Empowering cities and citizens

Belgian city leads the way in smart power consumption with energy monitoring solution

"Comfort has increased in five municipal buildings thanks to better environmental monitoring, and the city has reduced energy use in those buildings by 25 to 31 percent."

—Tanguy Boucquey, Energy Manager, City of Louvain-la-Neuve

To meet its commitment of becoming a carbon-neutral city by 2050, the Belgian municipality of Ottignies-Louvain-la-Neuve deployed Opisense, a Microsoft Azure–based solution, to monitor energy usage in its buildings. Developed by Microsoft CityNext Partner Opinum, Opisense offers an intuitive and cost-efficient way to measure power consumption. Now, the city has cut energy accounting time by 80 percent, reduced energy usage by 25 to 31 percent in monitored buildings, and can more easily analyze and share relevant data.

Ville d'Ottignies-Louvain-la-Neuve

City of Ottignies-Louvain-la-Neuve

www.olln.be

400 employees

Belgium

Government—local

Company profile

The city of Ottignies-Louvain-la-Neuve is home to 31,000 residents and a major university. It is located in the Belgian province of Walloon Brabant, southeast of Brussels, the capital city.

Partner

Opinum

Microsoft

Keeping an eye on energy

As morning breaks over the Belgian municipality of Ottignies-Louvain-la-Neuve, an engineer under contract with the city is checking statistics on energy usage and heating in five municipal buildings, including offices, a cultural center, and a school. Using the dashboard in Opisense, the city's cloud-based digital energy monitoring solution, she quickly checks power consumption and temperature in facilities across the city. Noticing an odd reading for one building, she switches to the Activity Map view and surveys a graphical representation of the building's overall energy consumption for the past month.

The engineer calls over Tanguy Boucquey, Energy Manager for the city of Ottignies-Louvain-la-Neuve. "There's something wrong in this building on Avenue des Combattants," she says. "It normally uses almost no electricity overnight, but last night it drew power all night long."

"Good observation," says Tanguy. "Let's get someone over there to check it out."

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Energy Manager,
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Building a sustainable future

The city of Ottignies-Louvain-la-Neuve has a population of 31,000 and is located about 18 miles southeast of Brussels, the nation's capital. It is well known as the home of the Université Catholique de Louvain, Belgium's largest French-speaking university. It also proudly houses the Louvain-la-Neuve Science Park, which contributes to regional economic development by promoting collaboration between the university and the business community, with a focus on environmental sustainability.

That "green" environmental focus is embraced by the whole city of Ottignies-Louvain-la-Neuve as well—it has a long-term goal to become a carbon neutral city by 2050. This project aims to cut greenhouse gas emissions by 40 percent compared to the levels found in 1990. "We want to be an example for other cities," says Tanguy. "Our hope is that by showing what is possible, we can motivate others to do the same."

The Opisense dashboard gives users a quick overview of various energy and environment variables, including power consumption, air quality, temperature, and humidity.

Finding the right technology partners

One of the city's most important partners in this environmental initiative is Opinum, a Microsoft CityNext Partner based in Braine l'Alleud, Belgium, and creator of the Opisense energy monitoring solution. The city also works closely with building management firm Optiwatt to act on the data that the city generates using Opisense. The city started working with Opinum after a 2013 building survey revealed the need for new monitoring methods.

"We started conducting an annual survey of all of our buildings, and we quickly realized that it was totally unmanageable to do it all manually," says Tanguy. "There was just too much data, because readings need to take into account local weather and temperature conditions, and the readings all take place at different times. All that data was then entered manually into Microsoft Excel spreadsheets, which introduced the possibility of errors. We needed a more automated solution, not just for collecting data, but for analyzing it as well."

"We plan to continue using [Opisense] as we look for new ways to analyze the data, further improve our energy efficiency, and move closer to our goal of transforming Ottignies-Louvain-la-Neuve into a green, sustainable city."

