BIO WAVE

The Little Mermaid and orchestrated wave forms, creating a fairy-tale landscape.

**Intro (1200)**

Wind power plants around the site and solar projects have already been pursuing. So I'm planning to use microalgae biomass energy and design facilities for public use.Also the opposite side of the site is a famous tourist attraction with the Little Mermaid statue.However, the statue sits alone only in spite of attractions. So, I’ll visualize the appearance of the Little Mermaid that disappear into the waves like the Little Mermaid story. And I’ll propose tour route for tourists.

By utilizing the carbon dioxide and wastewater from factories and power plants, when cultured microalgae, effect of killing two birds with one stone that while reducing the environmental pollution, the production of bio-diesel can be expected. The area that can be cultivated on a large scale microalgae, annual average temperature is 15 ˚ C or more, there is a livestock facility or city close to the minimum, and abundant influx of nutrients, is a plain low altitude while the cost of site must be inexpensive location. The results of the site analysis, the Refshaleøen have been evaluated with the location culture of microalgae large as possible.

**Bio Energy**

The growth speed is fast microalgae, it is contains a large amount of lipid component, and is evaluated as a resource that can produce biodiesel. The efficiency of utilization of solar energy of microalgae is about 25 times higher than the plant microalgae and carbon dioxide fixation ability also about 15 times higher than the plant microalgae in particular.

Furthermore, growth rate is high, biomass productivity of 5 to 10 times higher than that of the plants, depending on the culture conditions, accumulation of up to 70% are possible within the lipid. Therefore, amount of lipid per unit area using microalgae, higher by 50 to 100 times or more than that of plants.

Its productivity is higher 5 to 10 times than the plants because of its growth rate. And it is possible up to 70% depending on the culture conditions to make lipid accumulate within the body.

  Elevation of the building , which has had two enclosures , the outer part of the response to algal. Microalgae grow in the glass panels filled with water so that producing the biomass and heat. Aglae, make up the biomass by photosynthesis. The heat generated at this time is transmitted to the building via a heat transducer. Biomass energy obtained through photosynthesis is also used in the building, and the remaining energy can be used elsewhere or stored in the buffer.

Bubbles in the glass panel is increased, which means that the constant activity of algae is performed in elevational view. And these activities are changed in the color of the elevation. That is, microalgae not only transmits their own energy to building but also makes aesthetic appearance of the building better. Also photosynthesis of the algae serves us blocking the sunlight.

Will be used, in the course of photosynthesis birds, sunlight, is one that is to be used the process of creating the biomass is performed immediately, thereby at the same time as the sunlight, produce energy.

The sunlight is used to help biomass make more fast because it is used in process of photosynthesis of the algae. Therefore it blocks the sunlight and makes the energy.

**Enviromental Impact Statement (300)**

Microalgae photosynthesize by using light, carbon dioxide and water. In this process, microalgae absorbs carbon dioxide form 1.8 to 2.2 times their weight. This is because the absorption efficiency of 10-50 times would be better than the land plants. So it will be a great help to Global Warming.

**Estimate**

The biggest advantage of biofuels using microalgae is efficiency immediately. In the case of soybean, 50 gallons per area of one acre (1.1 barrel), even in the case of palm trees such relatively higher, there is only 500 gallons per acre, prices are expensive bio-fuel production in so far were. However, it seems biofuel produced by microalgae can, production reached (approximately 120 barrels) 5000 gallons per acre, and significantly reduce the price of biofuels.

Matured in the roof panel microalgae extracted through the extraction tank. And it devided into Lipid, Water, Biomass by gravity clarifier.10m x 18m x 169 panel x 0.000247ac= 0.83 (approximately 4167 gallons, 101 barrel)

**Summary**

The goal for the Loop, ultimately, is to become a transformative experience where visitors are inspired after discovering the installation and engaging with the amazing views of Bio wave. Moreover, the aim is to establish the installation as a learning facility where the visitors interact with state of the art technology and renewable energy while discovering a new built environment.

The Bio wave will be a unique place, a landmark, a sculpture in the landscape not only providing clean energy for Copenhagen but offering a variety of programs to the public and resident.