

Create Efficient and Healthy Space: Citywide Real-Time Temperature Monitoring System for Public Buses

With the Centrally Monitored System, Skellefteå Municipality Provides Better Working Environment for Buses Drivers



Milesight Partner Kubang AB	Location Skellefteå, Sweden	Number of Devices Deployed EM300-TH*80+UG67*1	Applications Indoor Temperature Monitoring, Improved Occupant Health and Productivity
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Background

Public transportation, such as buses, can experience temperature variations that differ from the built environment. This may affect driver comfort and productivity, especially in urban public transportation where the number of vehicles is too large to allow for timely manual inspections. Maintenance

Skellefteå municipality is at the forefront of environmental and climate control, and to help with it, they have built their own LoRaWAN network. This means that the municipality has coverage to place wireless sensors in the municipality's various activities. The possibilities are enormous and here the buses have been connected to public transport with LoRaWAN technologies and solutions.

Skellefteå Kraft, whose assignment from the owner, Skellefteå Municipality, is to secure the municipality's energy supply and offer a well-developed infrastructure for electronic communication. So, when it comes to public transportation, the collaboration between Skellefteå Kraft and Skellefteå Buss aims to improve the overall efficiency of more than 80 buses and the health of bus drivers.

"The reason why we introduced temperature monitoring in our buses was that we were interested in being able to follow the temperature differences over time, since the temperature should not be too low in the buses when the drivers start their shift and we have not been able to monitor the temperature before," says Mattias Gellin, group manager for maintenance and service at Skellefteå Buss.



Challenges



Lack of Clarity on the Real-Time Situation

During the winter, it can be a challenge to ensure the right temperature inside the buses, especially in local traffic where the doors open frequently and let warm air out. There are also potential sources of error in the bus depot that can mean that the buses do not have the desired temperature when they are about to enter traffic in the morning.

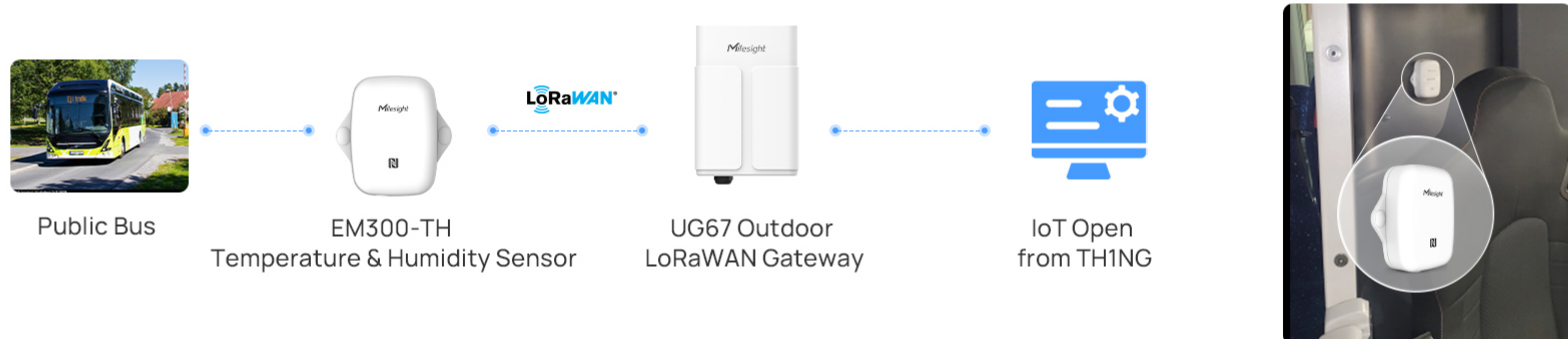
*Source: Newspaper Dagens Infrastruktur, published on March 1, 2023.

