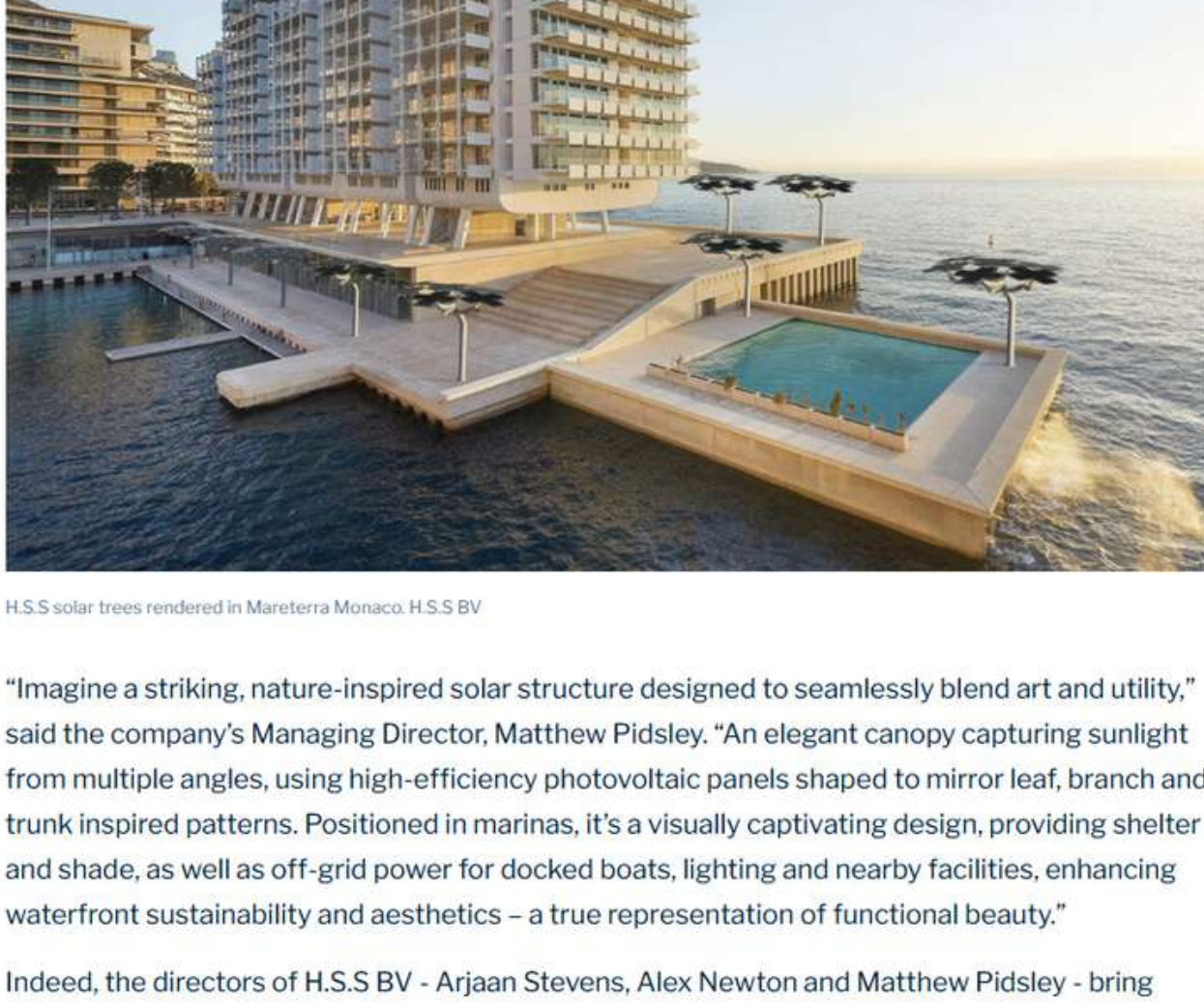


Marina solar trees: Blending nature and science

PATRICK NÖREN
Editor

Having recognised the need to optimise limited space, meet high energy demands, minimise environmental impacts and satisfy aesthetic considerations, Hybrid Solar Systems is collaborating with Espen Øino International to launch solar trees especially designed for marinas.



