

BIM (Building Information Modeling)

The project is an interdisciplinary idea that started to have discussion with agricultural and biological experts. According to the problem of pollination in world and lack of that, we decided to design a high rise building in brussels for producing honey bees to export bees in pollination season to orchardists...

The Complex has two main function inside which is divided to two parts : offices ,beehive part These two areas are separated by curtain glass wall to keep integrated view from inside of building and conducting the south part light to offices part...

Façade of building is self supported structure and technically its separated from interior structure. Considered material for façade is steel... Due to the analysis for the building such as wind analysis, position of building, Height of building, solar and light analysis on other hand, conditions that is related to bee lifestyle (they must be free and fly far from colony to look for nectar and come back to hives. Also these species are sensitive to wind. Since that wind start to flow, they fly to a safe place or come back to their hives) we decided to design kinetic façade in the part of building which is related to bees, Also according to the annually wind statistics in brussels, south-west of façade is kinetic façade...

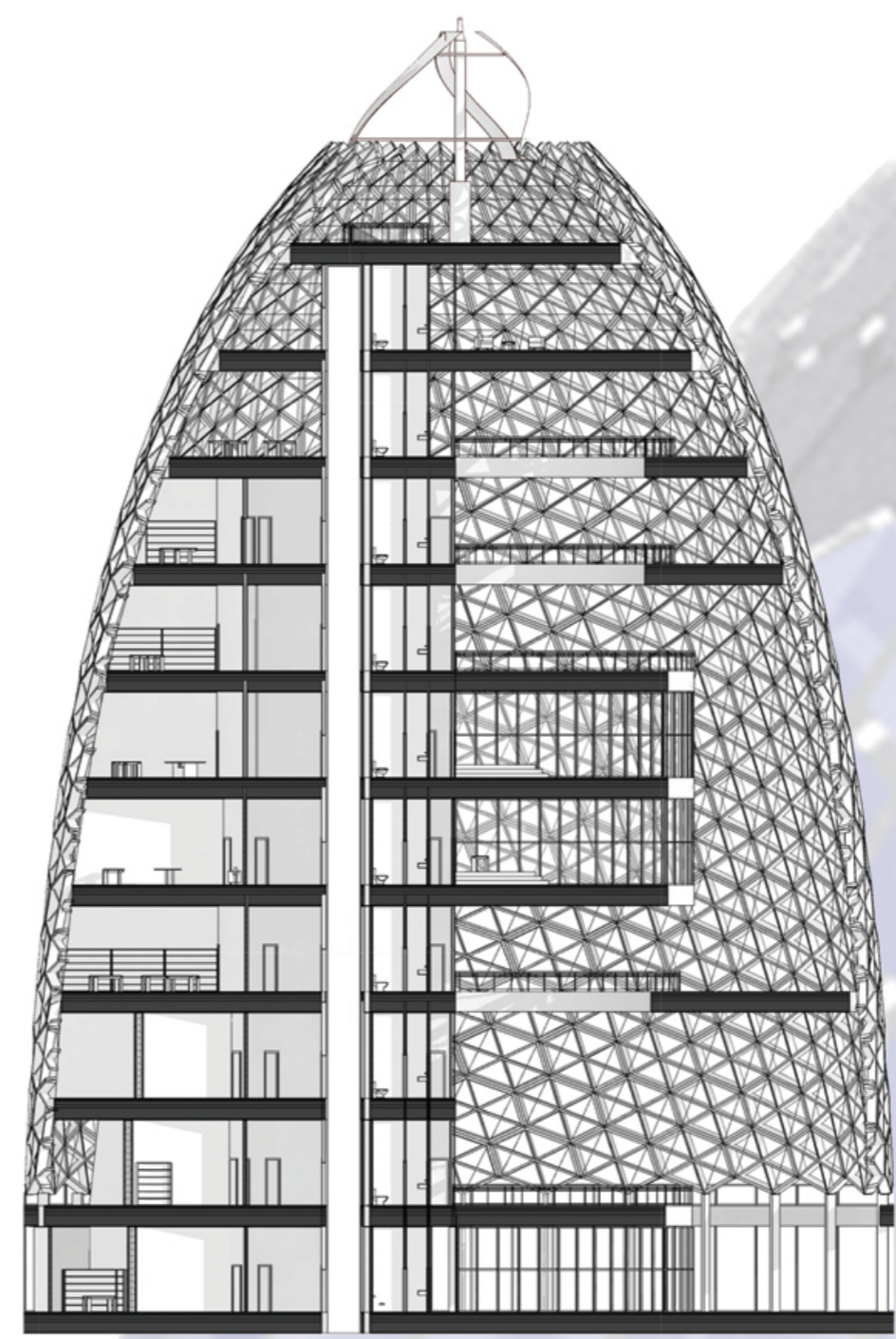
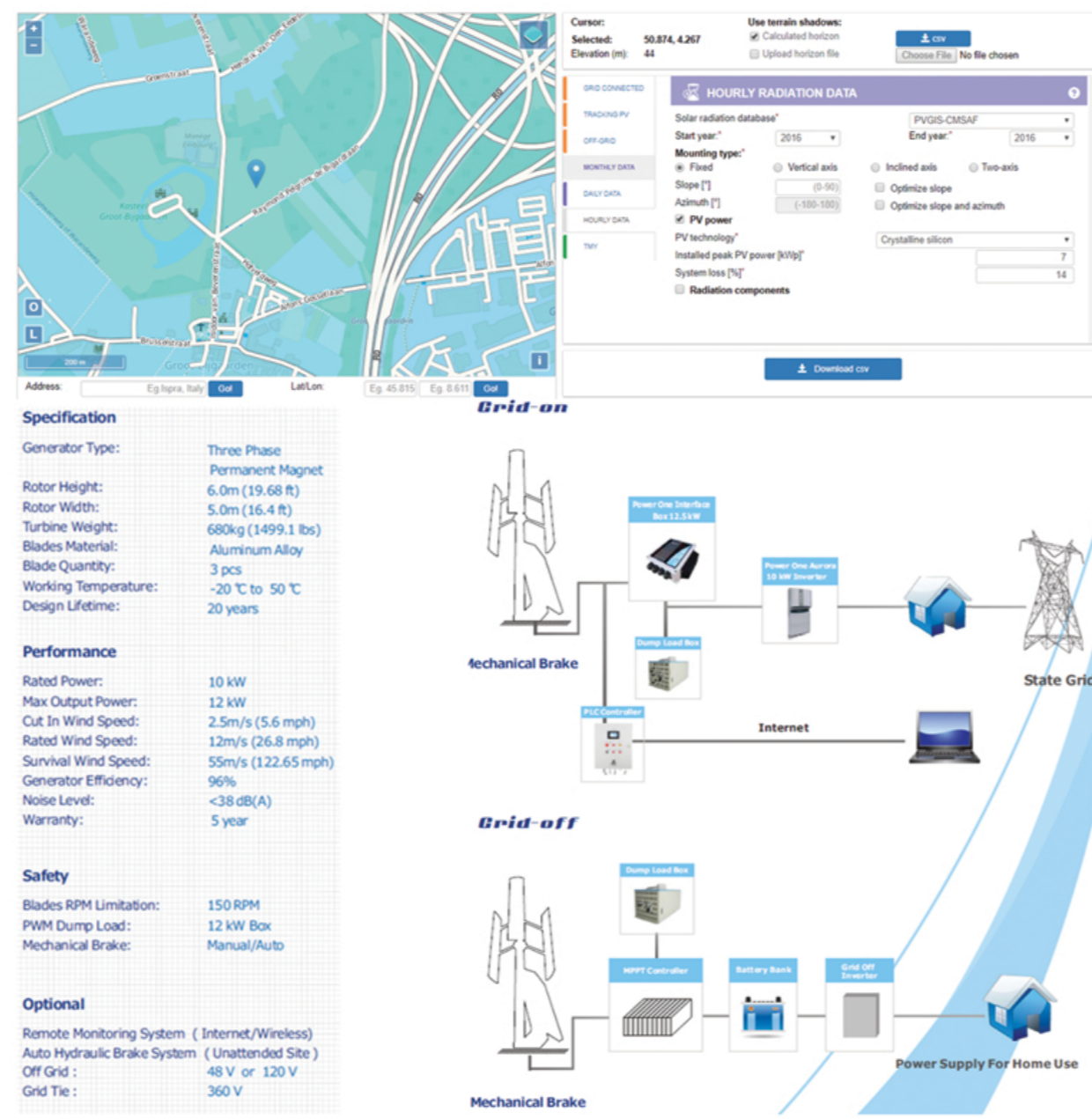
To control the kinetic façade according to the wind flow we considered two different type of sensors in building façade : piezoelectric sensors and ultra sonic sensors.

