OMEGA PROJECT

Offshore Membrane Enclosures for Growing Algae

Technology Development & Demonstration Project

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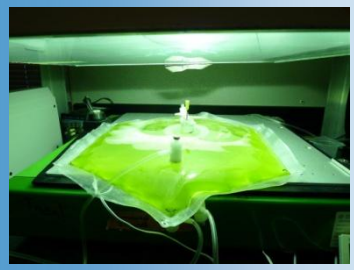

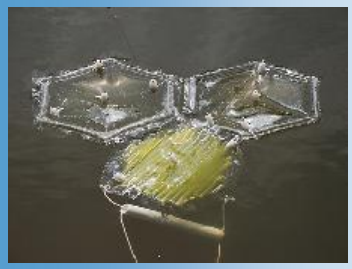

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Why OMEGA?

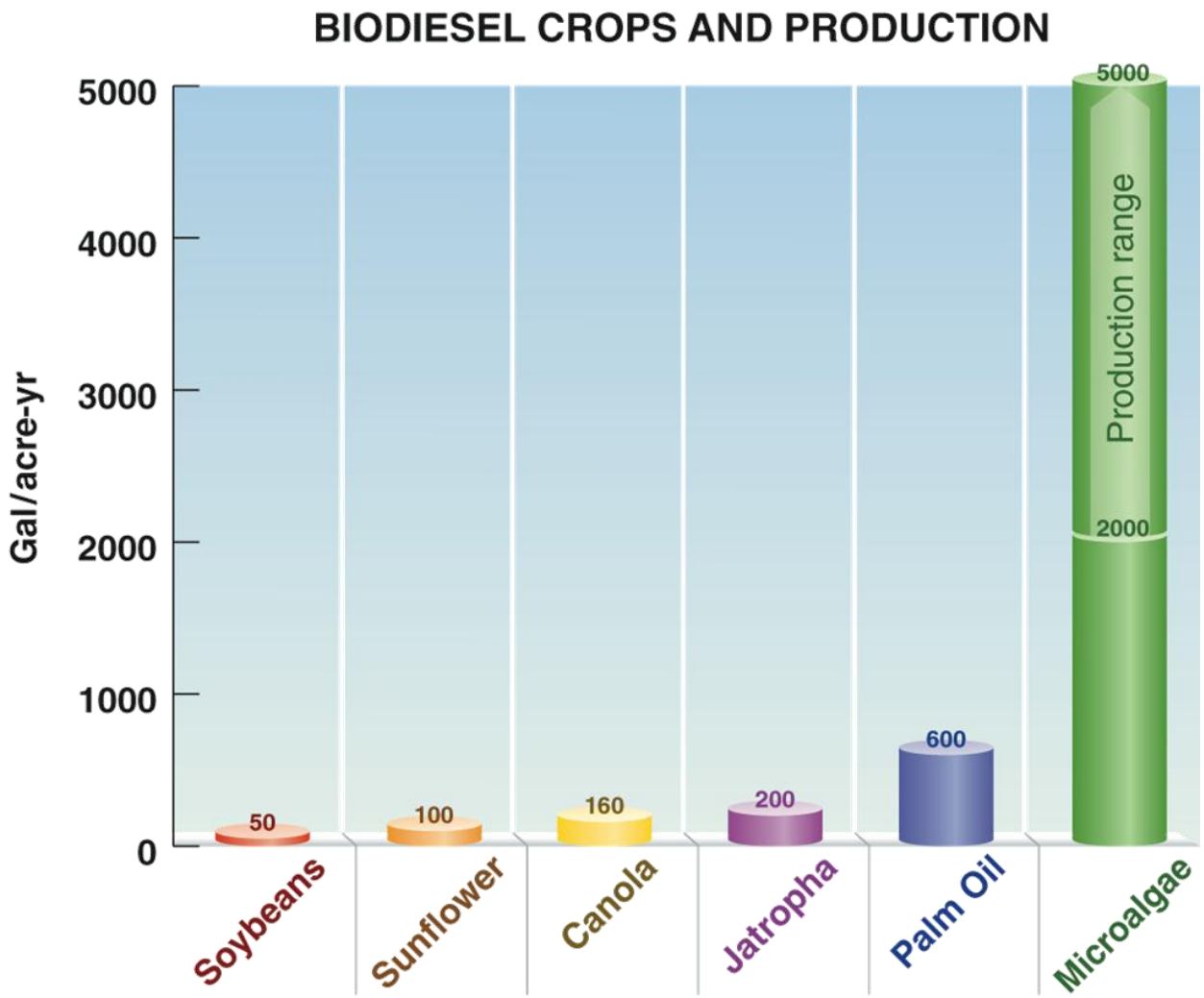
First flight test with sustainable biofuels for commercial aviation

