

Solar Tree

design
Ross Lovegrove
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Solar Tree is a light fixture combining an innovative design with the technical performances of LED lighting systems using solar energy supplied from photovoltaic system.

This project aims to combine the reduced environmental impact, especially deriving from the low absorption of fossil fuel-based energy, with the need of ensuring constant working and expected light performances. The operation of this light fixture is not influenced by weather randomness and project changes due to winter periods (e.g. number of panels, accumulator dimensioning). These project changes concerning dimensions and weights would imply higher costs, and however the fixture would not ensure continuous working. In fact hybrid versions are being more and more used in leading sectors. In this direction Artemide has developed the Solar Tree project which, with a mixed configuration of accumulators/solar energy and mains power supply, can combine Energy-saving and functionality at the best.

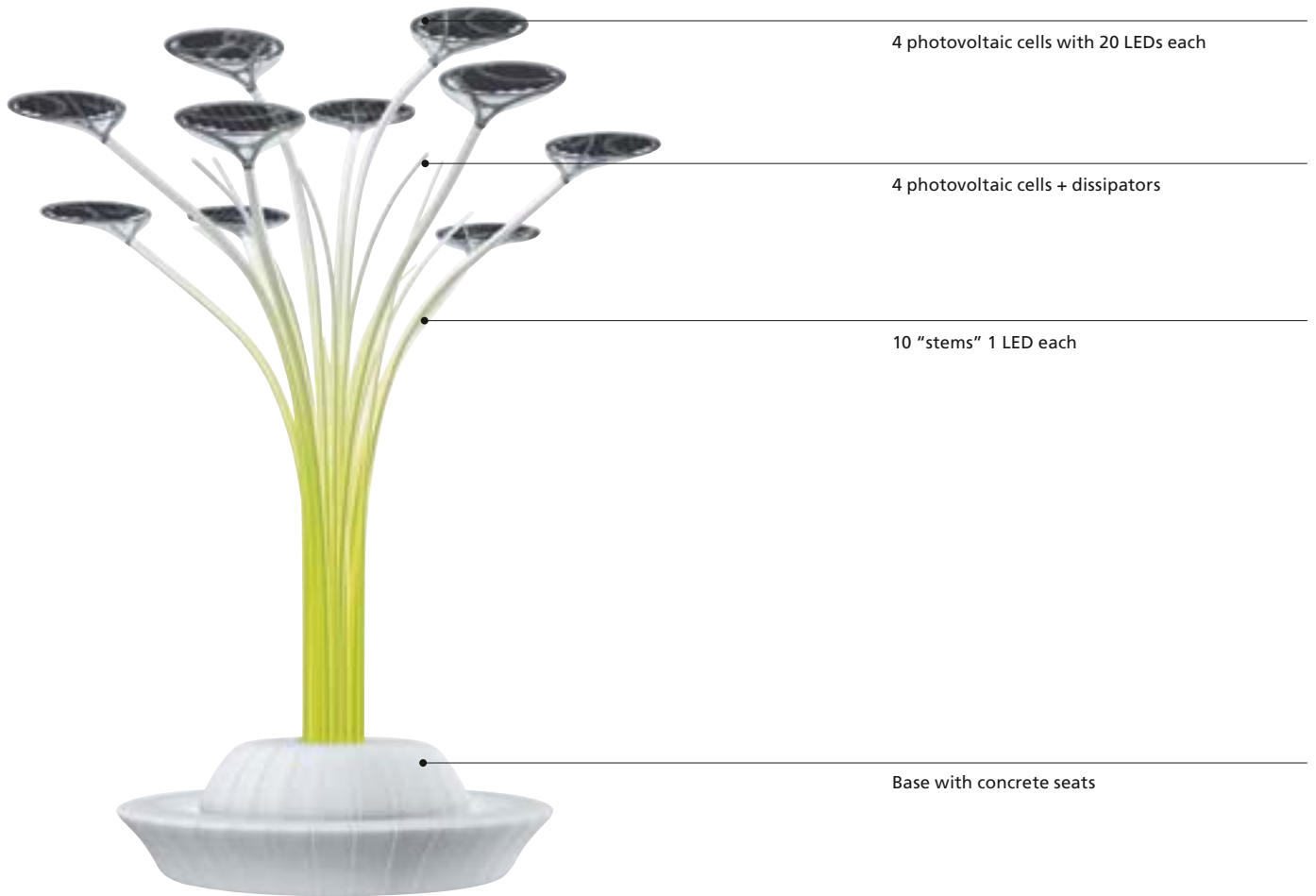


- Structure composed by curved steel poles of different diameters and heights, with a maximum total height of about 5,5m over road level.
- This system is composed by 10 “stems of grass” with 40mm Ø. On their extremity there is 1 LED of about 1 W protected by a diffuser screen in PMMA and 10 poles with 76mm Ø supporting the heads.
The poles are painted with outdoor epoxy paint in light green colour shading into white.
- The 10 heads, housing the photovoltaic cells in their upper part, are supported by poles with a diameter of 76mm; 20 power LEDs, which can be supplied with power up to 500mA and have a white neutral colour temperature, are housed in the lower part of 4 of them, on an aluminium dissipator, and are provided with a screen in plastic material which ensures protection against water and dusts.
- The base is made of hot-galvanized steel plate to be fixed to the ground. Otherwise it is possible to use a base, always in galvanized steel, with reinforced concrete parts forming a circular bench. In this case the base can rest on the ground without need of further fixing systems.
- The connection/wiring parts, the control and recharge boards and the batteries are contained in several watertight boxes, provided with male and female connectors with IP Rating IP65 or higher, placed at the foot of the base or inside the concrete bench, according to the technical specifications of the Solar Tree version supplied.
- Benches in white painted concrete, with second coat of anti-graffiti paint.



