Conidaria Halitus

SUN LIGHT

FRESNEL LENS		
STEAM		
METAL ALLOY TUBE COATED WITH HEAT SELECTIVE PAINT		
METAL ALLOY BOILER WALL COATED WITH HEAT SELECTIVE PAINT		
BOILER		
VACUUM (INSULATION)		
CONDENSATE		
POTABLE WATER COLLECTED THROUGH "TENTACLES"		
SEMI-RIGID STEM		
SEA WATER SUPPLY		
BRINE RETURN		



The axis of the fresnel lens and the collector is always tracking the sun in its daily and monthly trajectory across the sky, maximizing heat collection and absorbing about 7.4 kWh/m2/day.

Corrosion resistant metal alloy plates coated with a heat selective paint are connected with pipes through which the water flows and evaporate. The plates maximize the absorption of solar radiation, while minimizing emissivity around the pipes. This energy is transmitted by conduction to the water in the pipes which evaporate and turn into vapor. The heat is thus concentrated in a very small volume of water that evaporates and travels to the sides of the Fresnel lens where it is ejected inside a double skin.

The boiler itself consists of a double glazed envelope, vacuum in between, that allows solar radiation concentrated from the Fresnel lens to enter it, while reducing conduction losses, much like an evacuated tube collector. The lower part of the boiler is coated with a selective black paint that increases absorption of solar radiation while its low emissivity an additional insulation keeps the heat inside reducing heat losses to the exterior.

The external surface is an ultra-lightweight transparent fabric that expands with the water vapor, still allowing maximum solar radiation on the boiler. The vapor condenses towards the bottom and falls by gravity and distributed to the city.

Sea water is transformed into potable water, relying almost completely on solar energy and without using any non renewable energy at all. The water is filtered and collected from the ocean through a centralized system of pipes that pump it to the interior of each of the boilers located at the focal point of a Fresnel lens. SMS33320

Radiation Study
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