Biofuels fly airplanes

First sustainable biofuel flight test in Asia

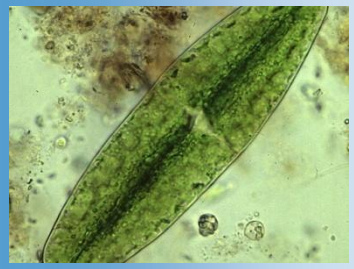
First North American sustainable biofuel flight test

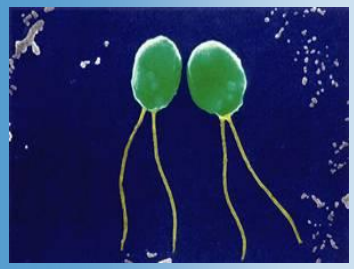
Why algae?

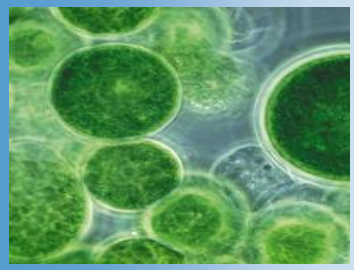

BIODIESEL CROPS AND PRODUCTION
Gal/acre-yr
5000
4000
3000
2000
1000
0
50
100
160
200
600
5000
2000
Production range
Soybeans
Sunflower
Canola
Jatropha
Palm Oil
Microalgae

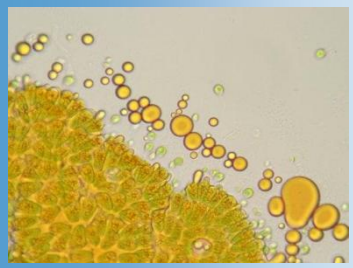
Land area required to grow feedstock to supply annual aviation fuel demand in U.S.

