

# CMU Thesis Studio 2013

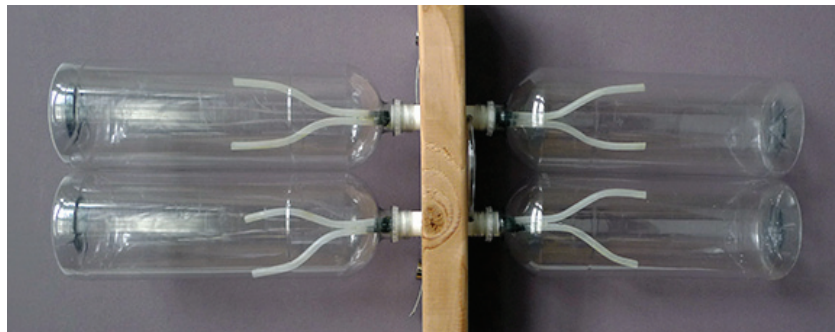
J. Douenias

Algae BioReactors

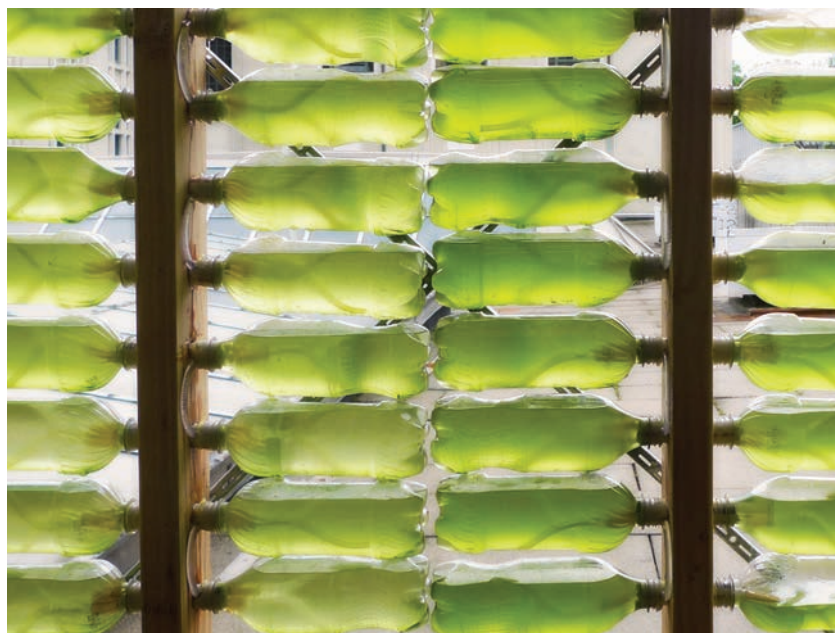
Advisor, D. Clifford

This thesis explores the prospect of sustainable living through material innovation and systems thinking. Algae is a resource that produces oxygen, biomass and fuel.

The design intent was to construct an instructional kit that could be fabricated at extremely low cost with found materials. Discarded bottles compose an interconnected system of algae chambers that are inserted within standard platform framing. It is envisioned that the new wall system effectively synthesizes enough energy from the sun to power a single family home and the majority of a families external fuel consumption.



Initial model of algae bioreactors set within a platform framing system



Prototypical wall system

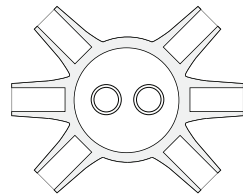
bioreactor platform framing system

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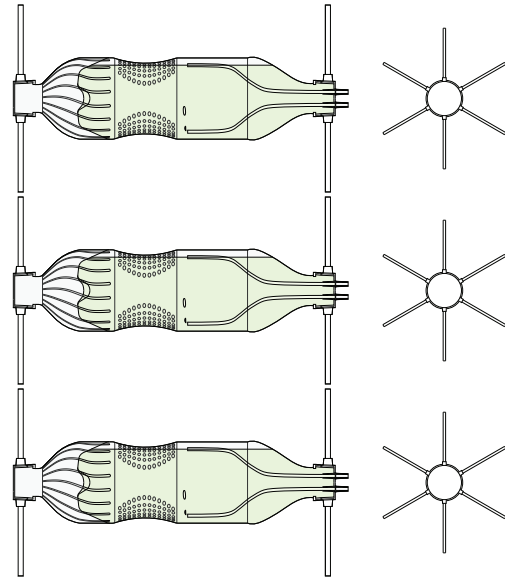
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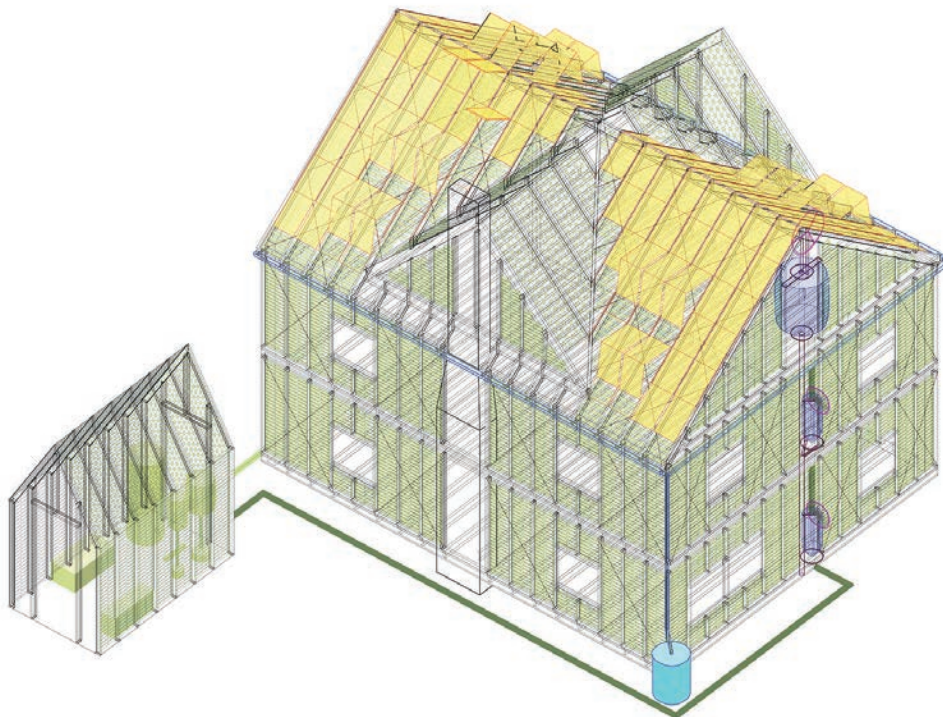
Bottle bioreactor system applied to a single family home.



3-D printed to accept tubing



Drawing of initial design made from discarded bottles



Speculative application of bioreactors to an existing platform framing