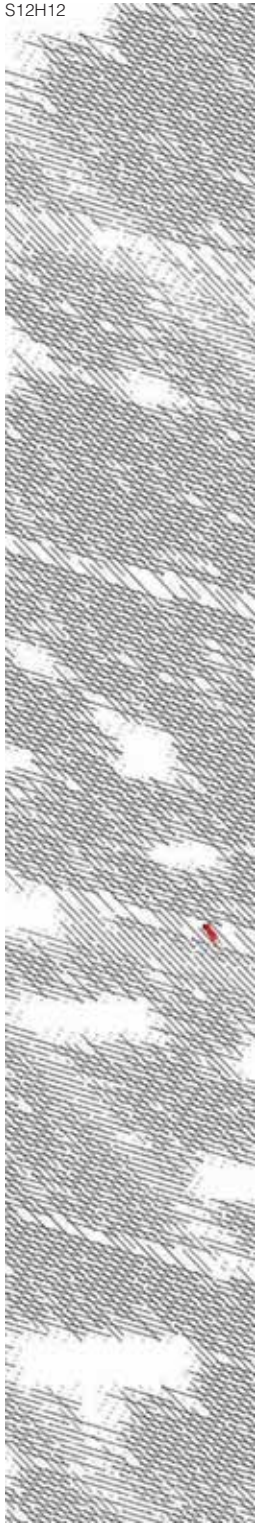
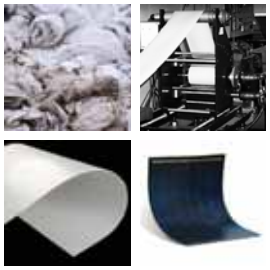


Site 3 Abu Dhabi: Airport Road, near the Masdar City site

NET

Recycled Plastic Woven Structure (LDPE) with Amorphous Flexible Solar Films



LDPE (Low-density polyethylene) is a thermoplastic made from petroleum. It is widely used for plastic bags, containers and is also common source for agricultural covering films and bale wrap. LDPE scraps can be 100% reprocessed and recycled into architectural materials such as plastic plywood and thin plastic sheets (Baleboard and Nusheet are the end products in the market manufactured by *Think Plastics Inc.* which has leading technology in processing LDPE wastes. Refer to http://www.thinkplastics.ca/.)
The recycled LDPE sheet is off-white flexible plastic available in three thicknesses: 1/8", 1/4" and 3/8" with 4' x 8' dimension.

It is a thin net of off-white plastic sheets (Recycled Low-Density Polyethylene). From a bird's eye view, it appears like a white curving fabric floating slightly above the earth. Dispersing sunlight under the UAE's strong sun radiation in the daytime, this vast surface area of plastic gives a viewer the illusion of it (the surface) being surrounded by a dim haze of light.

The horizontal space under the plastic structure is approximately 0.56km long and 0.25km wide. The texture of the net is mostly dense and homogeneous, but in parts, relatively loose and sparse so that it creates a different sense of space with the difference in the amount of light coming in.

A number of 3 to 4m high Y-shaped supporting metal structures uphold the net, standing on the ground. These vertical elements are arranged keeping relatively consistent intervals, producing similar rhythm of natural woods. With the existing enclosures (a thin layer of woods and highways circulating around the perimeter of the site), these broad and wide artificial installations blend with the existing landscape as if there exists two different woods: woods within woods.

The net is 0.28m thick. It is a woven structure of LDPE plastic sheets. It is an aggregation of a single plastic unit (0.28m high x 2.5m long x 0.03m thick) assembled horizontally. Each has five 0.03m wide and 0.14m long slots; a slot of a unit is set in that of the other. A number of sheets are fixed to each other in the same way and transformed into an open canopy structure.

The vast artificial surface is a thin and transparent layer where people encounter and sense the environment. The thousands of openings created serve as a frame and a new lens through which viewers can look up and observe the various chanes of landscape. The movement of the sun is seen through lozenge-shaped rooms between plastic sheets and the setting sun is felt by the changing shadow pattern on the ground. Local birds may come down and stay on the net for a while or build their nests on the structure.

