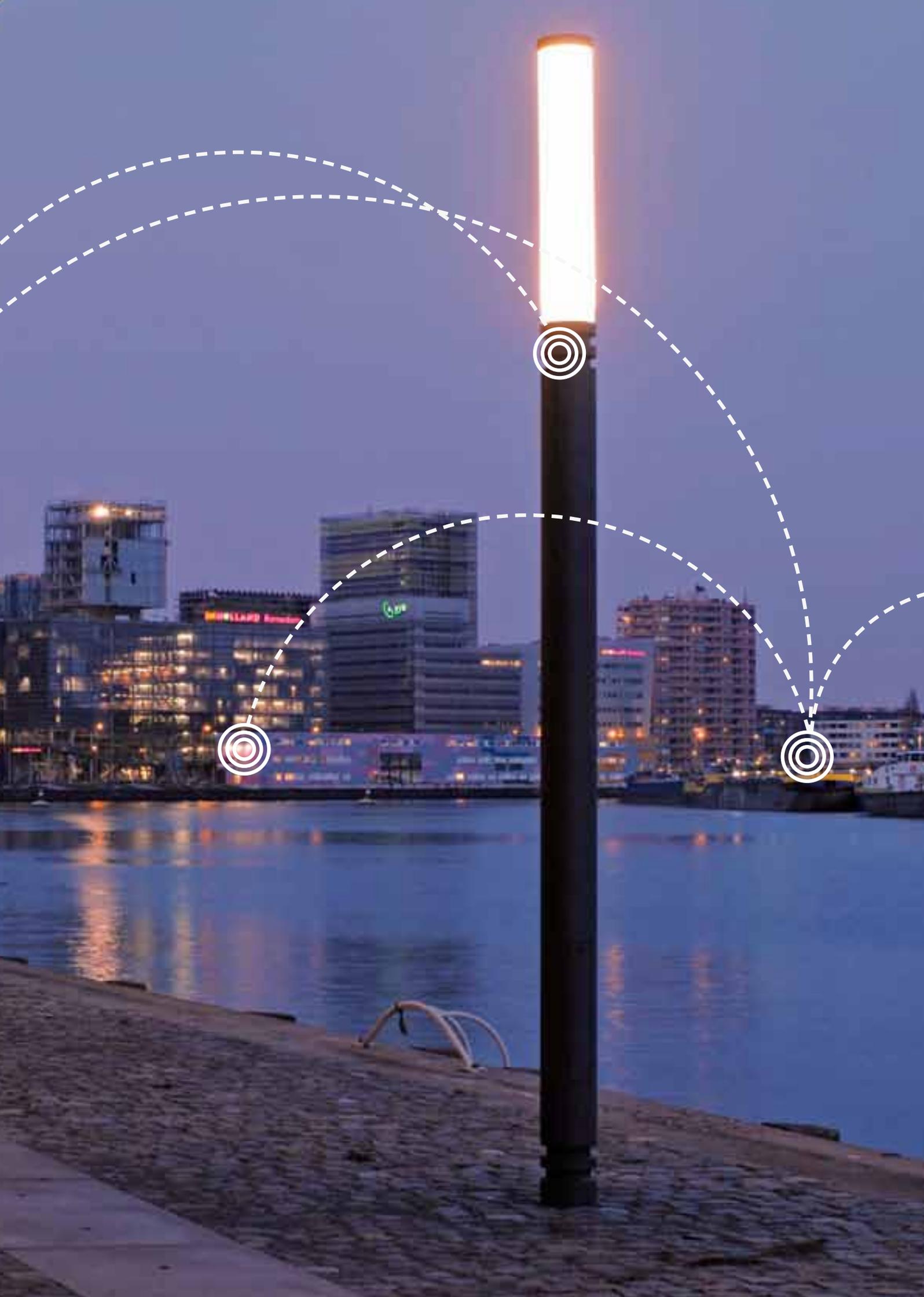
Due to its open architecture Owlet makes the public lighting network part of the internet, enabling to do anything whatever possible with modern web based applications.

