



Transforming Portalegre into a smart city

GOAL

The municipality's concern with energy consumption of the street lighting infrastructure reflected in substantial costs and in the environment, led to the adoption of more sustainable options.

The focus of this project was based on promoting the overall energy efficiency of the territory, due to the municipality's concern for decarbonization, reduction of greenhouse gas emissions and climate change.

The upgrade from the traditional street lighting system to LED technology, based on a remote management system of the luminaires, allows energy savings of around 78%, which benefits the municipality in financial and energy consumption terms.

This strategy will also extend to other public utilities such as telemetry in the water distribution infrastructure, control, and automation of irrigation systems, among others.



INSTALLED SOLUTION

SMART STREET LIGHTING

The replacement of traditional street lighting with ARQUILED LED luminaires connected by LoRaWAN® covers the entire municipality, where road, urban and historical luminaires were installed, ensuring the characteristics of the different areas of the region, as well as a substantial improvement in lighting quality.

The project aims to implement measures to improve energy efficiency in the street lighting infrastructure and is based on a shared savings model, at no cost to the municipality, contracted with AMENER S.A (ESCO¹), for 16 years, with an expected total investment of 5.3 million euros.

To make the project operational, AMENER S.A. partnered with ARQUILED, as a specialist in street lighting solutions, and Softinsa, an IBM subsidiary specialized in consulting, management, and application development services.

Total number of light fixtures – **5,846** ARQUILED luminaires:

- ▶ 4,709 **SCULPTOR** (road luminaire);
- ▶ 658 **HAMLET** (classic luminaire);
- ▶ 233 **OCTANS** (urban luminaire);
- ▶ 246 **ORIONT** (urban luminaire).

LUMINAIRES CONNECTED VIA LORAWAN®

The implementation of the point-to-point remote management system, based in LoRaWAN® communications, allows connectivity between the entire set of luminaires, serving management and monitoring indexes of various systems with a coverage throughout the geographical area of Portalegre, allowing energy savings up to 78%, which represents up to 350 thousand euros of annual savings for the municipality.

Through the integration of Softinsa's remote management system, able to aggregate municipality's 3rd party systems, it is possible to provide visibility to multiple events, collect information from various sensors, as well as monitor other services of the municipality through alerts, allowing immediate action.

The LoRaWAN® network installed in the municipality of Portalegre is a starting point for other IoT projects, in terms of remote management of water consumption, irrigation, security, air quality, among others.

Road Luminaires



SCULPTOR 100

SCULPTOR 200

Urban Luminaires



OCTANS

ORIONT

Classic Luminaire



HAMLET



LIGHTING CONTROL AND DIMMING

ARQUILED's ECCOS lighting control systems offer an adaptable and scalable range to the different needs of street lighting projects, adapting to the different needs of municipalities.

The SCULPTOR, ORIONT and OCTANS luminaires are equipped with an internal communications module (**ECCOS Embedded**), and the HAMLET luminaires with an external NEMA monitoring device (**ECCOS Controller**).

The ECCOS lighting control and dimming (internal or external) devices allows point-to-point control of the luminaires by remote management through Softinsa's remote management.

¹ Energy Services Company.

BENEFITS

OF THE PROJECT IMPLEMENTATION

The upgrade from the traditional luminaires to LED technology presents a set of benefits that meet the municipality's objectives.

The reduction in street lighting costs is significant and without any investment by the municipality, as the investment is fully covered by the ESCo, and a monthly rent is paid for the service provided.

The benefits of implementing this project are environmental and financial. It also:

- Improves the quality of street lighting, with greater visual comfort.
- Increases pedestrian and road safety.

ESCo MODEL

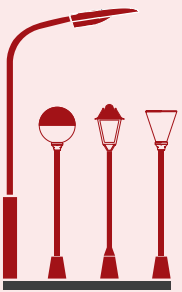
The ESCo model is based on energy saving principles, without additional charges or investments for the municipality, allowing the savings generated by the reduction of energy consumption in public lighting to be invested in the municipality's infrastructure.

The investment is fully financed by ESCo, which means a "zero" investment by the municipality. The implementation of this project allows the municipality to:

- ▶ benefit from a significant **reduction in its energy expenditures**.
- ▶ modernize and improve the **quality of street lighting**.
- ▶ guarantee the **quality of the service** throughout the contract, including maintenance.
- ▶ contribute to decarbonization by **minimizing the environmental impact of CO₂ emissions**.

LoRaWAN® TECHNOLOGY

- ▶ **WIDE RANGE** - in urban or rural areas.
- ▶ **LOW CONSUMPTION** - extended lifetime of more than 20 years.
- ▶ **LOW COST** - reduces initial infrastructure investments as well as operating costs.
- ▶ **HIGH CAPACITY** - allows you to connect thousands of devices.
- ▶ **HIGH STANDARDIZATION** - the LoRaWAN® specification ensures interoperability between applications, IoT solution providers and telecom operators.



5,846
Luminaires



352 k€/year
Financial savings



2,3 GW²
Consumption reduction



78%²
Energy savings



489 ton³/year
CO₂ emissions reduction



Reduced
Environmental impact

² Estimated total value at the end of the 16-year contract.

³ Considering a CO₂ emission factor (Kg CO₂/KWh) of 0.2066.



ARQUILED

BRIGHT NEW FUTURE

ARQUILED is an LED lighting manufacturer, specialized in LED street lighting with a focus on energy efficiency.

Based in Mora, it is a Portuguese industrial company that designs, develops, and produces its products from scratch.

ARQUILED is committed to the development of smart management solutions focused on energy consumption reduction and carbon neutrality, contributing to sustainable urban clusters.

CONTACTS

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