

Proposed Solution

Sensoneos smart waste management solution empowers cities to manage and battle ever-growing volumes of urban and municipal . The growing volume of waste are largely caused by two factors: large-scale urbanization and industry growth. The modern lifestyle around the globe produces much more waste per citizen than only a decade ago. The United Nations projects 66% of the world's population will live in cities by 2050.

To sustain all these factors, problems and challenges, cities need a sophisticated and efficient tool to manage waste, monitor bins with sensors, and optimize capacity and collection routes.

Sensoneo's solution can help cities be smarter with waste;

01

Understand production of waste in your city

02

Improvement of the environment in your city

03

Provide citizens with more efficient waste management

04

Evaluate the bin infrastructure in the city in terms of density, efficiency and cost

05

Optimize waste bin capacity, location, and type

06

Optimize waste collection frequencies, reduction of costs

07

Be able to collect waste on demand, reflecting the actual need



08

Relieve traffic congestion in city related to regular waste collection routes

09

Provide citizens with free mobile app enabling to find nearest available empty bin, directions and single click notification to the operation

01

Smart combination of hardware and software

Sensoneos smart waste management technology uses a variety of Sensoneo Smart Sensors (Single, Quattro), including patent-pending Micro-sensors, where the beams of the sensor can be positioned in the most optimal way; open APIs, advanced analytics, and leveraging mesh-network topology. Its this unique combination that provides the intelligence of the solution so that it is easily customizable for any network (NB-IoT, LoRaWAN, SIGFOX, CAT M1, or GPRS) and through real-time data monitoring and analyses, provides better information that helps to avoid collecting empty or half-empty waste bins.

02

Improve the well-being of people

Cities can improve the well-being of citizens with the smart waste management solution by Sensoneo. The implementation of our solution helps to optimize the capacity of bins and to promote separation of recyclables by residents. With sufficient capacity, there is always enough space for peoples trash — general and separable. The need-driven waste collection eliminates unnecessary traffic blockage and overflowing bins. Cities, as a result, become cleaner and free of litter, trash and garbage and sustainable solutions like recycling are promoted.

03

Engage people via smart mobile app

Activate people via Sensoneos Citizen App. The mobile application informs people of the nearest available empty bin, helps them find the right bin for their waste type — general, glass, plastic, etc., and enables them to be more environmentally responsible. By providing real-time feedback via the mobile app, citizens can help reduce overflowing and messy bins.



04

Improve the environment

Well-managed waste in the city with Sensoneos smart waste management solution improves the environment. The real-time data monitoring, Smart Analytics, and Smart Route Planning ensure more efficient waste collection, resulting in fewer cars, less noise, less traffic, and a carbon emission reduction of up to 60% in cities and most of all – a litter-free city. Additionally, the sensors are equipped with replaceable batteries and are made from recyclable polyimide optical fibers that provide not only an eco-design, but also help with recycling.

05

Make sure you implement an enterprise-grade solution

Sensoneo is redefining smart waste management. Its leading enterprise-grade waste management solution provides cities with a robust, scalable, secure and easy-to-deploy solution hosted in the cloud-based MS Azure, enabling high availability and redundancy capabilities. As such, Sensoneo can scale its solution according to customers needs and can connect any number of sensors per city. Payload and network communication is encrypted on two levels, preventing the misuse of Sensoneo Sensors for DDOS attacks. The hardware is of equally high quality, making use of top-quality electronic chips available on the market and deploying recyclable polyimide optical fibers for the casing.

06

Overall waste collection cost reduction of at least 30%

Sensoneos software solution cost-efficiently manages the waste collection. Thanks to real-time monitoring, Smart Analytics and Smart Route Planning, cities are able to rely on data-driven decision-making to achieve a collection cost reduction of at least 30%, by optimizing the collection routes, pickup frequency and vehicle loads.

07

Make bins available only for authorized citizens

Public availability of waste bins does not always mean the bins are meant for everyone. However, locking bins in cages or cabinets is not always an option – especially if the visual aspect is important for customer. Sensoneos Bin Access



Management solution does not disturb the visual of the waste containers or their surroundings. Besides ensuring that only the authorized people can access the bins, the solution can also facilitate introduction of PAYT for apartment buildings that otherwise must be done via door-to-door collection only.

