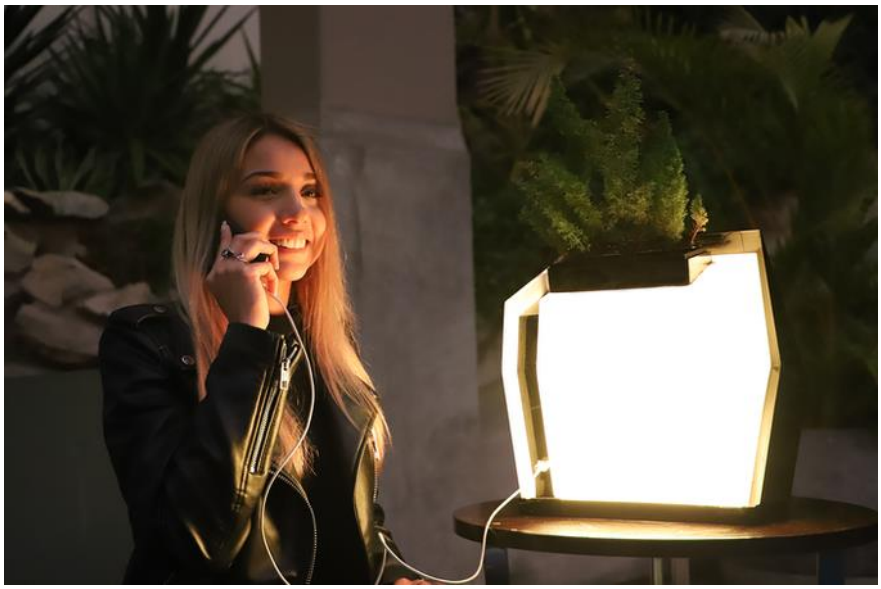
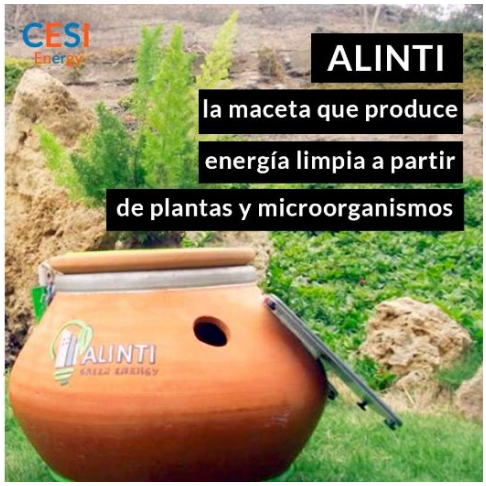
ALINTI - INNOVATIVE TECHNOLOGY THAT GENERATES ELECTRICITY FROM PLANT PHOTOSYNTHESIS IN PERU

April 2025

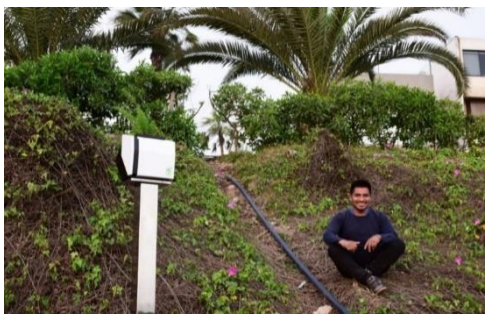


In 2016, Hernán Asto Cabezas, a university student from Peru, after two years of intense study and various tests, developed the first prototype of Alinti, a device that generates electrical energy from plants.

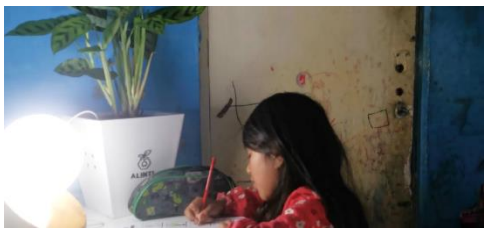
In 2016, Hernán Asto Cabezas founded the company Alinti ('Ali' means plant in Aymara language and 'Inti' means sun in Quechua). Since then, he has continued to produce new versions of the device, seeking funding to perfect its innovation, and earning national and international recognition. In 2018, Alinti won second place in the international competition, *An Idea to Change History*, sponsored by the international television network History Channel. The Alinti company has launched its innovative lamp onto the international market through the crowdfunding platform Kickstarter.



