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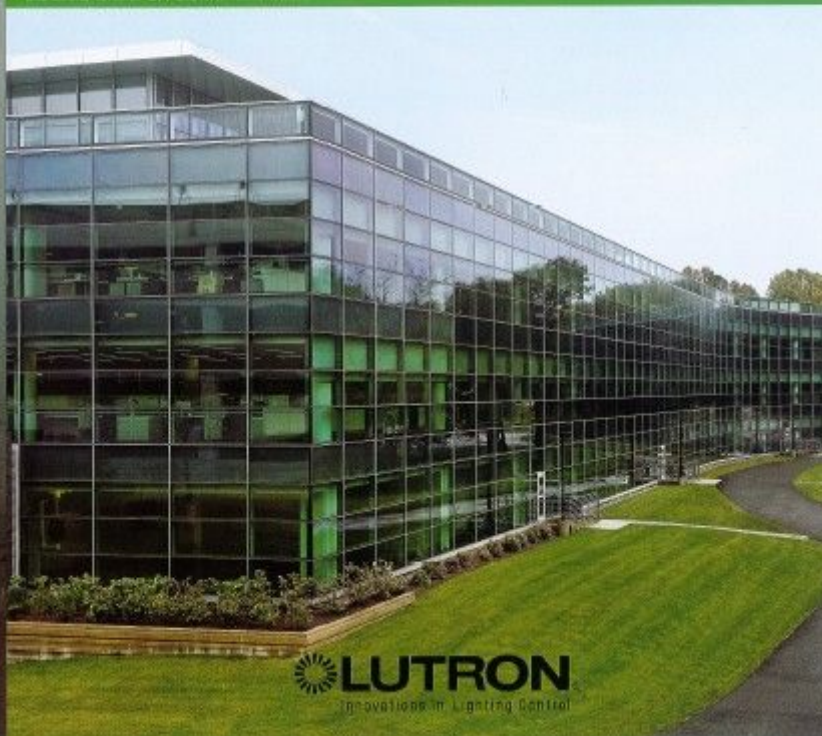
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for monumental architecture

自然之光
ESPA 休闲中心自然的反射光
Natural reflection of ESPA



 **LUTRON**
Innovations in Lighting Control



特鲁埃尔，西班牙 点亮群山的 黑暗

Teruel, Spain
Brighten up the
darkness of
mountains

整体的照明方案使这座古城闪耀于群山的黑暗之中，而 LED 与太阳能技术的巧妙结合，则最大程度地节约了能源和资金

The lighting project is designed to light up the city in dark mountains. Integrated with solar energy, LED reduces costs and saves energy to the most extent

In Teruel province (Spain) Ciudad de Albarracín is built on the slopes of a mountain, almost entirely surrounded by the river Guedelavivar. National Monument since 1961 and proposed to be declared a Unesco World Heritage site by the beauty and importance of their heritage. Light Obias presents a new concept of outdoor lighting. In order to enhance its Obias beauty, not only for the old narrow streets are treated, but also: the monuments like churches, the City Hall, the Medieval Casco, the roofs... and the remains of the old wall which crowns the city.

When night falls almost the identity of the city disappears. Its architecture and history are buried in the darkness of the mountains. Thanks to the initiative of the Foundation of Santa María and the City Hall of Albarracín, in April 2010 comes out a workshop led by Louis Clair called "Night Landscape", where eighteen students participated in a lighting project, leaving the concept prepared for the future. Light Obias wants to rescue the day beauty, while at night, with the lighting as an instrument for this purpose. The project offers, not only to the citizens but also to visitors, a unique night landscape. The proposal includes a double concept that plays with the verticality of the forts, bastlements and elements that direct their eyes to heaven, and the horizontal

图1：当夜幕降临，所有的古迹都消失在人们的视野中，户外照明则需要显现出它们的美丽

Picture 1: all monuments disappear when the night falls. A good outdoor lighting is needed to reclaim their beauty

项目 城市照明 *project: urban lighting*



在西班牙的在特鲁埃尔省，建在山坡上的 Albaracín 城，四周被 Guadalequivar 河环绕着。由于它的美丽和历史重要性，自 1961 年来国家纪念馆便准备申请世界非物质文化遗产。朗穆照明 (Light Cities) 展示了户外灯光的新理念，不只是古老街道，其他标志性建筑如教堂、市政厅、中世纪城堡、屋顶以及装饰城市的古城墙的美感。

当夜幕降临时，城市中所有的标志将随之消失。这座城市的建筑和历史被淹没在群山的黑暗中。多亏 Santa Maria 基金会和 Albaracín 市政厅的倡议，在 Louis Clair 的领导下于 2010 年四月成立了一个名为“夜景”的工作坊，在那里 18 名学生参与了一项照明工程，并为未来留下了理念。

在夜晚来临的时候，通过使用灯光照明来恢复城市白天的美丽。这个项目不仅为市民还为游客提供了独特的夜景。设计方案包括了两个理念，如城堡的垂直感可以把人们的视线引导到通往高处的城墙，由于地形陡峭，特色石材地板和屋顶暴露在阳光下。

为了强调古迹的垂直度，该项目建议照亮建筑物扶壁的一侧，用柔和微妙的灯光点亮塔和尖塔。同时也考虑照亮一些古迹的窗户，好似有人在建筑物中，以营造出一种欢迎的氛围。

图2：古城墙上的城垛使我们想起城市的历史。太阳能射灯很小，几乎看不见。

图3：Albaracín 市政厅

Figure 2: An old wall with its battlements reminds us the history of the city. The solar spot is small and it is almost non-visible.