Benefits in brief:

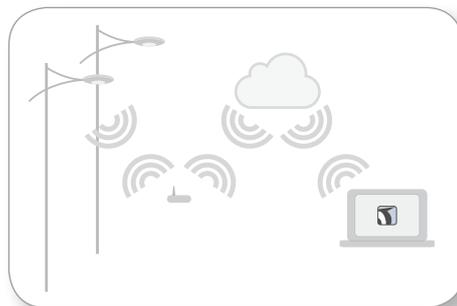
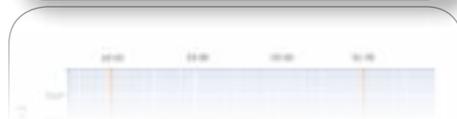
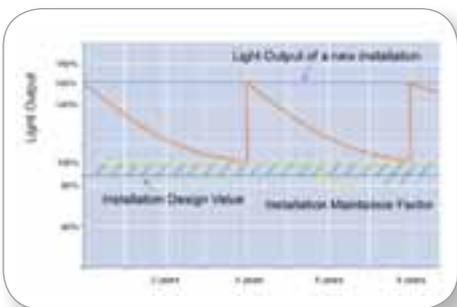
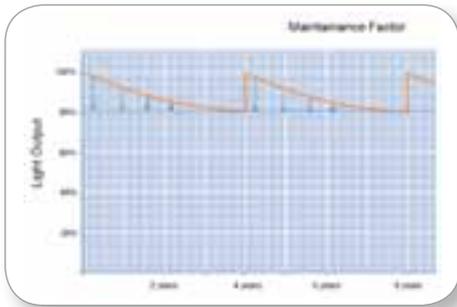
- Energy saving
- Energy metering
- Better maintance
- Less greenhouse gases
- Improves reliability and security

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Owlet Nightshift Benefits: Energy savings



Constant Lumen Output – Energy savings 8%-10%

To ensure that the required illuminance is provided over a period of time, the lighting design includes a maintenance factor MF that takes into account the reduction of luminous flux. A typical maintenance factor is 0.8, which indicates that the light output of 100% will depreciate to 80% at the end of the service time. Lighting consultants must budget in the fact: newly installed lamps emit more light than necessary, ensuring that lighting levels at the next service cycle do not fall below the required minimal level.

The Constant Lumen Output (CPO) function compensates the depreciation of light output of the installation and eliminates over-lighting. Depending on the installation, **energy savings between 8% and 10%** are very likely to be achieved.

Virtual Power Output – Energy savings 0%-25%

Lamps used in outdoor lighting are available in a range of fixed wattages (i.e. 50W, 70W, 100W, 150W, 250W, etc. for high pressure sodium lamps).

During the design phase of a street lighting the required lighting level, light pole spacing and the illuminance uniformity ratio are determining factors of the lamp power needed, resulting in a needed lamp wattage that might not exist. In today's designs the lighting engineer will choose the next higher available lamp wattage, which leads to over-lighting the installation.

With Owlet Nightshift's VPO you can compensate this effect, dimming i.e. you can set a 150W lamp to the initial 120W design value, avoiding over-lighting and wasting energy. With the build-in VPO functionality **energy savings up to 25%** are feasible.

Selective Dynamic Lumen Output – Energy savings 30%-40%

Wouldn't it be nice if the lighting level could be adjusted in relation to traffic density? With Owlet nightshift you can define dimming profiles to save energy during low traffic hours late night and have the right lighting level when the rush-hour begins.

Using the SDLO-Function can help to **save energy between 30% and 40%**.

System Architecture

Owlet Nightshift – a unique Combination of future oriented technologies and easy to use Web-operation: from a simple "fit & forget" solution to a "High-End System", which monitors, controls and manages your lighting installation from anywhere in the world to the level of a single light point, just as easy like browsing the internet.

Owlet believes that open systems are the best way to protect your investment, giving you the freedom to be vendor independent using open industry wide technologies, like the internet. That open approach is reflected at any layer of the system, from street level to web level.

Core of the system is the open communication protocol ZigBee, a wireless mesh networking technology, very widely used in various industries where a secure, reliable and industry-standard (IEEE 802.15.4 Standard) based networking technology is needed. For more information please visit www.zigbee.org.

Outdoor Luminaire Controllers (OLC)

The "LuCo" and "CoCo" are available in various configurations. All members of the family share the reliable Zigbee communication, switching and dimming capabilities and the lamp failure detection. The OLC's are ballast independent, supporting conventional gears like magnetic ballasts and bipower ballasts as well as electronic ballasts and LED drives with 1-10V interface or the DALI standard. Each output is able to switch a 1000W load @ 230V.

