



# CASE STUDY

## Smart City

### Location: España

#### PROJECT MAJADAHONDA, MADRID

##### ABOUT THE PROJECT

Majadahonda is a municipality located 16 km northwest of Madrid, Spain. It has implemented Envac's Pneumatic Waste Collection Systems, which is one of the most significant implementations of its kind. This latest technology serves almost 75% of the population, which is higher than what many Swedish cities such as Stockholm have achieved.

This initiative has enabled sustainable urban living and reflects the positive attitude of the municipality towards making waste management smart and efficient, thereby providing a safe environment and improved quality of life for the community. In 1999, the Majadahonda City Council decided to implement pneumatic technology and has since installed five collection systems.

These systems serve around 23,000 homes and collect over 8,000 tons of waste annually. The waste collected is separated into three fractions, residual, organic and packaging, encouraging the residents to sort and separate their waste.

##### FIVE SYSTEMS SERVING THE COMMUNITY

The implementation of five waste management systems - Majadahonda Centro, Arcipreste, Oportunidad, Monte del Pilar, and Negrillos - required the installation of 30 kilometres of underground pipes.

These pipes enable waste transfer to the corresponding collection centres, facilitated by deploying 1,061 waste inlets. The successful completion of this project has ensured efficient and effective waste management in the areas above.

##### 25 YEARS OF SUCCESSFUL OPERATIONS

The introduction of pneumatic collection facilities in Majadahonda can be traced back to 1999 when the first facility was installed and met with a highly positive response from the local community.

Since then, this innovative and eco-friendly technology has been integrated into new developments in the area, providing a more efficient and sustainable waste management system for the growing population.

These facilities use underground







pipelines to transport waste from individual households to a central collection point, reducing the need for traditional garbage trucks and minimising the carbon footprint of the entire waste management process. This approach has become increasingly popular in urban areas worldwide, and its success in Majadahonda has made it ideal for other cities to follow.

### IDEAL URBAN DEVELOPMENT

Majadahonda, a city in Spain, has been recognised as a pioneering example for implementing a pneumatic waste collection system. This innovative method of waste collection is sealed, and vacuum technology is used to transport waste to a central location, which helps to reduce the number of garbage trucks on the road. As a result, the city has experienced a significant decrease in air pollution, noise pollution, traffic congestion, and improved quality of life. This successful implementation has led to the General Urban Planning Municipality (Plan General de Ordenación Urbana del Municipio) mandating that the integration of this system be assessed for new developments in the country. This move is a significant step towards a more environmentally friendly and sustainable future for Spain.

### SATISFIED CITIZENS

According to a survey conducted by Sigma Dos, an external evaluator, the pneumatic waste collection system (PWCS) has received high satisfaction ratings from users in the area. Out of those surveyed, 94.7% of users expressed their satisfaction with the system and gave it an average rating of 7.88 out of 10.

Additionally, 91.3% of users in this group felt that PWCS is essential to their lives and would prefer to live in communities with this solution. For the 94.7% of users who approve of the system in the municipality of Majadahonda, the aspects they value the most are its proper functioning (49.7%), comfort (27.5%), and cleanliness (24.4%).

### COMPARISON WITH THE TRADITIONAL SYSTEM

According to a survey, most people prefer the Envac pneumatic waste collection system over the traditional system. This is mainly because they believe it is less environmentally harmful and emits less CO2 (78.7%). Additionally, most people (90.7%) feel that this system helps free up public spaces and creates a cleaner and more pleasant urban environment. Furthermore, 88.0% of users rate this system's comfort very positively compared to the traditional system.

The conventional system is considered to be responsible for creating more traffic problems in the City (88.0%).

### ROZA MARTIN - NEW SYSTEM

The City is planning to set up its sixth pneumatic installation in Majadahonda. This installation will be located in the Roza Martín neighbourhood and serve around 4,000 new homes, equivalent to 7,200 neighbours. Once established, this new facility will join the other existing facilities. Since the Negrillos Terminal was launched in the neighbourhood of the same name, approximately 75% of the municipality's inhabitants have used the pneumatic waste collection. This volume is anticipated to reach 85% when the sixth terminal is launched in the Roza Martín area.



**8k** TONS OF WASTE  
COLLECTED YEARLY



USERS IN MORE THAN 23,000  
CONNECTED HOMES

**53k**



**1.061** INLETS COLLECTING  
WASTE

RESIDUAL, ORGANIC AND  
PACKAGING

**3 fractions**