When the wind started to flow ultra sonic sensors send a pulse or order to central control unit (MC-AVR) to start to close the frames. But we need to be sure that all the bees came back to nest before frames be completely closed. In this case, through the piezoelectric sensors we can measure or its better to say estimate the amount of the bees, according to the special sound that bees produce inside the building.(While flying, honeybees average a speed of 15 miles per hour and make a buzzing noise).

so, according to the proportion of bees returned to inside building, kinetic façade will start to close the façade less than proportion of amount of the bees (not linear, but like parabolic chart proportion) and finally when the whole of the bees came back to the nest façade will be completely closed.

Also energy for kinetic façade will be generate by VAWT system and it is possible to save the electricity energy and use in necessary times. According to the size of turbine and the velocity of wind in brussels it generate electricity between 15 to 20 KWH.in the next pages we are going to show calculations.

Also there is second option to produce and harvest energy with PV panels system on top of the building which is in two final frames of façade. Instead of using glass in final floor, it is considered to install PV panels. Calculation for produced amount of electricity energy is done for PV panels and put in report in next pages. Its according to the size ,location , slope ,azimuth,... of the panels...



- VAWT
- ULTRA SONIC SENSOR
- PV PANELS
- PANAROMA VIEW
- KINETIC FAÇADE
- PIEZOELECTRIC SENSOR
- CENTRAL CONTROL

