

# INTELLIGENT ILLUMINATION AT A DUTCH SEAPORT

Moerdijk, the Netherlands  
Reference Project / Seaport

PORT OF MOERDIJK  
**SAVES ENERGY AND MEETS SUSTAINABILITY  
TARGETS WITH SENSOR-BASED CONNECTED  
OUTDOOR LIGHTING**

**dynniq**  
energising mobility



**TVILIGHT**  
EMPOWERING INTELLIGENCE



## Project Information



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Port of Moerdijk  
2017

**Application areas:**

seaports, harbors, industry terrains, parking lots, roads

**Location:**

Port of Moerdijk, the Netherlands

**Project Partners:**

Dynniq, Nobralux

**Client:**

Moerdijk Port Authority

**Products:**

CitySense, SkyLite, CityManager

Intelligent connected lighting helps this large Dutch seaport reduce the lighting energy consumption, lower light pollution, create a safe experience for employees and visitors, and accelerate towards becoming the most sustainable port in Europe.

## Project background

The Port of Moerdijk is the fourth largest seaport in the Netherlands. With an extensive transportation network, it connects the country to the rest of the world.

While being an important European transportation hub, this Dutch seaport is home to hundreds of companies located within its industry terrain that spans more than 2600 hectares of land. The port's impressive industrial park operates 24/7, which requires the Port Authority to keep the premises well-illuminated during the day and night to ensure public safety and comfort.

Energy conservation is extremely important for the Port of Moerdijk as it aims to evolve into one of the most sustainable ports in Europe and make its outdoor facilities energy-neutral by 2030. Because a large share of the electricity consumption goes into powering the street lighting at the port's industry terrain, optimizing outdoor illumination is key to achieving the Port's energy and sustainability targets.





## Customer Priority: Balance between “people, planet, and profit.”

**“ We want to make the port’s industry terrain energy-neutral and adopting smart connected streetlights is an important step in this direction. ”**

**H. Schakenraad,**  
Program Manager Infrastructure  
and Maintenance, Port of Moerdijke

The Port of Moerdijk is facing a challenge of becoming more sustainable and to achieve this goal it must take a variety of measures. Among other steps, the Port is exploring the new ways of illuminating its outdoor facilities. Bright illumination at the port’s industry park has been a source of energy waste and light pollution, especially during the late-night hours when the number of visitors is usually at its lowest. Yet, turning off the streetlights is not an option given that the visitors need sufficient

light to get around the park safely.

