

# Stratus Designs

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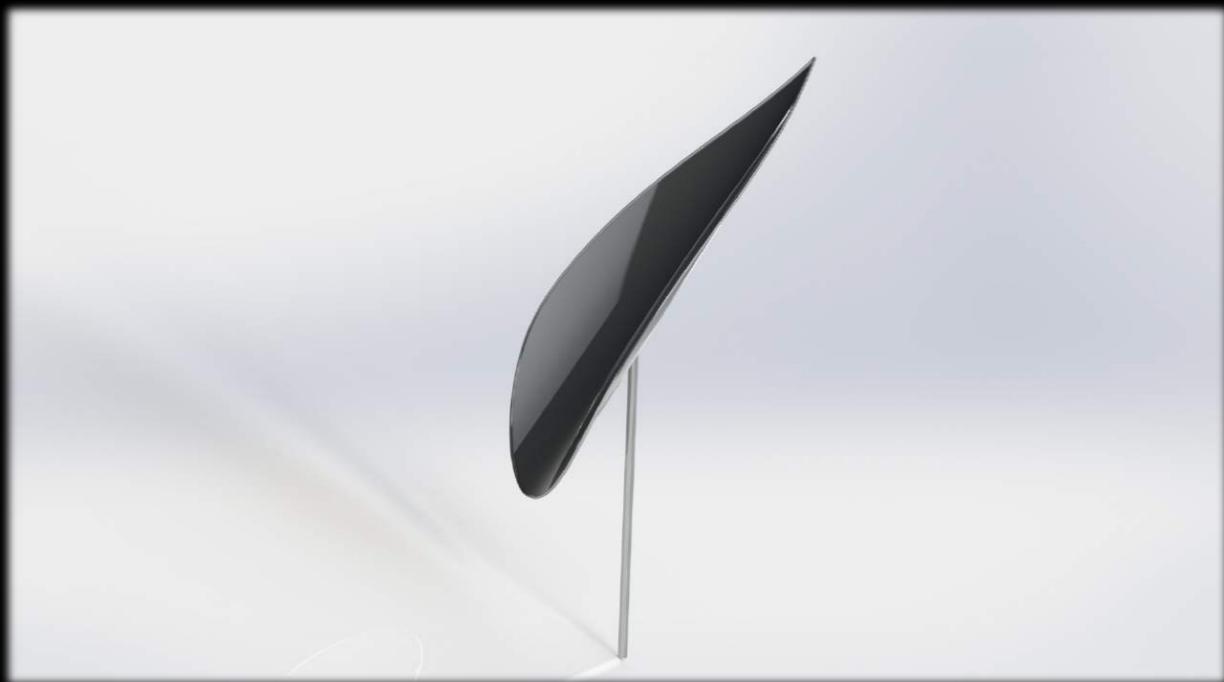
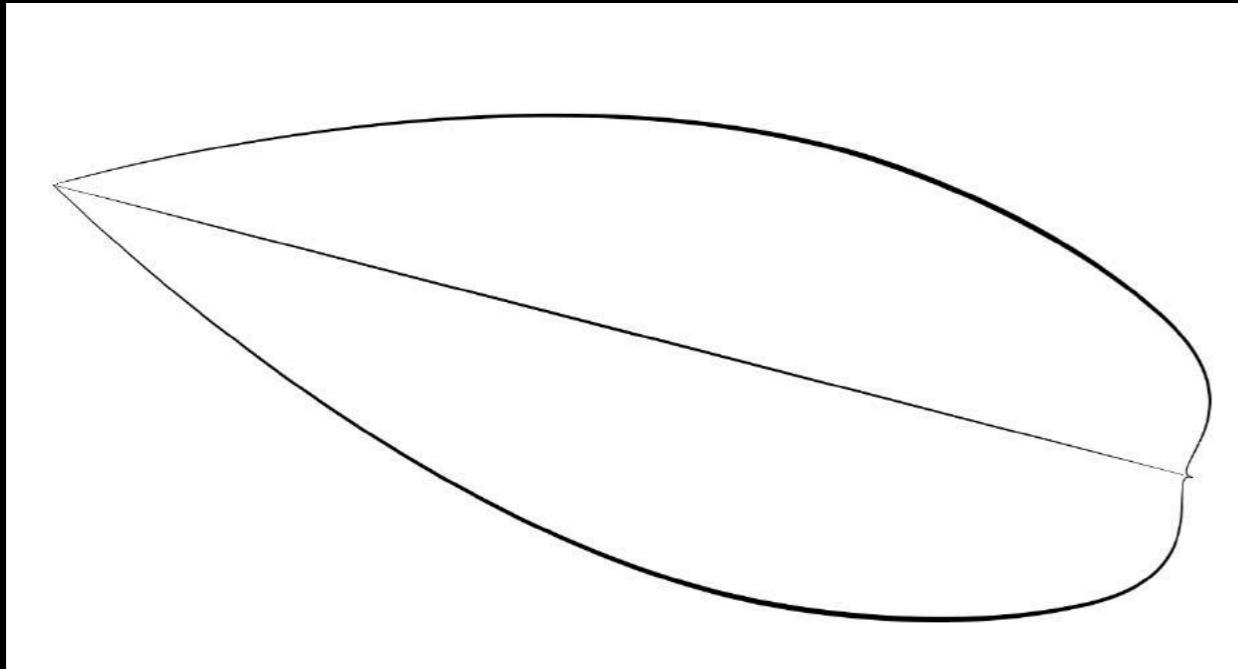


