Autonomous electric vehicles for goods and passenger transport

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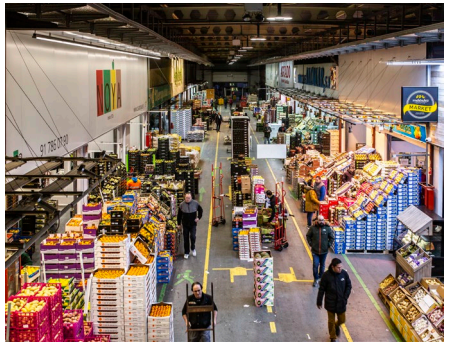
mercamadrid

3.4 million tonnes of product.

220 hectares with more than 800 companies.



9,000 people work, 20,000 access.

15,000 vehicles per day on average.

Area of influence of 500 km and 12 million consumers.

MOBILITIES FOR EU project:

Madrid – 5 pilotos

A1

Vehículos eléctricos autónomos dentro de Mercamadrid para mercancías y personas

A2

Red eléctrica basada en cargadores RES y V2G en Mercamadrid

A3

Carga eficiente y electrificación de flotas de personas y mercancías

A4

Implantación de estaciones de recarga de H2 y 10 autobuses de pila de combustible de H2

A5

Implementación de servicios de alto valor

With the main objective of contributing to the transformation of cities towards climate neutrality, the aim is to demonstrate the feasibility of 5 pilots on innovative mobility solutions in a smart urban space: Mercamadrid.

5G+, Connecting the future

orange™ Empresas

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5G+

Connecting the future

MOST INNOVATIVE PRIVATE 5G+ HYBRID NETWORK

It provides the best performance in connecting autonomous vehicles and devices in the project

SAFETY AND RELIABILITY

HIGH CAPACITY AND ULTRA-LOW LATENCY

MAXIMUM EFFICIENCY FOR CONNECTING IOT DEVICES

Zero Emission, Autonomous and Connected Vehicle (CCAM) for the transport of people in Mercamadrid.

alsa

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Context of the MOBILITIES for EU project

Current situation

Global

Lack of public transport solutions with autonomous vehicles at the international level.

In Madrid, Alsa operates the only vehicle in Spain operating in open traffic on a regular CRTM line (Cantoblanco Autonomous University campus).

The autonomous vehicles deployed so far are of low capacity (approx. 12 passengers).

Mercamadrid

There is no public transport solution within the complex, only 2 lines of the city bus.

Predominance of private transport.

Complex traffic environment.

Proposed solution

ZEV, Autonomous and Connected Vehicle (CCAM)

Regular commissioning of an electric midibus (ZEV) and autonomous (Level 4+) with more than 20 seats, located in a collaborative and interconnected environment (CCAM) within the Mercamadrid area.

This autonomous electric midibus will operate in a real open traffic space for at least 12 hours a day on a recurring basis.

Proposed interior route to connect the main mobility attraction nodes of the complex, although it is foreseen to be updated throughout the project to adapt it to the needs of people.

Proposed solution

In addition to the deployment of the CCAM vehicle itself, the Alsa-Mercamadrid project includes the following elements:

Zero Emission Mobility Plan

We will design a Zero Emissions Mobility Plan specifically for Mercamadrid, so that the circulation of the CCAM bus can achieve a real transformative effect on mobility in coordination with other environmentally friendly modes.

Customer Centric Service Design

The new mobility system, more comprehensive and designed ad-hoc for Mercamadrid, will have people and their different needs at its core: accessibility, ease of use, suitability, proximity, availability, technology...

Challenges and opportunities

Disruptive technology

Deploying an autonomous vehicle capable of responding to a real mobility need

Continuous learning and evolution towards full autonomy (Level 4 → 5)

Use of the new service

Capture the interest of users and gain their acceptance by responding to their needs.

Consolidating the new CCAM solution within a permanent mobility ecosystem

Permanent interaction

With other elements of the mobility ecosystem, e.g. other vehicles and infrastructure, charging network, data space, 5G+ network, etc.

