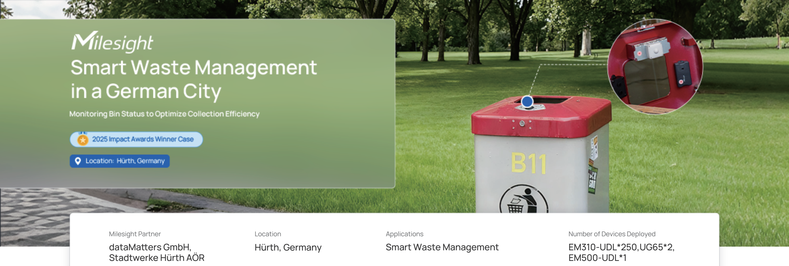

Milesight

Smart Waste Management in a German City

Monitoring Bin Status to Optimize Collection Efficiency

2025 Impact Awards Winner Case

Location: Hürth, Germany

Milesight Partner	Location	Applications	Number of Devices Deployed
dataMatters GmbH, Stadtwerke Hürth AÖR	Hürth, Germany	Smart Waste Management	EM310-UDL*250,UG65*2, EM500-UDL*1

Background

The City of Hürth relied on fixed collection routes for public waste bins, but actual fill levels varied widely across locations. As a result, half-empty bins were emptied unnecessarily while critical points overflowed, leading to wasted mileage, higher operating costs, and increased complaints due to "wild garbage." The municipality recognized that manual, experience-based scheduling was no longer efficient or reliable. A data-driven solution with real visibility and predictive logic was required — one that could support precise route planning, reduce wasteful trips, and remain cost-effective, robust, and fast to deploy. This requirement triggered the project.

Challenges

Rigid collection routes
Trucks followed fixed schedules instead of responding to actual bin fill levels.

Limited bin-level visibility
Half-empty bins were emptied while overflowing bins went unnoticed.

Increasing illegal dumping
Overflowing bins led to more uncollected waste and citizen complaints.

Lack of scalable sensing
The city required cost-efficient sensors that deliver accurate, consistent data outdoors.

Solution

To tackle overflowing bins and inefficient collection, Stadtwerke Hürth AöR deployed 250 Milesight EM310-UDL Ultrasonic Distance Sensors in key public waste bins, connected via a hybrid LoRaWAN® network combining Helium community gateways with a few municipal UG65 gateways.

A federated AI model provided by dataMatters GmbH analyzes location-specific factors — including proximity to train stations, bus stops, kiosks, and snack bars — to predict fill levels for the next day. The system dynamically optimizes waste collection routes, ensuring trucks service only the bins that need attention, improving operational efficiency and reducing citizen complaints.

Results

The deployment of Milesight's EM310-UDL sensors in Hürth's waste management system has delivered measurable improvements:

Reduced Carbon Footprint and Optimized Routes
Predictive AI combined with precise sensor data reduced collection kilometers by up to 21% per week, lowering fuel use and CO2 emissions. Staff now follow demand-driven routes instead of fixed schedules, which reduces stress and improves job satisfaction.

Reliable Outdoor Performance
Long battery life, IP67 protection, and seamless LoRaWAN® integration ensured stable operation in diverse outdoor conditions, including rain, dust, and temperature extremes.

Scalable Deployment
Compatibility with existing infrastructure (Helium + UG65 gateways) and standardized data formats enabled rapid scaling, flexible sensor placement, and minimized CAPEX, supporting quick city-wide rollout.

Replicable and Privacy-Conscious
Federated AI enables predictive models to be shared with other municipalities without exposing sensitive data. Milesight's sensors integrate reliably with existing systems, ensuring smooth replication in new deployments.

Discover More about Milesight Product

EM400UDL-Ultrasonic Distance/Level Sensor

EM400-TLD ToF Laser Distance Sensor

EM400-MUD Multifunctional Distance Sensor

EM410-RDL Radar Distance Level Sensor

Why Choose Milesight

"With Milesight's EM310-UDL sensors, our waste collection routes are now driven by real need rather than fixed schedules. Staff experience less stress and more purpose, while citizens report far fewer overflowing bins. The sensors' precision, long battery life, IP67 durability, and seamless LoRaWAN® integration ensured reliable outdoor operation, and compatibility with our Helium and UG65 infrastructure enabled rapid scaling. Predictive AI improved route planning, and federated AI allows safe replication across other cities. Since deployment, collection kilometers dropped by 21% and complaints fell by 61%, prompting other municipalities to request demonstrations."

About dataMatters GmbH

dataMatters is an AIoT startup based in Cologne, bridging the gap between the digital and real economy since day one. We support our clients along the entire data value chain – from sensor to app – with a modular suite of in-house products: *dataConnect enables reliable and secure data acquisition across diverse sensor and network technologies, *dataCore provides a powerful pipeline for both structured and unstructured data, *dataPlattform delivers analysis, visualization, and seamless integration into operational workflows, *aiStore serves as a marketplace for reusable AI models and domain-specific smart logic. With these components, we build transformative use cases for municipal and industrial clients – scalable, sovereign, and impact-driven.

About Stadtwerke Hürth AÖR

We are a reliable provider of electricity, heat, and water in Hürth. In response to changes in the energy sector and emerging customer needs, we continuously expand our energy solutions to include comprehensive services, personalized consulting, and cost-effective offerings. For over 100 years, we have been serving the citizens of Hürth – "We are here for you."

Milesight

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