

# 'HYGGE' POWERING PROJECT

Refshaleoen – Copenhagen

## Materials

## Environmental Impact Statement

By adapting the Venturi effect concept from the INVELOX technology by Sheer Wind Inc. Different sizes of towers captures different amount of wind. Each tower consists of four-inverted hollow L-shaped duct that capture and compressed wind to the inner turbines.

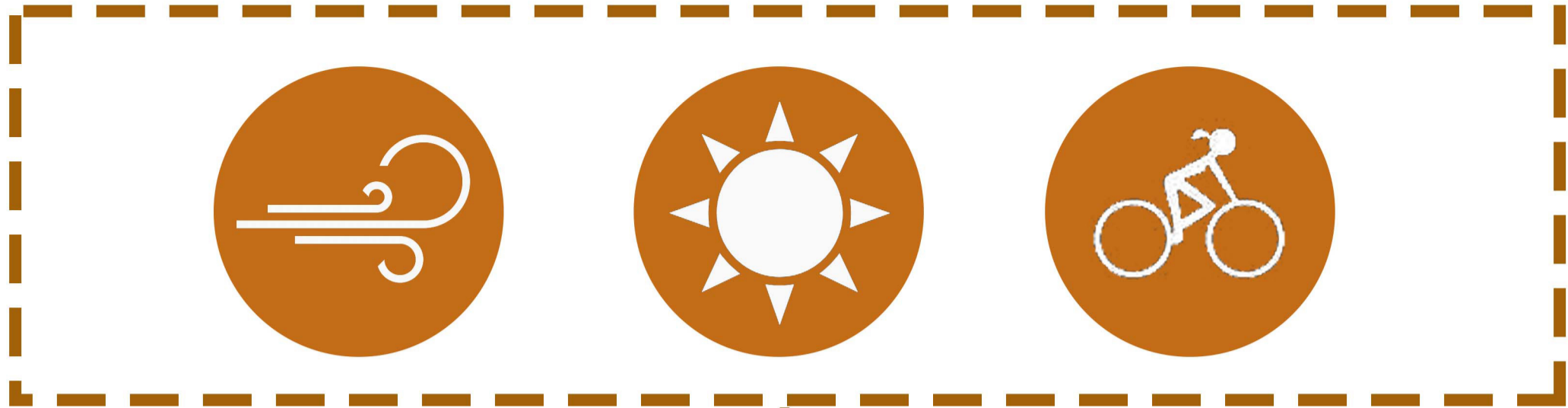
With an average wind speed on site is 4.77m/s, the wind shaft increase four times of captured wind speed which is 20m/s to the wind turbines.

The Main East Tower consists of 36 turbines in each L-shaped duct which total up to 144 turbines per tower. Three smaller towers has 24 turbines in each L-shaped duct which total up to 96 turbines per tower.

In East Tower, assuming a small wind turbine with one 0.5 m blade produces an average of 120kWh annually, which is 17280kWh. North, South and West Tower with one 0.4 m blade produce an average of 100kWh annually, which is 28800kWh. On site, four towers produce a total of 46080 kWh annually.