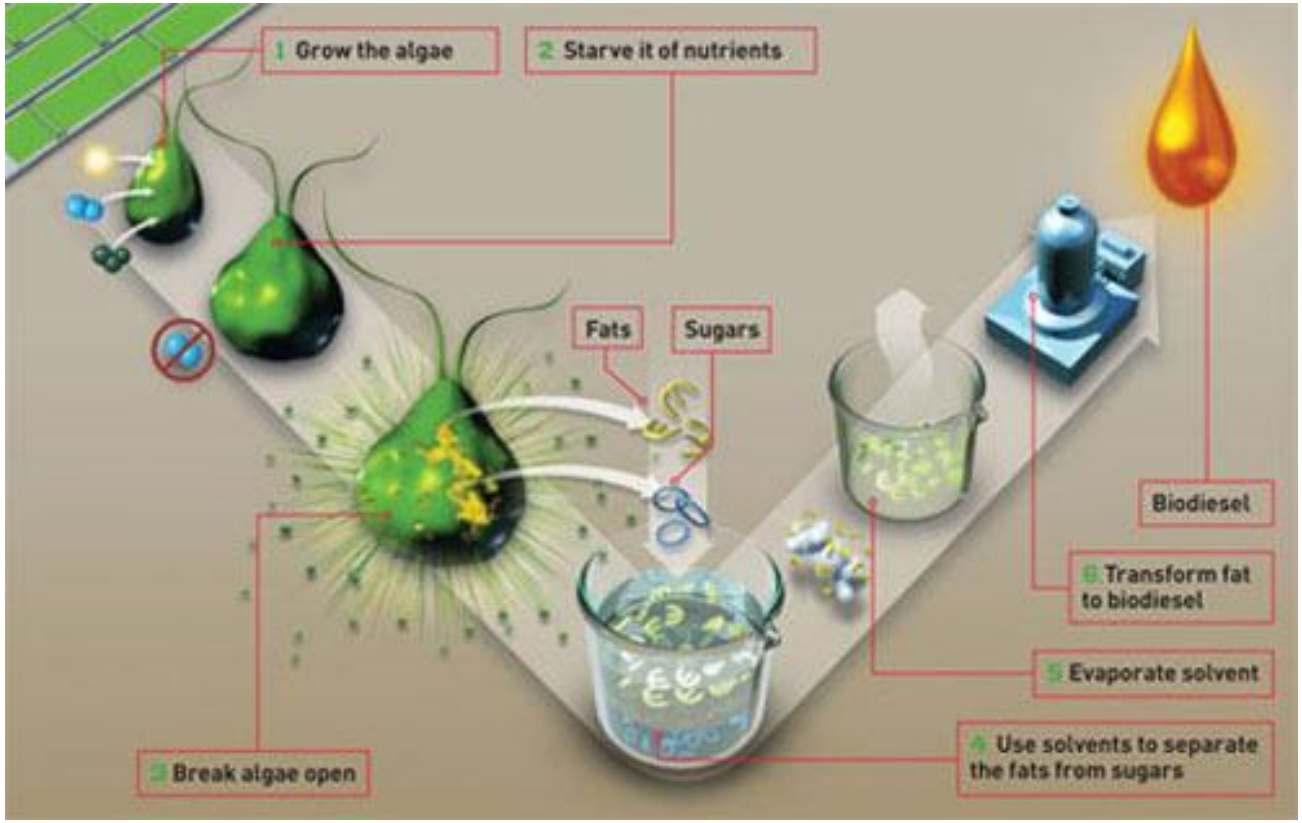
Algae Produce Biofuels







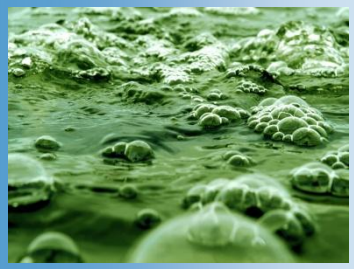




Why Offshore?

- **Land-Based Technologies**
  - Open Ponds
  - Enclosed Photo Bioreactors (PBRs)

