



 T-MASTER

# European System of Individual Waste Segregation

Taking care of the environment  
and the comfort of residents

less  
waste

# The effects of system implementation in numbers:

Since 2017, we have been providing Polish cities with waste management solutions that not only meet legal requirements but also effectively support residents of multi-family housing estates in efficient waste segregation.



**50%**

less mixed waste

**2x**

fewer mixed waste collections



**36%**

reduction in the costs of waste collection and disposal within just 5 months of implementation

**4x**

more weight of selectively collected (cheaper) waste instead of mixed waste



**95%**

of households segregate waste



**91%**

waste quality control with a correct result



**35%**

reduction of non-segregated waste containers in favor of selectively collected ones

T-MASTER S.A. is a Polish technology company.  
We design and manufacture our products in Poland.

With over 20 years of experience in the market, we have gained expertise in creating IT and electronic solutions for major clients in the public sector in the country.

Over **500** devices  
delivered



**6 000** households

**15 000** users

22 cities have trusted us,  
as well as renowned companies



Leading brands  
from the clothing  
industry

AkzoNobel

Manufacturing  
companies



Shopping centers



Developers



Creators of circular  
fashion boutiques

Each day brings more of them...

less  
waste



# We change Cities

We introduce innovative solutions that change the way we handle waste. Our smart containers not only make waste disposal easier but also improve the hygiene of the environment in which residents of multi-family housing estates live.

## SEE SOME OF OUR PROJECTS







We have created a system that **GUARANTEES:**



increase in the quantity of selectively collected waste



households fulfilling the segregation obligation, starting from less than <12%



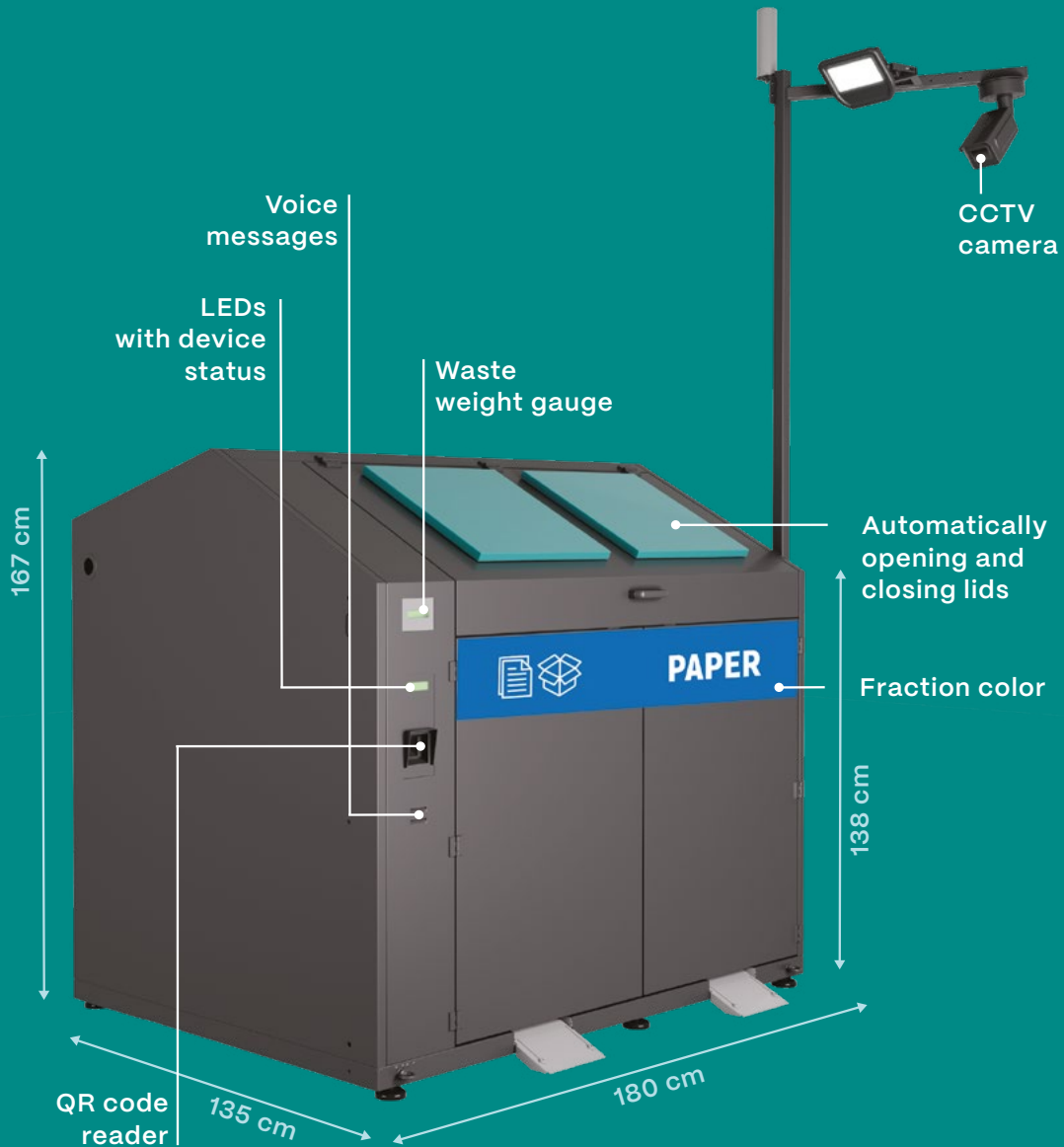
average cost reduction in collection and disposal



