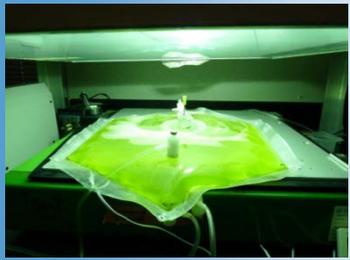


OMEGA PROJECT

Offshore Membrane Enclosures for Growing Algae

Technology Development & Demonstration Project



O ffshore
M embrane
E nclosures for
G rowing
A lgae



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

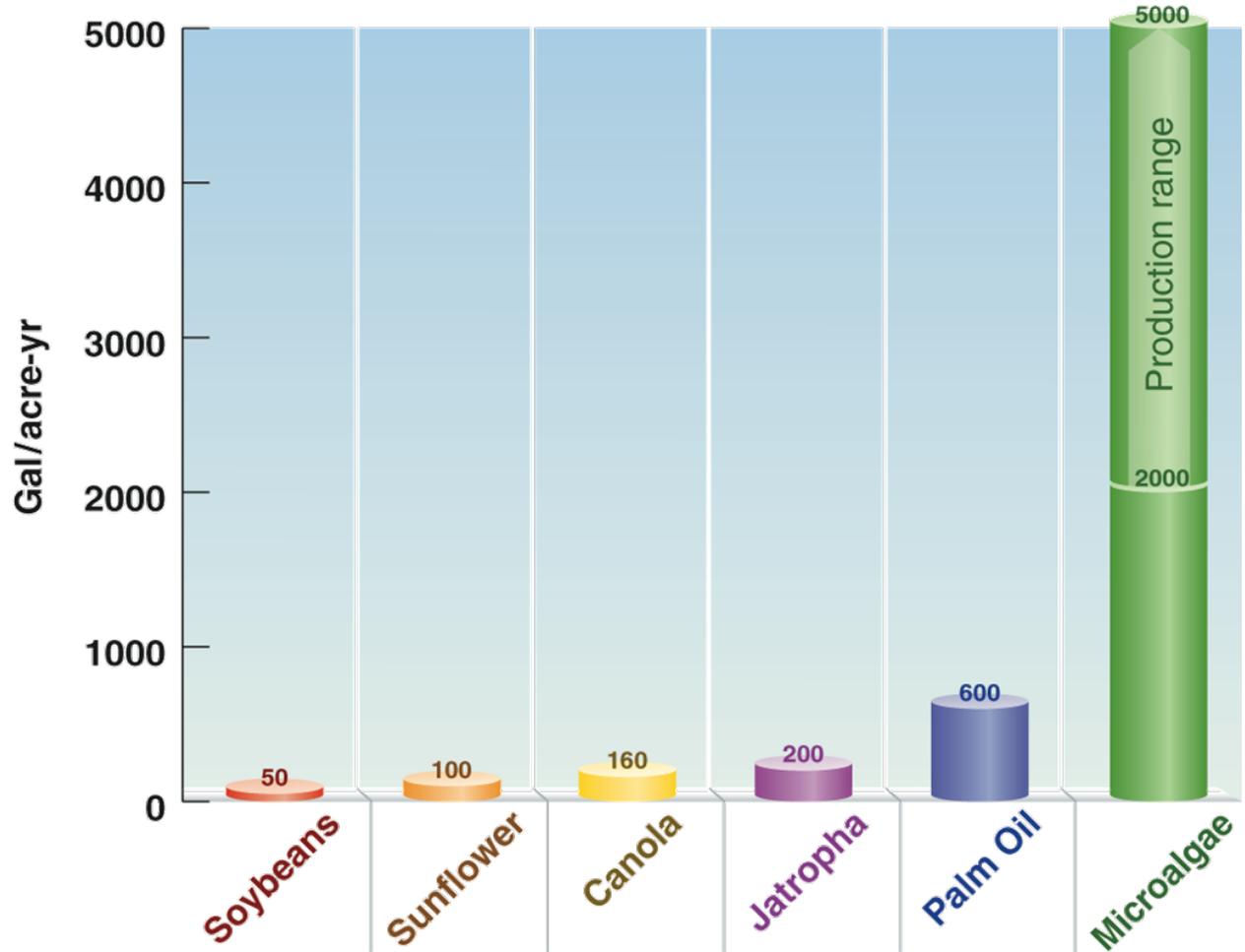




Why algae?