Difficulty in Scaling

"We were looking for a simple function that could clearly see how the temperature changed in our buses. That was the start of going through our needs and we started looking at different solutions. We quickly realized that there are lots of solutions available that are both very expensive and complex. Since we were going to do the installation in many buses, we couldn't find a simple and flexible solution," says Mattias.



Solutions



To meet with the project's needs, Milesight wireless LoRaWAN devices and solution will be an ideal candidate. With no complex installation required and long battery life, large-scale deployment and maintenance takes little effort. By collecting real-time temperature data via sensors, facility managers can remotely access everything from overall conditions to specific changes.

After a prolonged winter, the spring is in sight for the public bus management system. In January 2023, Milesight partner, Kubang AB together with its partner THING have delivered the solution to Skellefteå Kraft and Skellefteå Buss. Skellefteå Kraft started its part of the project by installing Milesight EM300-TH Temperature Sensor in 10 buses and started on a small scale to see how it worked. As the pilot project achieved satisfying results, Skellefteå Kraft and Skellefteå Buss decided to adopt this LoRaWAN solution in a larger scale.

"We didn't have any particular challenges in this case, but it worked as expected from the start. We have now installed temperature sensors on the buses throughout the city, which is 80 in number," says Erling Johansson, who was responsible for the project from Skellefteå Kraft's side.

Skellefteå Buss has installed the wireless Milesight Temperature Sensor EM300-TH in around 80 buses to monitor the indoor temperature. With one Milesight Outdoor LoRaWAN Gateway UG67 to provide network coverage for the entire city of Skellefteå. Managers Skellefteå Buss can now have all data collected and presented on THING cloud platform, analyzing historical data and catch problems before it is too late.

Erling says: "There was no special preparation needed to get started as this was a perfect project for us, as we already have the temperature monitoring function in our IoT platform, IoT Open from THING."

Results

Improved Productivity

"It has become an important aid for our service staff, especially if it's a busy morning. Then they can focus on the buses where they see that there is a temperature problem. They can also keep track of buses that are not in place in the workshop but are in a depot elsewhere in the municipality," Mattias concluded.

Data-Driven Insights

"We now also have the ability to follow up when the driver has reported a fault, and can see the history of the temperature in the bus even when it is out driving, so we can follow how it has looked over time and thus more easily come up with how to troubleshoot. Previously, we have not had the opportunity to see any history and that has been a concern," says Mattias

Getting Informed in Real-Time

"It can be anything from a short circuit in a cable to a ramp coupling not being in place. Thanks to the sensors, an automatic alarm goes off via the app if the temperature in a bus drops below a certain level at night. Then the responsible staff are noticed, so that they can act by replacing buses that are not hot and ensure that they are warmed up before they go out, says Per Lindfors, who is Skellefteå Buss' project manager in the implementation work.

*Source: Newspaper Dagens Infrastruktur, published on March 1, 2023.

Expanding to Smart Restrooms

"We are now planning for the next step, which concerns temperature monitoring of the toilets around the municipality that the bus drivers use. It is a smaller version of the toilet where we want to keep an eye on that the power has not gone out. It's not so fun for the staff to jump into a nest box that is minus 25 degrees," Mattias concluded.

Why Choose Milesight



"I was surprised at how easy it was to install the sensors, so we could do it ourselves."

—Mattias Gellin - Skellefteå Buss



About Skellefteå Bus

skellefteå buss

Sustainable public transport for a better everyday life.

We like to think that our successes over the years are proof that thoughtfulness, innovation, reliability and know-how pay off in the long run. Not only for us, but also for our customers. We want to constantly develop our quality and be on our toes to be able to meet the demands and conditions of the world around us, which are constantly changing.

Partner

About Kubang AB

Kubang AB is a Nordic distributor of IoT products.

We offer resellers in the Nordics the opportunity to build their business around a wide range of IT and network products. We educate and create business opportunities for our customers through close cooperation between us and the dealer.



About THING

THING develops and delivers critical digital infrastructure that enables smart and sustainable societies.



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