elimination of collective responsibility

# SMART CONTAINER- DROP&GO

electronic municipal waste gauge



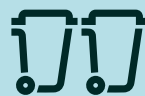
Height of the reader 90 cm



1x 1100-liter container



Automatic chute flap



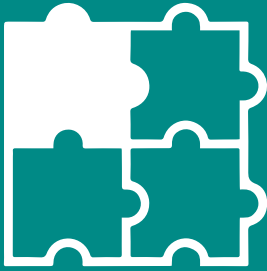
2x 360-liter containers



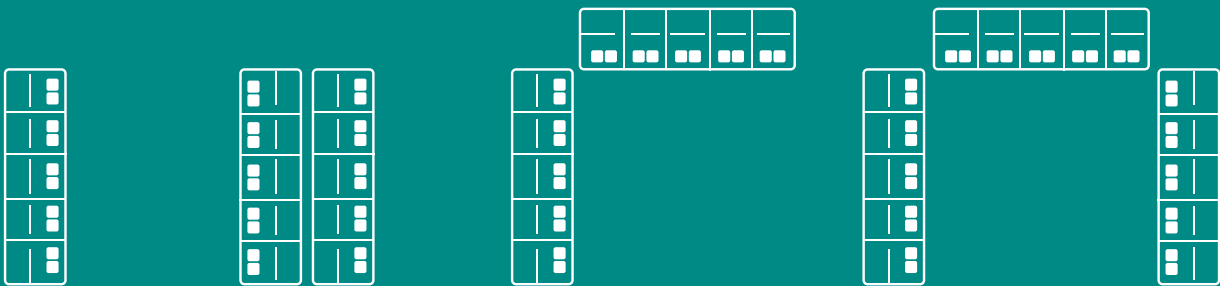
Voice messages



Power supply 230V



## WE ADAPT TO YOUR NEEDS



module settings examples

### • MODULARITY

Thanks to individual containers, we can design the installation freely

### • THE SYSTEM'S SCALABILITY

In case of expansion of the installation or legal changes, we simply add another container

### • PERSONALIZATION

QR codes attached to the bags allow for waste assignment to households

### • SAVINGS

Scheduled collection of only filled containers based on fill-level sensors data

### • THE FUTURE

The verified scales present in each container allow residents to be charged based on the weight of their waste

### • PROGRESS

A mobile segregation quality control system will allow for individual identification of premises not complying with selective waste collection requirements

