

Case Study

[Madrid Metro]

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Case Study: Madrid Metro



Background

Metro de Madrid is a metropolitan rail network that serves the Spanish city of Madrid and its metropolitan area.

Opened on October 17, 1919 by King Alfonso XIII, with a total of 301 stations, it is currently the largest metro network in Spain and the third in Europe, with a length of 294 kilometers.

Airis LED Solution

Within the second phase of the Metro de Madrid Energy Efficiency Plan, AIRIS products were chosen for the replacement of lighting by LED technology of 115 stations and 4 depots.

Building Data

Location: Madrid

Surface Area: 294km

LED Tube: 133,303 units in total

Business Model

Public contract tender

Previous Situation



Airis LED Solution

CONVENTIONAL	W	Units.	Units. * W
Tube T8 60cm 18W	22	11,172	245,784 kWh
Tube T8 120cm 36w	40	69,635	2,785,400 kWh
Tube T8 150cm 58W	62	44,644	2,767,928 kWh
Tube T5 60cm 14W	18	1,005	18,090 kWh
Tube T5 120cm 28w	32	3,000	96,000 kWh
Floodlight 400w	440	432	190,080 kWh
Street Lamp 250w	290	805	233,450 kWh
High Bay 400W	440	2,610	1,148,400 kWh
		133,303	7,485,132 kWh

Operating Hours: **18**
Maintenance life **8,000 hours**
Chromatic reproduction index (CRI): **>80**
Colour temperature: **4,000 K**
Electricity Consumption: **7,485,132 kWh/year**

CONVENTIONAL	W	Units.	Units. * W
Tube 60cm 9W	9	11,172	100,548 kWh
Tube 120cm 18w	18	69,635	1,253,430 kWh
Tube 150cm 22W	22	44,644	982,168 kWh
Tube T5 60cm 7W	7	1,005	7,035 kWh
Tube T5 120cm 14w	14	3,000	42,000 kWh
Floodlight 100w	100	432	43,200 kWh
Street Lamp 65w	805	805	648,025 kWh
High Bay 110W	100	2,610	261,000 kWh
		133,303	3,337,406 kWh

Operating Hours: **18**
Maintenance life **50,000 hours**
Chromatic reproduction index (CRI): **>80**
Colour temperature: **4,000 K**
Electricity Consumption: **3,337,406 kWh/year**

Actions Performed

- Feasibility evaluation visit.
- Measurement of lighting levels before and after installation.
- Dialux CAD design.
- Replacement of all fluorescent tubes by SmartLED AIRIS products with EXILIS technology.
- Final acceptance tests.
- Verification of the regulation system for the execution of up to three action of dredging in order to maximise energy efficiency, achieving an additional 30% saving on the electricity consumption, the levels of lighting required by regulations and the satisfaction of users of Madrid Metro.

80% SAVINGS GENERATED

Summary of benefits:

Following the upgrade to the lighting system, AIRIS reduced the consumption of electricity by up to 80% and the reduction of emissions by approximately 2,000 tons of CO2 per year.



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