—Tanguy Boucquey, Energy Manager, City of Louvain-la-Neuve

In 2014, representatives from Ottignies-Louvain-la-Neuve met staff members from Opinum at a renewable energy conference, and there they got a look at the solution that the company was developing. "Opisense is an energy monitoring platform that integrates automatic and manual measurements and control of buildings using cloud and mobile technologies," explains Nicolas Denef, Chief Marketing Officer at Opinum. "It works through a highly secure web portal built on the Microsoft Azure cloud platform, and uses SQL Azure and Power BI for data analyses. A European Union study found that 40 percent of all energy used across the EU goes to building lighting and temperature control, so making that more efficient can significantly reduce carbon emissions."

Opinum founder and CEO Loic Bar had a background in Microsoft technologies, but Opinum still took the time to investigate other cloud vendors to find the optimal foundation for Opisense. Microsoft Azure proved to be the best option. "We analyzed the other options closely and made a very careful decision," says Nicolas. "We believe that Azure offers us the greatest ability to get development started quickly and then scale up as we go along. Additionally, programming on the Microsoft .NET platform with Azure is very efficient."

Deploying the solution

Once Ottignies-Louvain-la-Neuve made the decision to team up with Opinum, it laid out plans for a pilot deployment of Opisense, which was still in development at the time. This gave Opinum developers a great opportunity to gather user feedback and performance data to help shape and improve its solution. The city identified the four buildings that were using the most power, and equipped them with Opinum smart meter devices to capture approximately 20 different readings related to temperature, electricity consumption, and gas consumption throughout the buildings.

Opinum designed its solution using the principles of the Internet of Things (IoT), where objects are connected to the Internet and can communicate with one another and with their users. "Opisense aggregates data from smart meters in the buildings and from building automation systems, and transmits the data through the cloud to the portal where the client accesses it," says Nicolas. "It then uses the data captured from the IoT devices to automatically populate reports in Excel, which the client can adapt to their specific needs."

City energy engineers found Opisense very easy to use, and they quickly discovered that it made their jobs significantly more efficient. "The solution is very intuitive, so there was no issue with people learning to use it," says Tanguy. "What is impressive is not only how much time we save collecting data, but how much easier it is for us to analyze and present it. Our energy accounting time is down by 80 percent, and we can generate custom reports that are tailored to the audience who will be reading them. This not only improves communication, but it also makes our data analysis more credible."

Once the pilot project was complete, Ottignies-Louvain-la-Neuve expanded the solution to include additional buildings, and the city worked with Opinum on the creation of a mobile app called Opisense Index. Energy engineers can use the app when they need to collect energy readings manually—typically for small buildings where a complex monitoring solution isn't necessary.

The Opisense deployment in Ottignies-Louvain-la-Neuve went so well, in fact, that Microsoft Belgium chose to adopt the solution to help manage energy consumption and environmental control in its Executive Business Center (EBC). "Opisense is working great for us," says Marie-Laure De Veyt, Microsoft CityNext Lead at Microsoft Belgium. "For example, we discovered that during one very busy event at the EBC, the air quality dipped more than we expected. Because we were able to see this, we could work with the landlord to change the air conditioning settings so that air quality stays high, no matter how crowded the building is."

Surveying the results

In addition to the time savings that energy workers in Ottignies-Louvain-la-Neuve have realized, the city is using its partnerships with Opinum and Optiwatt to make significant progress toward its 2050 clean energy goals, while also making buildings more livable. "Comfort has increased in five municipal buildings thanks to better environmental monitoring, and the city has reduced energy use in those buildings by 25 to 31 percent," says Tanguy. "That is equal to the normal annual power usage of 66 houses. Opisense is definitely working well for us and it is very cost effective. We plan to continue using it as we look for new ways to analyze the data, further improve our energy efficiency, and move closer to our goal of transforming Ottignies-Louvain-la-Neuve into a green, sustainable city."

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