# HOW IT WORKS?



1. Every household receives packages with QR code stickers



2. Residents sort waste into separate bags in their households



3. Single-use QR code opens the container and assigns the type and weight of waste to an individual user account



4. The mobile app facilitates accurate waste sorting and monitors residents achievements in waste sorting and reducing waste volume



5. Quality control over segregation is provided by IWO apps



6. Waste management application check

Watch the movie





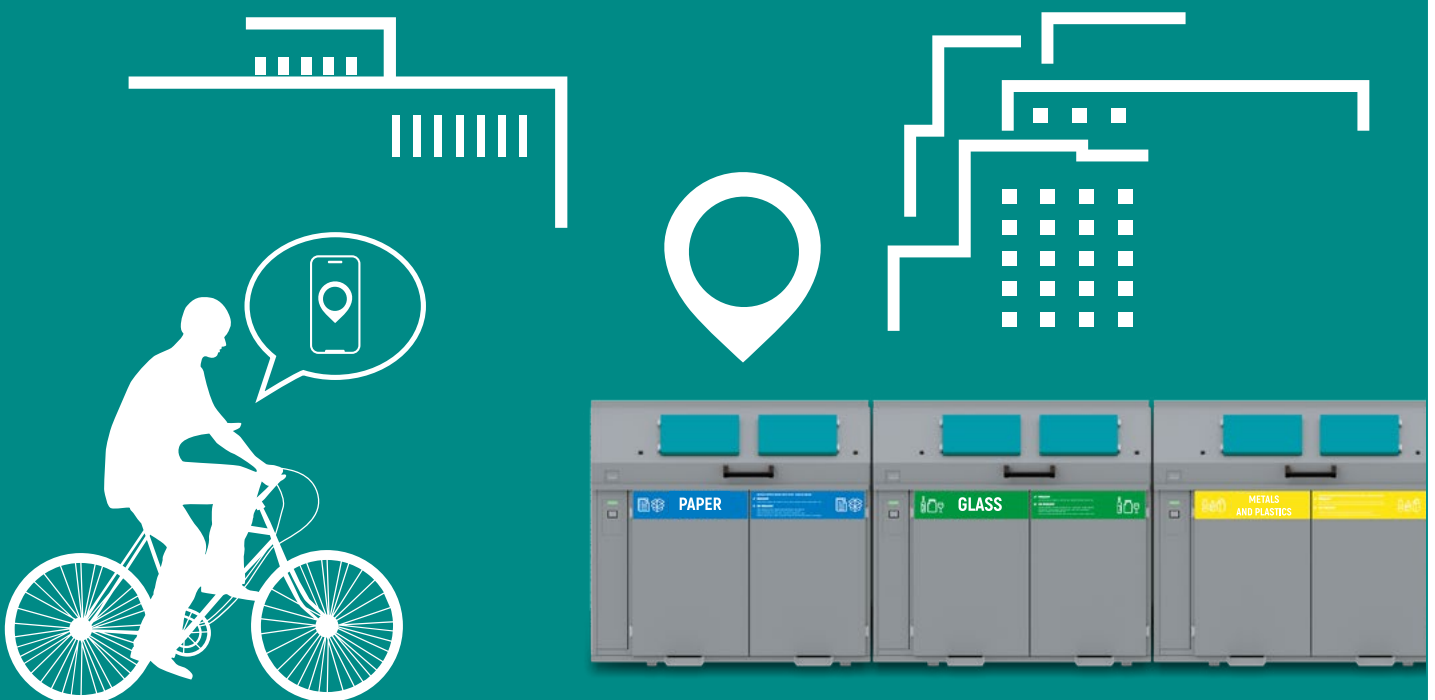


# Self-Service 24/7 installation close to residents

Our facilities offer a safe and environmentally friendly solution for disposing of problematic waste such as light bulbs, batteries, and expired medicines.

