



**WINPOL**  
Interreg Europe



European Union  
European Regional  
Development Fund

# Waste Collection with weighing

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Thematic Seminar 1

“Use of Information & Data in the waste field”

# Description:

3.300 Street Containers – 3.000 liters

Side Loader – 25 m<sup>3</sup>

1 operator in cabin

Automatic elevator

Sensors / Sonars/Cameras – Errors Compensation



# Description:

- Problem addressed/Context:
  - No control/data (containers collected, weight....)
  - Overweight (Security) / Underused (Optimization)
  - Driver's dependence
  - Extra time and resources to get data when needed
- Objective
  - Get data to improve the system
  - Reduce overweight risk
  - Optimize collector capacity

# Description:

## Operating Aid System: monitoring of vehicles and activities

The screenshot displays the EMULSA web application interface. At the top, there is a navigation bar with the EMULSA logo and the text "medio ambiente Ayuntamiento de Cádiz". The main navigation menu includes "SEGUIMIENTO", "GESTIÓN", "CONSULTAS", "MENSAJERÍA", "INCIDENCIAS", and "HERRAMIENTAS". The "SEGUIMIENTO" menu is currently selected.

The main content area features a "MAPA DIGITAL" (Digital Map) showing a street map of a city. Numerous green circular markers with "CO" inside are scattered across the map, representing tracked vehicles. A pop-up window is visible over one of the markers, displaying the following information:

- Descripción: CALLE DONOSO CORTÉS\_19-5
- TAG RFID: 00003600000000000000674
- Fecha recogida: 9-03-2011 23:42
- Fecha lavado: 2-03-2011 00:37

The sidebar on the left contains a "Vistas básicas" (Basic Views) section with the following options:

- Vehículos en tiempo real
- Operarios en tiempo real
- Contenedores
- Vertederos ilegales
- Papeleras
- UCI
- Otros elementos

Below this section, there are two active items:

- Vistas avanzadas
- Situar en...

The bottom of the map shows a scale of 1:2115 and a "Mostrar leyenda" (Show legend) button.

# Description:

Weighing System

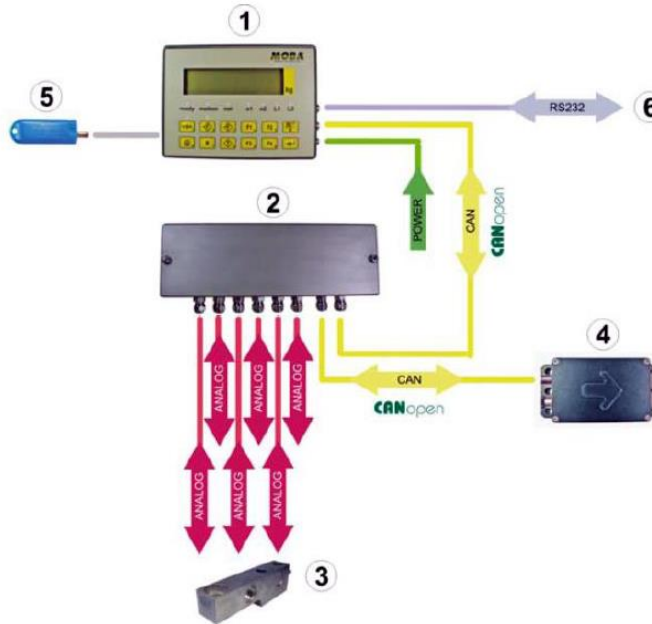
Dynamic (Non Stop)

2 weighing cells

Position sensors

Tilt Sensors

Integration with OAS



1. Screen
2. Digitizer
3. Two weighing cells
4. Till Sensor
5. Memory Unit
6. Communications port
7. Connection Box
8. Two End of Stroke Stop

# Implementation :

- Timescale:
  - 1<sup>st</sup> Phase: 2010 OAS – Custom software development
  - 2<sup>nd</sup> Phase 2010 Installation 22 collectors
  - 3<sup>rd</sup> Phase: 2018 Weighing System - 3 collectors
  
- Resources needed
  - OAS: 121.400€ (software development)
  - 185.000€ (Equipment On Board/ IT Equipment and Control Room)
  - Weighing system: 13.000 € – 15.000 € (incl/ 3 years mainten.)
  
- Stakeholders involved
  - Workers

# Evidence of success:

- Results achieved
  - Total knowledge:
    - Containers emptied/washed
    - Weigh of each container
    - Route, speed, irregular manoeuvres, etc.
    - Production (km, working hours...)
  
- Stakeholders acceptance:
  - Initial blockade of workers

# Lessons learned:

- Key success factors
  - System reliability
  - Perception of benefits (chiefs & workers)
  
- Negative aspects
  - Initial blockade of workers
  - Sensation of control
  - Costs (Implementation and Maintenance)
  
- Challenges
  - Complete installation in all collectors
  - Reduce breakdown damage (rural zone)



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# Thank you!

Questions welcome



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