



Sun's rythm

We live nowadays in an era marked by pollution, global warming...etc. Going back to the roots and using natural and green ressources for producing energy is the best way to maintain durability , save the ecosystem and protect the environment .

The structures designed for producing energy could be attractive, unique and can even mark the urban design of the city and become an artwork. All we have to do is think out of the box.

'Helianthus' known as sunflower has been our first inspiration to build our concept. These species actually face the sun as ti rises in the east and follow it across the sky until it sets in the west in order to convert the light energy into chemical energy that can be later released to fuel organisms' activities. This process is called photosynthesis.

Our artwork structure represents an abstract and simplified form of the sunflower shape.

The top part of the structure ,where the solar panels are placed, is not stable; Thanks to a rotation system, the structure is in a permanent search for sunrays and therefore the daily and annual production of energy are increased.

The sunflower structures will help ponctuate the urban space and will give an artistic and harmonious rythm to the city.

The artwork is made of cast iron topped with monocrystalline solar panels .

The cast iron is a bearing material. It is less expensive than the steel and practically has the same properties.

Cast iron could be fully recycled to produce products of equal integrity to the product it has been recycled from: This makes it a very sustainable material that helps achieve a highest environmental ratings. Besides, cast iron is known for its durability and long life. It is also a modern material which allows to have a better integration with modern buildings in Masdar city.

The estimated amount of clean energy produced by the artwork

We have chosen solar energy as a renewable energy because it is the most abundant and present green energy in Abu-Dhabi.

*solar panel chosen : -Type = monocrystalline

- Area= 1.5 m^2

- Power= 24 W

*Total area reserved for solar panels = $25\,700.900 \text{ m}^2$

*Number of solar panels used=

$25\,700.900/1.5= 17\,134$ panels

*Energy produced=

$17\,134*24= 411\,216 \text{ W.P}= 411.216 \text{ KW.P}$

*Annual energy produced=

$411.216 * 10 * 365 = 1\ 500\ 938\ \text{KWh} = 1500.938\ \text{MWh}$

= **1500 MWh**

10 is the number of hours of sunshine in Abu-Dhabi

The estimated cost of the artwork

*Sunflowers area= $8541\ \text{m}^2$

*Price of cast iron= $0.14\ \$/1\ \text{Kg}$

And we have $1\ \text{m}^3$ contains 6800 Kg

⟹ $6800 * 8541 = 58\ 078\ 800\ \text{Kg}$

*Price of the cast iron used in the project=

$0.14 * 58\ 078\ 800 = 8\ 131\ 032\ \$$

*Price of solar panel chosen= $0.2\ \$/\text{Watt}$

*Total price of solar panels used=

$0.2 * 411\ 216\ \text{W.P} = 82\ 244\ \$$

The cost must not exceed $20\ \$ * 411\ 216\ \text{W.P} = 8\ 224\ 320\ \$$

and we have as total estimated cost=

$8\ 131\ 032 + 82\ 244 = 8\ 213\ 276\ \$ < 8\ 224\ 320\ \$$