Open Pond Raceway Configuration



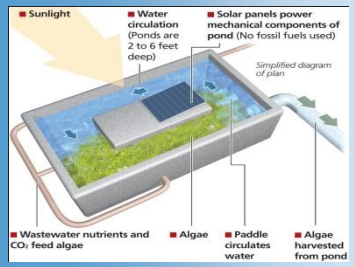
www.bioenergy-noe.org

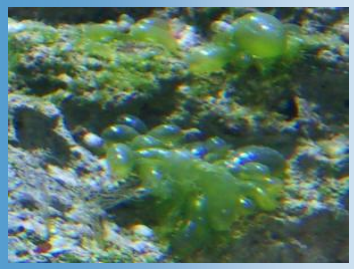
Vertigro Energy, Texas

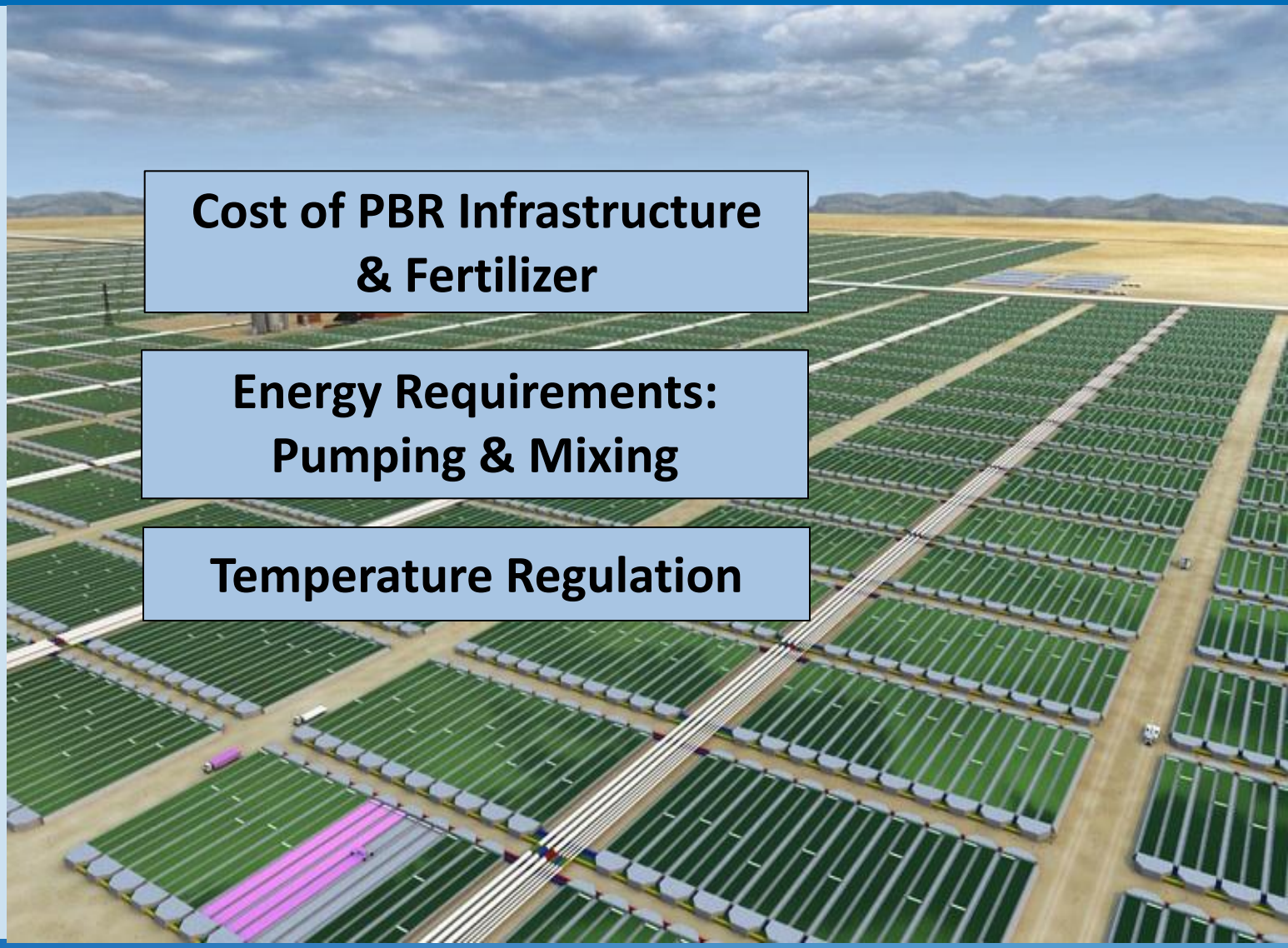
Subitec, Germany

www.nerc.ac.uk

What's wrong with this picture?







Cost of PBR Infrastructure & Fertilizer

Energy Requirements: Pumping & Mixing

Temperature Regulation

What is OMEGA?

