



Lighting and technology

Company

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1 Presentation

Introduction

For many local authorities and town councils LEDs lighting means a change towards sustainability and energy saving.

LEDs technology is much cleaner than present-day technology. It provides a substantial reduction in energy costs and improves the image of any town or city by turning it into a better lit and safer urban area.

The new few years will be vital for implementing energy saving policies and a more efficient use of resources as well as for establishing a Sustainability Program which meets the environmental objectives of the Kyoto Protocol, the Spanish Climate Change Strategy and the Spanish Energy Efficiency Strategy (E4).

DLED SOLUCIONES is working towards these objectives and offers for each project tailor-made solutions which can be installed immediately.

Background

Energy wasting: an economic, ecological and global problem.

Energy wasting is a fact and constitutes a problem for the whole planet. Spain has a high rate of energy dependency - 81% - compared to an average of 54% in the other European Union member countries. The average European rates will foreseeable reach 70% between now and the year 2030.

A large proportion of this energy, 22%, is used in lighting and this is why a change is needed to encourage Energy Saving and Efficiency through the combination of new technologies and energy saving processes and behaviors whilst at the same time maintaining or increasing productivity and social welfare.

Whilst in some countries of the European Union, urban lighting is equivalent to 48 kilowatts an hour per inhabitant, in Spain the proportion is 116 kilowatts an hour per inhabitant, far off the target of 75 kilowatts an hour set in the Spanish Ministry of Industry's Energy Action Plan 2008-2012, which means that huge amounts of energy are wasted through urban lighting as well as causing light and environmental pollution.

The main cause of light pollution is the inefficiency of urban lighting which uses a technology that not only squanders energy but which also has a high economic cost and emits a high level of carbon-dioxide emissions.

Artificial lighting is needed to guarantee safety when it is dark and keep the activity going in urban areas. The solution to the light pollution it causes can be found in the use of more efficient lighting systems, such as LEDs, which do not waste so much energy.

Light pollution is a concept which refers to the excess of lighting in areas where it is not wanted. It is a synonym of poor efficiency and energy waste and is produced at night when the excess of artificial light affects the gases and particles in the environment causing a glare and brightness in the sky as a result of the reflection of the light.



2 What is DLED?

DLED SOLUCIONES, based in the Spanish Autonomous Region of Castilla-La Mancha, is a firm that manufactures lamps, luminaires and lighting systems as well as **LED** lighting technology, urban wind turbines and energy control and management equipment.

Cutting edge solutions for sustainable lighting.

DLED Soluciones after dedicating several years to R&D of new lighting applications and technology and **LED** lighting, presents itself with the clear aim of satisfying the current needs of the Energy Efficiency Strategy, of generating new energies, cleaning the environment through the reduction of carbon-dioxide emissions as well as increasing social welfare through lighting solutions that improve safety and the quality of light.

Committed to quality and respect for the environment as its core strategy, **DLED** is prepared to lead the change in the public and urban lighting industry in Spain.

Values and business culture

- Energy saving and efficiency.
- Sustainability and the environment.
- Individual and collective welfare.
- More intelligent and sustainable ways of consuming.
- Better economic competitiveness.
- Strategies and alliances with our employees, our technological and industrial partners and our dealers.
- Investment in the training and quality assessment of all the members of the company.
- Excellence in our products and services.
- Specialization in the different technological areas that we work in and give service to.

Project

DLED aims to lead the change in the lighting industry in Spain through new technologies that foster energy saving and efficiency, the improvement of the environment and which contribute towards social welfare and sustainable development.



3 Led Technology

Over the last decade **LED** technology has advanced at great speed and has reached performance levels that have well exceeded all forecasts. This provides us with a totally new type of lighting for our day-to-day needs that is both simple and makes good sense.

Efficient, long-lasting, respectful and controllable.

The advantages of the **LED** lie in its size, long life, low maintenance, white light, its photometric efficiency, its contribution to the reduction of light pollution, the fact that it is 96% recyclable as well as its new designs oriented towards more dynamic lighting.

With **LED** technology we make important energy savings, generating the same light power as High Pressure Sodium but with four times less consumption.

