

SolaCulture & Climate Control

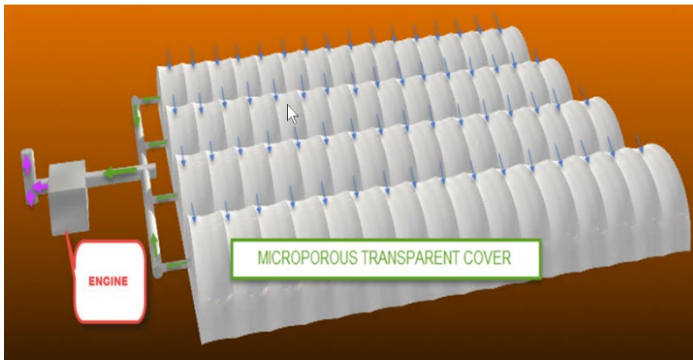


Fig.1 SolaCulture canopy supported by wire hoops

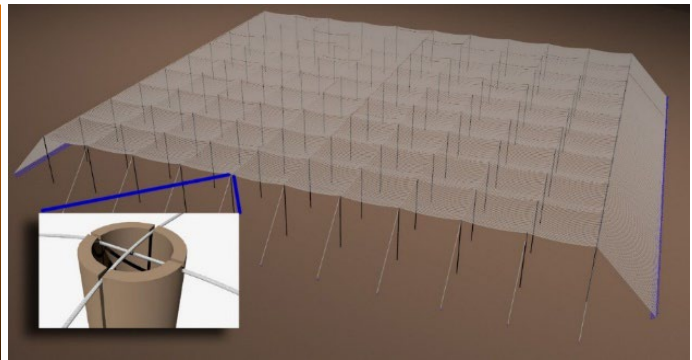


Fig.2 SolaCulture canopy supported by posts



Fig.3 SolaCulture canopy supported by plants

SolaCulture Array

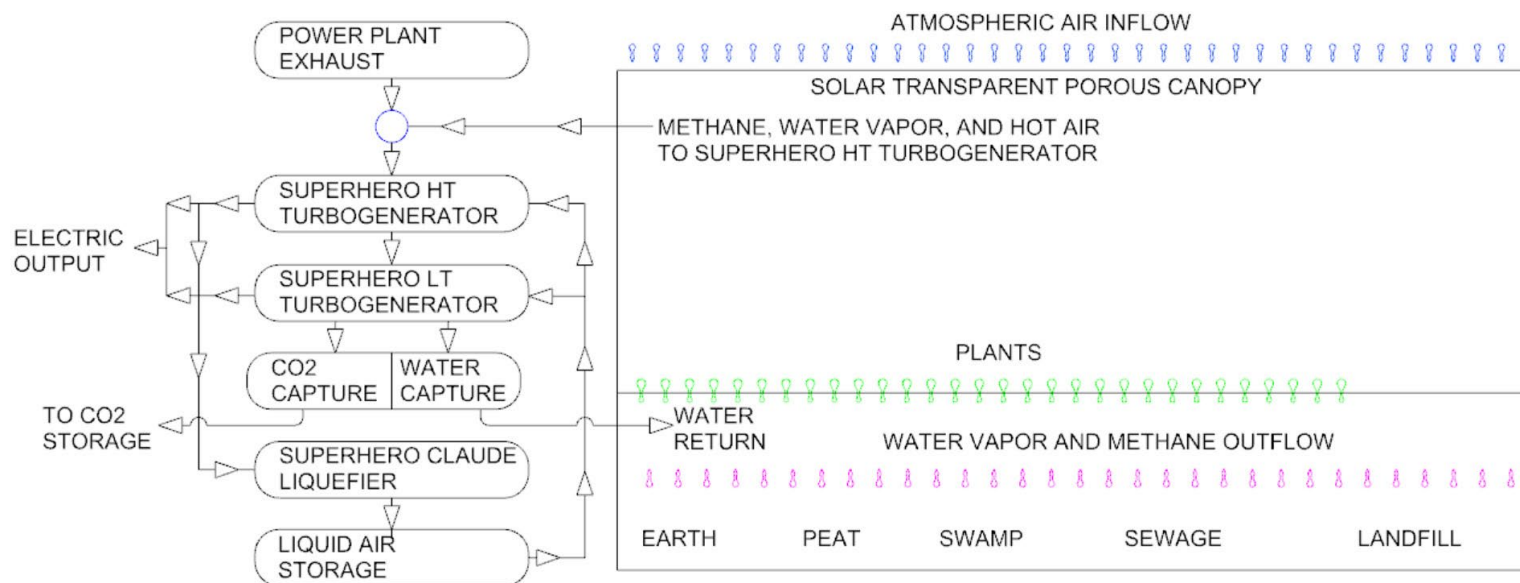


Fig. 4 SolaCulture system schematic with CO₂ capture and liquid air turbogenerator propellant and energy storage

SolaCulture climate control can be achieved by water capture, by increased plant matter, by methane capture, and by increased solar reflectivity.