Aviation Fuels

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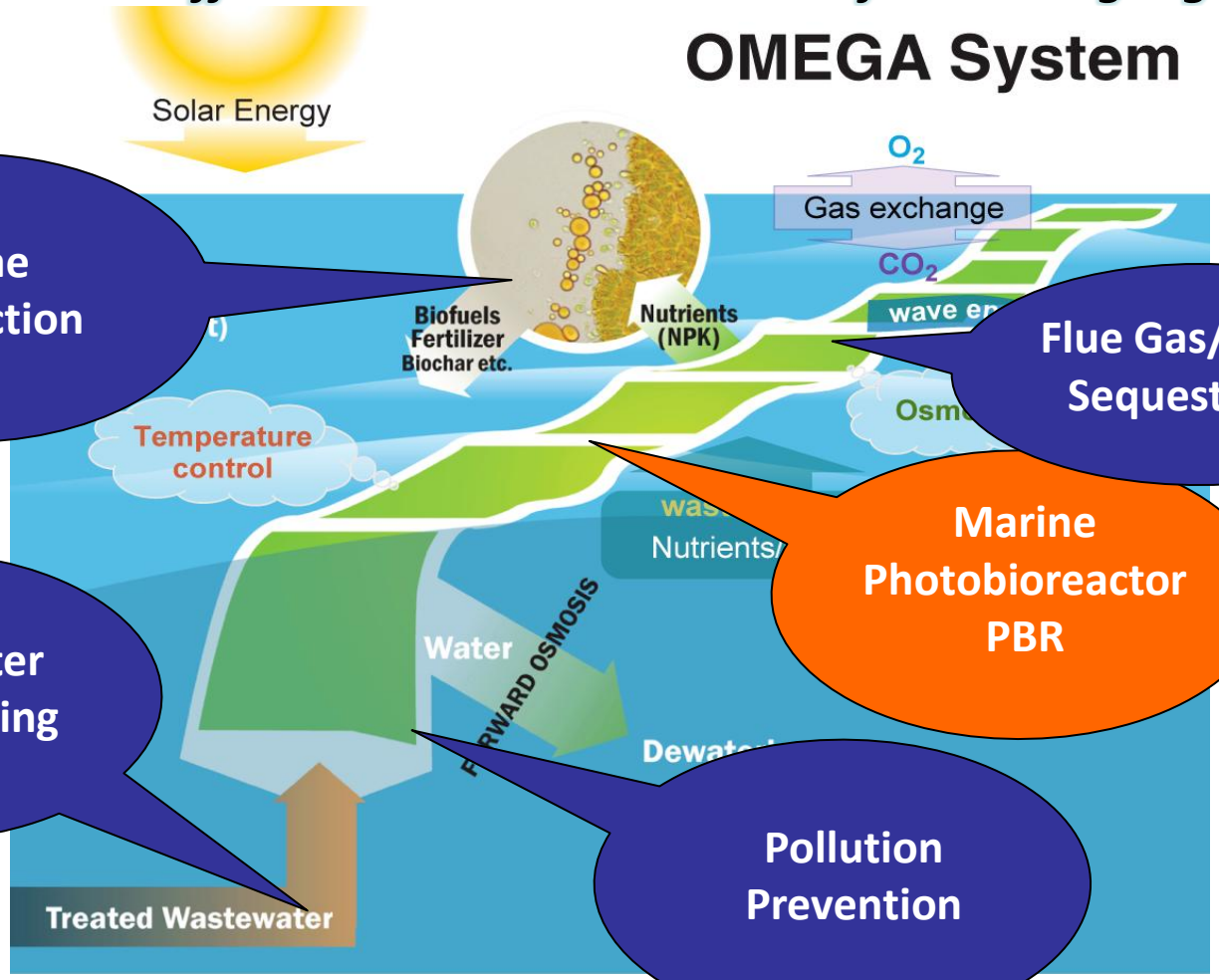

