

# USALe PROJECT

2012

 **University**  
University of Salamanca (USAL)  
**Country**  
Spain

**Location**   
Urban

**Size**   
30,000-40,000

**Mobility Organizational Structure**   
Green Office

## Summary

Acquisition of electric vans for university services and implementation of a charging stations network.

## Aims

- Implement electric mobility in USAL operations.
- Promote the use of the electric vehicle on an institutional level and use it as a model for other sectors (administration, companies, individuals...).
- Reduce the emission of greenhouse gases (GHGs) generated by the University.
- Favour the reduction of atmospheric and acoustic pollution on a local level.
- Use the project as an example and educational resource for the university community and society in general.

## Stakeholders

IBERDROLA S.A  
Local Energy Authority of Castile and Leon (EREN)

## Background

Over the last few decades, issues such as dependency on foreign energy supplies, especially among countries of the European Region, as well as the evident effects of climate change associated with the emission of greenhouse gases and the growing concern from all areas of society, have brought about the implementation of policies designed for the rational management of resources and technological development as an alternative to the current energy models.

"USALe" (USAL electric) is the University of Salamanca's project for the design, implementation and management of electrical mobility incorporated into its day to day running. (S.P. 8.2. Universal intercampus accessibility and mobility, "Studii Salamantini" Campus of International Excellence).



## Description

In this context, the University of Salamanca, has under-taken two pioneering initiatives in response to objectives marked by its environmental policy on electric mobility:

- The purchase of a fleet of 5 electric vans for internal mail services (General Secretariat), maintenance (Technical Infrastructure Unit) and for transporting goods and people between the University campuses of 'Salamanca city' and 'Villamayor de la Armuña'.
- The implementation of a network for re-charging electric vehicles belonging to the University across different campuses with a view to extending coverage to private users within the University community.

In October 2012, the commissioning of USAL electric vehicles was conducted; in June 2014, the opening of the "USALe" electric vehicle top-up network was implemented.

The activities developed to carry out this action were the following:

- Feasibility study for the implementation of electric vehicles in the University of Salamanca. (2010).
- Acquisition of 5 electric vans (Renault Kangoo Z.E.).
- Installation of charging points in the "Botanical" car park (USAL Science Campus).
- Training of the staff involved (drivers, managers, mechanics, etc.).
- Delivery of the vehicles (October 2012).
- Follow-up and control using the proposed indicators.
- Promotional and awareness activities (participation of local SEMs, talks, etc.).
- Design and installation of the electric vehicle charging network (USALe Network).
- Inauguration and opening of the USALe Network (June 2014).
- Installation and commissioning of the USALe Network (5 EVCP on 4 USAL Campuses).
- Study of private vehicle incorporation within the University community (pilot project) and development of the USALe Network management procedure.



## Indicators

- Kilometres / year.
- Kg CO2 / year.
- Kilometres / €.

## Results

The use of the electric vehicle was considered a more environmentally friendly system not only because of the overwhelming reduction of pollution and noise associated with combustion engine vehicles, but also taking into account the image of the University. By projecting an image of respect and concern for the environment it is hoped that other institutions and organisations follow the example given.

The electric vehicles currently available on the market are considered technically acceptable for urban and peri-urban use that does not exceed 100 km/day, autonomy being limited by the capacity of the batteries. They also require the availability of compatible charging points to ensure energy top-up.

The current cost of this type of vehicle is considerably higher than conventional models but subsidies are available for their purchase. The cost of charging devices must also be taken into consideration. The operation of electric vehicles is considered economically viable for more than 12,000 Km/year as the batteries are leased and imply a set monthly expense. Based on this annual usage (12,000 km), an electric vehicle generates economic savings as a result of the cost difference between the electric KWh and the equivalent KWh of the fuel of a conventional vehicle. In addition the maintenance costs and taxes on electrical vehicles are about 50% less compared to conventional vehicles with similar characteristics.

The results obtained indicate a reduction in the emission of greenhouse gases (adjusted to CO<sub>2</sub>) of approximately 10 tons up to 2015 in comparison to equivalent conventional vehicles (fig. 1). In addition, 100% of local emissions and noise pollution have been eliminated, as well as improving the working conditions of the drivers involved.

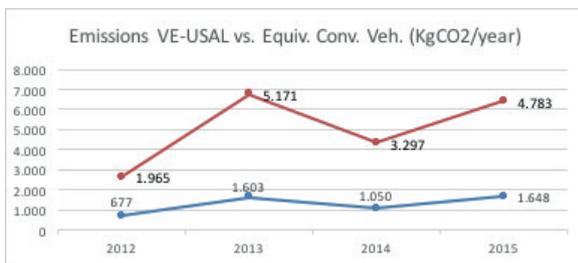


Figure 1. Real emissions of the USAL electric vans (blue) compared to equivalent conventional vehicles (red) (180 g of CO<sub>2</sub>/Km). The period studied (2012-2015) represents savings of 10,238 Kg of CO<sub>2</sub>.

## Cost

181,599.99 €.

## Financing

- Campus of International Excellence Program.
- Private financing (Iberdrola S.A.).

## Lessons Learnt

The electric vehicle is an excellent option as a vehicle for daily urban and peri-urban use, especially for transporting goods and people between different campuses.

A detailed study is required to correctly define the parameters and viability of the inclusion of electric mobility in universities. Questions such as the geographic characteristics, transport needs, frequency of trips, daily and accumulated distance travelled, may be key points when deciding on the different options available on the market. Consideration must be given to the need for charging points and the cost of hiring the batteries when calculating the economic viability.

 Pictures

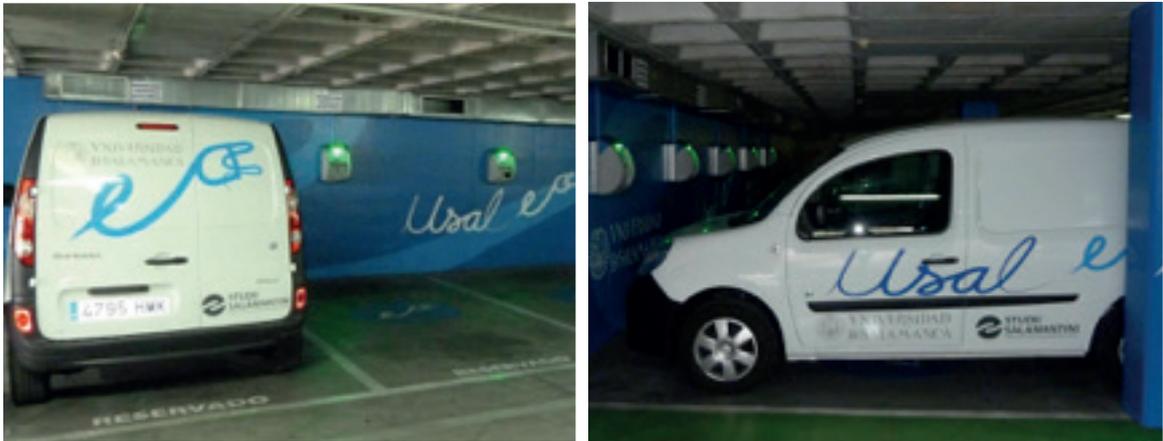


Figure 2. Electric vans and parking spaces adapted as charge points at the University of Salamanca.



Figure 3. Electric vehicle charging points of the USALe Network.



Figure 4. Logotype of the USALe Project.

 Links

Not available.

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