The **LED's** light improves our perception of objects, colors and people thanks to its high quality color reproduction and higher sensitivity to brightness.

LEDs provide an unlimited palette of colors and white light tones and give a more uniform light, with no brusque contrasts nor "rings" of light, which improves orientation and better perception of detail. They also improve our level of Chromatic Reproduction by 80% unlike sodium lamps that need more light to guarantee a correct vision.

Small in size

A **LED** can be extremely small yet give off a high quality beam of light.

Low power consumption

LEDs consume very little electricity. Generally a **LED** is designed to work on a 2-3.6V, 0.02-0.03A current which means that they need no more than 1W to work.

Long life

Working on a nominal voltage, adequate current and conditions, **LEDs** can last for a long time, between 50,000 and 100,000 hours.

High light efficiency and low heat emission

LEDs can convert nearly all the energy they consume in light and, as a result, they perform with high light efficiency and low heat emission.



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Technology

A New Concept

The lighting industry has evolved significantly thanks to the LED revolution.

Local authorities are faced with the challenge of improving energy efficiency in order to meet the objectives of Kyoto and of reducing light pollution in order to respect the environment at night.

DLED offers a new concept in street and urban lighting: LED dynamic lighting.

High quality light technology which enables the correct level of lighting to be adjusted precisely, so avoiding energy waste by using only what we consider to be necessary. New technologies that foster energy saving and efficiency as well as social welfare.

Intelligent lighting that adapts to the changes in daylight

We design dynamic and sustainable solutions with the aim of minimizing the excessive and uncontrolled use of light, so reducing light pollution at the same time as energy is saved, offering better quality light with a higher standard of public and road safety.

With LED technology we achieve a greater sense of security for passers-by at night.

With a **ONEZONE** system where each light can be controlled individually, so allowing them to be regulated and where any fault can be detected. This software also provides savings in maintenance.

LED dynamic lighting is presented as the solution to town councils' and large corporations' energy wasting.

R & D

The **DLED** brand has invested all its resources with the aim of offering a change in the urban lighting industry as well as for large corporations through the development of new sustainable technologies which improve efficiency and more energy and economic savings.

High efficiency solutions

DLED SOLUTIONES is a Spanish manufacturer of highly efficient LED lighting components, which always aims to adjust both the intensity and the orientation of the beam of light and to adapt individually to the place and needs required.

DLED SOLUTIONES possesses various registered patents that illustrate the company's philosophy of research, development and innovation. Technology and original designs thought of and developed to satisfy the new needs and aspirations of people and institutions, and to reduce the impact that the present lighting and illumination systems have on the environment.

Innovation

We invest in projects with greater energy saving and higher efficiency and that improve people's quality of life as well as the environment.

Our products are made of components manufactured by the leading brands in the industry. This results in high quality products with a maximum guarantee which allow us to easily pass all the quality controls of the European Community.

We work to innovate in close collaboration with our partners and technological and industrial associates, introducing onto the market new designs quickly and efficiently. Technology and design at the service of town councils and large corporations.



One objective: DLED 2020 STRATEGY

The **DLED** 2020 strategy proposes that in the space of ten years a technological change should take place in Spain that fosters energy saving and efficiency. To achieve this goal the implication and participation of different public and private organisms is necessary in order to turn our towns and villages into sustainable places to live.

At the present time, local authorities should take advantage of the public funds available in the 'Plan E' to substitute their urban lighting with more efficient systems that will help them save up to 80% electricity which, in turn, will provide funding in the future for new projects and for the creation of employment. It will also contribute to substantially reduce carbon-dioxide emissions and to lower levels of light pollution.

DLED wants to take the lead in Spain in promoting the use of efficient lighting with **LED** technology, so that in ten years' time we can meet the objectives of the European Union's Energy Action Plan, the main priority of which is:

To reduce energy consumption by improving energy efficiency with the aim of protecting the environment; to strengthen the safe supply of energy and to create a more sustainable energy policy through the rational use of energy.

We are convinced that by working in collaboration with public and private organisms, social agents, partners and technological associates we can instigate a change towards better energy and a better environment. We therefore propose a Joint Plan of Action to change the lighting system with efficient technology like **LEDs**.

