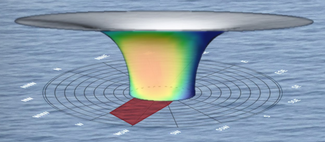
WIND SKIN

With tool of fluid dynamic software, the canopy perforated skin is designed to generate a gradual pattern that allows to identify zones of high wind presure and place 1100 mm diameter Compact Wind Acceleration Turbine (CWAT).
This type of horizontal axis wind turbine with a cone increase the velocity of the wind as it passes through the rotors sweep area performing the efficiency in X2.5 of the overall system.



High wind presure
Mid wind presure
Low wind presure

WIND CALCULATION
Scheme WSW Orientation Annual Average

CALCULATION RESULTS: Turbine location

Orientation	Diameter	Quantity
WSW	Ø 1100 mm	350
NE	Ø 1100 mm	70

The strategic location of the wind turbines after the railing and separately from the water line makes it safe to the public and to the natural environment.

OUTER SKIN EDGE Ø 1100 mm

INNER SKIN EDGE Ø 1100 mm

+

WAVES RING

At the base of each canopy there is an encircling element with radius - depending of the scale of canopy- of 14 mts. This ring has the capacity of produce energy at same time that acts as a protection against big waves to the canopy structure, as well as being a place to rest for the local fauna.

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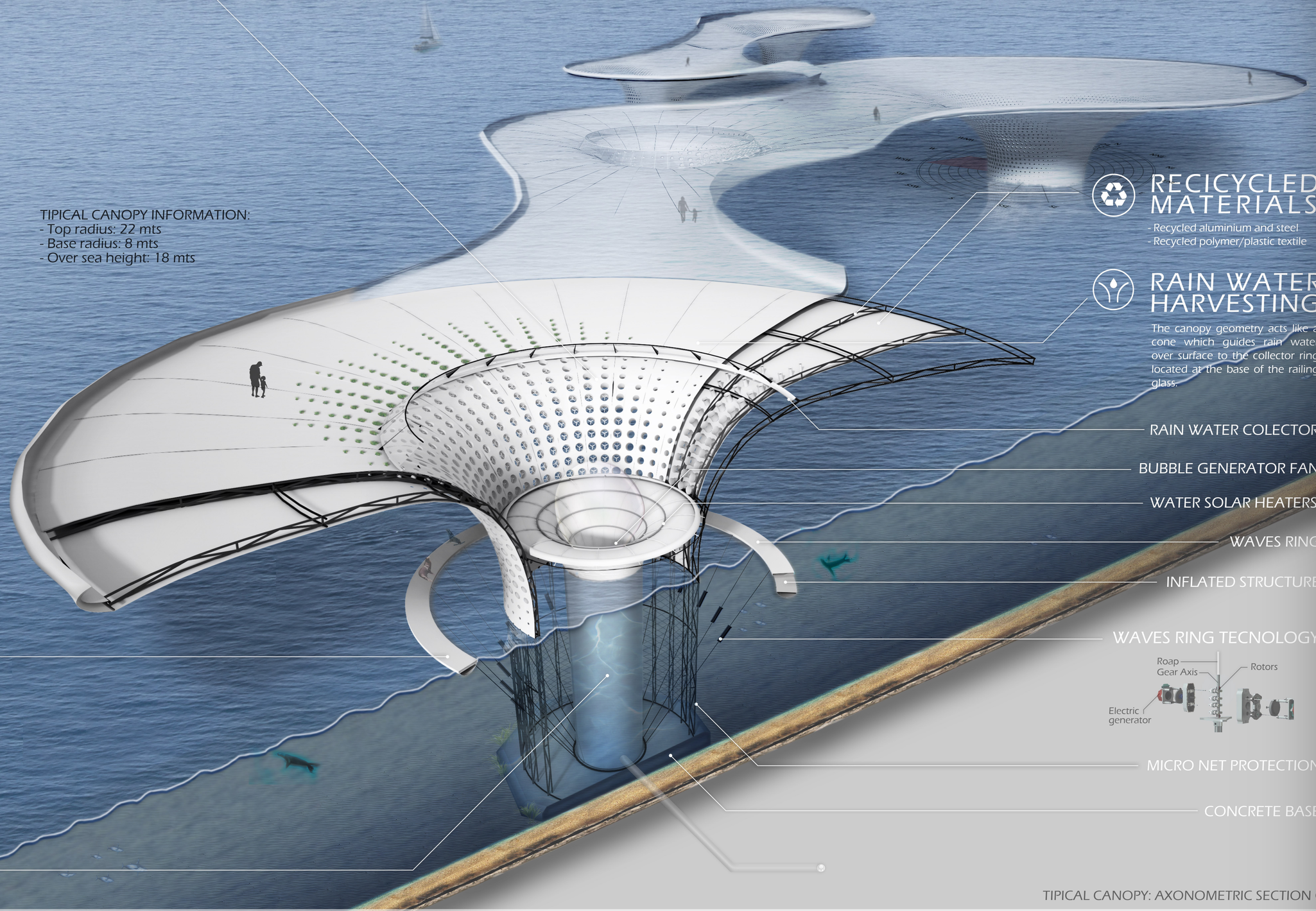
HYDROGEN TOWER

TIPICAL CANOPY INFORMATION:
- Top radius: 22 mts
- Base radius: 8 mts
- Over sea height: 18 mts



RECICYCLED MATERIALS

- Recycled aluminium and steel
- Recycled polymer/plastic textile

RAIN WATER HARVESTING

The canopy geometry acts like a cone which guides rain water over surface to the collector ring located at the base of the railing glass.

RAIN WATER COLECTOR

BUBBLE GENERATOR FAN

WATER SOLAR HEATERS

WAVES RING

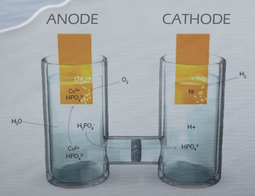
INFLATED STRUCTURE

WAVES RING TECNOLOGY

MICRO NET PROTECTION

CONCRETE BASE

TIPICAL CANOPY: AXONOMETRIC SECTION CUT



HID TOWER ELECTROLYSIS SCHEME

The proposal aims it's not only about getting, it's also about stocking energy. For this goal HYD CANOPIES considers the possibility to stored energy as hydrogen gas using sea water as the only product required during production and pure water as the only byproduct output during consumption.

$$ + H_2O = H_2 / O $$

Hyd Tower located in the center of each canopy has two containers tanks, one equipped with a cathode – negative polo of electric power- and the other with an anode – positive pole of electric power. Sea water is pumped inside the containers and electric power goes through the cathodo and anode, resulting in Hydrogen gas at one tank which is stored and pure oxygen at the other tank which is released to the atmosphere transported inside a biodegradable detergent bubble.

At temperature over 50º, the electrolysis process is more energy efficient, so the head of the Hyd tower is equipped with a water heater which uses the sun solar rays to elevate temperature of water before getting inside of the tank.

At last, the Hydrogen gas stored can be used to power hydrogen fuel cells to satisfy homes energy demands, or also can be applied in the transportation industry motivated by both the depletion of fossil fuel resources and the need of drastically reducing the carbon emissions that affect the climate.

HYD CANOPIES