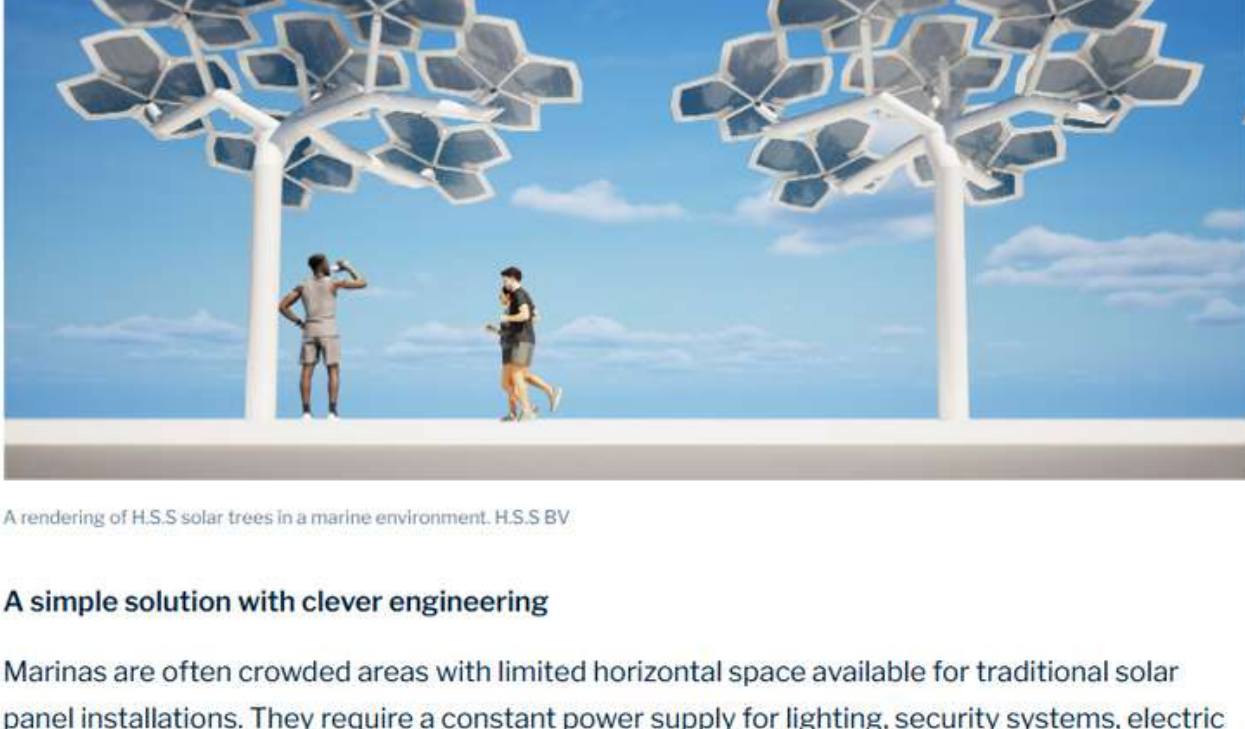
H.S.S solar trees rendered in Mareterra Monaco. H.S.S BV

"Imagine a striking, nature-inspired solar structure designed to seamlessly blend art and utility," said the company's Managing Director, Matthew Pidsley. "An elegant canopy capturing sunlight from multiple angles, using high-efficiency photovoltaic panels shaped to mirror leaf, branch and trunk inspired patterns. Positioned in marinas, it's a visually captivating design, providing shelter and shade, as well as off-grid power for docked boats, lighting and nearby facilities, enhancing waterfront sustainability and aesthetics – a true representation of functional beauty."

Indeed, the directors of H.S.S BV - Arjaan Stevens, Alex Newton and Matthew Pidsley - bring with them a lifetime of experience in the marine sector, having built yachting hardware and engineering systems for some of the largest vessels around the world.