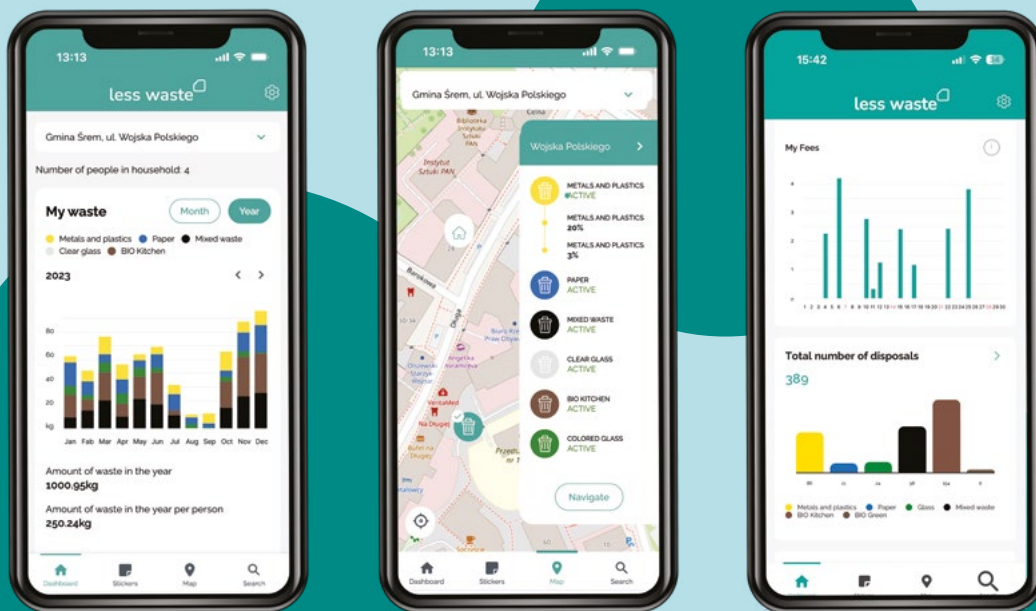
By locating these points close to housing estates and shopping centers, we provide easy access for residents, which contributes to reducing the amount of waste dumped on the streets and in illegal landfills.

Moreover, the possibility of using these devices as collection points for recyclable materials encourages residents to actively participate in recycling. This contributes to increasing recycling levels in our municipality and supports sustainable development goals.



# LESS WASTE APP

helps and educates



## Features of an app designed for residents:

- You see the actual cost you incur for mixed waste, while for segregated waste, you gain actual value in cash

- The quality of segregation and comparing your results with other residents

- Knowledge about the amount of waste generated by your household

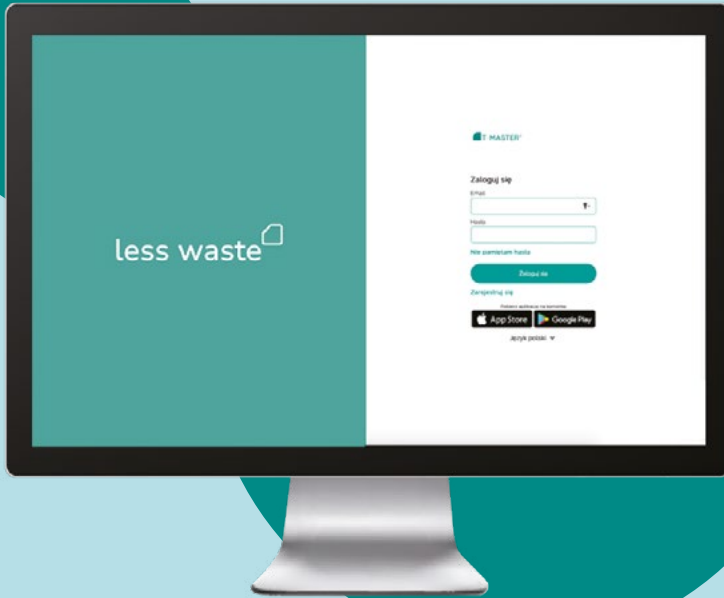
- Control of the quantity of stickers with QR codes