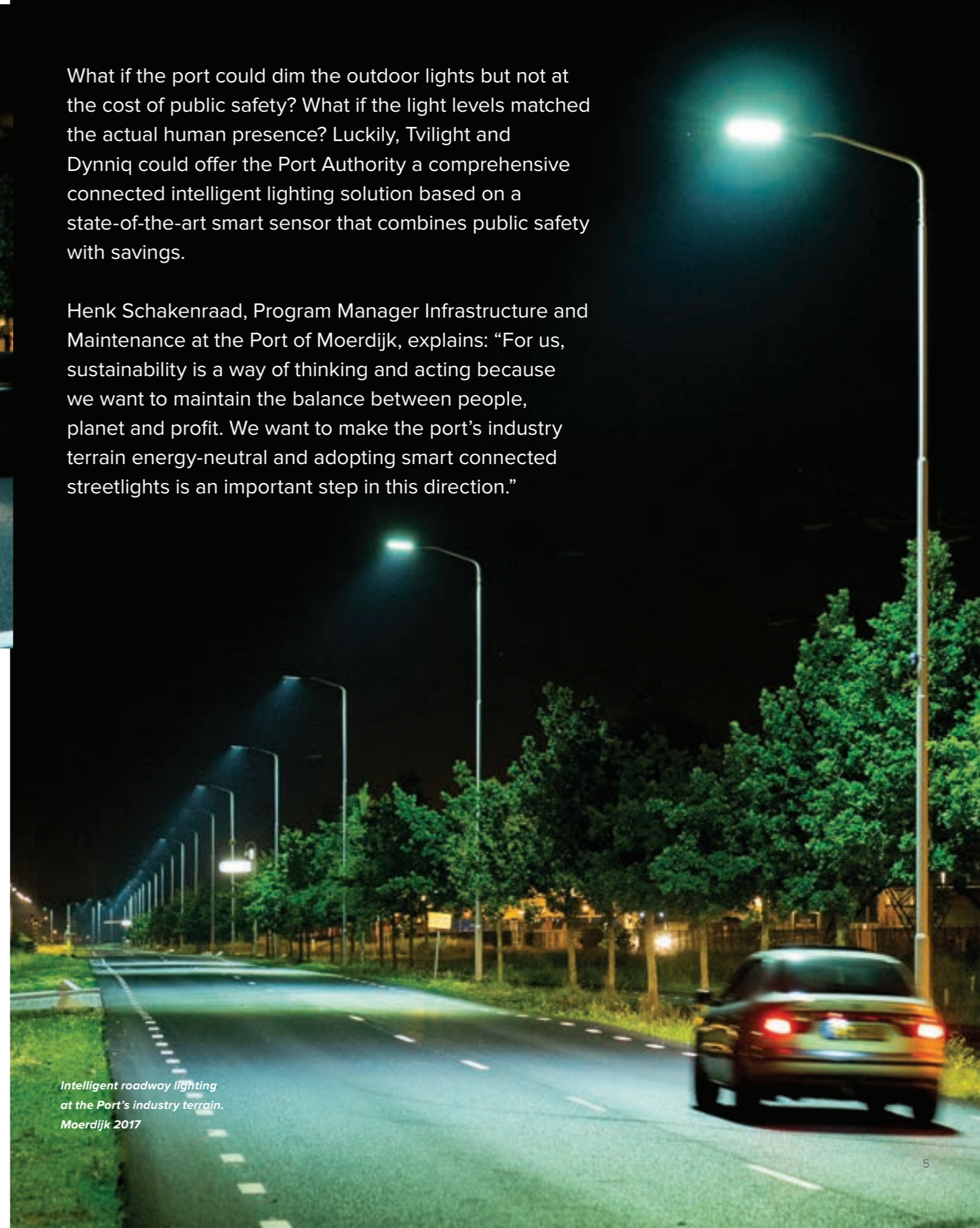
Bas van den Bosch, Project Manager at the Port of Moerdijk adds:

**“ We wanted to cut down the electricity use for outdoor lighting but we also wanted to provide people with enough light to feel safe and comfortable at the port’s industry park. We want to achieve more when it comes to street lighting, safety, and energy cost reduction. ”**