The origins of H.S.S's new marine solar trees lie in the fundamental principle of non-invasive but efficient off-grid renewable energy generation, first developed in the urban tree. "Our vision is to see the marina operating as an off-grid energy eco-system in which solar trees power electric boats and amenities."

"Energy harvested by the panels can be stored in integrated battery systems housed within nearby benches and adjacent structures," said the design team at Espen Øino. "Furthermore, they supply clean, renewable energy directly at the point of use - ideal for charging stations or smart benches without relying entirely on electrical grid access." The H.S.S trees can be integrated into wider smart marina initiatives, hosting Wi-Fi hubs, environmental sensors and USB charging ports, and can even heat water for hot showers. Pidsley is emphatic: "Let's face it, they're also a stunning piece of art!"



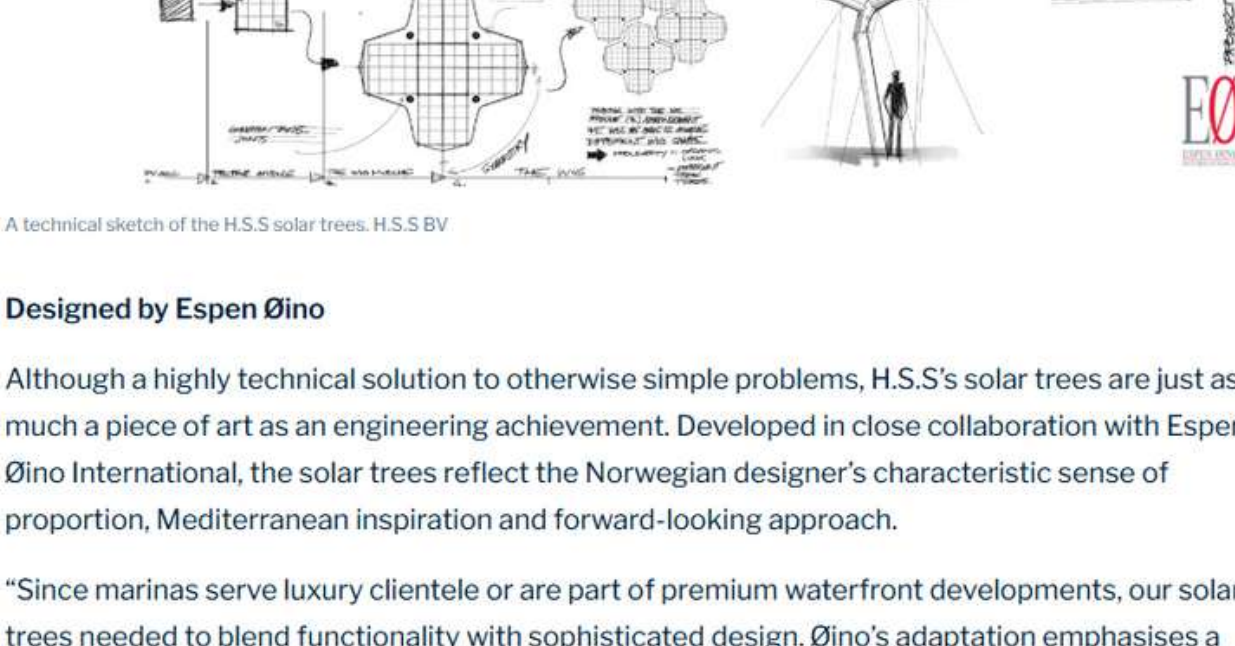
A rendering of H.S.S solar trees in a marine environment. H.S.S BV

A simple solution with clever engineering

Marinas are often crowded areas with limited horizontal space available for traditional solar panel installations. They require a constant power supply for lighting, security systems, electric vehicle and increasingly boat charging stations. H.S.S brings a holistic solution to a global marine problem: how do we help preserve the delicate balance of the waterside environment which we all enjoy?

"We start by utilising height rather than horizontal space, maximise hard standing space efficiency and significantly reduce the ground level foot print as space is often limited in conventional walkways and pontoons," said the design team at Espen Øino. By using durable, corrosion-resistant materials such as stainless steel and marine grade aluminium, the solar trees withstand harsh marine environments, while modular installation systems provide robust anchoring points and simple installation or removal should the use requirements of the marina change. "Simply put, as the marina landscape grows or changes, so too can the solar tree orchard."

