Candela

The Evolution of Light

Design by Francisco Gomez Paz, 2016

Continuing the long tradition of Scandinavian flame luminaires, Candela – which is Italian for candle – brings this classic product typology into the 21st century with the newest technology, turning the heat of a flame into electricity. It was designed by Argentinian designer Francisco Gomez Paz in a visionary collaboration with Astep. A shared passion for significant lighting solutions has led to a signature luminaire; a manifesto that addresses the evolution of design and technology. The evolution of light.

The use of fire to power LED lights simultaneously represents both the oldest and the newest form of illumination in a single product that is also environmentally friendly. Astep has developed a novel energy-harvesting system that generates electricity from the heat of the flame using the thermoelectric Seebeck effect, which was discovered by Thomas Johann Seebeck in the 19th century.

A portable and self-powered luminaire, Candela is ideal for cafés, restaurants and lounges as well as private homes as a source of warm light and a stylish power port. Due to the smokeless flame, Candela can be used both indoors and outdoors.

Candela is assembled in Italy of recyclable materials such as opalescent glass and aluminum and a variety of advanced high-temperature thermal materials and powered by bioethanol, a clean, natural and renewable fuel made from plants.

Recharge – Candela is a sustainable lighting solution and design statement that enables you to recharge your devices via a USB cable. With an internal battery that charges whenever there is a flame, Candela can charge mobile phones and tablets even when powered off. The luminaire is easily ignited with a match or lighter. A full tank contains 260 ml of bioethanol – enough for five hours of use.

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The Seebeck effect

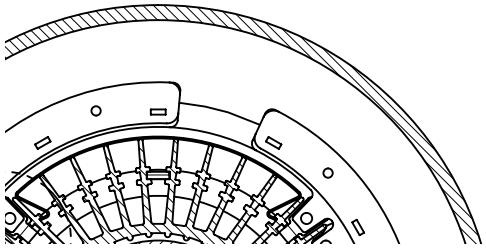
A Scientific Phenomenon

The Seebeck effect is a phenomenon discovered in the 19th century in which the temperature difference between two different electrical conductors produces a voltage difference between the two electrodes. When heat is applied to one of the two conductors, heated electrons flow toward the cooler one. If the pair is connected in an electrical circuit, direct current flows through the circuit.

Regardless of the scientific significance of this discovery, the voltages produced by the Seebeck effect are small, usually only a few microvolts per kelvin of temperature difference. If the temperature difference is big enough, some Seebeck-effect devices can produce a few millivolts. However, by combining many Seebeck-effect devices it is possible to increase the output voltage and generate a useful, albeit small amount of electricity.

Using the thermoelectric Seebeck effect, Astep has developed a novel energy-harvesting system that generates electricity from the heat of a flame. In Candela, four heat collectors working together with a large aluminum heat sink provide the necessary temperature difference to create electrical power. This generates sufficient power to provide ambient LED illumination while storing excess energy that can be used to charge a mobile phone or tablet device later, making Candela a portable and self-powered luminaire.

The Seebeck effect is named after Thomas Johann Seebeck, who discovered the phenomenon in 1821.



Portrait by FGP

Francisco Gomez Paz

Designer (born 1975)

Since 2004, Francisco Gomez Paz has had his own design studio in Milan. He was born in Argentina but moved to Italy after completing his studies in Industrial Design in Córdoba and is driven by a profound curiosity and understanding of sophisticated technologies and materials. He creates and designs in a particularly experimental hands-on creative process, striving for innovation, significance and the mysterious quality of beauty.

Francisco Gomez Paz has created furniture and lighting products for a wide range of leading design companies, among them Luceplan, with whom he has developed highly innovative and iconic lighting solutions, including the Hope chandelier, which he designed in partnership with Paolo Rizzatto.

He is also active in the field of research and education, giving lectures in Italy and abroad, and in 2000 he was appointed visiting professor at Domus Academy, a living laboratory for design, architecture and fashion in Milan. He also holds a master's degree in Design from the Domus Academy.

Francisco Gomez Pas has received several international accolades for his work, among them the Good Design Award (2010), the prestigious Compasso d'Oro (2011) and the Red Dot Award (2010 and 2016). His Solar Bottle, designed together with Alberto Meda, was awarded first prize in the Index Award (2007) and was also selected for MOMA's Study Collection.

CANDELA

Francisco Gomez Paz, 2016

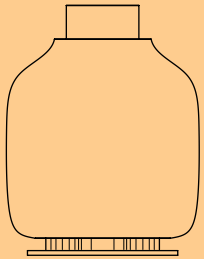
Candela continues the long tradition of Scandinavian flame luminaries by advancing the product with 21st century technology. From the heat of the flame, Candela produces its own electricity to provide cosy LED illumination, while harvesting energy to charge mobile devices.

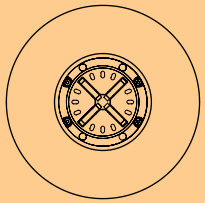
Candela is powered by bioethanol, a renewable fuel made from plants.

Technical specifications

Type	Portable Table Luminaire
Environment	Indoor
Materials	Opaline Glass, Aluminium, Alumina Wick, High-Temperature Materials
Finish	White Diffuser, Anodized Aluminium Fuel Tank
Dimensions	Ø 186 x 241 mm
Fuel Type	Bioethanol
Fuel Capacity	260 ml (5 Hours)
Light & Charge	12 LED, 2200 K Ca. 1,5 W Battery Capacity, 3400 mAh USB Type A Port
Light Only	24 LED, 2200 K Ca. 3 W

IP20





NOX

Alfredo Häberli, 2017

Nox is composed of four elements: a charging base, an anodized aluminium body containing the charging system, a hand-blown opaline glass diffuser and a simple handle. Distinctive to Nox is its wireless charging system with induction technology, enabling this sophisticated and highly versatile lamp to be used unplugged. Featuring a touch dimmer, Nox can provide ample light for reading and a cosy soft light when dimmed.

Nox is assembled in Italy of high-quality materials and provides more than fifteen hours of use when fully charged.

Technical specifications

Type	Portable Table Luminaire
Environment	Indoor
Materials	Opaline Glass, Aluminium
Finish	White Diffuser, Anodized Aluminium Body
Dimensions	Ø 224 x 305 mm (325 mm with charging base)
Connectivity	Micro USB Port
Light Source	8 LED, 2700 K 400 lm, CRI 85 Dimmer
Duration	15 Hours

Wireless Induction Charging Technology

IP20