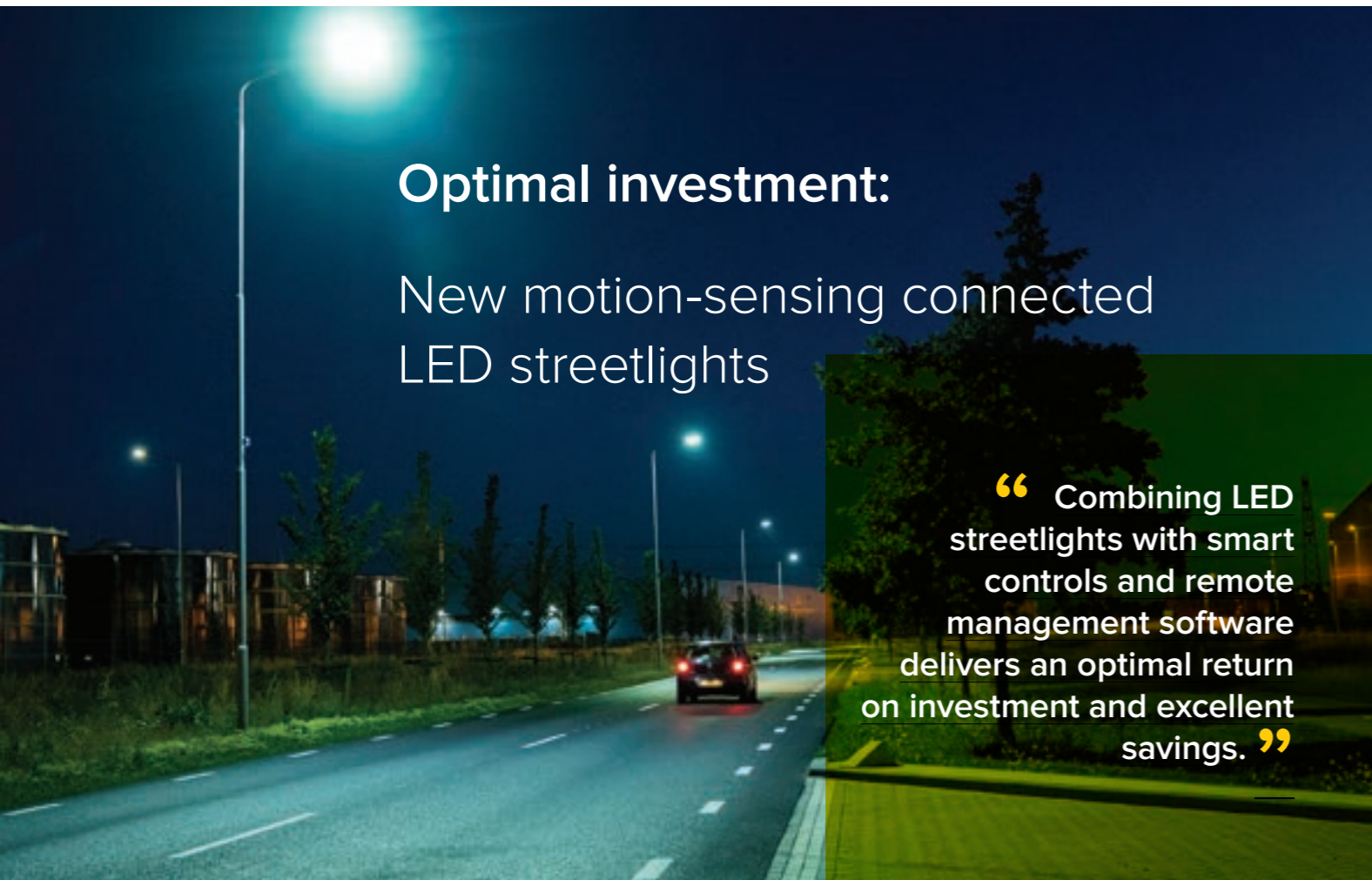
What if the port could dim the outdoor lights but not at the cost of public safety? What if the light levels matched the actual human presence? Luckily, Tvilight and Dynniq could offer the Port Authority a comprehensive connected intelligent lighting solution based on a state-of-the-art smart sensor that combines public safety with savings.

Henk Schakenraad, Program Manager Infrastructure and Maintenance at the Port of Moerdijk, explains: “For us, sustainability is a way of thinking and acting because we want to maintain the balance between people, planet and profit. We want to make the port’s industry terrain energy-neutral and adopting smart connected streetlights is an important step in this direction.”



*Intelligent roadway lighting  
at the Port’s industry terrain.  
Moerdijk 2017*





**Optimal investment:**  
New motion-sensing connected LED streetlights

“ Combining LED streetlights with smart controls and remote management software delivers an optimal return on investment and excellent savings. ”

The Port started with a pilot installation and was quickly convinced of the system benefits of the smart connected lighting. When the time came to upgrade outdoor lighting in the public parts of the industry terrain, the Authority decided to not only step over to new energy-efficient LED luminaires, but also to equip those with the wireless connected lighting solution from Tvilight.



*Bas van den Bosch,  
Project Manager*

Port of Moerdijk

As a result, more than a thousand of streetlights at the Port’s industry park are becoming intelligent. “We concluded that combining LED streetlights with smart controls and remote management software delivers an optimal return on investment and excellent savings,” explains Bas van den Bosch, Project Manager at the Port of Moerdijk.

He continues: “If you think about smart streetlights in the context of all other energy initiatives at the Port, it might seem like a relatively small contribution, but, at the end of the day, all these initiatives are important in bringing us closer to the goal – that is, becoming energy-neutral. We are glad to have chosen the Tvilight solution because the system is performing well and meets our requirements. We can recommend it to others.”