The type-approved, triple laminate high-tensile glass can include lights so that images or graphics can be overlaid to create a certain ambience or celebrate a certain occasion. "We can tell a story on the canopy, a light show, flags, mark a birthday celebration or occasion, there is so much scope to make these a really personal project, or fit uniformly in a larger area."



A technical sketch of the H.S.S solar trees. H.S.S BV

Designed by Espen Øino

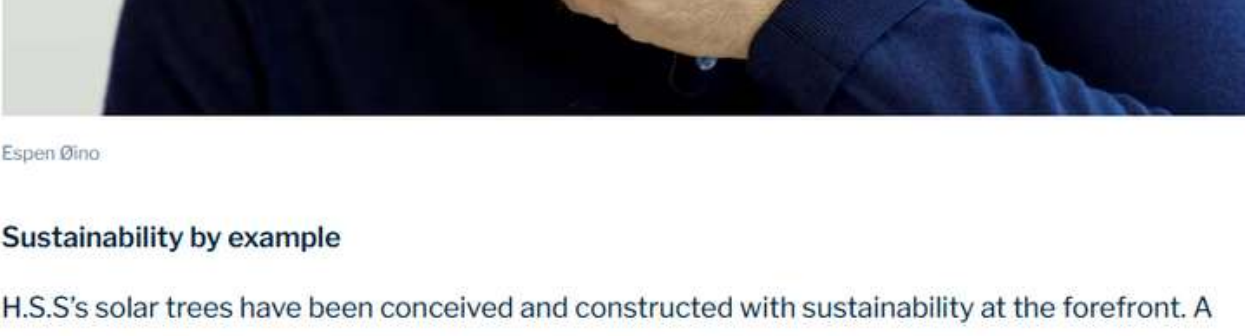
Although a highly technical solution to otherwise simple problems, H.S.S's solar trees are just as much a piece of art as an engineering achievement. Developed in close collaboration with Espen Øino International, the solar trees reflect the Norwegian designer's characteristic sense of proportion, Mediterranean inspiration and forward-looking approach.

"Since marinas serve luxury clientele or are part of premium waterfront developments, our solar trees needed to blend functionality with sophisticated design. Øino's adaptation emphasises a natural harmony with oceanfront surroundings, offering an elegant fusion of sustainability and luxury that enhances both private and public marine spaces," according to Pidsley.

"Collaborating with Espen Øino ensured that the visual language of the trees matched the clean, elegant lines of modern yachts and marina architecture."

With a portfolio that includes some of the world's most prestigious superyachts, Øino brings a sense of proportion and elegance to the project. "His contributions ensure that the solar trees are not just functional installations but also architectural landmarks that complement the sleek, modern design language of high-end marinas and yachts," said Pidsley.

"The solar trees were inspired by the iconic form of the Mediterranean stone pine - its vaulted canopy became a natural blueprint. The design is about creating a balance between technology and nature, beauty and sustainability," said Espen Øino. Indeed, Øino's involvement has pushed the boundaries of what solar infrastructure can look like, transforming a traditionally utilitarian object into a sculptural and symbolic centrepiece for maritime developments.



