STARRY NIGHTS ON TEXEL

Reference Project / Island

THROUGH INTELLIGENT LIGHTING TO ENERGY NEUTRALITY.
The Dutch island of Texel sets a global example on how to become energy-neutral, eliminate light pollution and rediscover the magnificence of the natural night sky.

### Project Information

**Application areas:**
Islands, residential areas, main roads, secondary roads, city centers, nature areas

**Location:**
Texel, the largest and most populated island in the Netherlands, known for its rich flora and fauna and beautiful landscapes.

**Project scope:**
Nearly 4,000 intelligent sensors and wireless lighting control devices

**Project Partners:**
Dynniq, Vulkan

**Client:**
Municipality of Texel

Thousands of LED streetlights with integrated Tvilight wireless control devices and Dynniq’s advanced scenario supervisor software enabled Texel to cut its energy consumption by more than 65% and become one of Europe’s first municipalities with fully energy-neutral public lighting. Thanks to intelligent dimming, the night sky is revealed in all its magnificence.

Furthermore, the intelligent lighting network deployed on the island serves as a perfect springboard into the Internet of Things, allowing Texel to implement numerous smart applications and sensors in the future.
Customer Challenge:

Light pollution, energy waste and poor illumination

Prior to the project, the conventional public lighting infrastructure on Texel suffered from several serious drawbacks. In addition to being highly energy-consuming, the lamps were burning too bright and gave off a strong orange-tinted glow into the night sky.

“The way the island was illuminated was simply not right. There was either too much light or too little, depending on the location. In some places, there were streetlights where no one needed them.”

In order to address the issues with the conventional lighting infrastructure, local authorities defined three major goals:

• Redistribute the streetlights to maximize public and traffic safety
• Reduce the energy waste and light pollution
• Restore and preserve nocturnal darkness on the island

There is a clear link between public lighting and quality of life on Texel. As explained by Stephan Kikkert, Project Leader at the Municipality of Texel: “Street lighting on Texel is very important because of its impact on public and traffic safety.

At the same time, preserving the nighttime darkness and saving energy is equally important. By implementing a new public lighting infrastructure, we wanted to achieve a balance between public safety and energy savings.”
Solution:

Intelligent LED street lighting

CitySense
Plus is an award-winning streetlight motion sensor with an integrated wireless lighting control.

In 2016, the public lighting infrastructure on Texel underwent a complete renewal in which all conventional lighting points were replaced by LED streetlights. Each lighting point was equipped with a Twilight wireless lighting controller (SkyLite or CitySense) capable of regulating the lighting levels of the streetlight. Using the Twilight Open API, the controllers were then connected to ImCity, Dynniq’s advanced scenario supervisor software that allows Texel to gain complete control over its street lighting infrastructure. Using the software, Texel can remotely set up lighting profiles, change the brightness levels of streetlights, switch the lamps on and off, and more. Thanks to remote control possibilities and “light on demand”, the island saves energy, preserves nocturnal darkness, and moves to energy neutrality. Counting thousands of intelligent devices and sensors, the intelligent street lighting network on Texel is one of the largest in Europe.
With intelligent lighting, Texel stays dark wherever possible and is illuminated only when and where it is necessary. Using the management software, the municipality created customized lighting profiles for streetlights throughout the island.

For example, on the main roads, the lighting is kept at 50% of brightness from 01:00h to 05:00h. In the residential areas, the lights are dimmed to 50% between 23:00h and 01:00h, and switched off between 01:00h and 05:00h. Dynamic dimming takes central stage in the downtown areas, where during the night the streetlights adjust their brightness based on the real-time human presence, delivering “light on demand”—light when and where it is needed.

Stephan Kikkert:

“After the last ferry leaves, there is hardly any traffic on the island, and the majority of residents is staying at home during the night. When the streets are empty, there is no need to leave the lights burning.”

Twilight solution delivers excellent benefits beyond illumination at only a marginal additional cost. Haye Mensonides, Commercial Director of Dynniq, comments:

“The beauty of our solution is that it doesn’t compromise public safety in any way. On the contrary, the possibility to increase the brightness of streetlights based on real-time human presence or specific time/location requirements helps to keep the streets safe while minimizing the light pollution. On top of that, the energy savings deliver an attractive return on investment.”
“The beauty of our solution is that it doesn’t compromise public safety in any way.”

Haye Mensonides
Texel has set an ambitious goal to become completely energy neutral by 2020. This means that the island will rely only on locally-produced energy from renewable sources to power its everyday operations. Being one of the most energy consuming sectors, public lighting is a cornerstone element to energy neutrality.

By revolutionizing its public lighting, Texel has made a first step in the direction of the 2020 goal.

“I am really satisfied with the result. By using LED streetlights and dynamic dimming, we save more than 60% of the energy previously spent on street lighting. This is a major achievement,” adds Stephan Kikkert.

The annual energy consumption for streetlights on Texel went down from 544 megawatt hour to 192 megawatt hour.

Furthermore, because of the lower energy need, Texel can power all streetlights on the island using only solar energy.

“We are the first municipality with completely energy-neutral public lighting, in the Netherlands and perhaps in entire Europe,” shares Stephan Kikkert.
The new intelligent illumination on the island contributed to the drastic reduction of skyglow, one of the forms of light pollution that results in the brightening of the sky above the inhabited areas.

Stephan Kikkert:
“ The light pollution was so strong that it looked like there was a giant cloud of light hanging over the island. It was difficult to see any stars. Meanwhile, we wanted to transform Texel into a “dark sky park”, where anyone can look up into the sky and see the Milky Way. ”

Following the integration of intelligent street lighting, the natural darkness on the island was restored. What’s more, the island is transforming itself into a top destination for stargazers who come to Texel to admire the stars and the beautiful natural night sky.

Stephan Kikkert:
“ Now, when I walk around the island at night, I see the stars. It’s a unique and an amazing experience. The beauty is overwhelming, especially if you haven’t seen anything like this before. I hope more people will visit the island to get to know the natural night sky. ”
The open application programming interface (API) makes the Tvilight intelligent lighting solution versatile and future-proof. The open API allows connecting third-party software to the Tvilight DgiHub smart city platform. The Municipality of Texel, for instance, uses a scenario supervisor software provided by Dynniq. The software enables Texel to control the entire street lighting infrastructure on the island: set up the dimming profiles, change brightness levels of the street lighting, switch the streetlights on and off, and more. Furthermore, using the same software system, Texel can control additional infrastructure and mobility elements, such as traffic lights, VMS signs, CCTV cameras, and outdoor sensors.

With the intelligent lighting network in place, Texel has made a first step towards becoming a smart island. Haye Mensonides, Commercial Director of Dynniq, adds:

“Wealth the roll-out of the intelligent street lighting network, Dynniq has implemented the data infrastructure as well. In the coming years, there will be numerous possibilities to use this infrastructure on Texel in innovative ways. The infrastructure can be used, for instance, to measure the CO₂ output or help public safety by connecting it to the police CCTV.”

Tvilight and Dynniq have entered a strategic partnership to further develop their platform and to implement it for Smart Cities all over the world.