

# ALGAE HOPE

A new vision of renewable energy, always trying to find something new or rethink the existing environment to fit and put to better use. In this case it was thought in the micro algae as a renewable energy because fossil fuels are running out, but mostly because of the pollution that is around in all our environment.

Increasing talk over CO<sub>2</sub> emissions and global warming, so this project is looking for ways to reduce these emissions, but mostly as grasp, Because the goal of Copenhagen is to reduce CO<sub>2</sub> emissions 50% in 2025 to become a city free of emissions in 2050, And one of the ways to combine renewable energy and CO<sub>2</sub> capture is by means of algae. Since CO<sub>2</sub> is used (among others) to feed micro algae.

Biofuel is derived from micro algae. To get this bio fuel is necessary to feed the algae with CO<sub>2</sub>, sea water and sun, but Why algae in this project are used to produce bio fuel and not commodities like palm, sunflower and soy? For the simple fact that we are surrounded by the sea and also because the yield of algae in this area is 100 times higher. We're talking about a hectare of soy produces 468 liters of oil and algae produce between 18 700 and 46 750 liters.

These are some of the algae and oil yields:

*Botryococcus braunii*: 29-75% dw

*Chlorella* sp. 29% dw

*Dunaliella tertiolecta*: 36-42% dw

*Schiochytrium* 50-77% dw

Today there are already cars running on bio fuel and are developed to be more efficient every day and respond even better to the needs of the consumer. Cars that use bio fuel consumed on average 1.5 litres/100km which is already well below consumption to which we usually use every day. The average path of a particular vehicle is 15 000 km / year. An average vehicle consumes 6 L/100 km. What gives us an annual consumption of 900 liters per year, For a vehicle that runs on algae we are talking about a consumption of 1.6 L/100km which gives an annual consumption of 240 liters per year.

speaking specifically about the project; a building of 186 meters long by 154 meters was designed wide which is completely covered by plastic tubes that contain micro algae and sea water, the project idea is to have a building that produces fuel from algae, when the oil is extracted from microalgae, it produce some waste, these wastes can be compressed to manufacture pallets to transport different products, it means that the creation of this energy does not generate any toxic resided for ambience. This project mix manufactures and spa; spaces within the building refinery microalgae and relaxation spaces are combined, the spa includes a sauna, Jacuzzi and swimming pools. One purpose of this project is the interaction between the generation of green energy and people, is very important that people understand and interact with the process of generation of this fuel, another benefit of the project is that the building which has a slope of 5% is for given the need for people to climb the facade and placed in position of stands for different events that may occur.

## SURFACES

$$186 \times 154 = 28\,644 \text{ M}^2$$

$$154 \times 20 = 3\,080 \text{ M}^2$$

$$186 \times 20 = 3\,720 \text{ M}^2$$

$$154 \times 62 = 9\,548 \text{ M}^2$$

$$\text{TOTAL} = 44\,992 \text{ M}^2$$

$$10\,000 \text{ M}^2 = 30\,000 \text{ LITERS}$$

TOTAL PRODUCTION 134 976 LITERS PER YEAR

A CAR USE 240 LITERS PER YEAR.

PRODUCTION FOR 570 CARS PER YEAR