Espen Øino

Sustainability by example

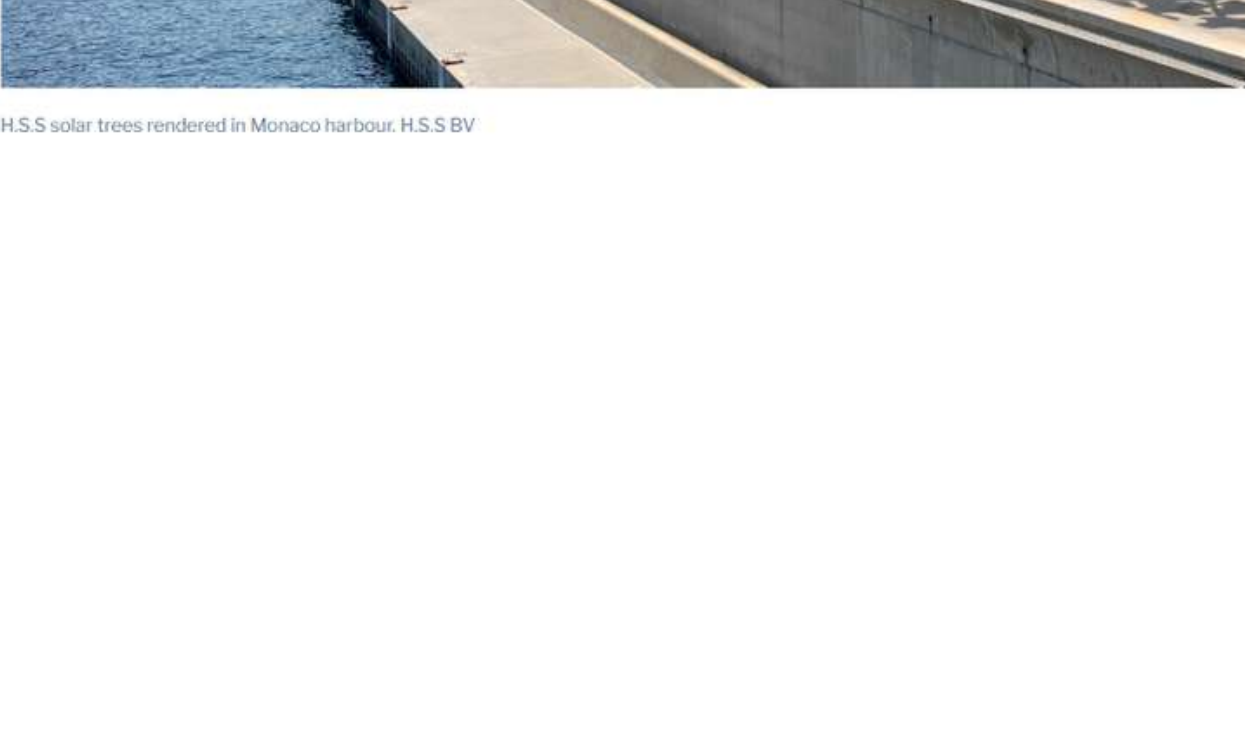
H.S.S's solar trees have been conceived and constructed with sustainability at the forefront. A more efficient source of renewable energy generation and localised storage reduce both marinas' and boats' reliance on fossil fuels, while surplus power can be fed back into the local grid thus benefitting local communities.

Furthermore, unlike large fields of solar panels or wind farms, hybrid trees are compact and can be installed without extensive excavation or marine disruption, thereby preserving local ecosystems. "Installing hybrid solar trees can help marinas meet criteria for certifications like Blue Flag, Clean Marina, or ISO 14001, which require evidence of environmental responsibility," said Pidsley, adding that two high-profile marinas in the Mediterranean have already placed orders for the trees.

There are even more localised benefits to the trees, according to H.S.S's managing director. The wide, elevated panels mimic a canopy and thus offer shade for seated areas, marina boardwalks, waiting zones and charging stations, which are also powered by the trees. By generating and storing their own energy, the trees can help marinas reduce operational costs, hedge against rising utility prices and maintain critical systems like lighting and security even during outages. They also contribute to "smart marina" initiatives by hosting sensors that track energy production, air quality, weather and water conditions, the data streams of which can then inform better environmental management and maintenance planning.

"H.S.S aims to position its solar trees as a flagship product for sustainable coastal living, contributing to the decarbonisation of marinas, beautification of urban spaces and the global movement toward climate-resilient infrastructure," finalised Pidsley. "Meanwhile, Espen Øino's global reputation lends prestige and credibility to the project. His involvement signals that clean energy solutions can be aspirational and aesthetically driven, not just functional."

With growing pressure on waterfronts to become greener, smarter and more user-friendly, H.S.S sees its trees as a natural fit for the future of both luxury and public marine environments.



H.S.S solar trees rendered in Monaco harbour. H.S.S BV