BIODIESEL CROPS AND PRODUCTION



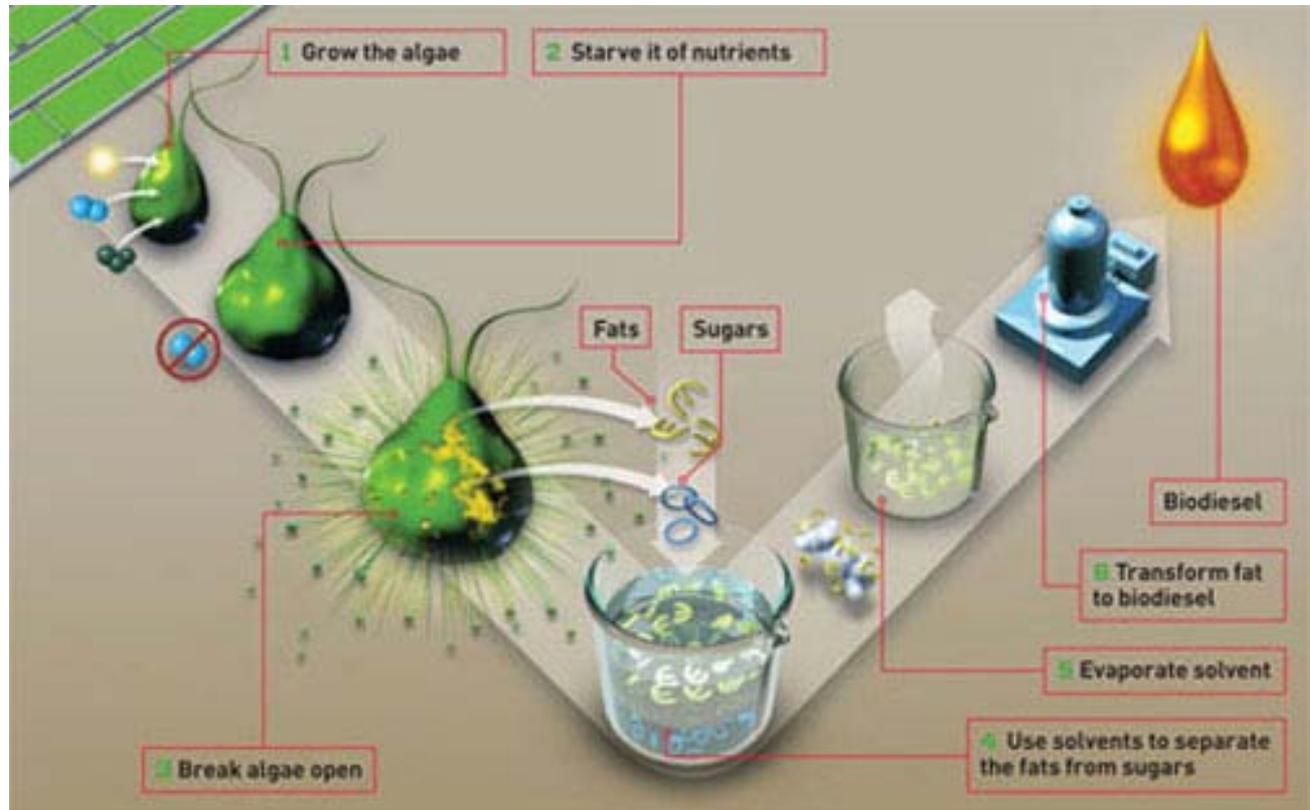
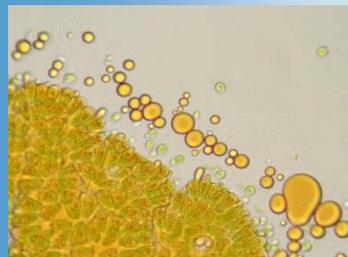
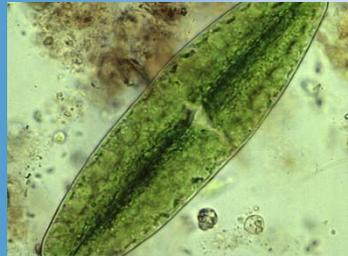


Land area required to grow feedstock to supply annual aviation fuel demand in U.S.





Algae Produce Biofuels





Why Offshore?