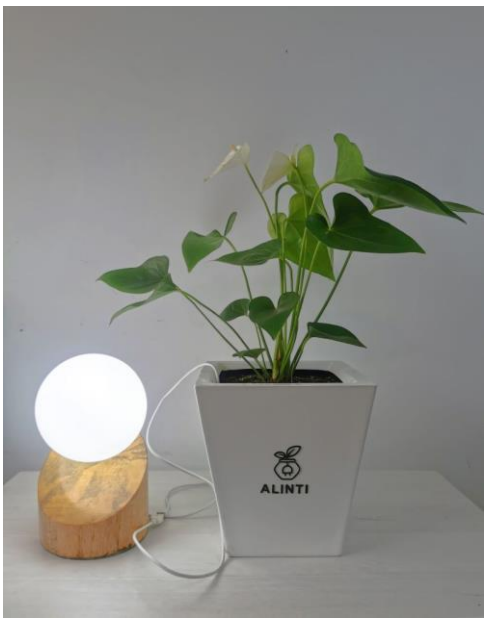
Alinti is a device that generates electrical energy through plant photosynthesis. During photosynthesis, plants expel electrons through their roots. A microcell captures these electrons and stores them in a battery that is part of the entire system (pot, microcells, plants, and battery). The current flow is stored in a battery connected to the photovoltaic system, which charges during the day. The energy produced is used for lighting and charging cell phones.



The Company's website presents what is Alinti and how does it work. “Alinti has revolutionized the way we perceive plants, transforming them into advanced systems for generating renewable energy. Based on photosynthetic and microbiological principles, this innovative technology harnesses the electrons released in the rhizosphere during photosynthesis to produce clean and sustainable electricity. The process begins when plant roots release organic compounds during their metabolic activity. These exudates, rich in glucose and other nutrients, are broken down by microorganisms present in an optimized substrate developed by Alinti. This natural interaction generates electrons and protons as byproducts. To capture the released energy, Alinti has developed a revolutionary conductive polymer anode, a non-metallic, highly corrosion-resistant material. This polymer, in direct contact with the roots, acts as a receptor for the electrons generated in the glucose-rich medium. By transforming chemical energy into usable electricity, this system redefines the concept of bioelectrogenesis and marks a milestone in the use of living ecosystems as energy sources”.

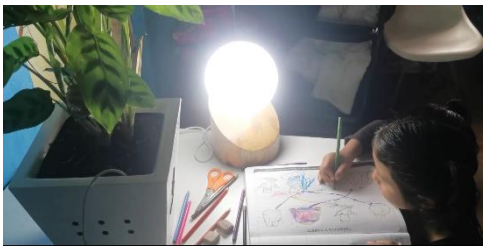


“Bioelectrochemistry faces challenges due to the lack of non-metallic anode electrodes, as metals are corrosive and lose conductivity in organic matter. Alinti has revolutionized this field with an invention of a non-corrosive, non-metallic conductive polymer, synthesized from a plant (whose origin and synthesis process remain confidential for intellectual property reasons). This new, environmentally friendly and highly conductive material is ideal for bioelectrochemical systems, generating voltages comparable to those of rare metals such as platinum. This breakthrough enables more efficient and sustainable biological energy generation”.



Alinti offers devices for homes, public spaces, green roofs, and for businesses. It not only produces clean, biological energy, but also absorbs more than 100 kg of CO2 per day per 15 m^2 of surface area. Furthermore, as a portable device, it adapts to any environment. The technology aims to spread worldwide, adapt to user availability, meet electricity demand, and continue to evolve continuously.

