Starry nights on Texel

From intelligent lighting to energy neutrality

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Background

There is a clear link between public lighting and quality of life on Texel. As explained by Stephan Kikkert (Regional Policy Manager, Municipality of Texel): "Street lighting on Texel is very important because of its huge effect on public and traffic safety. However, preserving the nighttime darkness and saving energy is also important. Through implementing a new public lighting infrastructure, we wanted to strike a balance between all these different factors." However, the reality before 2016 was different.

"Street lighting on Texel is very important because of its huge effect on public and traffic safety."

Customer Challenge

The old conventional public lighting infrastructure on Texel suffered from several serious drawbacks. Besides being extremely energy-consuming, the lamps were burning too bright and gave off a strong orange-tinted glow into the sky. "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," explains Stephan Kikkert. "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 were no one needed them."

The island needed to turn things around. Local authorities had four major goals:
- Eliminate unnecessary light sources
- Improve public and traffic safety
- Cut down the street lighting energy
- Preserve nocturnal darkness on the island

ProjectInformation

Location:
Texel, the largest and most populated island of the West Frisian Islands in the Wadden Sea. Known for its beautiful landscapes, rich flora and fauna, and relaxed seaside atmosphere, this island is a favorite destination for visitors from all over Europe.

Project scope:
3,000+ intelligent devices

System integrator:
Dynniq

Client:
Municipality of Texel

Solution

In 2016, public lighting on Texel underwent a complete overhaul. The municipality took down all obsolete lighting points on the island, instead rolling out energy-efficient LEDs. The streetlights have been equipped with Tvilight wireless lighting controllers and connected to a central management system. As a result, all street lighting on the island became dimmable and perfectly controllable. To help improve traffic safety on the island, Dynniq also rolled out glowing roadway surface marking on the island's main roads. Because intelligence was made a key element in the roll-out, the Texel municipality benefits from a value beyond illumination at only a marginal cost. With thousands of intelligent devices, the new connected lighting installation on Texel is one of the largest in Europe. Thanks to remote control possibilities and "light on demand" technology, the island saves energy, preserves nocturnal darkness, and moves to energy neutrality.

"We can control all street lighting remotely from a computer. It's fantastic!"

Intelligent illumination

With intelligent lighting, Texel stays dark wherever possible and illuminated only wherever necessary. Using the management software, the municipality set up customized lighting profiles throughout the island. Thus, on the main roads, the lighting is kept at 50% of brightness from 01:00 to 05:00. In residential areas, the lights are dimmed to 50% between 23:00 and 01:00, and switched off between 01:00 and 05:00. Dynamic dimming takes central stage in downtown areas, where during the night the streetlights adjust their brightness based on real-time human presence, delivering "light on demand".

"Dynamic dimming is a perfect solution because it allows us to save energy and preserve the nocturnal darkness."


Stephan Kikkert: "After the last ferry leaves the island, there is hardly any traffic, with majority of residents staying at home during the night. Between 1 and 5, the streets are empty, so there is no need to leave the lights burning. Dimming is a perfect solution for Texel because it allows us to preserve the nighttime darkness and save energy. If we want to make changes to the dimming profiles, we can do it remotely from a computer. It's fantastic!"

Haye Mensonides, Commercial Director of Dynniq, comments: "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. The energy savings deliver an attractive return on investment."

"I am really satisfied with the result. Now, Texel is illuminated beautifully."

Stargazing

It is worth travelling to the island to admire the beautiful natural night sky away from the cities' glow. With intelligent lighting in place, Texel might become a favorite destination for stargazers from all over the world. Stephan: "Now you can come to Texel to watch the stars at night. It's an extra attraction point that cannot be found on just any island resort. I hope that many more peo- ple recognize the beauty of the dark night sky. Previously, I would look up and see the orange glow staining the sky. Now, I am walking around the island at night and see the stars. It's a unique and amazing sight. The beauty is overwhelm- ing, especially if you haven't seen anything like this before."
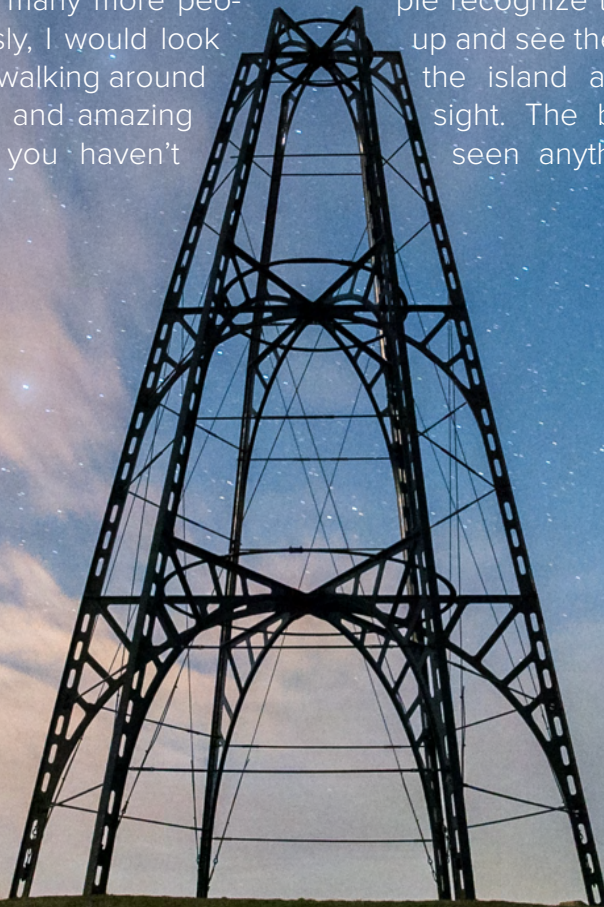
From intelligent lighting to energy neutrality

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.

With the deployment of new LEDs and dynamic lighting technology, Texel has achieved a drastic energy reduction, cutting the street lighting energy consumption by two thirds (the annual energy consumption for streetlights went down from 544 megawatt per hour to 192 megawatt per hour). Following the implementation of the new street lighting infrastructure, Texel is able to power all streetlights on the island using only the locally-sourced solar energy. "We are the first municipality with completely energy-neutral public lighting, in the Netherlands and perhaps in entire Europe."

Future-ready

Dynniq provided Texel with a scenario supervisor software that enabled the municipality to gain complete control over its lighting infrastructure. The software, connected to Tvilight's DigiHub smart city platform, allows Texel to set up dimming profiles, change brightness levels, switch the streetlights on and off, and more. With Dynniq's future-proof online management system, Texel can similarly control additional infrastructure and mobility elements, such as traffic lights, VMS signs, CCTV cameras, and outdoor sensors, according to pre-defined scenarios or real-time situations, e.g, emergencies and road accidents. With the intelligent lighting network in place, Texel has made a first step to becoming a smart island. In the future, the municipality would be able to easily integrate extra IoT applications and devices into the lighting infrastructure, such as sensors for evaluating road conditions or measuring the air quality.