Technical data

- Total number of heads with solar panels: 10
- Number of heads with LEDs: 4
 - Installed power for each light head:
about 23.1 W at 350mA (base current drive),
max current drive 500mA.
- 20 power LEDs for each head in neutral
light tonality 4300K.
 - Maximum luminous flux for each head:
minimum 1250 Lm.
 - Solar panel voltage in open circuit: about 10 V.
 - Peak power for each panel: about 63 W.
- Total number of "stems": 10.
 - LED power for each "stem":
about 1 W with a power supply of 350mA.
- 2 Batteries
 - Battery voltage: 12 V
 - Single battery capacity: 240 Ah
- Box with USB connection for diagnostics/
setting/servicing access.
- Technical features of the light fixture in compliance
with EN60598-1.
- IP Rating IP55.
- Insulation class II.



4 photovoltaic cells with 20 LEDs each

4 photovoltaic cells + dissipators

10 "stems" 1 LED each

Base with concrete seats

Working

Solar Tree has been designed to work in HYBRID configuration. The batteries can ensure an autonomous working at full charge for a period of 7-10 days (with an "Energy-saving" working cycle which is described below). Moreover, in case of discharged batteries, the fixture is connected to the mains, which supplies it with energy (by means of a suitable DC ballast connected to the mains). In this way it can ensure a continuous working even with persistent bad weather and/or reduced insulation or 100% use of the light performances or, anyway, in case of negative energy balance.

LED light sources light up in the twilight (recognized according to the hours of dawn and sunset which have been set in the management program or according to other modes) and they remain lit up until dawn according to the working duty-cycle set.

In case of "HYBRID" fixtures, the system uses the energy coming from the batteries until they reach the minimum charge limit, then the system is connected to the mains automatically.

In case of light fixtures with this configuration, if the connection to the mains takes place at the same time when the public lighting, which the Solar tree fixtures refer to, lights up, it is possible to set them so as that the moment of the mains connection is recognized as start for the Solar tree working, and vice-versa in case of mains cut-off.

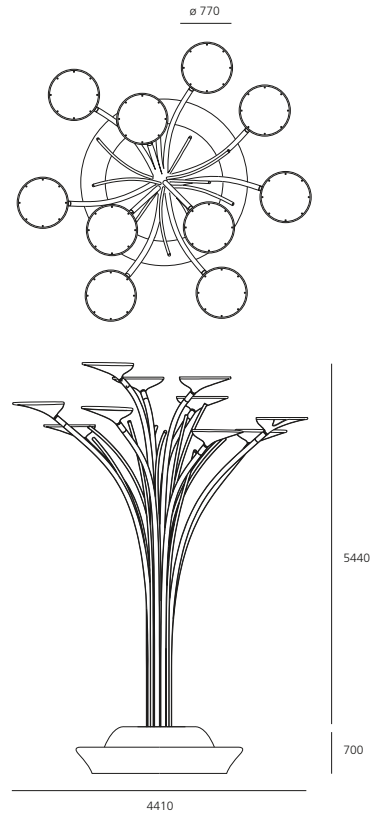




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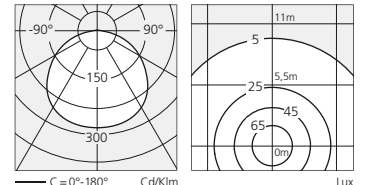
Solar Tree



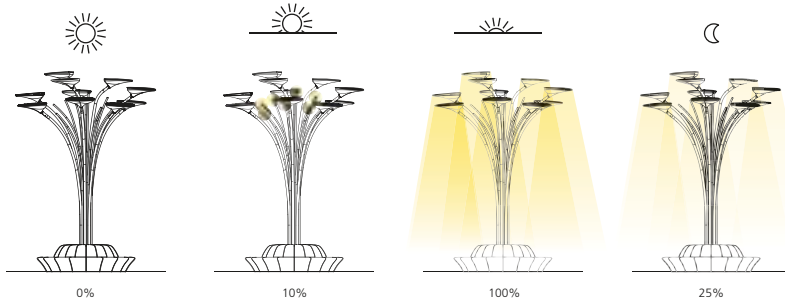
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IP55

	4 LED heads 23W (92W totali)	4300K
	+10 LED stems 1W (10W totali)	6000K
T080600	Lighting units, curved poles, "stems" and batteries	
T080400	Pole support structure + 18 benches	



Light intensity of one head. Flow 1250 lm. Lighting of the whole fixture.



Working programs

Two working modes can be selected according to the needs: Manual and Automatic. Automatic mode can be set with three different configurations according to the performance and level of energy-saving desired for the light fixture. In particular:

Auto Eco

100% working in the hours when the installation areas are expected to be used more often, reduced working of the only LED heads during the hours of full night (the LED light sources are switched on and adjusted at about 25% of their working rating from sunset to dawn in order to ensure a mean floor lighting of 8 lux). This mode is recommended to obtain a continuous working even during autumn/winter and to maintain energy balance.

Auto 100%

Working mode to ensure the complete management of the fixture by considering its performances with respect to a higher input of solar energy (if this condition occurs).

Personalizzato

The user can establish the hours and the working configuration of the fixture according to his needs. The three above-mentioned configurations can be associated to a particular period and they can alternate one another, if desired.

Manual

Can be enabled by the user in case of particular events and/or needs. The user can access the advanced adjustment menu for a 0-100% slicing of the flow emitted by the single LED heads and by the "stem" units. In this way the sources remain lit up and adjusted according to the configuration set by the user until switching off or return to automatic mode controlled by the user.



