

The smart way to manage and light up the municipality

GOAL

The Municipality of Palmela aimed to contribute to the improvement of the overall energy efficiency of the municipality through the adoption of a lighting management platform and technological innovation associated with the standardization of technological solutions and design of public lighting systems, turning the municipality into a Smart City with the introduction of technologically innovative solutions.

The project was based on a no-cost model for the municipality (ESCo¹ model) and consisted of the complete replacement of conventional public lighting throughout the municipality with LED technology luminaires, supported by intelligent management systems.

The solution implemented resulted in more sustainable consumption, greater energy efficiency and a reduction in the ecological footprint, contributing to the decarbonization of the municipality.



¹ Energy Services Company.

INSTALLED SOLUTION

SMART STREET LIGHTING

The replacement of traditional street lighting with LED luminaires, mostly from ARQUILED, connected via LoRaWAN®, has allowed to adapt the light variable intensity (dimming) to the needs of the different locations, also providing a higher lighting quality.

The project aims to implement energy efficiency improvement measures in the public lighting system and is based on a shared savings model, at no cost to the municipality, contracted with AMENER S.A. (ESCO) for 15 years, with an expected total investment of approximately 13 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.

The project included the installation of **19,793 luminaires**, of which **16,445** are ARQUILED road, urban and historical luminaires, which guarantee the characteristics of the different areas of the region.

- ▶ 14,364 **SCULPTOR** (road luminaire);
- ▶ 3,348 **I-TRON** (AEC Illuminazione road luminaire);
- ▶ 1,793 **OCTANS** (urban luminaire);
- ▶ 378 **HAMLET** (historical luminaire).

LUMINAIRES CONNECTED VIA LoRaWAN®

The implementation of the point-to-point remote management system, based in LoRaWAN® communications, allows connectivity the entire set of luminaires, serving management and monitoring indexes of various systems with a coverage throughout the geographical area of Palmela, allowing energy savings up to 70 which represents up to 1 million euros of annual savings for the municipality and a significant reduction in CO₂ emissions.

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 Palmela also enabled the implementation of two IoT pilot projects related to the Irrigation Management System and the Integrated Waste Management System, both supplied by Softinsa.

Road Luminaires



SCULPTOR 100

SCULPTOR 200

Urban Luminaire



OCTANS

Historical 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 and I-TRON luminaires are equipped 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.

BENEFÍCIOS

DA IMPLEMENTAÇÃO DO PROJETO

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

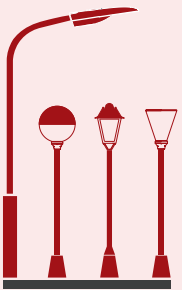
The ESCo model is based on energy saving principles, without additional charges or investments for the municipality, allowing the savings generated by the reduction of energy consumption in public lighting to be invested in the municipality's infrastructure.

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.



19,793
Luminaires



1 M€/year
Financial
savings



6,5 GW²
Consumption
reduction



70%
Energy
savings



1,333 ton³/year
CO₂ emissions
reduction



Reduced
Environmental
impact

² Estimated total value at the end of the 15-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

Arquiled, Projectos de Iluminação, S.A.
T: +351 217 971 964
E: sales@arquiled.com

2024, ARQUILED, PROJECTOS DE ILUMINAÇÃO, SA.
All rights reserved. All trademarks are acknowledged.
Bright Science Lda. is the owner of the ECCOS brand and products and a member of the LoRa Alliance®.
LoRaWAN® is a trademark used under license from LoRa Alliance®.
Images shown are for illustrative purposes and may differ from the final product.