The Port controls each streetlight remotely and benefits from lower energy use and maintenance costs.





# Solution

## Human-centric adaptive lighting with **Twilight CitySense**

This industry-leading streetlight sensor detects human presence and automatically adjusts the brightness of surrounding streetlights. The user is always embraced in a safe circle of light.



Twilight provided the Port of Moerdijk with its patented, industry-leading connected lighting solution which includes sensors and wireless controls capable of adjusting the brightness of streetlights based on real-time human presence (the effect popularly known as “light on demand”, “adaptive streetlights”, or “dynamic dimming”).

CitySense is a unique product that currently has no alternatives on the market. Designed for harsh outdoor environments, a combination of smart sensors within CitySense detects pedestrians, cyclists, and vehicles, and then brings the lamp (including pre-selected neighboring lamps) to a higher brightness level. After a pre-determined period (once the occupant leaves the area), the lamps automatically return to the pre-defined lower levels of brightness.

Using the Twilight CityManager software, the Port Authority created light profiles that match the illumination requirements of each particular location at the port. For instance, on the main roads of the industry park, the lights dim down to 20% of their capacity when there is no one around, and return to 100% brightness as soon as human presence is detected. While at the railway crossing, the lights are kept at 70% of brightness.

Thanks to the in-built wireless communication, each CitySense unit simultaneously triggers a number of streetlights in front of the passing user. Therefore, unlike other products on the market, Twilight connected streetlights do not trigger sudden flashes of light. The gradual yet quick brightening of lights results in a creation of a safe circle of light around an occupant and delivers a seamless experience to the passing drivers, cyclists, and pedestrians.



# Complete remote control with **CityManager**

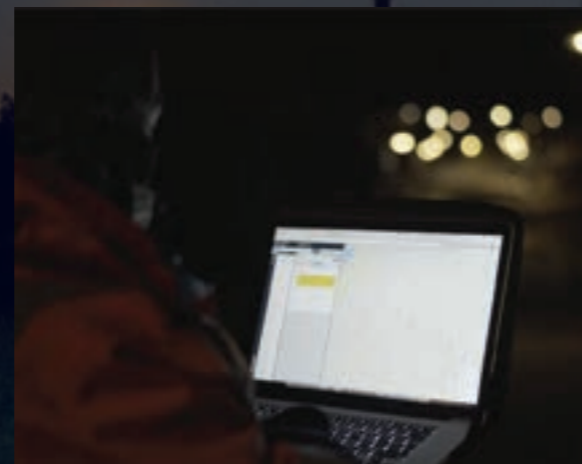


Wireless Sensor Network

The combination of Twilight wireless light controls and remote light management software CityManager enables the Port to monitor, manage, and control its entire outdoor lighting infrastructure from a single computer dashboard.