Small and low soil mounts are distributed on the site. These viewing platforms are placed where the fabric of the net is sparse so that people can mount on that platform and have a view over the wavy plastic surface. Stretching out their head above the net, visitors may see glaring white light reflected from plastic sheets like looking over clouds in the sky.

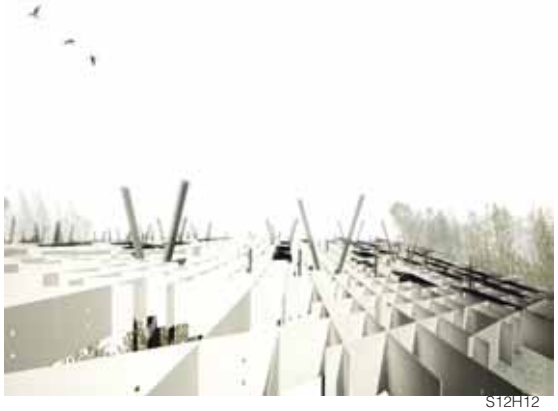
An amorphous solar film (20W, 17.5V, 1.275m x 0.385m, 0.90kg) is bendable due to its extremely thin (less than 1mm thick) and flexible characteristic. The photovoltaic units are mounted on the curving surface of the net maintaining the units' faces perpendicular to the sun. The eight 0.018m diameter holes are made on each plastic sheet for consistent detailing method for any kinds of attachment to the structure. Disposable plastic fasteners (tie straps) can be used to tie the attachments such as solar panels, LED lights and electrical wires to the structure. Those electrical devices are exposed to the atmosphere but not reachable from the ground andare protected by additional finishing materials; a transparent plastic tube wraps round a supporting structure where electrical wires from photovoltaic units on the roof pass down and connect to an electrical grid on the ground.

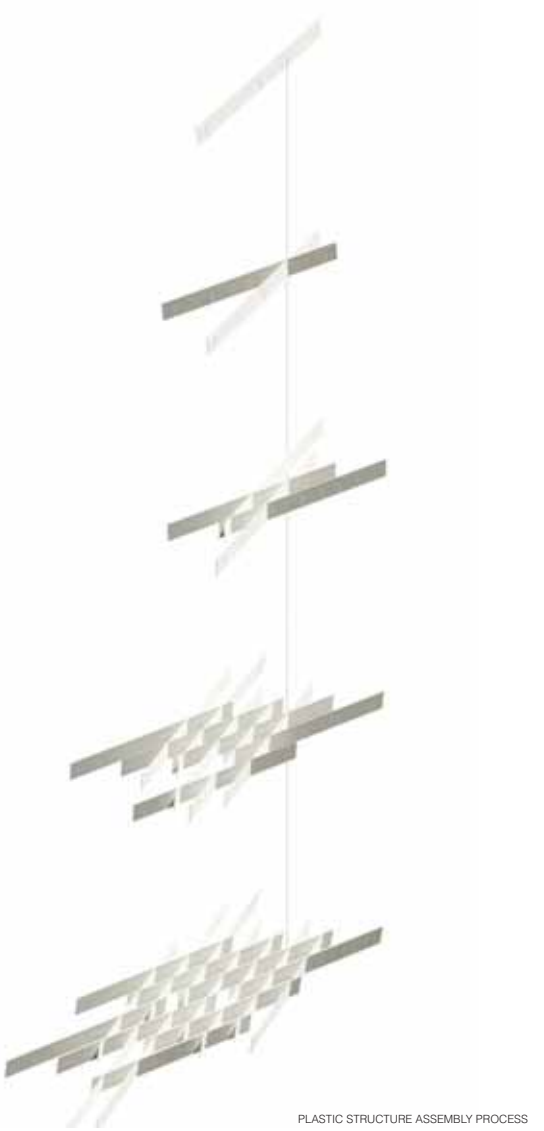
Some solar panels are connected directly to bar-type LED lights (not to the electrcal grid) and work autonomously with a Light sensor and a controller set next to them; storing solar energy in a Lithium-ion rechargeable battery in the daytime and emiting light at night. A Light sensor makes it turn on and off automatically according to the sensed ambient illumination. For example, when it falls below 13LUX, the light comes on and when it exceeds 50LUX, the light goes off. LED lights suspended by plastic straps turn on at places and render another distinctive landscape of light in darkness.