- A waste search engine that suggests where to dispose of waste

- Locating the nearest available DROP&GO container, mini waste collection point

# LESS WASTE APP

## to support waste management



One application for all participants in the process

**• COMMUNICATION**

Information about upcoming inspections and the need to order QR codes

**• SUPERVISION**

Device status in the system and CCTV monitoring

**• MONITORING FILL LEVELS**

Collecting only full containers helps to optimize costs

**• INTERFACE**

Continuously evolving profiles for the Municipality, Property Manager, waste collection company and residents

**• REPORTS AND ANALYSIS**

Quantity of waste produced in the city by fractions, segregation level, waste growth dynamics, and more

**• BILLING**

Individual billing based on the weight of waste assigned to the household

**• CRM**

User management, configuration, online support

**• QUALITY CONTROL**

Mobile application for quality control integrated with lesswaste software

less waste



Production of devices and software	Poland
Device servicing and repair	
Maintenance and development of the IT system	

**MECHANICAL LAYER**

Device construction	modular
Installation design	the number of containers in the installation is flexible and limited only by the buyer's vision. The arrangement of modules is flexible, ideally maximizing the available space.
Height of the device - insertion opening	1.38 meters
Number of interfaces	1 interface per 1 container  (short service time - no occupied session - only one container is affected in case of failure)
Installation lighting	YES  (LED - activated by motion/energy - saving)
Opening method for users/residents	
manual	YES
automatic	
Waste collection method by the municipal company	Each container directly  (short service time)

**ELECTRONIC LAYER**

Access control system	YES
RFID cards	
Barcode codes	
QR codes	
RFID chips	
RFID proximity reader 125 KHz/UHF	
MIFARE proximity reader	
LED indicator for bin availability	
CCTV system	
Automatic detection of waste tossing	
Automatic detection of bulky waste	
Bin fill level measurement system	
Multi-point (image of waste distribution in the bin)	

Certified waste weight measurement system (basis for commercial settlements)	YES	
Fire detection system		
Device communication system with central layer	GSM (LTE or FTTH)	
Unauthorized access detection system to the device	YES	
<b>IT LAYER</b>		
Server room location	Poland	
Redundant network architecture	YES	
Backup copy		
Software	YES	
Software in multiple language versions		
Website interface for the Client/Owner		
Website interface for the waste collection company		
Website interface for Property Manager (e.g., HOA, Property Management, Public Housing)		
Website interface - individual account for user/resident		
Mobile application for residents		
CRM system (user management, communication, support)		
Electronic service/repair request system		
Individual billing system based on waste weight (billing)		
Statistics		YES
Records of the number of drop box openings		
Records of residents/users		
Records of waste quantity (based on authorizations/openings)		
Records of waste weight (certified measurement)		
Records of container fill levels		
Waste segregation control based on fraction percentage		
Quality control of segregated waste		
Mobile app for quality control		
Automatic detection of anomalies targeted for quality control (precision = low cost)		
Electronic circulation of quality control results		

FACILITIES	
Visually impaired individuals	YES (voice messages)
Individuals using wheelchairs	YES (automatically opening flap)
WARRANTY	
Warranty period	12 - 60 months
Manufacturer's warranty for the casing (sheet metal)	even up to 10 years!
Duration of IT system maintenance	YES
Duration of device maintenance/service	



**They're talking about us**



**Follow our social media profiles and stay up to date with us!**





# One device multiple possibilities



## CLOTHES DISPENSER

Our smart containers were designed for collecting municipal waste, but they also work well as clothes dispensers.

Install in a housing estate, shopping center or frequently visited places in your city and take textile collection to a higher level.



We cooperate:



Our devices are used by





## T-MASTER Weigh in Box

### Universal Solution for Underground Containers

The device for recording and weighing separately collected municipal waste is intended for integration with the underground container system.