CoCo (Column Controller)

IP 67 fully potted ruggedized version for in-pole mounting, shipped with up to two independent power switches, each individual energy metered, ideal if more than one load is attached to a pole, i.e. double flamed luminaries, festive lighting, advertising signs, etc. The energy consumption of each output is individually metered through Class 1 meters on board. Current, voltage and power factor are also continuously monitored and logged. An in built back-up astronomical clock provides switching after sunset / before sunrise even when the superordinated systems (Segment controller, Web server) fail to operate.

LuCo (Luminaire Controller)

LuCo is the choice if you want to install the system into luminaries. The controller is available in three versions: LuCo-D with DALI-interface, LuCo-M with in built Class 1 energy meter and the LuCo-U without metering for applications where a common energy meter is mounted in the feeder pillar. Like the CoCo,

current, voltage and power factor are also continuously monitored and logged. An in built back-up astronomical clock provides switching after sunset / before sunrise even when the superordinated systems (Segmentcontroller, Webserver) fail to operate.



Segment Controller (SeCo)

The SeCo manages a segment of up to 150 CoCo's and LuCo's. It collects the data from the OLC's through the self-healing ZigBee mesh network and transmits it over the internet to the Webserver, assuring security through a VPN. The connection to the internet is done either to ADSL, GPRS or 3G. Equipped with 2 Digital and 2 Analog In/Outputs and a Modbus Interface the SeCo can acquire data from a segment-wide energy meter for billing purposes as well as send and receive commands from remote sensors and actors, i.e switching a complete lighting feeder or receiving a ripple control command.



Due to it's in built Python engine, the segment controller is fully programmable if customization is needed. As a matter of course light points can be organized in groups (i.e intersections, main roads, crosswalk, etc.) receiving and executing switch and dim commands synchronously.

Owlet Nightshift Web-UI/Webserver

Are you familiar with booking flights on a webpage or using a web search engine? If so, you can commission and manage the Owlet Nightshift System as well.

No special skill set or expensive integrators are required for setup and manage the system. The basic idea of open systems is also reflected in the Nightshift server which can be hosted everywhere. Locate and monitor your installation in geographic maps, access predefined reports, customize your personal reports, configure the system, change dimming profiles or switching schedules etc., all on the system webpage.

All the received information is stored in a MySQL Database making the data available for longterm evaluations like energy analysis, lamp life time forecasting, problem detection, etc.



Services

Despite the fact that Owlet Nightshift is one of the easiest to handle systems on the market, we at Owlet offer additional services from training via commissioning up to turnkey solutions.



Training

New to telemanagement, want to add telemanagement solutions to your portfolio? We offer complete trainings in our facilities where you can acquire the knowledge about the various telemanagement philosophies, system design and setup as well as operating telemanagement systems.



Design

Together with you, our design engineers design your system, investigating potential savings and planning the installation schedule.



