SOLAR CLOUD
Lighter than air solar collectors

ENVIRONMENTAL IMPACT

Technological, medical and social improvements have allowed humanity to develop at a pace without precedents, expecting a population of over 10 billion people in 2100. However, technological improvements are increasing our energy demands, making us dependent on large amount of terrain outside our settlements. This makes of land optimization a key for our future cities.

Eric W. Sanderson calculated in 2002 that 83 percent of Earth's land surface is directly influenced by human activity.

As an answer to these challenges, a "Solar Cloud" composed by modular balloons that uses the combination of air and sun as the only lifting force is proposed. By creating buoyant clouds we achieve two things in one gesture:

-To create a buoyant cloud that allows its owners to save space wherever is located. The "Solar Cloud" works only when is needed – with solar exposure. When the sun rises, the units that form this cloud lift by absorbing solar radiation. When the sun goes down, as every solar collector, becomes impractical. Therefore the units come down and are stored in a minimum space thanks to its material flexibility.

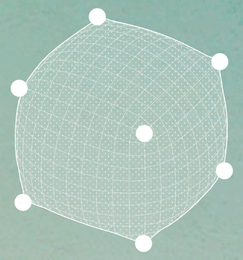
-The greenhouse effect produced by the absorption of solar radiation allows the cloud to lift up to stratospheric levels with the use of air and sun, avoiding the usage of complex technological systems that would require more energy consumption. In addition, at stratospheric levels, the project is able to recollect almost four time more energy than standards solar collectors.

The modularity of the project allows it to grow up to any scale, making it adaptable to feed the energy demands of any settlement. Its buoyancy, allows the cloud to act as a nomadic element that can deliver energy to any settlement, cast shadows where is needed and even combat global warming by reflecting solar radiation back to space.

MODULARITY

The "Solar Cloud" is composed by a series of solar balloons in order to enhance its modularity and replicability. Moreover, this modularity makes the entire system resilient to possible damages – if one balloon breaks, is supported by the entire cloud.

An array of balloons will be composed by joining them through its vertex. Like this, we leave the faces of the units free for the sun to pass through.



Units = 14
Cloud 7= 7560 MWh/year

Units = 10
Cloud 4 = 5400 MWh/year

Units = 7
Cloud 5 = 3780 MWh/year

Units = 73
Cloud 3 = 39420 MWh/year

Units = 9
Cloud 6 = 4860 MWh/year

Units = 8
Cloud 2 = 4320 MWh/year

Units = 25
Cloud 1 = 13500 MWh/year

Stationary generator coils

Solar Energy

Tidal Energy

Water Harvesting

KXYZ2846