



An European urban transition project towards more sustainable cities through innovative solutions, in the fields of mobility, energy and digital.

## Smart City

### Global project

Coordination: Cartif  
European grant: 18 M€  
30 partners, 6 countries  
Period: Dec.2016 - Nov.2021  
Demonstrators: Nantes, Hamburg, Helsinki

@mysmartlife\_EU  
<https://mysmartlife.eu/>

### Nantes demonstrator site

Coordination: Nantes Métropole  
European grant: 4,5 M€  
10 partners

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## Mobility



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## ACTION OVERVIEW



### e-Busway

This action was implemented by Nantes Métropole and Semitan. A full report on this action (D2.13), written in English in November 2019, is available at <https://mysmartlife.eu/publications-media/public-deliverables/>.

#### ► OBJECTIVES

- › Increasing the capacity of the buses.
- › Switching from gas to 100% electric propulsion.
- › Reducing the level of pollution emitted by buses.
- › Bringing new services to users.

#### ► IMPLEMENTATION



#### CHALLENGE / CONTEXT

In 2006, a bus line with a high level of service was put into operation in order to be able to reach the city centre from the south of the Loire (one bus every 3-4 minutes during peak periods).

The success of this line, which is used by more than 39,000 passengers a day, made the journey more uncomfortable for users. In addition, Nantes Métropole wishes to develop a more environmental-friendly public transport system.

#### SOLUTIONS

The Metropole has equipped the line with twenty-two high-capacity 100% electric bi-articulated buses (24m long, 150 seats) allowing 55,000 passengers a day to be carried without having to carry out heavy infrastructure work.

Unique in the world, this bus line benefits from a rapid charging technology by bottle-feeding. This technology allows the bus to recharge over short periods, when passengers get on and off the bus without impacting the operation of the line (2 seconds for connection and 20 seconds for charging with a power of 600 Kva).

12 fast charging stations have been deployed (10 on the Busway line, and two at the operations centre).

The transfer of energy between the vehicle and the fast charging station is carried out by an articulated arm located on the roof of the bus, with a tolerance in the positioning of the bus under the charging device (one metre in length and 60 cm of distance to the dock) to facilitate the charging operation for the drivers.

This so-called "opportunity-charging" system has several advantages:

- › It limits the size and weight of the batteries, so more passengers can travel in the same bus
- › Each charging station is powered by a different ENEDIS station, which makes the system secure.
- › Electric recharging takes place throughout the day, which avoids peaks in electricity consumption.

## MONITORING

Several types of indicators (KPIs), linked to the bus or the charging station, are monitored such as :

- › Energy consumption during charging and operation.
- › The state of charge of the batteries and their operating condition.
- › The number of boarding and alighting at stops.
- › The distance travelled.

This data allows the optimization of the operation of the Busway line, detecting and anticipating problems. This data will be compiled in the Urban Data Platform.

These indicators will be aggregated with those of all the actions of the Nantes-based mySMARTLife demonstrator in order to give a consolidated result of the overall impact of the project.

## ► BENEFITS

### Environmental

- › Reduction of energy consumption by 30 %
- › Reduction of CO2 pollution by 1300

### Users and inhabitants

- › A 35% increase in the number of passengers that can travel on the same bus, from 110 to 150.
- › New services for users such as USB ports under each seat or a panoramic view at the back of the bus.
- › A more comfortable, stable and safe journey thanks to the two engines located in the middle of the bus (axes 2 and 3).
- › A reduction in hearing pollution thanks to a silent engine.
- › A fast charge that will not affect travel time.



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