DLED 2020 STRATEGY

With this aim in mind **DLED** is developing an Energy Saving and Efficiency Strategic Plan to help implement projects to improve and substitute the current systems of obsolete and energy wasting lighting with more efficient systems using **LED** technology through **Energy Service Companies** in which the following services are offered:

- Design, production, financing and implementation of Energy Efficiency projects.
- Installation and maintenance of the equipment installed.
- Monitoring and verification of the energy saving achieved.

These services are included in the cost of the project and are redeemed through the economic savings derived from the energy saving.

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Sustainability and the Environment

Sustainability

In **DLED** partners, employees, collaborators, suppliers and dealers are all committed towards sustainability and we have set as a clear objective to foster the efficient use of energy.

In our designs we study and analyze each and every material and component that we use in our manufacturing process of the luminaires, in our system of control and management, as well as our wind turbines, with an eye to the environmental impact they can cause.

DLED has in course the following certificates:

ISO – 9001

ISO – 14001

In Spain, despite the gradual increase in recent years of the price of energy, the challenge to meet the Kyoto Protocol and the energy deficit that we suffer, investment has not been made in a technological change which is becoming more and more necessary.

Therefore **DLED SOLUCIONES** now offers the possibility to start a change towards sustainability and efficiency. With **LED** technology an average energy saving of between 60 – 70% can be achieved; a saving that can be increased with our control and management public lighting systems. In addition the estimated life is 10 times longer than that of the technology used currently which also contributes to further savings in the replacement of parts and maintenance.

Environmental legislation

The planet needs an immediate change and legislation is re-defining lighting requirements making it necessary to have to meet stricter requirements and controls. **DLED** is anticipating these changes and is now in a position to offer a range of products that will easily comply with future regulations.

EuP Directive

The aim of the EuP Directive is to reduce the environmental impact of products that use energy through the adoption of measures that establish the basic energy efficiency criteria for new products.

The EU has implemented a measure for domestic lighting whereby from now until 2012 lamps that do not meet energy requirements Class A and B will be gradually withdrawn from the market. The measure also applies to lighting in the tertiary sector and includes lamps, ballasts, luminaires and fluorescent compact lamps that are not integrated for outdoor use.

The WEEE Directive

The Directive on Waste Electrical and Electronic Equipment provides for the disposal of electronic waste so that it does not end up in incinerators and refuse tips and stipulates that this waste be collected separately in order to recycle all types of lamps, luminaires and associated control systems (except incandescent and halogen), so completing the product's life cycle and helping all the parties involved to become more environmentally aware.

RoHS

The RoHS Directive (Restriction of Hazardous Substances) in conjunction with the WEEE, to which it is directly linked, applies to lamps and systems and limits the content of substances that are environmentally hazardous such as lead (Pb) and mercury (Hg).

The EEL Directive

The Directive on Energy Efficiency Labeling has been implemented to encourage the general public to buy more energy efficient products through an energy consumption classification system. It is compulsory for all products and packaging to be labeled: class A is for the most efficient products and class G for the least.

Class A or B lighting products have the lowest environmental impact and costs of exploitation.



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Why choose **DLED** SOLUCIONES

Pioneers in **Led** technology

DLED'S Strengths

DLED SOLUCIONES has the strength of its systems, products, the quality of its service, its project management and technological know-how applied to lighting and illumination systems, fruit of its investment in R&D.

Its greatest strength lies in its employees, technological and industrial associates and dealers who have adapted to and identify themselves with **DLED**'s philosophy and objectives as well as our customers' needs.

10 Good Reasons for choosing **DLED**

1. We are Spanish manufacturers of advanced **LED** lighting components. Our products are exclusive.
2. Years of investment in R&D have allowed us to develop highly efficient products.
3. We manufacture components that are adapted precisely to the duration and resistance of **LED** technology, with a three year guarantee.
4. **DLED** uses diodes manufactured by the US company Cree, chosen for their maximum reliability and durability.
5. Numerous certificates guarantee our quality.
6. We offered tailor-made solutions to meet the needs of local authorities and large corporations.
7. **DLED** only uses components that are 100% reliable and only works with European and American technology in order to be able to pass comfortably all the EU controls.
8. We have a management system that cuts maintenance costs by nearly 70%.
9. The quality of the light is much higher, offering more than 85% of CRI.
10. **DLED** offers technology and components that can be adapted to any lighting system available today and as a result we can give immediate solutions.

