

# Diagonal 123

## Barcelona



*“We wanted to differentiate Diagonal 123 and provide the ultimate in added value through improved energy certification.”* **Oscar Perena, Cushman & Wakefield**

## Background:

Diagonal 123 is a dramatic commercial office space built within the innovative 22@Barcelona project district. This project is in the business of transforming two hundred hectares of industrial land in Barcelona into one of the most impressive examples of urban regeneration in Europe. The thinking behind 22@Barcelona is to create a strategic concentration of intensive knowledge-based industries in the area. However, the creation of such a wealth of commercial spaces is also putting pressure on the owners of the buildings to make their properties stand out to would-be purchasers.

## The challenge:

Diagonal 123, designed by Dominique Perrault Architecture, Paris, and completed in 2009, needed to make its mark both in terms of its architecture and its added value to potential tenants. It was decided that ensuring that the building was as energy efficient as possible would make it even more attractive, so a review of the building's energy consumption was carried out. It was rated as 'D' using Spain's technical building code (Código Técnico de la Edificación CTE).

With lighting accounting for 33% of electricity used in commercial buildings\* it is no surprise that after analysing the most effective way to reduce the building's CTE rating, with minimal investment, it was decided that addressing the management of Diagonal 123's artificial and natural light control was essential.

# Lutron's Quantum, the centralised system that controls light, saves energy increases employee productivity:



Quantum can alter interior light levels to suit external natural light conditions



Quantum ensures that the internal lit environment is right for any and every occasion

## The solution:

Energy consultancy Efentia carried out the energy audit at Diagonal 123 and recommended the installation of Lutron's Quantum total light management system to control the 9,320m<sup>2</sup> of office space. Quantum not only provides an opportunity for facilities managers and building owners to reduce both energy consumption and operating costs but in addition, enables users to manage DALI ballasts and other high efficacy light sources and dim them down to 1% of full light output. Quantum is also fully expandable and can control light levels and usage across multiple floors, whole buildings and entire campuses throughout corporate, industrial and public sector facilities.

Lutron's highly successful Energi Savr Node QS modules were installed within Diagonal 123 and connected to daylight sensors throughout the 12 floors. In addition, two Lutron Quantum processors were also installed on each floor, ensuring that depending on the requirements of the future tenants, the system can be upgraded or adapted to suit their needs as necessary.

## The results:

Following the installation of Quantum an energy audit of the lighting has been carried out. Diagonal 123 has moved from an energy rating of 'D' to 'B', thanks to the powerful control that the Lutron system provides to the building management team. This equates to an estimated saving in lighting power alone of 46%.

Saving Energy Consumption	188.453 kWh/year
Reducing CO <sub>2</sub> Emissions	122 T CO <sub>2</sub> /year
Energy Cost Savings	25.441 €/year
Ground surface type 7	954 M <sup>2</sup>
CO <sub>2</sub> Emissions Reduction floor 7	13 T CO <sub>2</sub> /year
Energy Cost Savings floor 7	2.662 €/year

Not only has the Lutron Quantum system helped Diagonal 123 to save energy and reduce lighting bills, but it has also improved the lit working environment within the office areas thanks to the system's continual management of artificial and natural light. Now, no matter the time of day or night, the lit working environment within Diagonal 123 is at optimum levels.

<b>Client</b>	Cushman & Wakefield
<b>Lighting Project</b>	AIA Salazar-Navarro, Barcelona
<b>Photography</b>	Tangenio
<b>Lutron products</b>	Quantum

\* Source: Department for Business Enterprise & Regulatory Reform, Energy Consumption in the United Kingdom 2009 Update, Pub. URN 08/456

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