

NORD | SENSE

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CASE STUDY:

**Smart Waste Management
Impact on San Francisco**

[Smart waste management](#) is revolutionizing an industry facing a worldwide struggle to reduce costs while keeping our cities cleaner. An increasing number of people around the globe are realizing that the status quo is no longer acceptable and that the best solution is to develop and maintain smart waste management.

Regardless of whether you represent a whole city, an organization, or a waste operator, the benefits from focusing on smart waste management are undeniable.

THE NORDSENSE ADVANTAGE

“The key benefit of the Nordsense smart waste management solution is cost savings through improved route optimization, resource handling and monitoring. Your increase in efficiency will not only save money, but also improve workflows while reducing your carbon footprint.”

Empowered with the insight to deploy haulers only when needed, city officials can minimize traffic congestion, fuel consumption and costs.

Advantages



Reduce Waste Collections by 50%

Realize big savings on waste collection, by picking it up at just the right time



Environmentally Beneficial

Reduce CO₂ emissions by 50%, lessen noise pollution and decrease traffic congestion, while preventing unsanitary bin overflows



Risk-Free Solution

Nordsense is available as a monthly subscription, removing the need for huge upfront technology investments

HOW IT WORKS

Unlike offerings that require customers to purchase or rent expensive ‘smart bins’, Nordsense IoT-enabled sensors fit existing trash bins of all sizes, from small city bins to large underground containers, saving municipalities both time and money.

Nordsense uses machine learning and Internet of Things (IoT) technology to monitor container levels and apply data to analyze waste generation patterns in specific locations and make predictions about activity to prevent overflow and optimize collections.

The company's sensors measure 16 points within the bin to establish a "topology" of waste for each individual container, which allow detection of "static zones" and filter out "false positives" that may signal more waste than is actually present.

The smart waste technology allows waste operators and haulers to operate more efficiently.

Software as-a-service (SaaS) pricing eliminates the capital expense and risk of replacing existing infrastructure; Nordsense solutions are available for a low, flat monthly subscription fee, which includes all device-related costs.

Harnessing AI and machine learning, Nordsense [Fleet Management](#) and [Intelligent Routing](#) present actionable insights for waste management officials to identify areas in need and track the efficiency of improvements over time.

The breadth and depth of insights mitigate container overflow, reduce the number of overall collections and vehicles on the road, guide bin placement and optimize operational resources.

PROBLEMS WITH MUNICIPAL WASTE MANAGEMENT

"In most American cities, waste collection is handled in much the same way it was 100 years ago, with inflated costs, a substantial CO2 footprint and service that isn't closely aligned with variable demand," Nordsense CEO Anders Engdal says.

Waste pickups can be an outsized concern for towns and cities.

The cost to dispose of municipal solid waste (MSW) has been rising steadily for the last few years. In 2017, it costs an average of \$50.30 per ton to dispose of MSW, and that cost is expected to reach \$53.53 by 2021.

The rising cost of waste disposal is borne upwards by several factors, and municipalities have been casting about for ways to bring prices down.

WHY WASTE DISPOSAL COSTS CONTINUE TO RISE

First, people are making more trash. Americans in particular create more trash per person than anyone else in the world.

With 4% of the world's population, they create 12% of the world's trash. Of this figure a full 30% is represented by disposable packaging.

Second, people are running out of space to put their trash. This is a problem that varies based on where you happen to live.

In heavily built-up areas of the United States such as the Northeast, there's a lot less available landfill space, leading to higher costs.

Lastly, too many people ignore the benefits of optimizing waste pickup times!

90%
of the world's waste is
collected at the wrong time



Too late

Overflowing containers lead to illegal dumping following additional cleaning and collection costs

Too early

Containers are empty at the time of pickup wasting time, resources and money

CITY OF SAN FRANCISCO

Nordsense is part of the Start-up in Residence (STiR) program with San Francisco Public Works.

“Our partnership with the city of San Francisco is aligned with San Francisco's Sustainable City initiative, said Anders Engdal, “and is an important component of its vision for the reduction of waste. “The primary goals are to improve services to citizens, make the city cleaner, reduce the number of public complaints, understand where more bins are needed and where bins can be removed, as well as reduce the number of overall collections.”

GOALS

1. Mitigate container overflows
2. Provide a better and cleaner experience for the citizens
3. Detect service need before the citizens complain
4. Reduce number of collections
5. Optimize placement of bins
6. Ensure that bins are only serviced when there is a need.

SOLUTION

Nordsense installed 1,000 multi-point reference sensors in waste bins along San Francisco's major commercial corridors. This represents 1/3 of the City's 3,000 sidewalk trash cans.

The small pods monitor activity, including bin fullness, temperature and fill rates in order to identify waste generation patterns. Upon placement in bins, [Nordsense Pods](#) monitor container activity, including fullness, temperature and fill rates, to identify waste generation patterns.

Data from bins is collected and analyzed by the company's web-based platform, providing real-time analysis of every trash bin simultaneously.

RESULTS

Collected data helps the city mitigate container overflow, reduce the number of overall collections, guide bin placement and optimize operational resources.

80%

decrease in overflowing
trash cans

66%

decrease in street
cleaning service
requests

64%

decrease in illegal
dumping

Source: The San Francisco Examiner. www.sfexaminer.com

"The program showed us firsthand the benefits of the sensor technology to improve cleanliness on our city's streets and we're looking forward to implementing the expansion," said San Francisco Public Works Director, Mohammed Nuru. "The partnership with Nordsense will allow us to use real-time data to better service the public trash cans and deploy resources more strategically."

During the initial pilot program, 48 sensors were installed across the city to create public "smart" bins that collected real-time data about trash levels and patterns.

The results were an **80 percent drop in the number of overflowing bins**, as well as a **64 percent decrease in illegal dumping** and a **66 percent decrease in street cleaning**.

Complaints from the public concerning trash overflow in smart bins were eliminated.

The project also generated data revealing how empty or full bins were on average when they were serviced.

This information indicated increasing the number of bins overall would have less impact on the cleanliness of city streets than smarter distribution of bins based on measurable activity.

ABOUT NORDSENSE

Nordsense is redefining waste collection using artificial intelligence (AI), machine learning and Internet of Things (IoT) technology. Nordsense has created a complete end-to-end solution that optimizes waste collection processes by monitoring container levels, applying advanced data analytics and delivering an event-driven turn-by-turn navigation for waste collection.

For the first time, Nordsense makes it easy and cost-effective to deploy a smart waste solution at large scale, enabling cities, waste operators, and waste haulers to perform waste operations much more efficiently. This provides a positive environmental impact by reducing the number of vehicles on the road and their fuel consumption, as well as the benefit of preventing unattractive and unhealthful overflowing bins.

Nordsense has during the last two years acquired customers in Europe, the Middle East and North America and installed thousands of sensors for the benefit of its customers and their overall carbon footprint.

Nordsense customers typically save more than 50 percent on waste collection per year. The company has offices in Sunnyvale, CA and Copenhagen.

[Visit us at nordsense.com.](https://www.nordsense.com)