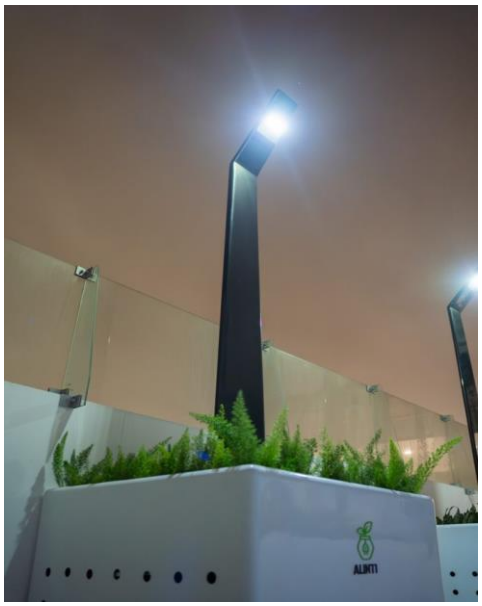
The two main products of the Alinti Company are the following:



Alinti e-POT is a compact (30 cm²) solution that integrates live plants and bioelectrochemical principles to generate clean energy, enough to power 10 W LED devices. It replaces traditional lighting sources such as candles and kerosene lamps, reducing health risks and CO_2 emissions.

Environmental and social impact:

- Emission reduction: Avoid 80 kg of CO_2 by replacing candles and absorb 1.8 kg of CO_2 annually.
- Oxygen generation: Releases 27 grams of oxygen per day, and 9.86 kg per year, equivalent to approximately 12.57 full days of breathing for a person.
- Health benefits: Prevents respiratory diseases and burns.
- Energy autonomy: Promotes self-sufficiency in communities without reliable access to electricity.



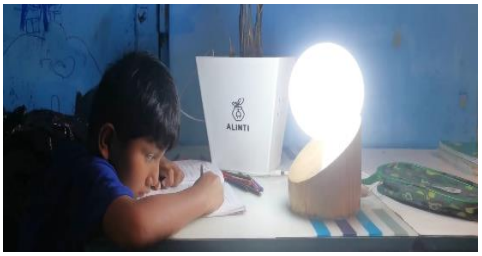
Alinti e-GRASS transforms urban lighting infrastructure using bioelectrochemical cells, living plants, and microorganisms, generating clean energy and purifying the air. It occupies 1 m² per unit and provides efficient 25 W lighting for streets and parks, replacing non-renewable sources and polluting batteries.

Environmental and social impact:

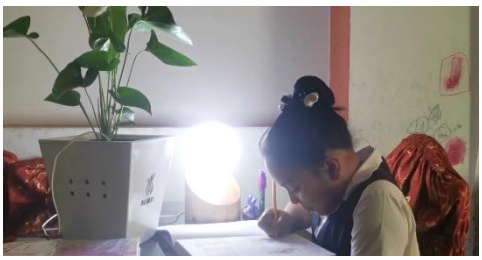
- CO_2 Capture: Absorbs 210.24 kg of CO_2 per year, equivalent to offsetting 1,752 km travelled by an average car.

Oxygen generation: Produces enough oxygen for 175.2 days for one person.

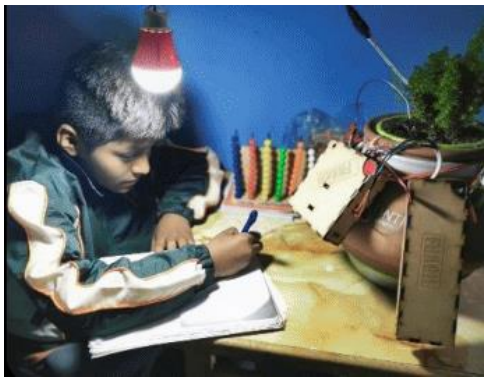
- Sustainability: Eliminates the use of batteries and reduces dependence on fossil fuels.
- Community benefits: Improves safety, promotes green spaces, and supports urban biodiversity.