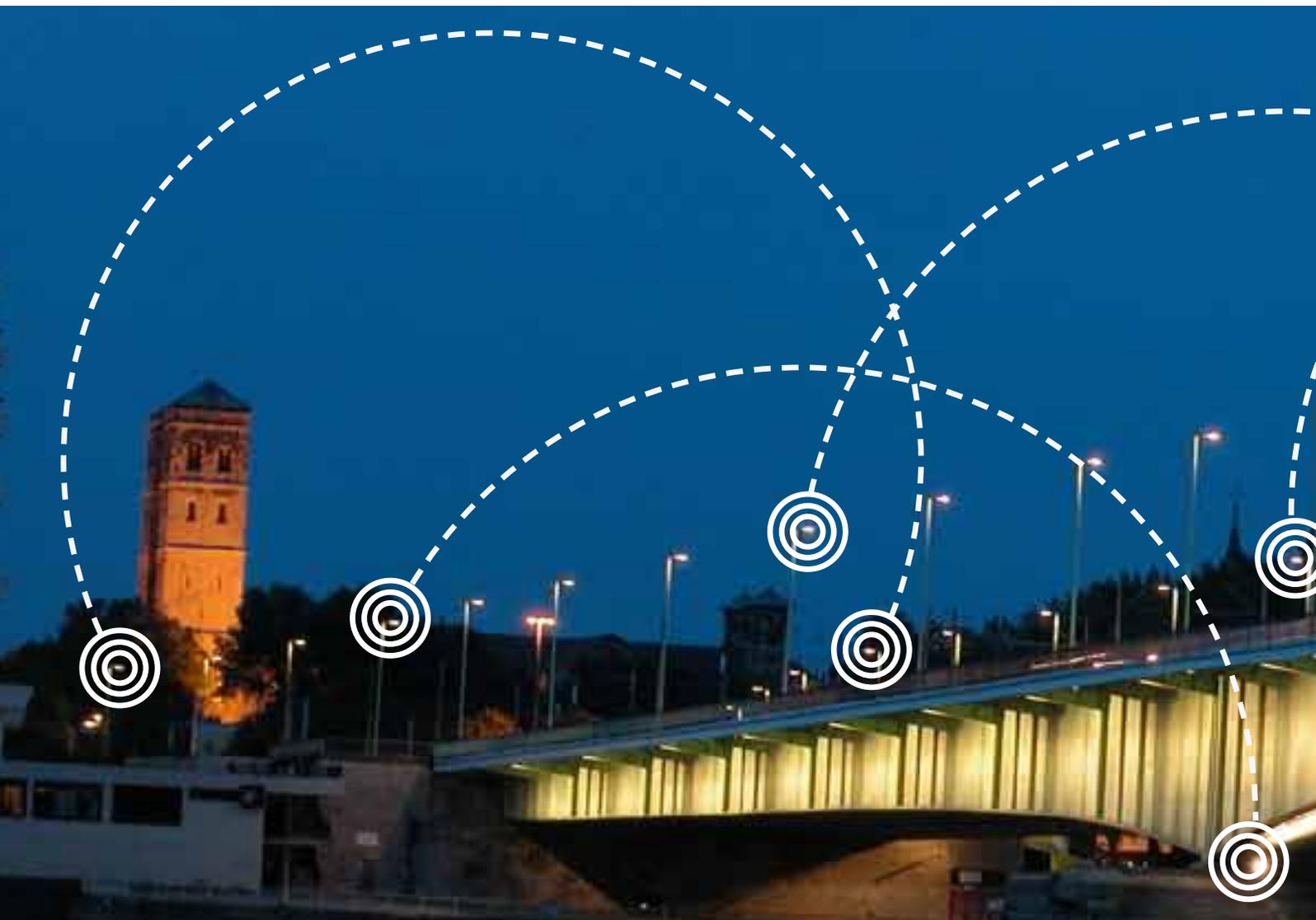
Installation & Setup

Our Field Application Engineers observe the proper hardware installation on site, commission the system and connectivity until handover to the customer.



Turnkey Solution

As a part of Schröder Group GIE, Owlet has access to the complete lighting knowledge and capabilities of a market leader in outdoor lighting. We offer complete telemanagement solutions including electrical installation, luminaries and poles from design to handover.



FAQ's:

Q: Which energy savings can I expect introducing a telemanagement system?

A: Of course that depends on the type of your installation, but if you utilize dimming during times with less traffic density and the maintenance factor compensation functions of Owlet Nightshift, savings between 30% and 40% are not unrealistic.

Q: Why does Owlet Nightshift use a wireless communication instead of powerline communication?