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



Open Pond Raceway Configuration





Vertigro Energy, Texas

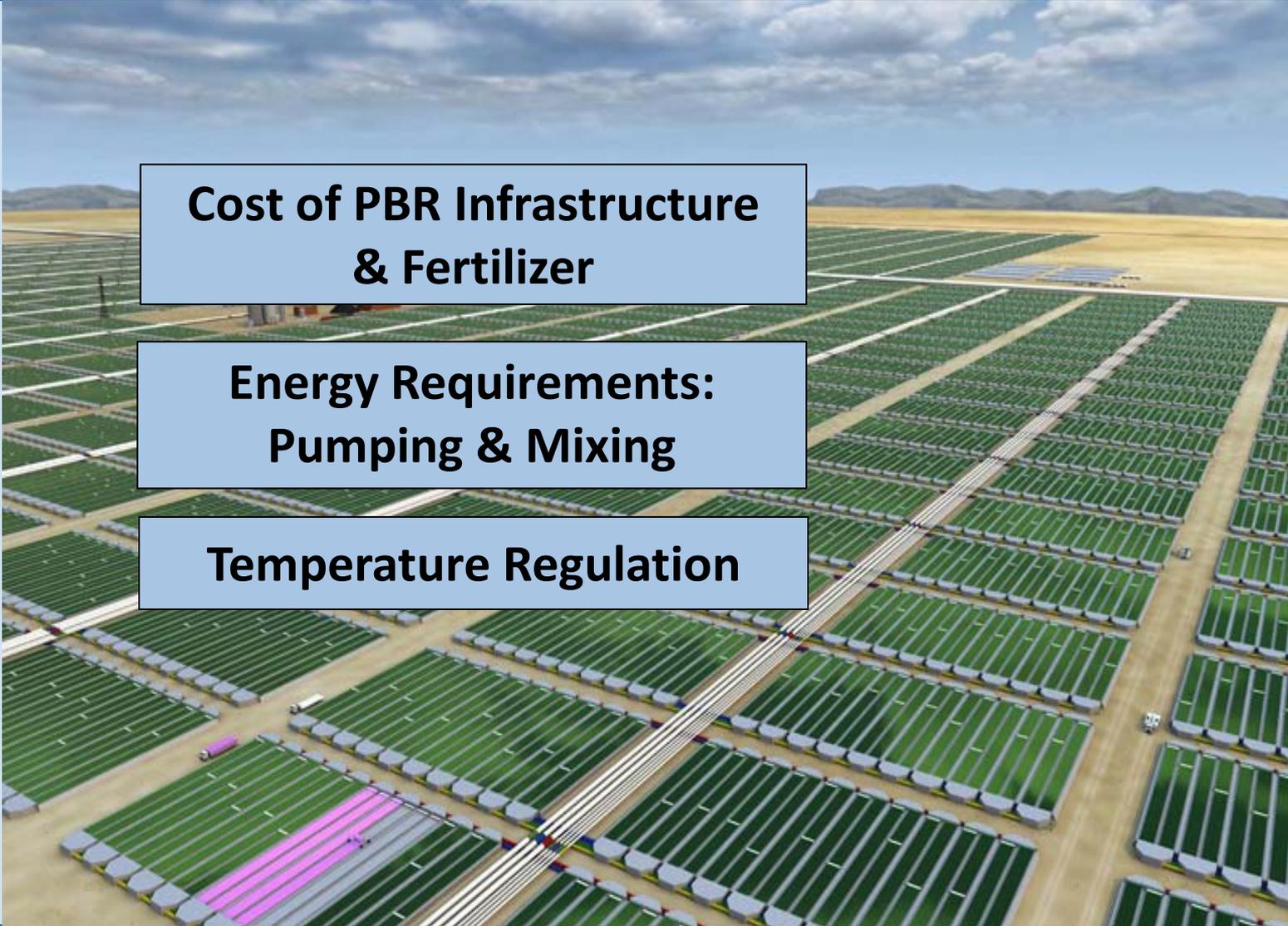
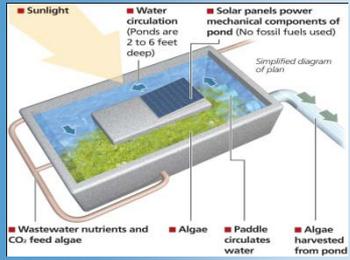


Subitec, Germany





What's wrong with this picture?



Cost of PBR Infrastructure & Fertilizer

Energy Requirements: Pumping & Mixing

Temperature Regulation



What is OMEGA?

