WINDSHAPE /Narrative text

WINDSHAPE is situated in Refshaleoen, a small peninsula attached to the city of Copenhaguen previously used for yardship and industry. The site benefits to an unobstructed panoramic view which permit to be easily seen inter alia other shore of the city. We used this advantage to make people come to this place and to transform this unused site to an attractive landmark of Copenhagen. Due to marine stream and the abscence of obstacles, the site benefits naturrally to a very good input of wind, this all year. Thus, WINDSHAPE is using its asset to produce power.
The purpose of this project, besides create energy, is to demonstrate that it can be playful by changing radically our perception of space and its uses.
WINDSHAPE project is a srim of 302 poles which each support severals voils. Thanks to *Piezoelectric* textile systems, wind speed is transform into energetics. Humans are also a part in the processus of making energy, their action triggers dynamo mecanism as well. According to the wind direction, the project will fallow naturally the breath and the site will be reshape and transform. If the wind is changing, all the site will be in movement. More the project move, more energy is produce.As the wind can breath 360° and can change quickly, the visitors can enjoy the site everyday in a different way and have a different experience every time they comes because it will never look the same as their last visit.

Because we wanted people to be part of the process, the dimensions of each sails panels is imagine with human ratio. They permit sometimes to hide yourself completly or just to let your gaze observe the other people. The site can be turn to a very intimicy place but also in shared public spaces.
Some part of the design are voluntary attached and cannot rotate to create a passage through the site passing to the entrence and to the taxi boat station. The other are tottaly free but can be set to the ground by user if they want to modulate the space.
The shape and the appearance of the site is always changing ,thus , it encourage people to come more often. The concept is playful for all ages and can create spaces for many utilities (play sport, take a nap, have snack, party at night ...)

Severals factors justify the design of the voil. Analysing the wind, we had to find the good balance between strenght and lightness structure. The main inspiration for it was how windsurfing voil are made. A succesion of differents kind of layers (aramid fiber scrim and mylar protection) turn it very strong. The sails are designed as a real voil including nanofibers with *piezoelectric* properties which convert the kinetic energy into electricity. Because we wanted people to be part of the process, the dimensions of each sails panels is imagine in adaquation with human ratio.

The project produce energy in three different ways: Human action, *PiezoElectric textile system* and Dynamo System. Each poles have a dynamo system to produce energy when the wind make them rotate.
On the pole there are differents horizontal arms, which can rotate in a autonomous way and are a support for sails which are made of *Piezoelectric* textile. Effective 365 days a year, this system augment its profitability in winter when the wind blows stronger, longer and in a more irregular ways. Using renewable materials and promoting new technology unknown by the major part of the public like *piezoelectric* system to produce a green energy is aim to make people try understand that their is plenty of way to harvest the surrounding element power. This *piezoelectric* textile structure provides an estimate output powedensity in the range of 1.10–5.10 μW cm−2 at applied wind pressures in the range of 0.02–0.10 MPa. As additional contribution the dynamo system have an estimate output power density in a range of 0-3.5W for a speed rotation between 0 and 7 km/h. *LED* lights system are located in the poles and light softly the site area at night, make it visible form the other shore and become a reminder of the power of copenhaguen wind.