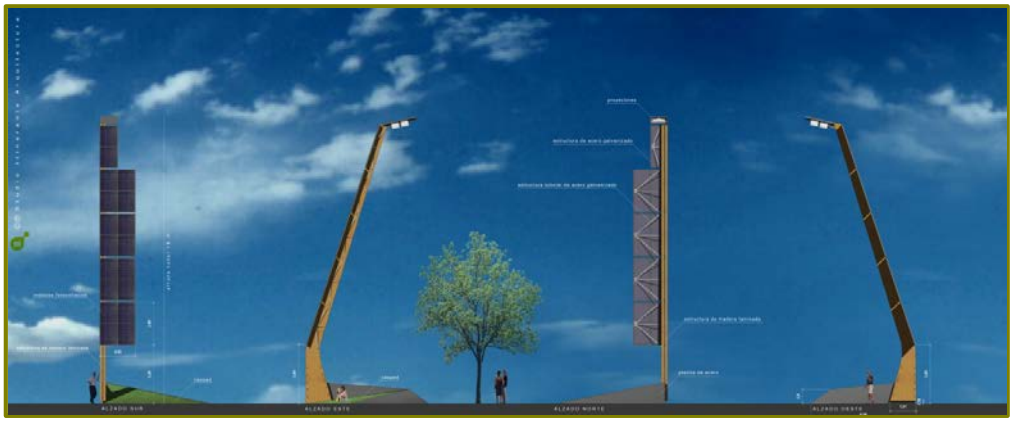


SOLAR STREETLIGHT / PHOTOVOLTAIC PLANT

TOTEM MODEL

The TOTEM streetlight / photovoltaic plant combines a thoughtful, attractive architectural design with energy-efficient solar light generating capacity. As such it is an innovative element for a sustainable urban landscape design.

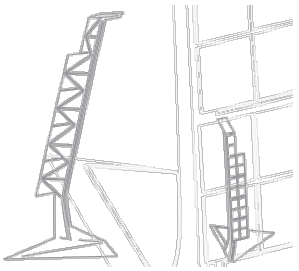
TOTEM functions both as a streetlight and a photovoltaic generation plant. This grid-connected street light is made of a laminated wood, vertical structure 16 meters high.

It is fitted with two LEDs 150 W floodlights located at the apex of the structure and is designed to maximize illumination of the surrounding area. The solar plant is capable of generating 3800 Kwh yearly. All of the energy generated is returned to the local electrical grid.

The energy consumed by the projectors (approximately a third part of the energy generated) is obtained directly back from the electrical grid. The installation has a positive net energy balance of at least 2,700 Kwh as less than a third part of the energy generated is used to power the flood lights.

The sculptured structure of TOTEM provides a semi-defined space beneath which invites people to rest or play, however they desire.
This makes this streetlight highly suitable for urban parks and gardens.

The presence of TOTEM light sculptures in public spaces also helps to reinforce an abiding concern for our environment and encourages an ecological consciousness in the community



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Type of system	Hybrid photovoltaic power plant / conventional lighting system
PV Installation	Maximum power 3420Wp
PV field	18 modules silicium monocristallin 165-190 Wp
Current Inverter	Single phase 220 V Yearly energy generation 3800 kWh (3,5 HSP)
Luminaries	2 LEDS projectors 150W
Structure	16 m high laminated wood and galvanized steel
Foundation	Block of reinforced concrete

PHOTOVOLTAIC FIELD

The photovoltaic field consists of 18 mono crystalline silicon modules of variable power for a maximum power of 3420 Wp. The field converts the solar energy captured into DC (direct current) electrical energy.

CURRENT INVERTER

In order to input generated solar energy into the electrical grid, the capture field is connected to a single phase current inverter. The inverter has a maximum of electricity generation of 3000 W at a voltage of 220-230 V.

REGULATING SYSTEM

The system is fitted with a monitoring device which permits easy access to energy generation data and statistics.

ARCHITECTURAL CHARACTERISTICS

The design of the supporting structure takes into account esthetic, technical and functional aspects of the streetlight in order to optimize both energy generation and lighting of the surrounding area while minimizing maintenance. The supporting structure maintains the capture field oriented south at an inclination of 72 ° to the horizontal, an efficient orientation for yearly electricity generation.

MATERIALS

Laminated wood has been selected as a construction material for both esthetic and bio-architectural reasons.

The energy cost of producing wood is 60-70 Kw per cubic meter compared to 600-700 Kw per cubic meter in the case of steel. Furthermore, laminated wood is an efficient means of sequestering carbon, which helps, in its own small way, to limit global warming. The laminated wood is Scotch Pine produced in controlled fields and treated for exterior use.

STRUCTURE AND LIGHTING

Two 15cm-thick beams of laminated wood of varying width depending on height. The beams are securely bolted to a 25 mm steel plate anchored to a foundation block of reinforced concrete. At a height of 3.5 meters, the beams incline to an angle of 72ffl to the horizontal. Lattice of steel tubes flattened at their extremities to form anchor points for the tensors used to support the frame of the photovoltaic modules. The photovoltaic panels are fixed to a frame sustained by two welded steel profiles. A structure made of galvanized metal and located at the apex of the street light supports the two luminaries.

The structural steel plate which anchors the wooden beams is also designed to simultaneously serve as a park bench