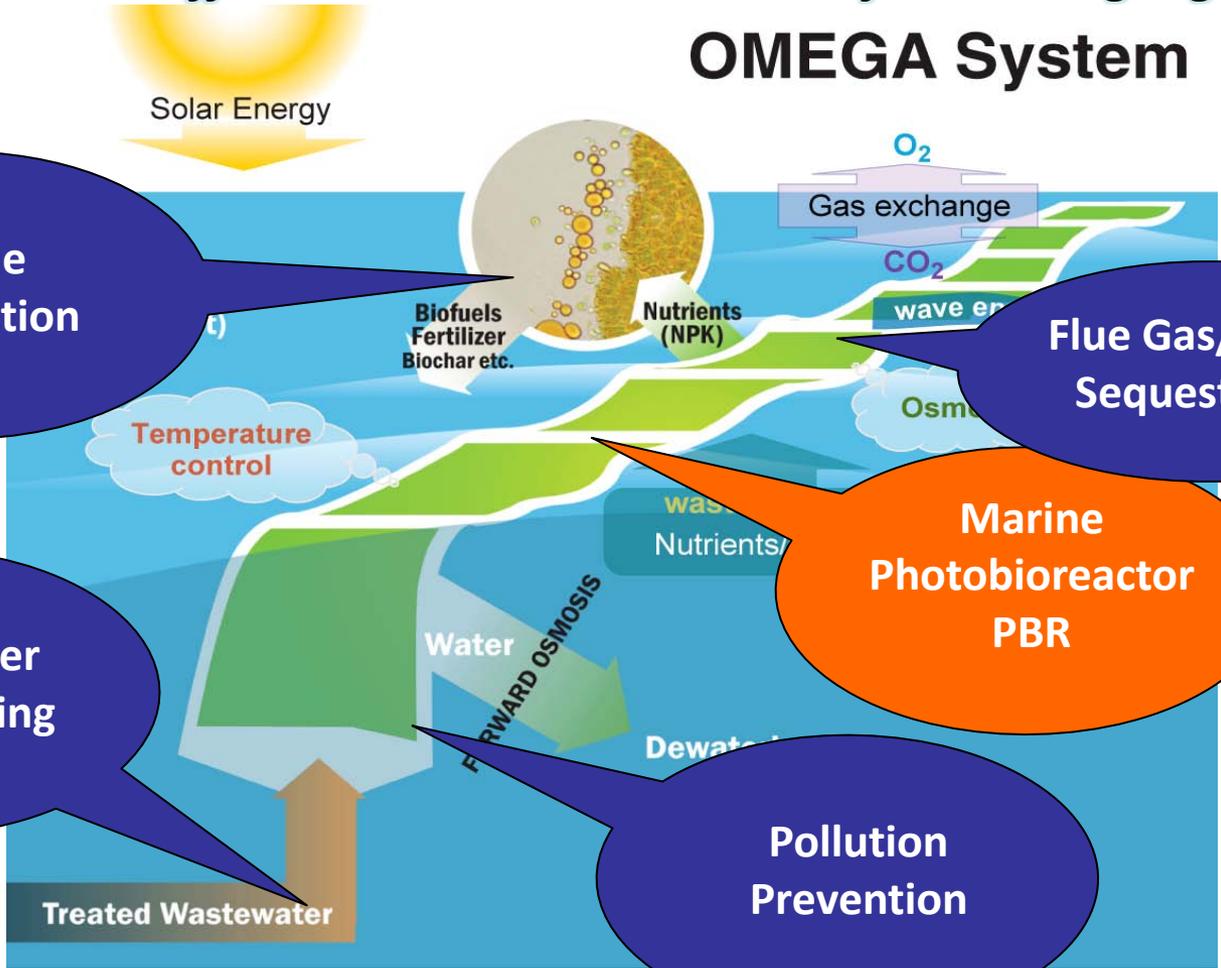
Offshore Membrane Enclosures for Growing Algae

OMEGA System

Aviation
Fuels

Algae
Production

Wastewater
Use/recycling





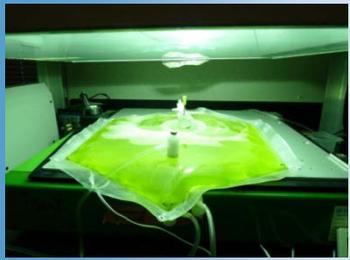
How realistic is OMEGA?





Are we up to the
engineering/environmental challenge?





O ffshore
M embrane
E nclosures for
G rowing
A lgae