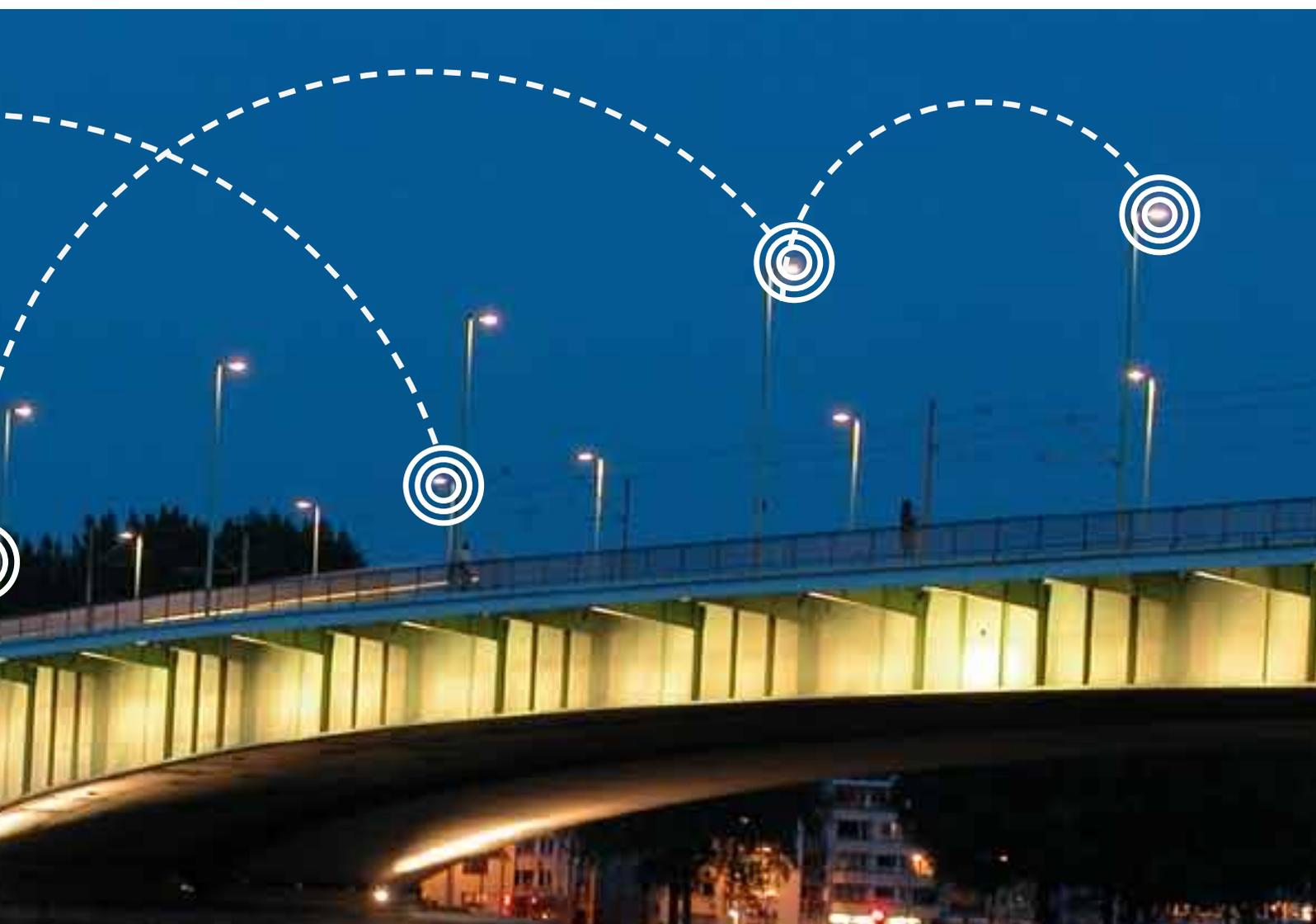
A: Outdoor lighting installations vary from country to country and from city to city. Unfortunately not every lighting installation uses it's own dedicated grid. In mixed installations where you have households, industrial plants, heavy machines attached to the grid, communication through powerline cannot be guaranteed. In other cases even a power grid plan does not exist, or your installation is linked to different power substations. In those cases you have to investigate pole by pole if a powerline communication is possible. That adds additional engineering costs to a telemanagement budget, even when a communication is not guranteed. Owlet's aim was to build a system that will work anywhere inthe world, regardless of the grid structure, with minimum engineering effort. Therefore we use wireless communication.

Q: Will your communication be harmed by other system using 2,4 GHz, for example Wireless Hotspots?

A: Many institutes and organizations, like Schneider Electric, the University of California and the ZigBee alliance investigated that matter in the past, stating that even in the presence of a surprising amount of interference, ZigBee devices continue to communicate effectively. Most of these surveys are published, please visit zigbee.org for white papers or run a web search. Based on our own field trials we experienced a decline in data rate, but even in worst case scenarios, the data rate was ten times higher compared to a powerline communication without interference.

Q: Which kind of ballast / lamp can be plugged to your system?

A: That's an easy one. Any! Any type of lamp or ballast, regardless if magnetic gear, bi-power, step-down, electronic ballasts with or without 0-10V interface or DALI can be managed by Owlet Nightshift.





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