#### KEY FEATURES OF THE SOLUTION ARE:

- Legalized weight measurement system
- Waste registration system using an individual QR code on the waste bag or RFID card
- Access control system to the underground container chute, possible only after waste registration in the Weigh in Box device
- CCTV monitoring system for each collective installation
- Mobile tool for quality control of waste segregation

# Waste disposal process



1. Distribution of sticker packages with QR codes



2. Residents segregate waste at home into separate bags and affix individual QR codes



3. The QR code on the bag serves as a one-time key to the device. After placing the bag and selecting the type of fraction to be disposed of, the waste is weighed



4. After completing the process in Weigh in Box, the flap of the appropriate container opens. You can then place the bag with the corresponding waste inside





# COMPREHENSIVE SOLUTIONS FOR INDIVIDUAL WASTE SEGREGATION

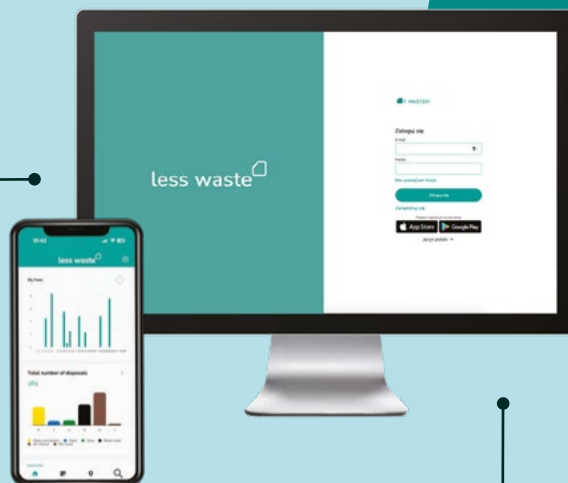


## DROP&GO

Modern waste collection points for multi-family and single-family housing

## LESS WASTE APP

Software for managing and optimizing waste management processes



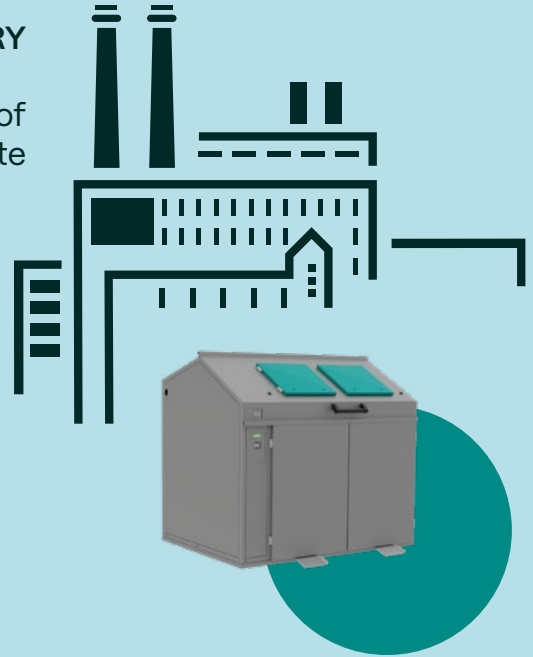
## WEIGH IN BOX

Sealing the system through an integrated solution for underground containers



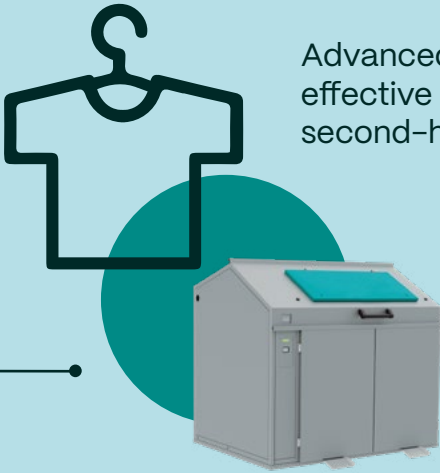
### DROP&GO FACTORY

Cost optimization of post-production waste



### DROP&GO TEXTILE

Advanced and effective collection of second-hand clothes



### SELF-SERVICE 247

Distributed systems for problematic wastes near residents



less waste



less  
waste

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