With around 3,200 amorphous solar units installed on the net, the installation has a capacity to generate 50Kwh clean renewable energy (around 75MW a year) which will be delivered to an electrical grid and used for Masdar City nearby.

Architecturally, it is a field under a wide canopy structure where meetings and events such as a market can take place. In the daytime, the area is open and both residents and tourists can access and wander around enjoying open air activities. At night, with the LED lights on, the still environment will convert into a place for a festive event for anyone.

The disassembly process is the reverse of that of the assembly. Plastic sheets can be taken down from the supporting structures, taken apart, and reassembled and reused in other places.





PLASTIC STRUCTURE ASSEMBLY PROCESS

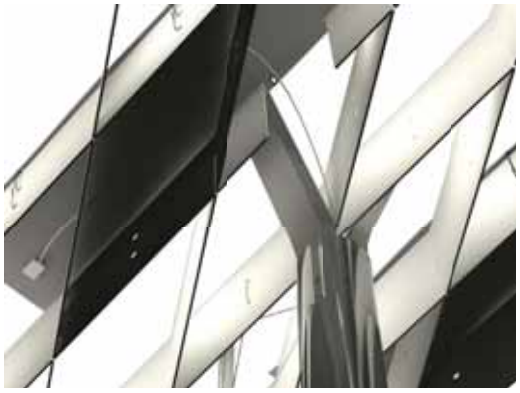
STRUCTURAL PERFORMANCE

ON-SITE CONSTRUCTION PROCESS

DETAILING - EIGHT 0.018m DIAMETER HOLES ON PLASTIC SHEET

DETAIL 1 - AMORPHOUS SOLAR PANEL ATTACHMENT TO PLASTIC STRUCTURE

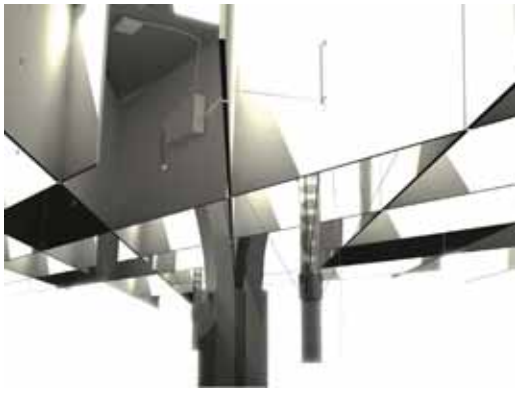
Amorphous solar film (20W, 17.5V, 1.275m x 0.385m, 0.90kg) + Plastic fastener



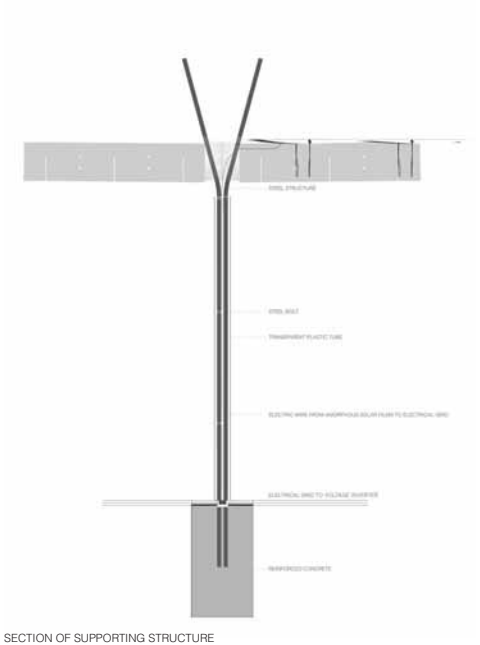
DETAIL 2 - ELECTRICAL WIRES FROM PHOTOVOLTAIC UNITS ON THE ROOF
PASS DOWN AND CONNECT TO ELECTRICAL GRID ON THE GROUND
ADDITIONAL FINISHING MATERIALS; A TRANSPARENT PLASTIC TUBE WRAPS
ROUND A SUPPORTING STRUCTURE

