

## Battery-powered solutions provide 24/7 electricity to P+R lampposts in Kerken



The Nieuwerk P+R in Kerken is a typical P+R parking lot that belongs to the Verkehrsverbund Rhein-Ruhr. The community of Kerken is located on the train line from Kleve to the state's capital, Düsseldorf. Kerken has about 12,000 inhabitants and numerous commuters who use the NordWestBahn to Düsseldorf, Krefeld, and the surrounding towns. As in many other cities, the local lampposts are only supplied with electricity during the night.

### The Case

The municipality of Kerken wanted to provide commuters and train passengers taking a car to the train station with accurate information about the availability of parking spaces before they arrived. By doing so, municipality officials hoped to promote the local train services, while also avoiding unnecessary circling of cars in fully occupied parking lots. If all parking spaces are taken, commuters can head directly to an alternative P+R parking space, thus avoiding a waste of time, stress, traffic, and unnecessary emissions.

Furthermore, the municipality wished to implement the new service in a very short amount of time. Road work, as well as construction work, were to be avoided and there should be no interference to the electricity infrastructure.

Cleverciti could provide comprehensive real-time occupancy detection of all approximately 100 parking spaces in the two

parking areas of P+R Nieuwerk, using eight Cleverciti Sensors mounted on existing lampposts. Parking data generated by these sensors are made available to commuters in an app, meaning they can check the number of free parking spaces before their arrival at the train station. Simultaneously, the city can use a management dashboard to analyze the occupancy data according to peak times and block individual parking spaces if necessary, for example, during renovations.

The problematic lack of 24/7 electricity at six of the eight lampposts was remedied by using a battery-powered solution developed by Cleverciti with night-time charging especially adapted to the sensors. The batteries now supply the sensors with power independently during the day when the power to the lampposts is switched off.

## The Challenge

The new service was to be implemented quickly. A solution using ground sensors was impossible for a number of reasons. The main problem during the implementation: the lack of continuous supply of electricity to the lampposts. However, construction work or interferences with the lighting system to supply the lampposts with electricity permanently were to be avoided.

Groundwork to install new cables is typically time-consuming and expensive. Moreover, permissions from third-party landowners would have had to be obtained in this case, which would have slowed down the project significantly.



### Decision makers wanted:

- 📶 **Quick installation with minimal cost**
- 📶 **Supply current lampposts with continual power**
- 📶 **The following should be avoided**
  - **Construction work**
  - **Interference with the lighting system**
  - **Obtaining permits**



## The Target

The goal was to implement the new parking service within a short time frame and at a minimal cost. To this end, the supply of permanent electricity, groundwork, interference with the lighting system, and obtaining permits from third parties were to be avoided.

## The Cleverciti Solution

The problem Six of the eight lampposts did not have 24/7 electricity, which would normally prevent the installation of IoT sensors. With Cleverciti's battery solution specially designed for nighttime charging and sensor integration, the sensors could run without changing the lamppost power supply. These batteries charge during the night and were specifically adapted to the sensors. They supply the sensors independently with power during the day when the power to the lamppost is switched off. At night, when the power is on, the battery is recharged.

The batteries were mounted on the lampposts quickly and easily while the sensors were also installed. The Cleverciti PowerRing, with its modern design, curves around the pole. The installation is independent of the space inside the lamppost and the size of the maintenance flap.



**Cleverciti Sensor**



**Cleverciti PowerRing**

The PowerRing has a smart charging logic. It enables short charging times of four to six hours for full capacity—even on the shortest summer nights. The battery system can be controlled remotely to check the charging and operating status at any time. It can also be monitored and serviced remotely.

## The Result

Using the PowerRing with night-time charging provides an independent solution for the permanent power supply of the most modern smart city sensors from Cleverciti. Thanks to this technology, the smart parking system could be implemented in a short amount of time and with minimal infrastructure costs. The monitoring and remote maintenance functions minimize the maintenance effort further. The short charging times ensure stable operation throughout the year.

Without Cleverciti's battery-powered solution, the plans for a smart parking service would have come to a standstill in Kerken and would likely still not have been put into action.

"After not having been able to find a short-term solution for the electricity issue at the P+R facility, we were glad that Cleverciti offered a suitable battery-powered solution with night-time charging that allows for a permanent power supply of the sensors. This enabled us to implement the project on short notice and at lower costs compared to alternative solutions. The batteries have been running perfectly since the start."

**Detlev Grimm, Project Manager in the Department of Construction/Planning/Technology of Kerken municipality**

