

# SUSTAINABILITY BY DESIGN: LIGHTING



**The lifestyle in Denmark as in the rest of Scandinavia is highly influenced by light – or the lack of it. We enjoy the long summer nights and pay back during the dark winter where modern life would be virtually impossible without artificial lighting. Perhaps, to compensate for this, Danish lamp design has a long tradition of emphasizing the qualities of proper light for working, reading, dining, hanging out and the like – creating the ambience for everyday life.**

## **In war and peace**

In the 1920's and 30's Poul Henningsen – known by his initials PH – designed and developed his series of PH lamps with the prerequisite of getting decent light out of electrical light bulbs. Not that PH thought that old fashioned candle light was a better choice – he was a radical modernist – but because he simply believed that the new technology called for another solution than just exchanging a gas flame with a bulb. And to PH, good quality of light for everybody was a part of developing a democratic society.

PH worked as an innovative lamp designer throughout his life. He had the position as architect in Copenhagen's Tivoli Gardens during World War II and because he refused to black out the gardens at night to protect it from being seen from the air, he designed a lamp that did not emit light upwards but still illuminated the ground. Thus people could enjoy a walk in the gardens even during the war. PH's Tivoli Lamp illustrates the complexity of outdoor lighting. On top of illumination it serves to create space, life and security – both the actual and the experienced.

## **Reducing the footprint**

PH's experiments with the electrical bulb are fundamental knowledge for modern Danish lamp designers. But while environmental footprint was not an issue in PH's time, it certainly is today. And as around 5 % of the total amount of energy used in Western countries is used for lighting, it is an important issue to consider.

In existing lamps conventional bulbs are gradually substituted for the new

energy-saving A-bulbs. But new lamp designs show more radical solutions. The state of Denmark supports innovation consortiums where Danish designers work with leading lamp manufacturers, engineers and scientists to showcase new ways of designing energy efficient lamps based on light emitting diodes (LED). LEDs consume only a fraction of the energy compared to conventional light bulbs. Moreover, they offer new possibilities of controlling light quality, colour, intensity and more. Thus, Danish designers continue to design lighting that go beyond illumination while reducing the environmental impact of our daily life.

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FRONT PAGE PHOTO: PH ARTICHOKE DESIGNED BY POUL HENNINGSEN IN 1958. PRODUCED BY LOUIS POULSEN. PHOTO: LOUIS POULSEN

### CASE

# SCOTIA AND REFER + STAER

#### SunMast; Scotia, 2009

The newly launched company, Scotia™, has developed a solar-powered streetlight designed to work in low levels of sunlight, using less energy than it generates and feeding energy back into the power network.

In December 2009, the company showcased its solar-powered outdoor lighting columns designed by the architectural office 3XN at the Bella Center during the Climate Conference COP15 in Copenhagen, to demonstrate the feasibility of emission-free lighting even at northern latitudes. The new lighting creates a warmer welcome for evening and early morning visitors. 250W orange sodium lamps were replaced with a custom system of 60W LED luminaries that light the ground in bright white light.

At the same time, Scotia demonstrated how light can be used to help visitors identify the different colour-coded parking zones: Bands of light formed by coloured LEDs embedded in the masts are used to identify the P5 car park as 'the blue zone' and help with orientation.

#### Black Fiber; Refer + Staer, 2008

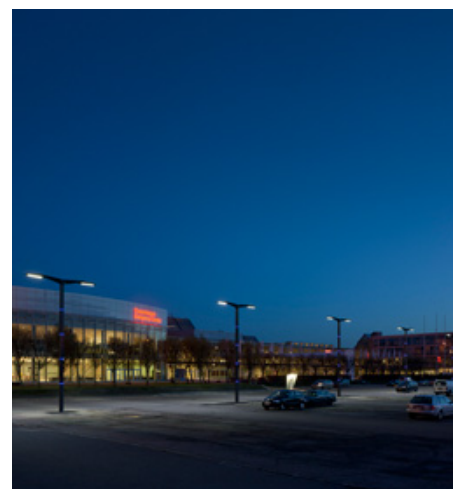
Jakob Staer, who together with Sofie Refer forms the young design duo Refer + Staer, designed Black Fiber, inspired by the classical lamp shape with an exclusive futuristic look.

While the shape resembles a lamp from pre-modern times the lamp in itself is based on new energy-saving technology. The 'lamp-shade' is made from fiber optics creating a sparkling and airy feel. While shaping the silhouette of the lamp, the fiber optics function as the sources of light instead of keeping the light inside the lamp as a classical lampshade would.

Moreover the fiber optics serve to control and optimise the quality of light from the LEDs mounted at the end of the fibers. Thus, Jakob Staer uses design to combine energy-saving technology and experiences to create a new product with new qualities and a strong identity on a competitive market.



Combining LED with fiber optics, the Black Fiber by Refer + Staer creates a high quality of light with a futuristic touch. Photo: Laura Stamer



The SunMast is solar powered outdoor lighting designed by Danish architects 3XN and Scotia and introduced at the COP15 summit in 2009. Photo: Scotia + Adam Mørk