Algae Production

Flue Gas/Carbon Sequestration

Marine Photobioreactor PBR

Wastewater Use/recycling

Pollution Prevention

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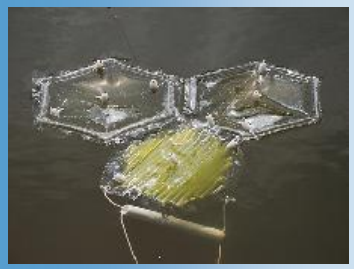
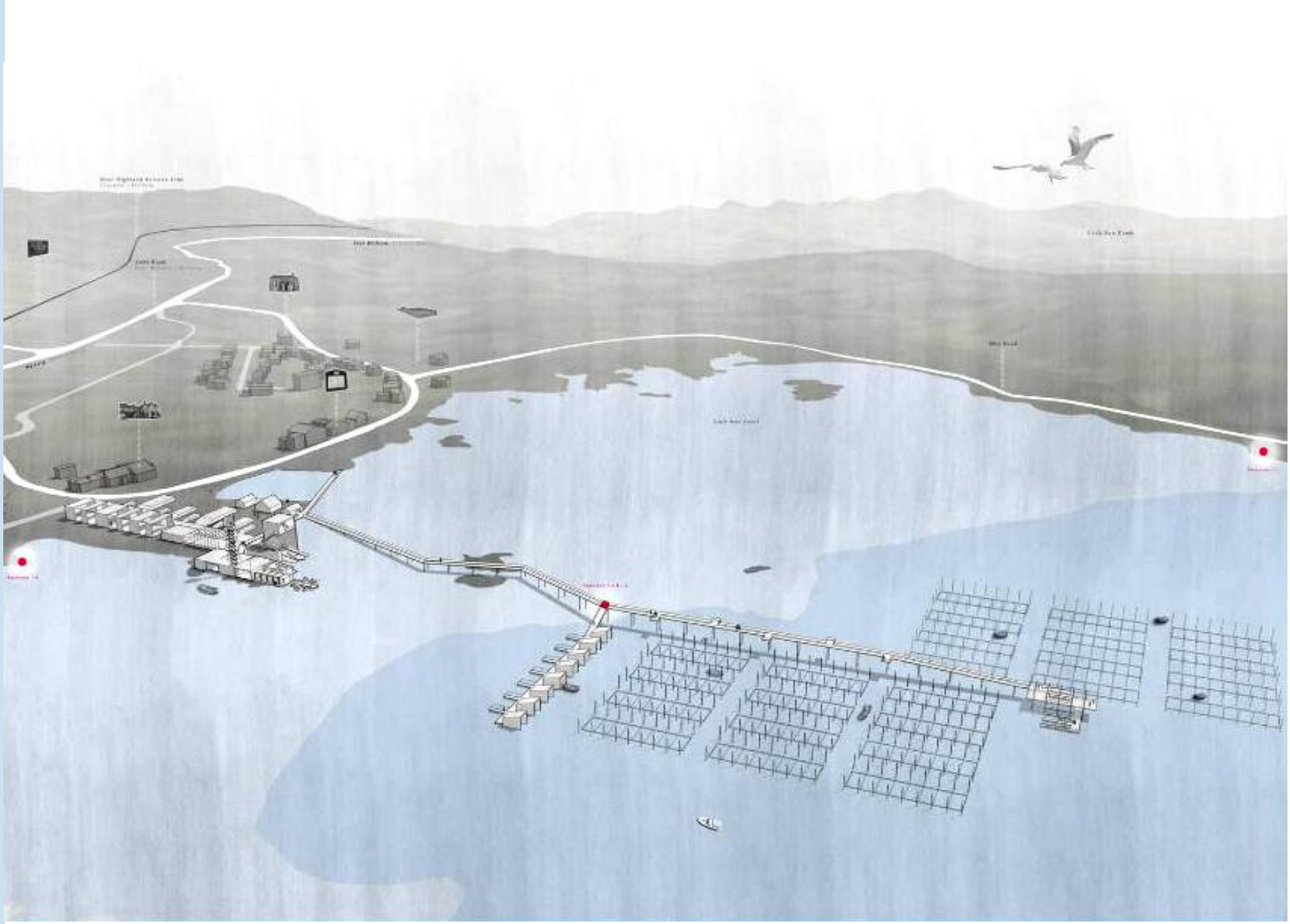
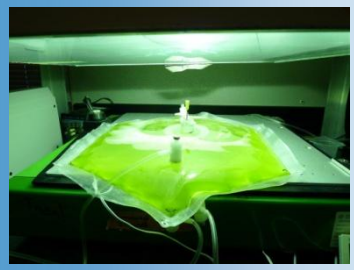
Offshore Algae Farming

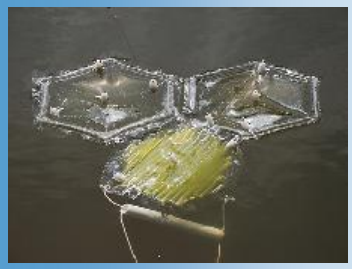




How realistic is OMEGA?

Are we up to the engineering/environmental challenge?





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