DETAIL 3 - LED LIGHT ATTACHMENT TO PLASTIC STRUCTURE

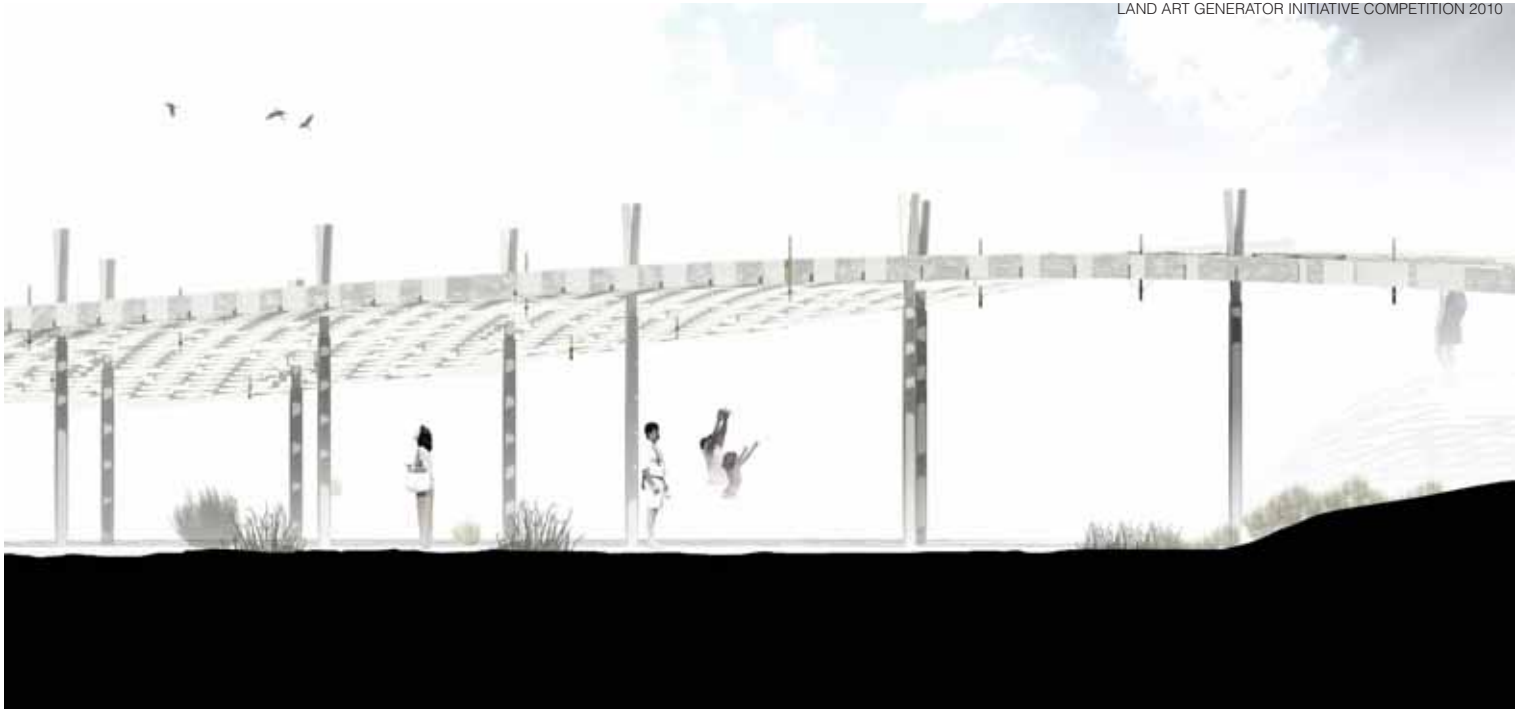
Bar-type LED light + Plastic fastener



DETAIL 4 - AMORPHOUS SOLAR UNIT CONNECTED TO LED LIGHT
WITH A LIGHT SENSOR AND A CONTROLLER



SECTION OF SUPPORTING STRUCTURE



VIEWING PLATFORM / SOIL MOUNTS