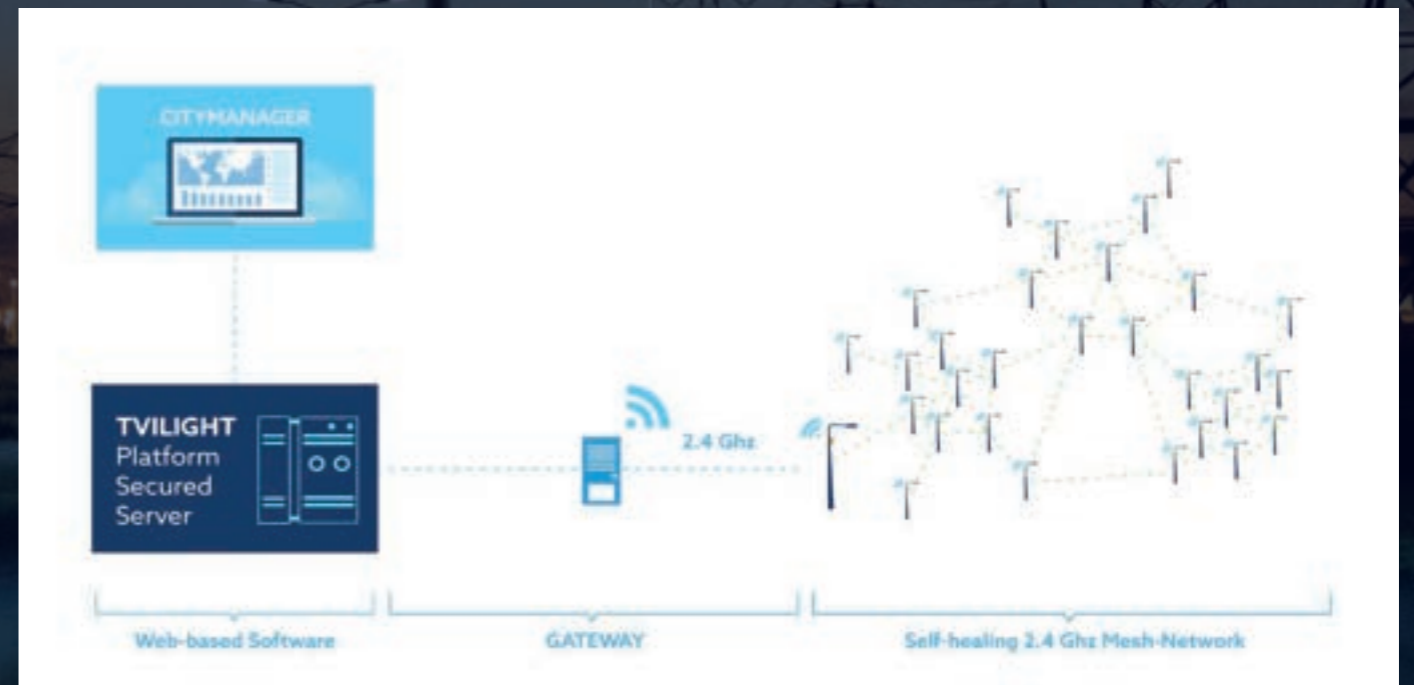
Intuitive user interface, system insights, and an array of helpful features help deliver better outdoor illumination and stay in control of the lighting infrastructure.

If a light point fails, CityManager immediately sends an e-mail report specifying which luminaire has malfunctioned and what was the cause (e.g. lamp/ballast failure). The maintenance manager, in turn, can promptly take the necessary measures based on the provided information and repair the streetlight before it becomes a problem. Furthermore, maintenance crews carry fewer night inspections which results in lower operational costs.



“ I like the combination of various features that the software offers. We can obtain a lot of useful data from it, ” says Henk Schakenraad.

With CityManager, it is easy to configure individual light points or entire groups of streetlights. Using this software platform, it is easy to turn the streetlights on or off and change the brightness levels of the lamps in real time. The software allows the infrastructure manager to set up lighting profiles according to the requirements of each location, making the streetlights dim at defined intervals (scheduled dimming) and/or based on the local sunrise/sunset times (Twilight AstroClock).





