

FORM AND FUNCTION

Photovoltaic Canopy

A canopy of photovoltaics in an eight-pointed star pattern suspended at the height of adjacent buildings to maximize solar gain double as climate modification infrastructure, casting a delightful cool shade of arabesque geometric patterns upon the public gardens and pedestrian boulevards below. Covering an area of 12800 m², the solar canopy generates 3367523 kWh/year, under average site conditions, enough to electrify 80 conventional households, and 133 sustainable households.

Geometric Form/Framework

The entire design is generated from the arabesque pattern of the eight-pointed star, an abstract representation of both the cosmos and fundamental biomorphic form, a conceptual bridge between the physical and spiritual realms.

Fog Harvester

The fog harvester’s hydrophilic mesh membrane captures atmospheric moisture on foggy days, and its tree-like biomorphology, derived from the eight pointed star geometry, conveys and concentrates atmospheric moisture in a collection pool in the ‘cooling pavilion’ below. With a surface area of 1168 m² of hydrophilic mesh membrane, the fog harvesting tree can capture up to 20 l/m²/day or 23376 litres/day. Although in this scenario, harvested water is intended for public recreation and he irrigation of an oasis garden, for the purpose of comparison, 10 fog harvesting trees can meet the water consumption needs of 29 conventional households, and 48 sustainble households n the UAE.

Cooling Pavilion

The pavilion evokes the pavilions of traditional Islamic gardens, where the cooling effect of water promotes social gathering and interaction, functioning as gateways from the pedestrian corridors into the garden.

Irrigation Runnel

Drawing from both lexicons of the Islamic four-quartered garden, and vernacular irrigation systems such as the falaj system, a hybrid pedestrian circulation-irrigation system distributes water across the garden, while facilitating cross-connections, and access to a number of reflective pools.

Sand Filter

The sand filter polishes domestic grey water for irrigation. It is aligned with pedestrian corridors.

Drainage Swale

The drainage swale collects runoff predominantly from rainfall, and stormwater runoff from adjacent hard surfaces. Furthermore it facilitates the movement of small mammals through Masdar City’s ‘green fingers’ park network, below pathways and roads.

