

REIMAGING SOLAR INSTALLATIONS:



ADDING *BEAUTY, SAFETY, SHELTER,* AND CONNECTIVITY IN PUBLIC SPACES

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When we think of solar installations, we often think of rows upon rows of solar panels installed in fields and on roofs. Ground-based solar is land-intensive, and rooftop solar installation can be limited based on the condition of the building. What if there was another option, one that did not require a lot of land and wasn't dependent on a building's condition—an option that served more than just the function of generating energy?

There is, it's an E-Cacia Solar Tree.

Manufactured by Solar Forma Design in Eau Claire, Wisconsin, the E-Cacia Solar Tree was developed to integrate solar generative elements into human spaces and contribute to place-making in public spaces: city parks, college campuses, corporate campuses, healthcare campuses, zoos, amusement parks, wherever people live, work, play, and learn. The tree canopy, ranging from 17 to 22 ft tall, can be grid-tied or standalone, with scalable battery storage to accommodate varied site demands with 3.5 kW of Mono-cSi PV-module generative capacity.

But what sets this solar installation apart is its nature-inspired functional design.

NATURE-INSPIRED BEAUTY

Up until now, the primary design focus of solar has been to serve a utilitarian function: generate clean electricity by capturing sunlight. Solar Forma's products deliver this utilitarian function, but also create a high-profile, complementary asset that cultivates public well-being and place-making through deliberate design. In so doing, the products redefine the relationship between renewable energy and public spaces. Designs are inspired by nature - the E-Cacia's design mirrors the Acacia tree, an iconic symbol of the southern and eastern African savanna. The umbrella dome of their canopy is an evolutionary adaptation that enables the trees to capture the maximum amount of sunlight with the smallest of leaves.

Solar Forma's products, like the E-Cacia, optimize public perception of solar infrastructure by expanding acceptance, visibility, and installation locations. The artful design of products and the elements that define our communities' living spaces that add an aesthetic quality are inherently sought out and valued by people.

SAFETY

The tree features a programmable high-lumen LED lamp concealed within the main juncture of the tree that projects light upward and then reflects it back down from the underside of the canopy. The lights are motion-activated and will brighten and dim based on the ambient outdoor sunlight levels and movement under the tree. When thinking about common areas for students, pedestrians, employees, etc., well-lit outdoor spaces contribute to safety, reducing the risk of accidents, crime, and falls. These lighted areas are inherently welcoming and facilitate accessibility and broaden usability. Having well-lit spaces can boost community health by encouraging outdoor activities, such as walking and jogging, even after sunset.



SHELTER

The tree canopy measures up to 22 feet tall, encompassing 440 square feet, providing shelter and shade. When grouped in multiples of 2 to 5 trees, they can create significant shade areas. There is a version in development that adds water misting to the underside of the canopies, creating an active cooling function. Shade and cooling are becoming increasingly important in an ever-warming world. Solar Forma's latest test models indicate that the combination of shade and misting can create a micro-climate under the tree canopies that is up to 20 degrees Fahrenheit cooler than the surrounding sunlit ambient air temperatures. A game-changing climate adaptation that can keep public parks and urban areas viable and usable in the face of extreme heat events that are starting to become ever more common.

CONNECTIVITY

With 3.5 kW of generative capacity, the E-Cacia easily charges user devices and may be scaled to charge electric vehicles and e-bikes.

The renewable energy sector and the transition to a net zero-carbon society can benefit from embracing a new approach to design in the solar category. By integrating these products more directly into people's lives, we can inspire confidence that these energy forms can provide for our current and future energy needs. Familiarity breeds trust and expanding installations within the built landscape can hasten and accelerate the adoption and uptake of renewable energy technologies overall. 🌻



SOLAR • FORMA
INSPIRED SOLAR DESIGN



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ABOUT SOLAR FORMA

In 2019, I founded Solar Forma Design. From the start, it was intended to be a different kind of solar company based on a wildcat idea that was built upon a seemingly unimportant quality in the solar world: artistic product design.

Before starting Solar Forma Design, I was a business development consultant for a conventional solar company. We focused on various installations—rooftop, ground-based, residential, commercial, and agricultural. While our technology was efficient and cost-effective, and it reduced CO2 emissions, I always felt something was missing. Our installations weren't visually pleasing or enhancing properties. They were functional but didn't add beauty to buildings or enhance their surroundings. They sometimes felt like space-takers rather than place-makers.

Using the established engineering and design concept called BIOMIMICRY, we set about developing products that emulated the designs and processes found in nature. Our first product was a "solar tree," the E-CACIA, designed after the iconic Acacia Tree of the African savanna. Our second product draws upon the inherent attraction that the surface of water seems to hold for people. The WAVE Solar Carport adds this simple element of design interest in the form of wave designs as an alternative to utilitarian flat-panel carports. Our third product is inspired by the huge leaves and flora of the Amazon and Asian rainforests. The SOLAR PODS are outdoor meeting and seating areas for two to four people. They are mobile and completely self-contained with their own power storage systems.

Don Norman, a design professor at The University of California, San Diego and author of "The Design of Everything Things" states: "It is not enough that we build products that function; we also need to build products that bring joy and excitement, pleasure and fun, and yes, beauty to people's lives."

By allowing architects, urban planners and others who are charged with place-making to incorporate solar as an integral element of their landscapes, we hope to advance the proliferation of solar into the new energy future. Our goal is to elevate solar's acceptance by fostering space utilization, encouraging connection, optimizing perception, advancing functionality to enrich public settings and to impress upon people how solar can replace fossil fuels and support the activities that define our lives.

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