We believe the international market has reached a critical moment  
in which the demand for a universal solution to potable water access  
is grand enough to yield an effective and viable solution.

# Design Methodology

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# Roots



## Functional Unit: *The Leaf*

-Streamlined, biomorphic take on the presented model

-Curvature to increase the pitch and inertia of droplet movement

-Lotus inspiration for contour elegance

# Bio Inspired Design



Namib Beetle  
*Stenocara gracilipes*



Lotus  
*Nelumbo nucifera*



Thorny Dragon  
*Moloch horridus*

# Bio Inspired Design



Namib Beetle  
*Stenocara gracilipes*  
Stenocara gracilipes

Its bumps are hydrophilic, gathering water high on the gravitational gradient.

The rest of the surface is waxy, repelling water and promoting droplet movement.

# Bio Inspired Design

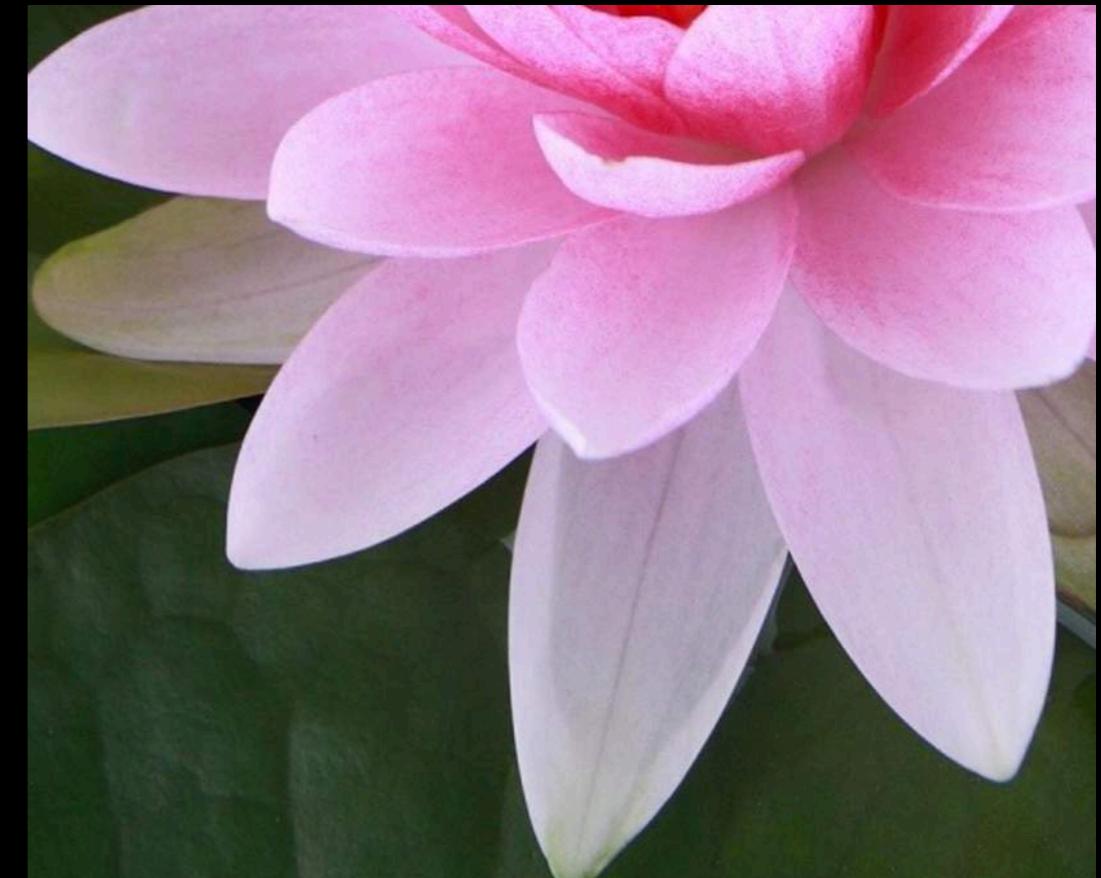
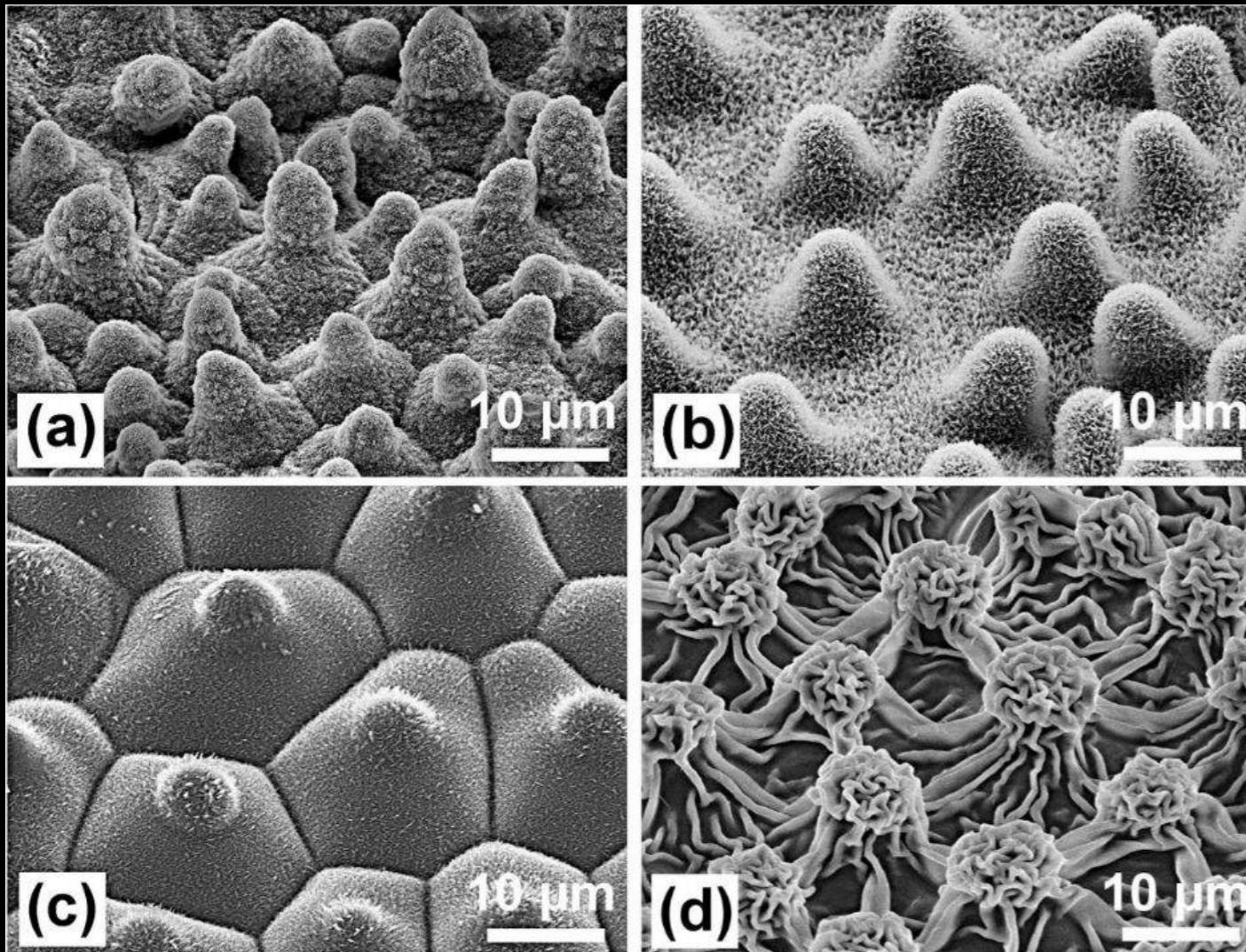


Namib Beetle  
*Stenocara gracilipes*  
Stenocara gracilipes

*The Namib Beetle condenses its own water, "basking" on the dune ridge near sunrise.*