Our Guarantee

DLED is currently the only Spanish company with its own **LED** technology. We manufacture lamps and **LED** technology systems that have undergone and passed satisfactorily different trials and testing for Electromagnetic Compatibility, Electrical and Heat Safety, Technical Lighting and Light Pollution. It has received numerous certificates that endorse its quality and worth.

- Empresa Nacional de Acreditación ENAC
- Instituto de Tecnología Eléctrica ITE
- Instituto Tecnológico de Óptica, Color e Imagen AIDO
- CE Mark
- ITACA. Instituto de Aplicaciones de las Tecnologías de la Información y Comunicaciones Avanzadas.

With the assurance of the high quality of its products, **DLED** gives a 3 year guarantee.



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Human Capital and resources

Human capital

In **DLED SOLUCIONES** we have brought together the experience and the know-how that a group of people have built up over recent years, each in their own area such as electronics, computing, economics and telecommunications and who have wide professional experience, fruit of the work they are been carrying out in R&D applied to new systems of lighting and **LED** illumination technology as well as renewable energy.

R&D

The R&D department develops all the components of the lamps, luminaires and lighting systems, as well as the vertical wind turbines that **DLED** manufactures.

Our main objective: to develop technologies that are highly energy efficient that contribute towards a more intelligent and sustainable consumption.

Production and assembly line and testing

DLED has its own production line of **LED** base plates and power sources as well as its own assembly line for lamps, luminaires and lighting systems along with a test laboratory.

Quality

All the products that **DLED** manufactures on its premises as well as the components designed by **DLED** that are manufactured by other selected companies are submitted to quality controls during each stage of production and assembly which guarantee that they fulfill all the requirements for which they were designed according to ISO 9001 AND ISO 14001.



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Our Products, Leaders

DLED, the leading company:

We are the leading company in **LED** technology.

- In products and illumination and public lighting systems.
- In our offer of tailor-made **LED** solutions.
- In our total commitment towards our customers.
- In our capacity to attend to and solve our customers' needs,

Products and systems :

DLED offers a wide range of lamps, luminaires, intelligent control and management lighting systems and vertical wind turbines for a variety of different places and surroundings :

Outdoors: streets, avenues, parks, residential areas, car parks, tunnels and roads.

Interiors: homes, offices, hospitals, factories, hotels, shopping centers, shops, schools, universities, sports facilities and garages.

DLED also designs and develops architectural and decorative illumination projects.

DLED not only works to achieve constant innovation in its offer of highly efficient products but has also developed a management software which multiplies the energy and economic savings of the same products.

DLED's ONEZONE system centralizes the control of each light individually, with the possibility of increasing or decreasing the intensity of each according to the needs at any given time. In this way the amount of light used can be adapted to the real needs so reducing enormously the amount of energy used in the hours when there is little human activity.

Simply, through a server, ONEZONE can control a whole city or any large illuminated area adapting to each place's different lighting needs according to daylight hours and activity, and economizes by reducing the power when it is not needed in geographical areas where the activity varies.

If one of the lights fails, the system alerts us to the failure allowing us to considerably reduce maintenance costs and to plan its replacement, maximizing in this way the use of resources such as control teams, surveillance and maintenance.

This point-to-point lighting system monitors, measures and diagnoses any problem in outdoor lighting installations and is therefore very cost-effective. It allows those in charge of public lighting to gather the necessary data which will improve their decision-making, planning and orientation.

As a consequence the energy saving effect is multiplied.

ONEZONE

It allows the grouping, programming, remote turning off and on at any moment or intensity regulation; eg. at night when there is little traffic in order to save energy and cut costs. Its regulation capacity alone can save up to 40% the amount of energy used.



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