

DESIGN v1 FOR A MARINE NANOBUBBLE GENERATOR OR “FIZTOP”

FUNCTION: To brighten the sea surface with long-lived nanobubbles, thereby increasing sea surface albedo and cooling the planet

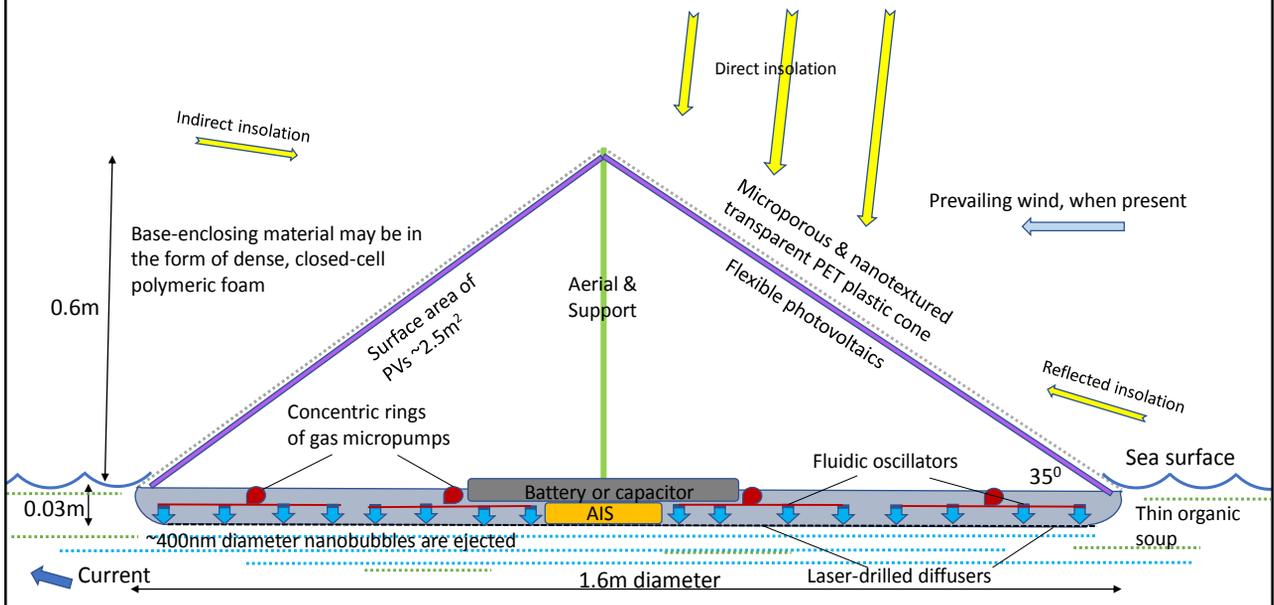
SHORT NAME: FIZTOP, a solar-powered, top-shaped unit that generates long-lasting, ocean brightening fizz on the ocean surface.

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INTRODUCTION

- In his paper “Bright Water” (2010) <https://arxiv.org/pdf/1010.5823.pdf> Seitz analysed how microbubbles could be used to enhance marine albedo, thereby cooling the planet.
- Nanobubbles last much longer and do a better job.
- These can be generated most efficiently using fluidic oscillators.
- Buoyant cones powered by photovoltaics and using Desai-Zimmerman Fluidic Oscillators (DZFO) might brighten the oceans cost-effectively.

DESIGN FOR A MARINE NANOBUBBLE GENERATOR



MARINE NANOBUBBLE GENERATORS (MNG)

- Disseminate them mainly in remote tropical and subtropical waters where the insolation is high and the waters are usually calm
- Sensors & comms periodically transmit data about MNG identity, location, status, and local environmental conditions
- If overturned, the weighted base and shape tends to right the unit
- The nanotextured cone surface is made self-cleaning, like some leaves
- Upper shape is resilient to normal wave action and provides no perch
- Units are collected, cleaned & relocated by drone vessels, as required
- Nanobubble half-life is likely to be measured in months, when aided by surfactants in the sea surface
- Units are light and buoyant enough to pose little hazard to shipping
- The under surface will provide algal food and habitat for marine life
- Use satellite and aerial surveillance to determine MNG effectiveness

CONSIDERATIONS

- There are some practical considerations that will need to be addressed before this concept can be validated, one of which is whether the unit might overheat enough to damage battery or AIS.
- Others are: would enough power be generated to produce useful amounts of nanobubbles; would biofilm or marine organisms block too many of the diffuser pores too quickly; following overturn, is the design sufficiently self-righting; what is the unit's average longevity at sea; will theft or vandalism be a problem; and what is the likelihood of RD&D funding and deployment approval by relevant agencies.