Water Capture

SolaCulture systems capture water from precipitation, humidity, and water evaporated within the array by covering regions with solar transparent porous canopies and drawing atmospheric air downward through the canopies. Water passes through the porous canopies but its escape is prevented by continuous atmospheric air inflow created by slightly subatmospheric pressure between the canopies and the earth. Convective and evaporative heat losses from the earth are prevented by the continuous atmospheric air inflow thru the porous canopies.

SolaCulture canopies can be commodity row covers currently used by farmers to increase growing season, increase growing region, reduce predation, reduce infestation, and reduce windblown soil loss. See Agribon AG-19 ref. <https://www.bagicho.com/products/agribon-ag-19?variant=2623556550683> AG-19 row cover media cost ~\$0.20/m².

Water is the primary greenhouse gas and its transfer from the atmosphere to the earth's store is beneficial. The captured water can be returned to the array or used elsewhere. Saline and sewage water can be evaporated and collected as fresh water. SolaCulture water capture can be used to greatly increase the growing region and the growing season. Aquaponics, aquaculture, aeroponics, hydroponics, and mariculture can be practiced in SolaCulture arrays.

CO₂ Capture

CO₂ is removed from the atmosphere by a net increase in plant matter via increased growing region and increased growing season. Many crops can be grown in SolaCulture arrays, but the growth of small waterborne plants is particularly attractive. Azolla can double in mass in a few days, produce its own nitrogen, utilize sewage for food, and provide high protein animal feed. Azolla can absorb >30tons/hectare/yr. of atmospheric CO₂. <http://theazollafoundation.org/azollas-uses/as-a-co2-sequester/>

Methane Capture

Methane capture is attractive because its addition to the atmosphere contributes to global warming. Methane can be used for heat and power in stationary and transport applications and its combustion provides water as a product. Methane is the obvious biofuel; it is not hard to create; it is hard to prevent. Big methane emitters are the low hanging biofuel and include sewage lagoons, landfills, concentrated animal feed operations, rice production, abandoned oil and gas fields, and abandoned coal mines. Satellites can now identify methane emitting regions and measuring methane emissions from space is an attractive way to identify **our new energy sources** rather than a means to instill fear. Methane can be liquified for storage and transport use including cars, trucks, trains, ships, planes, and rockets. Methane is an attractive energy source right under our noses or right under our satellites and we need to encourage rather than discourage its use.

Solar Reflectivity

Many plants prefer shade; azolla prefers 1/3 sun and crop covers are available with varying degrees of reflectivity, ergo 1/3 transmission and 2/3 reflection, so we can have both high plant growth rates and high reflectivity. SolaCulture canopies can provide shade for plants and animals, including people, while increasing solar reflectivity. We know when the earth becomes whiter it can lead to a positive feedback

loop resulting in an ice age; it is a question of area and reflectivity. Increasing solar reflectivity with SolaCulture is a low cost route to global cooling and easy to scale.

Energy Storage

SolaCulture can provide a continuous supply of biofuel, primarily methane, since the biofuel produced by microbial communities does not depend *directly* on solar input. The microbial communities depend on temperature and the availability of organic media and *indirectly* on solar input for temperature maintenance and the production of organic media. The importance of the *indirect* dependence on solar input is that biofuel can be available 24 hrs a day, 7 days a week, 365 days a year, as opposed to solar processes that depend *directly* and immediately on solar input and therefore require costly storage systems to provide full time energy availability. SolaCulture uses the local earth for plant growth, water storage, thermal storage, carbon sequestration, and as an environment for biofuel production. Biofuel energy can also be stored to match demand more closely. Biofuel production and heat storage may require a significant initiation period.

Output

Large scale SolaCulture systems can use Combined Cycle Gas Turbines (CCGT) which offer fuel to electric efficiencies >60%. Cofueling can be used to meet demand and during system initiation period. Modular SuperHero microturbogenerators offer low cost combined heat and power. See new economy technology PDF.

Water heating for domestic and commercial use, steam production, domestic and commercial cooking, space heating via hot air and/or biofuel,

Methane gas can be purified and introduced into the grid.

Epilog

What we are currently doing “is” Geoengineering; it is geoengineering for better or worse and it does not have to be the latter. That we require punishment to achieve climate control is a moral assumption, not a scientific one. SolaCulture can increase the usability, productivity, and profitability of land and water regions and as a consequence improve economies. SolaCulture can provide food, water, fuel, heat, electricity, and energy storage while removing CO₂ from the atmosphere and capturing methane emission from the earth. SolaCulture offers a profitable means to mediate the climate and has the potential for rapid and widespread implementation. If we want to cool the globe, we can, and we can do it profitably. SolaCulture canopies also provide a great canvas for artists.

SolaCulture video link. <https://www.youtube.com/watch?v=oXiDUAirAg>

The new economy technology PDF presents a more comprehensive effort towards a new economy.

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