## SMART AND SUSTAINABLE PORT OF MOERDIJK

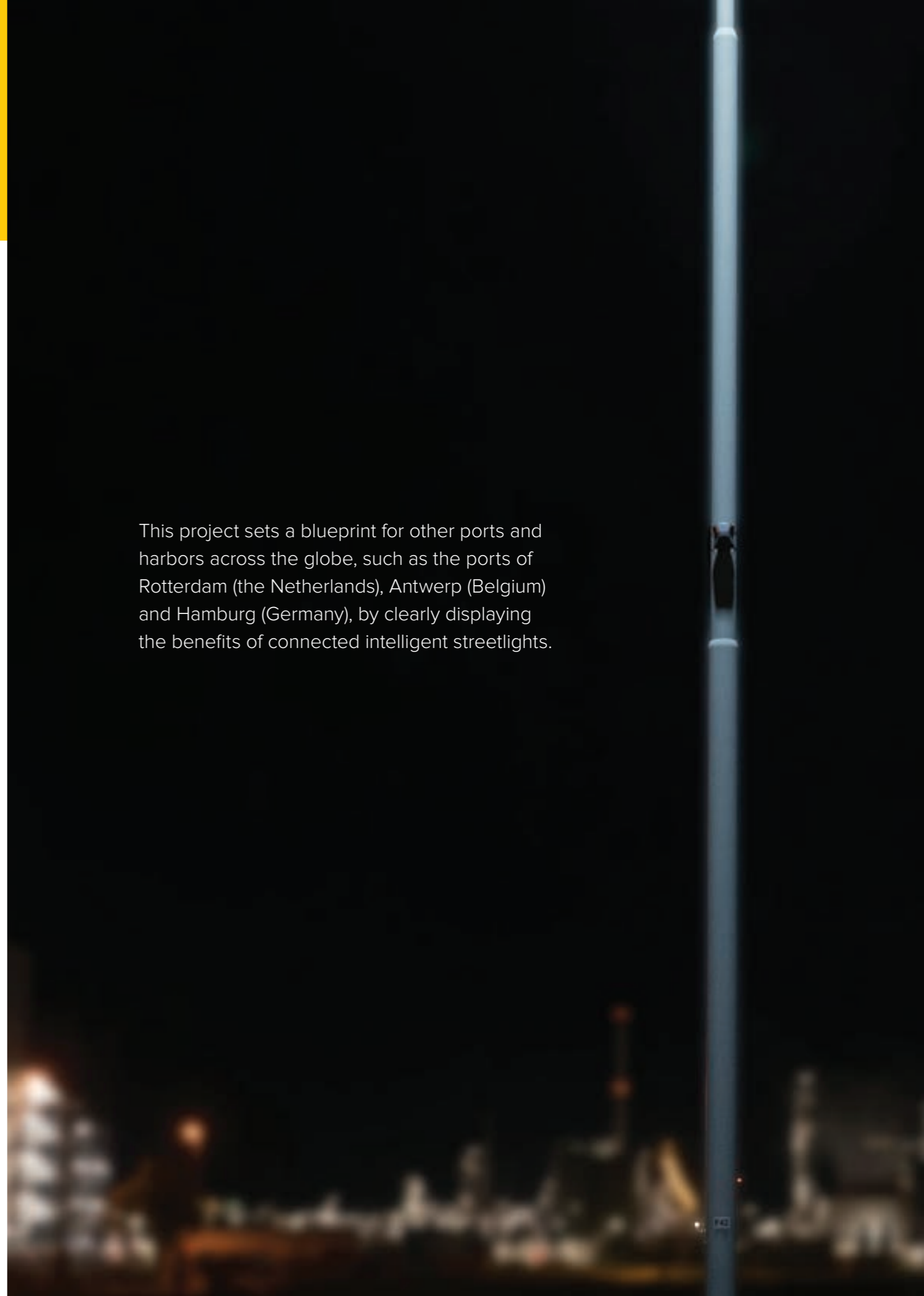
Furthermore, connected wireless street lighting networks from Tvilight are a perfect foundation for Smart Cities and Internet of Thing (IoT). “While delivering immediate results, such as energy savings, this technology also unlocks new opportunities for smart ports and industrial IoT,” added André Meijer, Managing Director of Dynniq Mobility Netherlands, a Tvilight Business Partner that ensured the roll-out and commissioning of the project at the Port.

Thanks to the Tvilight Open Application Programming Interface (API), “the Tvilight system can be easily connected to third-party software and solutions, which empowers the port with flexibility to support countless new applications.”



Henk Schakenraad: “We are exploring different options when it comes to making the Port “smart”. We aren’t there just yet, but we believe that intelligent streetlights are the first step to smart cities and IoT applications.” The examples of future applications that can be used at the Port include: noise sensors, smart energy metering, security systems, traffic guidance, and others. The port will be able to implement these to further improve sustainability and achieve operational efficiency and user comfort.

This project sets a blueprint for other ports and harbors across the globe, such as the ports of Rotterdam (the Netherlands), Antwerp (Belgium) and Hamburg (Germany), by clearly displaying the benefits of connected intelligent streetlights.







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