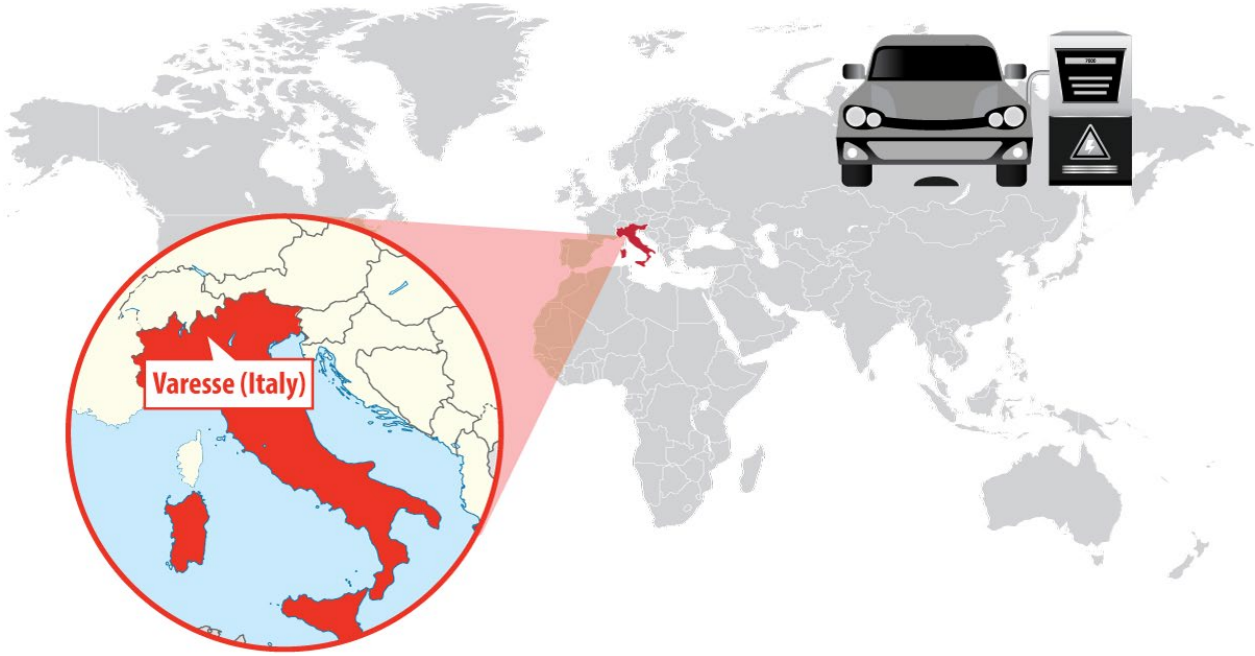
Smart Parking IoT platform to increase the efficiency of electric car recharging station

The motion of the electric car is unstoppable. Its autonomy increases with every new design and cities promote it as one of the solutions to reduce pollution levels. In fact, the contamination is not only a duty of public authorities; companies also must be involved in its reduction.

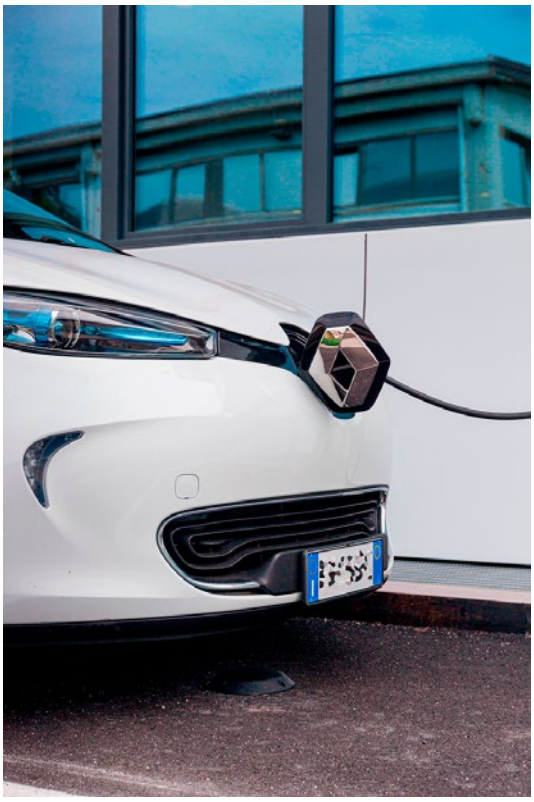
To speed up and streamline smart services, an Italian tecnological company focused on intelligent solutions, Elmec Informatica, has fully automated its headquarters in Burnello (Varese, Italy) with the IOT, in association with its partner, Everynet.



Location of the real project

A smart parking management system has been included among other smart building applications. For example, the building has been equipped with adaptive bio lighting to manage the intensity and colour temperature of the light in meeting rooms to improve performance. There are also noise sensors placed in communal areas to warn when the tolerable noise threshold has been exceeded; and CO2 detectors to automatically activate the ventilation system.

The project also includes charging stations for electric cars placed for employees. In fact, this is a great counteraction for electric car adoption: finding a place for parking and charging. Part of the energy is provided centrally by solar panels. Elmec has a battery of rooftop solar panels that can cover almost 50% of the energy recquired to power the whole building, including the electric car station. recquired to power the whole building, including the electric car station.



