**Breathing Totems**

**Project description:**

The symbolic and spiritual representation of the totem added to the innate action of breathing of all living beings, personifies the soul of this project. The simple act of breathing rises to a higher category when this action leads to a purifying result.

This project aims to generate a reflection scenario for the community and its visitors through a congregation space where the symbology and the analogy of the inherent actions of life make us think about the importance of taking care of our natural environment and present us the need to live in an equitable and balanced way with the planet.

“Breathing Totems Square” is presented as a new urban scenario that invites to the social interaction of the community through a space of entertainment and learning for the citizens. This space has the capacity to adapt itself to the changing conditions of the environment, generating a comfortable micro-environment for the visitors throughout the year.

The ability of the system to understand the fluctuating characteristics in the natural environment makes it capable to adapt itself in an efficient way so that the renewable resources of the environment can be used to generate electricity.

Under this premise the project can generate energy and a comfortable space for its visitors throughout the year as follows;

***"During the summer, at day"***

*Energy production system – Thermal chimney*

The radiant sun is reflected in the protective membrane of the public square, visitors benefit from the shadow projected by the opalized roof in ETFE (Ethylene Tetrafluoroethylene). The reflected sun rays heat the 3 metallic spheres at the base of the totems generating heat energy that is easily transmitted through the metal surface of the totems which in turn heat the air inside. The hot air inside the spheres rises through the tubular ducts of the totems towards the turbines in the upper part making them move to generate energy. Likewise, the hot air ascending inside the totems generates a vacuum in the lower part, causing the air found in the square to be sucked through the lower perforations at the base of the totems benefiting this space from a natural system of fresh air due to the continuous circulation of it.

***"In summer at night"***

*Energy production system – Wind power & Thermal chimney*

The wind coming from the coast passes through the turbines at the top of the totems, the hot air that still accumulates, but with less force, inside the totems makes the turbines move equally producing energy.

***"In winter at day and night"***

*Energy production system – Wind power*

The force of the wind moves the energy generating turbines, the membrane on the square protects visitors from the wind generating a more comfortable micro climate inside the space, allowing cultural and social activities to take place in the plaza despite the cold weather of the winter season.

***"Throughout the year, at day and night"***

*Air purificación – Air ionizer technology*

Although the square is located between vehicular roads that are a source of pollution for the air, the project proposes the creation of a large green areas surrounding the ring of the square. The totems in the center of the ring of the square absorb the surrounding air, cleaning it by means of the ionized surfaces inside the totems that capture the toxic particles in the air.

The surfaces are ionized naturally by the static energy inherent in the system result of the movement of the energy generating turbines. The clean air filters outwards while the toxic particles captured, by the weight of the accumulation and gravity slide on the interior surfaces of the totems until they accumulate at the base of them.

**Amount of Energy produced:**

**Wind power energy production**

Vertical axis turbine with 2.50mts diameter = 3703kWh x 40 turbines = 148120kWh (each totem)

148120kWh x 3 totems = 444360kWh

Annual Capacity = **444 MWh**

**Solar Thermal Chimney energy production**

Totem turbines (air suction) = 120000kWh (each totem)

120000kWh x 3 totems = 360000kWh

Annual Capacity = **360 MWh**

**Total amount of energy production annual approximately:**  **804 MWh + Air purification**

Each of the totems are maximum 100 meters high with a base that does not exceed the 20 meters. The protective membrane of the semi-translucent square allows visitors inside to see the nature of the surrounding park while “protecting” them of the external environmental conditions according to the time of year. Three metallic needles of no more than 2.50m of diameter and 100 meters of highness (the highest), extend to capture the winds and channel the warm air that comes from the inside of the spheres. The steel structure and the totems surface in aluminum magnifies the conductivity of the caloric energy. Both structures, because of the materials, are low weight easy to build and dismantle

The pink paint of the structures emulates the characteristics of color of the lungs. This, makes them have a high and significant value and easily recognizable structure in a special environment that reflects tranquility, inviting to reflection.

**Environmental impact**

The Project itself proposes a large park in which the areas that were previously hard and grey are now areas that become soft and green because of the nature that brings joy and life to the space. The structure material of the roof of the square and the totems (steel) is easily recyclable as is the aluminum that covers the surfaces of the totems, which are also easily dismantled materials.

The system not only generates energy but also has the added value of cleaning the surrounding air. Taking into account this characteristics, it is possible to say that the project has a low environmental impact.