Sending and exploiting data for the benefit of all stakeholders

Electric and Autonomous Vehicle for waste transport in Mercamadrid

prezero

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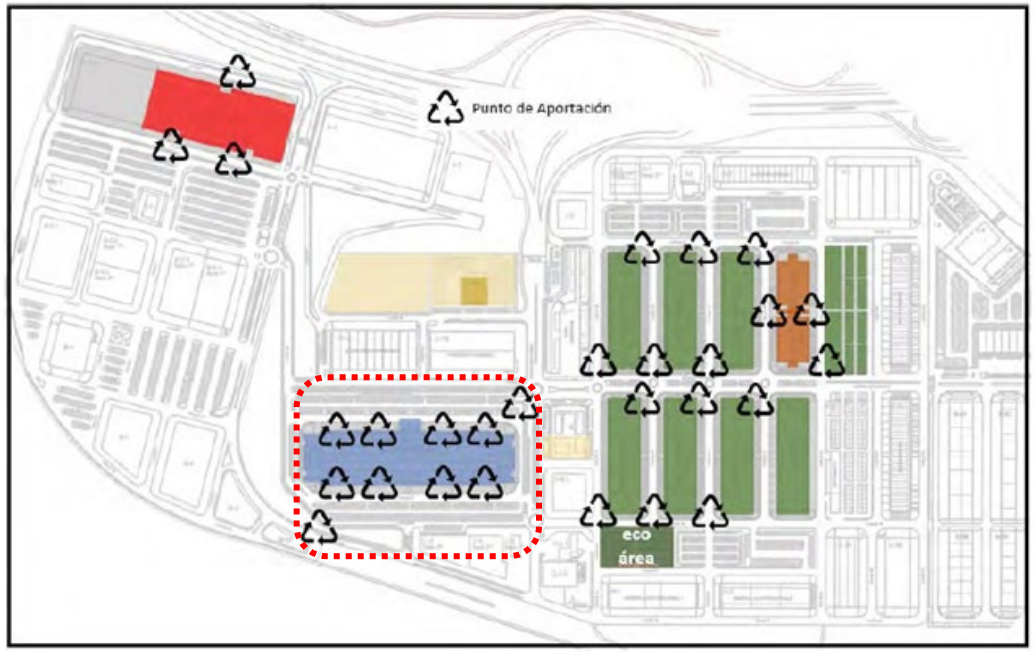
PreZero Service in Mercamadrid

Street cleaning services

Central market cleaning services

Selective waste collection services and integrated management of the Eco-Area

Scope of the MOBILITIES for EU project



Current service

Location:

Mercamadrid Central Fish Market.

Current situation:

At the **Central Fish Market**, boxes of pórex are generated and deposited at collection points outside the market ( ).

There are currently 20 cages at the 12 points where material is collected (10 points on the ramps around the shed and 2 contribution points).

When these cages are full, an operator who circulates continuously around the site checking the state of the cages, picks them up and takes them to the recycling area. This activity is currently carried out with a diesel vehicle that tows 2 cages on each trip.

Proposed solution in the MOBILITIES for EU project

Pilot

Demonstration of the operation of an **Electric and Autonomous Vehicle** for the collection of empty boxes of pórex (waste) in the Central Fish Market of Mercamadrid.

Target

To achieve a more **efficient** and **sustainable** collection service for recyclable materials thanks to:

- Emission and noise reduction due to diesel vehicle electrification

- Optimisation of vehicle circulation through the design of an on-demand collection solution

Project development

Implementation planning

Following an assessment of the working area, a high level of human and vehicle traffic has been identified.

Therefore, the implementation of the pilot will be carried out in 3 phases:

Phase 1: Collection of the cages at the two points of contribution (AP1 and AP2).

Phase 2: Collection of the cages at the ramps closest to the recycling area (CP9 and CP10).

Phase 3: Analysis of the technical and economic feasibility of carrying out collection at all points (CP1-CP10 and AP1-AP2.

Main challenges

- ✓ Ensuring AGV connectivity
- ✓ Identification of the degree of filling of the cages by sensor system
- ✓ Connectivity between cage sensors and AGVs
- ✓ AGV interaction with traffic
- ✓ AGV interaction with people
- ✓ AGV coupling with cages
- ✓ Displacement of cages (trailer)

Main advantages of the solution

- ✓ Emission and noise reduction due to diesel vehicle electrification
- ✓ Optimisation of vehicle circulation through the design of an on-demand collection solution
- ✓ Optimisation of human resources and reduction of risks by avoiding the need for operators to constantly circulate around the area to identify the degree of filling of the cages.

MOBILITIES FOR EU

https://mobilities-for.eu/

Co-funded by the European Union