Figure 3: The city hall of Albaracín

of the characteristic stone floors and roofs of Albaracín in coherent exposure due to the steep terrain place. To emphasize the verticality of the monuments, the project proposes to illuminate one side of the buttresses of the buildings with a soft and subtle light the towers and steeples are lit. It is contemplated also to illuminate some of the windows of the monuments, to simulate there are always people inside the buildings and provoke a welcoming ambience. The walls follow the same concept. It emphasizes the verticality of the towers, and draws the delicate line of battlements that runs through the wall. Warm colours to fit are chosen for a comfortable environment.

These buildings and monuments are lit respecting the darkness, it minimizes light pollution, to allow the Albaracín sky stay with us every night. In the streets, the horizontal planes are lit, ie the pavement. Light pollution and glare will be minimized. This is a functional lighting and should allow good vision for pedestrian, however, not underestimating the aesthetics of the lamps, the light arising from them will be a warm light, inspired by the sunset. Roofs are always present in the view of the city due to the slope of the terrain. They are underlined with the God's eyes, dotted throughout the town with a blue light, inspired by the moonlight. This light is very soft, just to make clear this horizontal layer at night.

For this purpose the project is a combination between innovation and tradition, working in a rural and mountainous environment with the latest technology. To follow the concept proposed for this project, the bet is to use LED technology combined with solar energy. Light Cities develops a new fixture with these two technologies that will provide several advantages. First, it enables a very easy installation where the accessibility to the installation point is difficult, such as the old wall on the top of the mountain in a steep terrain. Each solar spot comes prepared for a very easy installation. At this point, there is no electricity cabling to be installed, and there will be no need for that, as each solar LED spot will be autonomous. The maintenance will be minimal



墙壁也遵循相同的理念，它强调了塔的垂直度，并画出了一条穿越城墙微妙的线条，认为营造一个舒适的环境选择暖色。这些建筑物和古迹灯光遵照夜晚的需要来设计，尽量减少光污染以便让 Albarracín 的暗天空每晚陪伴着我们。

在街道，灯光照亮人行横道这样的水平面，光污染和眩光将降至最低。这种功能照明应该为行人提供良好的视野，但是，同样要重视灯的美感，受落日的启发，它们发出的将是暖光。

由于地形陡峭，屋顶向来都是这座城市的一道风景。受月光的启发，通过点缀在镇上的蓝色灯光，他们强调了上帝的眼睛。这种光很轻柔，只是为了清楚的展示夜间的城市，出于这个目的，这个项目将创新与传统相结合，并在乡间和山区运用最新的科技。

为了遵循这一项目所提出的概念，势必要把 LED 技术与太阳能结合起来。Cibles照明运用这两种具有多种优势的技术发明了一种新灯具，首先，它可以在地势陡峭的地点

轻易安装，如安装在地形陡峭的山顶上的古城墙上。每个太阳能电池都很容易安装，因此没有必要安装供电电缆，因为每个太阳能电池点会自发运作。由于 LED 技术的使用，维修极少，这也保证了较长的寿命。另一个好处是由于能源来自于太阳光，每个 LED 点只消耗 3W 能量，所以不需要支付电费。

团队还研发出另一种灯光配件以解决在 Albarracín 狭窄的街道上的功能性照明问题。这是一种 LED 灯笼，它保持着与城市风格相协调的旧有灯笼的美感，但其中蕴含了最新的技术。通过使用 LED，电力消耗将减少 50%，为市政府节约了能源和资金。通过消除眩光和均匀性的欠缺，就可解决视觉舒适性这一实际问题，又避免了实际存在的光污染。

在西班牙，这个项目开创了用灯光亮化整座城市的先河。这将改善居住者和游客的视觉舒适度，同时也为市政厅减少了电费开支，而且会突出城市美丽的古迹。■



because of the usage of LED technology, which will also guarantee a long life duration. Other advantage is that there will be no electricity bill to pay as the energy comes from the light of the sun, which will feed only 3W LED spot. There is also another great lighting fitting developed by the team, to solve the functional lighting in the narrow streets of Albarracín. It is a LED lantern, maintaining the aesthetics of the old lanterns integrated in the style of the city, but including the latest technology. By using LED, the consume in electricity will be reduced in a 50%, saving energy and money to the City Hall. It will solve the actual problems of visual comfort, by eliminating the glare and the lack of uniformity, and will avoid the lighting pollution actually existing.

This great project will be a pioneer project in Spain, where it is the first time to treat in its totality the lighting of the whole city. It will improve visual comfort for the habitants and visitors, it will reduce the electricity bill for the City Hall, and it will highlight the beautiful monuments of the City. ■

图4.5：考虑到这座城建在陡峭的山坡上，屋顶时常暴露在阳光下，所以照明团队决定用灯光强调这种浪漫。太阳能电池被小心地安装在屋顶上，以期为所有的灯具提供能量。

Picture 4.5: Due to the steep morphology of the city, the roofs are constantly exposed. That is the reason why Light Cibles decided to emphasize the romantic point of this by lighting. A solar panel was carefully set on roof. All the fittings are feed with solar energy.