The Alinti lamp represents an innovative solution for communities with limited or no access to electricity, a problem that affects millions of people worldwide. In Latin America, where approximately 25% of the population lives in rural areas, the impact of this technology can be far-reaching, helping to reduce energy poverty and its negative effects on education, security, and economic development. From the start of its innovative process, the Alinti company has sought partnerships and worked to make this invention accessible to the communities most in need. Currently, Alinti lamps are installed in various municipalities in Peru, such as Cusco, Ayacucho, and Pucallpa. Local authorities distribute the pots to communities without electricity. Furthermore, some municipalities, such as San Isidro, are investing in Alinti for their public lighting.



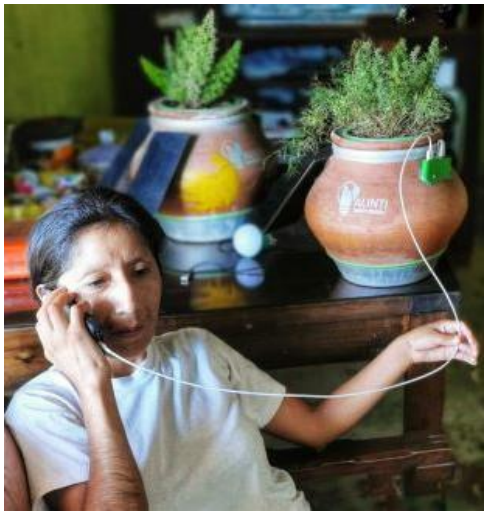
The use of candles and kerosene lamps in vulnerable communities can cause serious health problems. Combustion releases toxic gases such as CO_2, carbon monoxide, and benzene, causing respiratory illnesses, eye irritation, and the risk of cataracts. Furthermore, their flammability leads to burns and poisoning, particularly affecting women and children. Alinti for homes generates electricity through photosynthesis by plants and soil microorganisms, eliminating fuels like kerosene. This reduces respiratory illnesses caused by toxic gases like carbon monoxide and benzene. It provides safe lighting, without the risk of fires or burns, and improves air quality by capturing CO_2 and releasing oxygen.



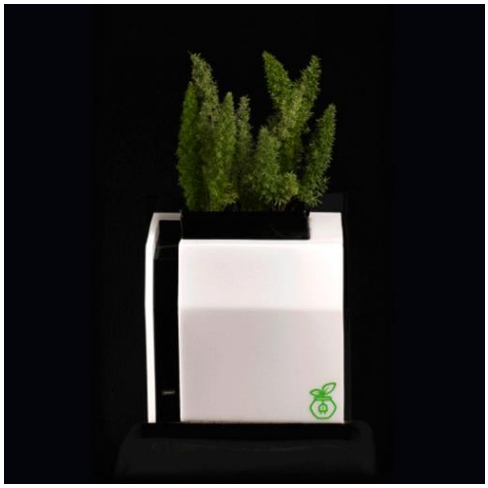
Alinti provides safe lighting for nighttime study, improving children's concentration and academic performance. It also eliminates the use of candles and kerosene, protecting them from respiratory illnesses and eye problems. Its sustainable technology captures CO_2 and releases oxygen, promoting environmental awareness and mitigating climate change.

The social impact achieved by using Alinti consists of 30% fewer respiratory illnesses by eliminating kerosene and 20% more school attendance thanks to improved lighting. The environmental impact achieved consists of more than 4,000 families benefited and more than 40 tons of CO_2 avoided. It also saves 20 tons of CO_2 annually from street lighting.

The Alinti company continues to work to find partners that will allow it to improve its technology and expand its production to a commercial scale that will make it easier for all interested communities to acquire its products. It also continues to participate in national and international awards to showcase the innovative features of the Alinti system and generate national and international demand. In 2020, Alinti was recognized as one of the 500 best innovations at the Dubai Expo. In 2021, Alinti received support from the ProInnóvate program of the Peruvian Ministry of Production, and Hernán Asto Cabezas was also chosen as the Peruvian of the Bicentennial in his country. In 2023, Alinti was one of the winners of the Latin American Green Awards, and in 2024, Alinti achieved first place, winning 100,000 euros, as well as an exclusive acceleration program granted by the NTT DATA Foundation.



To know more



Alinti sitio web

Alinticoin.green sitio web

Kickstarter crowdfunding Platform

Premios Verdes 2023

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