Electric car recharging in the Smart Parking of Elmec Informatica

The parking area of the Elmec building now includes seven nodes of Libelium Smart Parking installed to more efficiently manage the recharging points of employees' electric cars. Libelium's devices detect the presence of parked cars and send this information to the Everynet gateway via LoRaWAN. The station warns via Ethernet when the car is fully charged and sends a text message (SMS) to its owner to remove the car. When the Libelium's Smart Parking sensor recognises that the place is vacant, another notification is sent to the next employee on hold.

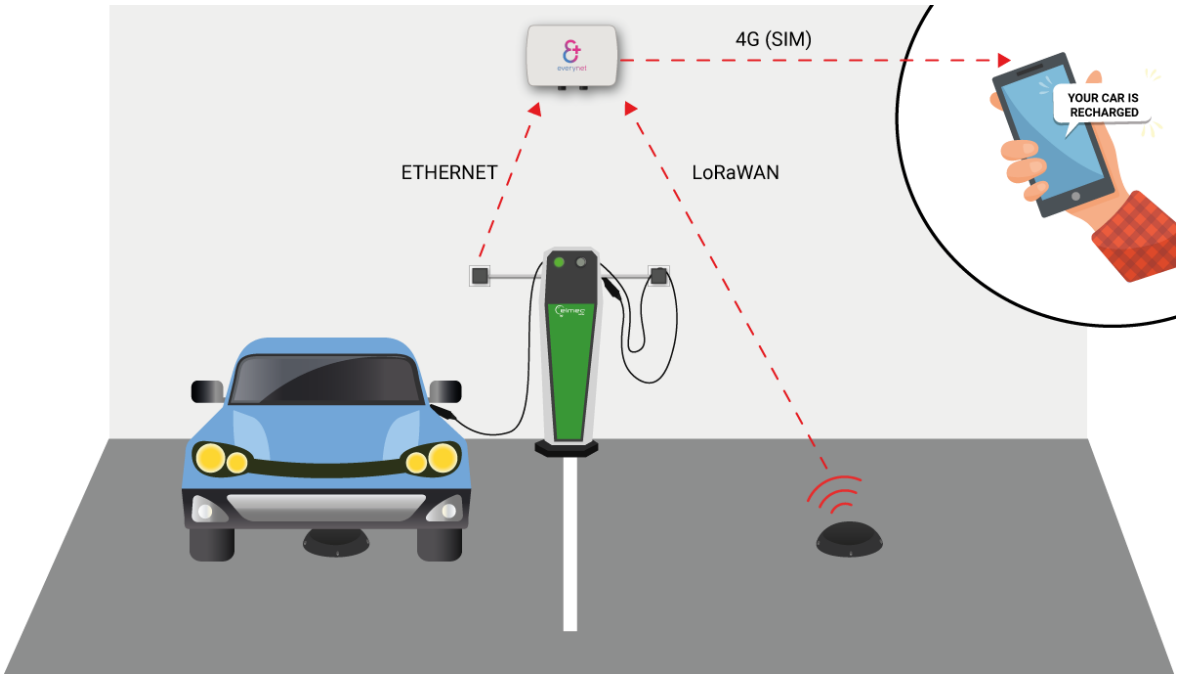


Diagram of the Smart Parking implemented project

The system follows a FiFo logic (First in, First out) allowing the employees with electric cars to wait in a virtual queue for a free lot. They use the company's badge to enable the power station and to get

their car recharged. This method improves the efficiency of the rechargeable station by allowing up to three cars to be recharged during the day by each parking lot instead of one or two in best cases. It also minimizes the time spent on checking free park lot during the day (15 - 30 minutes per day per employee) and ensures that every electric car can be recharged during the same day.

Users are also totally satisfied because they are now able to know in real time the availability of a place to recharge their car while they are working in the building and, they are sure that, at the end of the day (or at a specific hour), their battery will be full.

LAutomatized parking points for electric car

“Working with Libelium is always a pleasure. Quality and reliability of sensors, as well as commercial and technical support, is top-notch in this industry. In Everynet we are not only keen on promoting and pushing LoRa technology for a vast audience of clients and partners around the world; we are also utilizing this technology in real life, installing solutions in our offices, for our people, our city, to make our environment greener, smarter and to improve employees’ quality of life”, says Antonio Terlizzi, Everynet Senior VP Head of Global Sales.

Outside smart parking recharging points

Since recharging is a job perk for the employees adopting new technology such as this, parking management encourages the use of electric cars amongst colleagues, thus overcoming one of the main barriers. That is, finding a charging point near home or work.

In the bigger picture, smart parking management for electric car recharging points is the best solution for cities and towns to embrace cleaner commitments while improving their citizens' quality of life. The solutions can be monetized by imposing parking places or penalising those owners who do not vacate a place when their car is completely recharged.

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More information:

- For technical details on Plug & Sense! Smart Parking: Smart Parking Technical Guide
- Read more about Libelium sensor product lines in the Waspmote, Waspmote Plug & Sense! Sensor Platform and Meshlium Gateway websites.
- LoRaWAN Networking Guide: libelium.com
- Smart Parking project in Montpellier to relieve traffic congestion and reduce car parking search: libelium.com
- Smart Libelium: Living IoT Lab to monitor parking, water quality, ambient and environmental conditions: libelium.com
- Smart Parking and environmental monitoring in one of the world's largest WSN: libelium.com

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