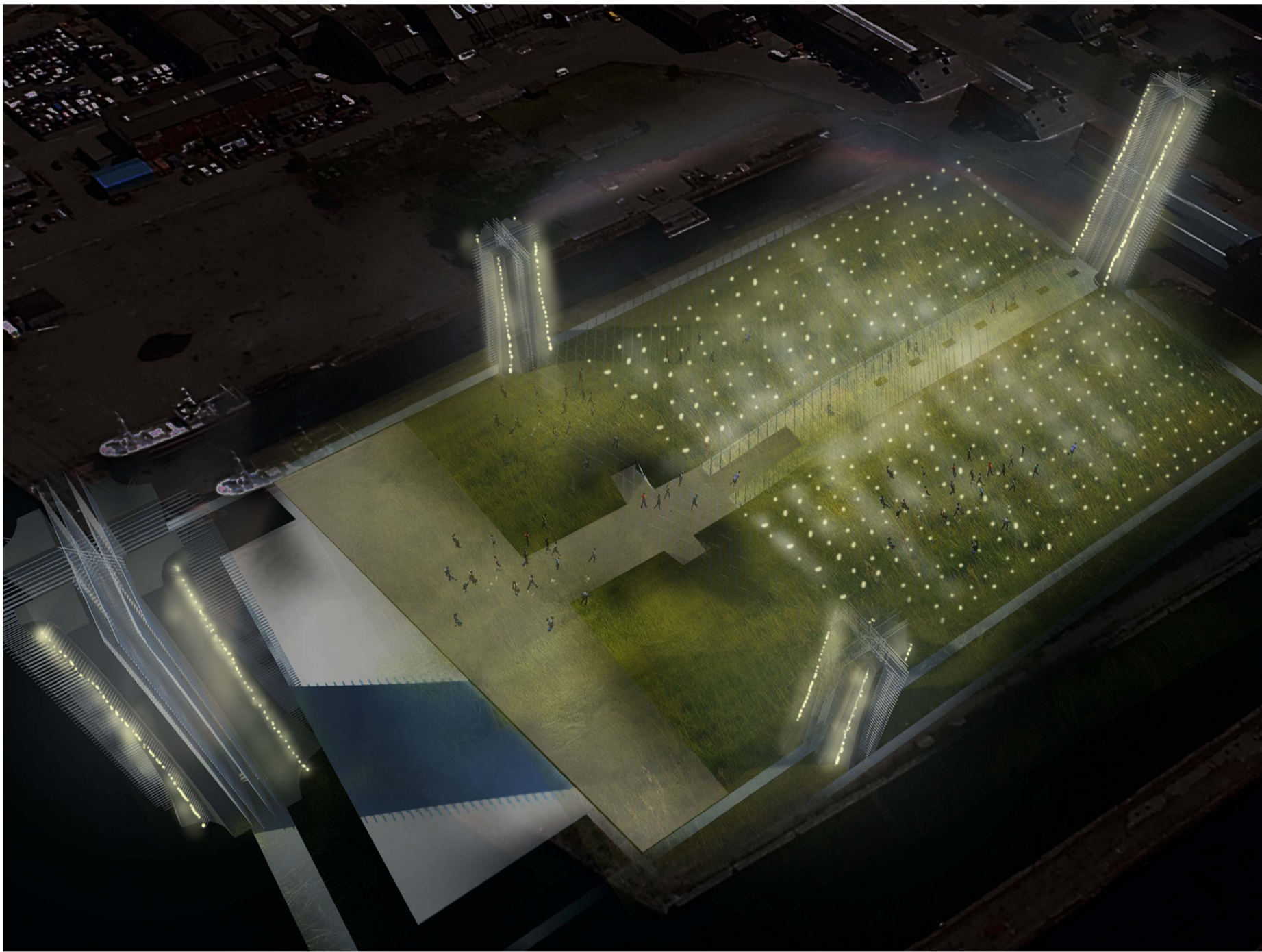
A total of 100000 piezoelectric needles with one produces 0.5 kWh that built up the exoskeleton of the towers will produce an average of 50000 kWh annually.

Assuming 890KWH per house,  
All the above summing up a total of 96080kWh which approximately contribute to 107 houses in Copenhagen annually.



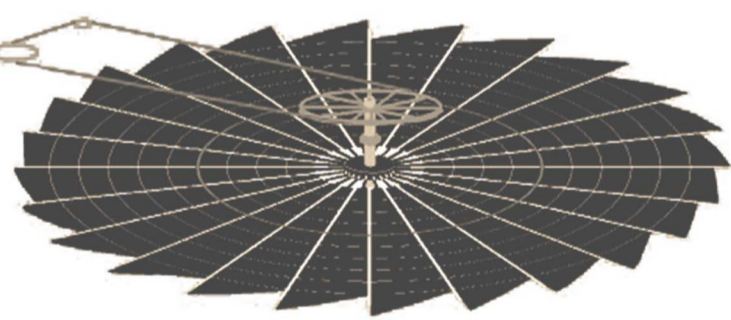
96080 kWh  
107 HOUSES

Some of the energy is used to illuminate the danish soul on the site.  
to give the HYGGE effect to the visitor, so as together they can celebrate the carbon neutral city of copenhagen



### VERTICAL AXIS WIND TURBINE

A series of vertical axis wind turbines is placed at the end level of the tower. 80 m high for the largest tower, 60 m high of the entrance tower and 45m high for the side towers, the wind is very strong. Hence, the turbine will be at its maximum speed producing electricity.



### HORIZONTAL WIND POWER GENERATOR

After the wind has been captured from the top, it undergoes into the narrow hollow wind shaft, which accelerates the movement due to pressure and passes through the horizontal turbine which produce electricity.



### STEEL -REINFORCED PIEZOELECTRIC NEEDLES

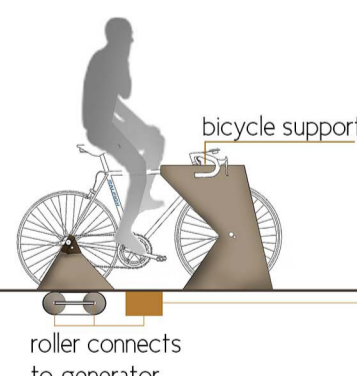
It's a multi-layered frame work with numerous needles on the exterior end. The blurred definition of tower envelope and the LED lit needle points will help creating a fantasy of the place and making an iconic feature of the city.

### Electric equipments

The generator and other electrical equipment are stored in special rooms away from the visitors. This is due to safety purposes.

### BRINGING CULTURE TO THE SITE

The pedal genotor is not a new technology, it is placed along the corridor, acting as bicycle parking bay. Hence the people will park and cycle to illuminate the Hygge poles, bringing a soul to the site. 100 - 300 w/h per person.



### The 'HYGGE' POLES

SOLAR PANEL

LED

VERTICAL WIND TURBINE

GENERATOR

Thousands of illuminating poles cover the site of Refshaleoen will contribute to the production of electricity. Three components are connected to the pole, such as the SUN, WIND and bicycle.