*It demonstrates a 20-30° pitch against the wind—a lab proven optimal pitch for condensation.*

# Bio Inspired Design

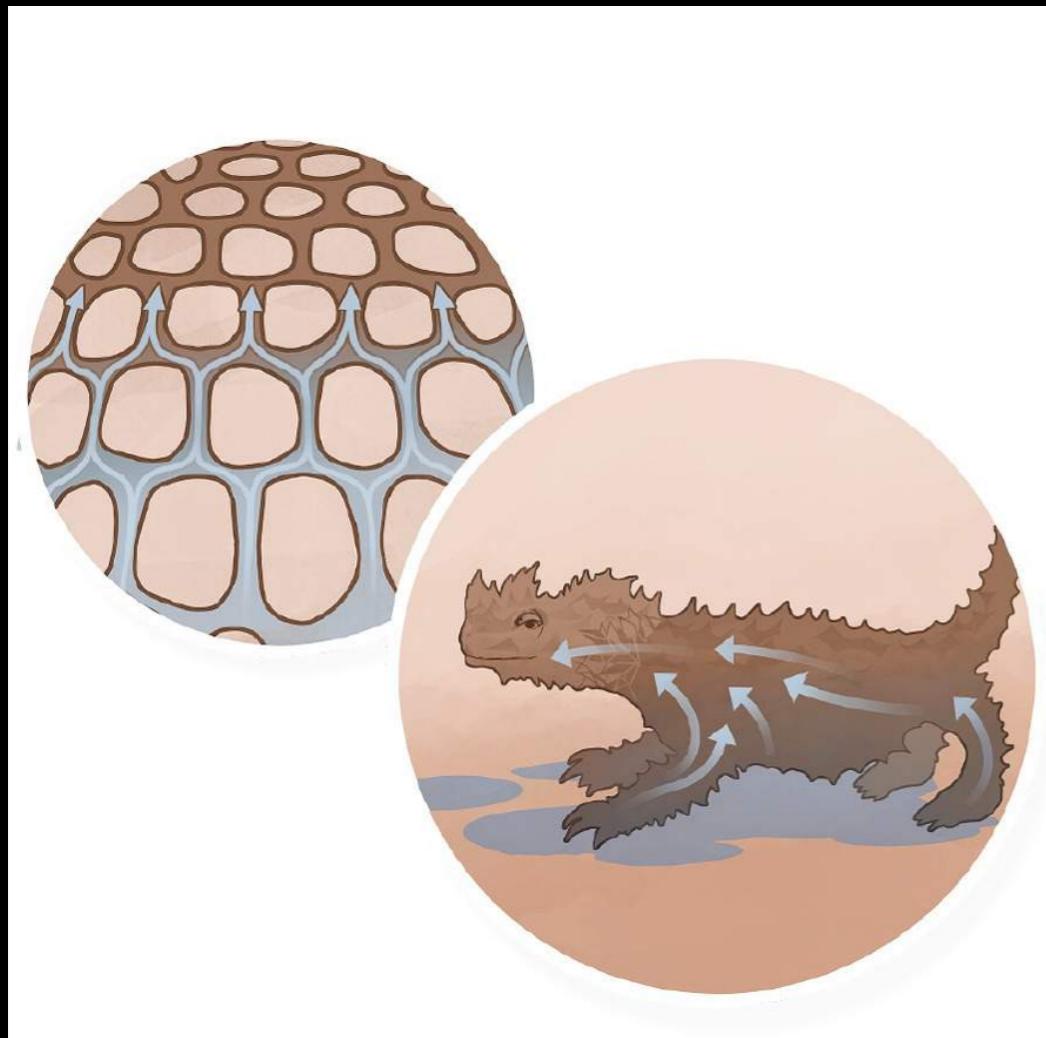


Lotus  
*Nelumbo nucifera*

The lotus also harnesses properties of hydrophobic and hydrophilic tension.

"Lotus effect" refers to it's ability to self-clean, employing a geometric micro-structure.

# Bio Inspired Design



Thorny Devil  
*Moloch horridus*

The dragon's drinking behavior is notable, because it never lowers its head to drink.

It transfers water from its feet to its mouth using the gaps between scales as a conduit.

# Components

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# Combination Heat Extraction

## Above-ground radiative condensing

torqued aluminum 1/8" build-conducts heat to the ground to keep condensing surface cool-hydrophobic/phobic hex pattern to wick water for collection-



## Passive air funnel



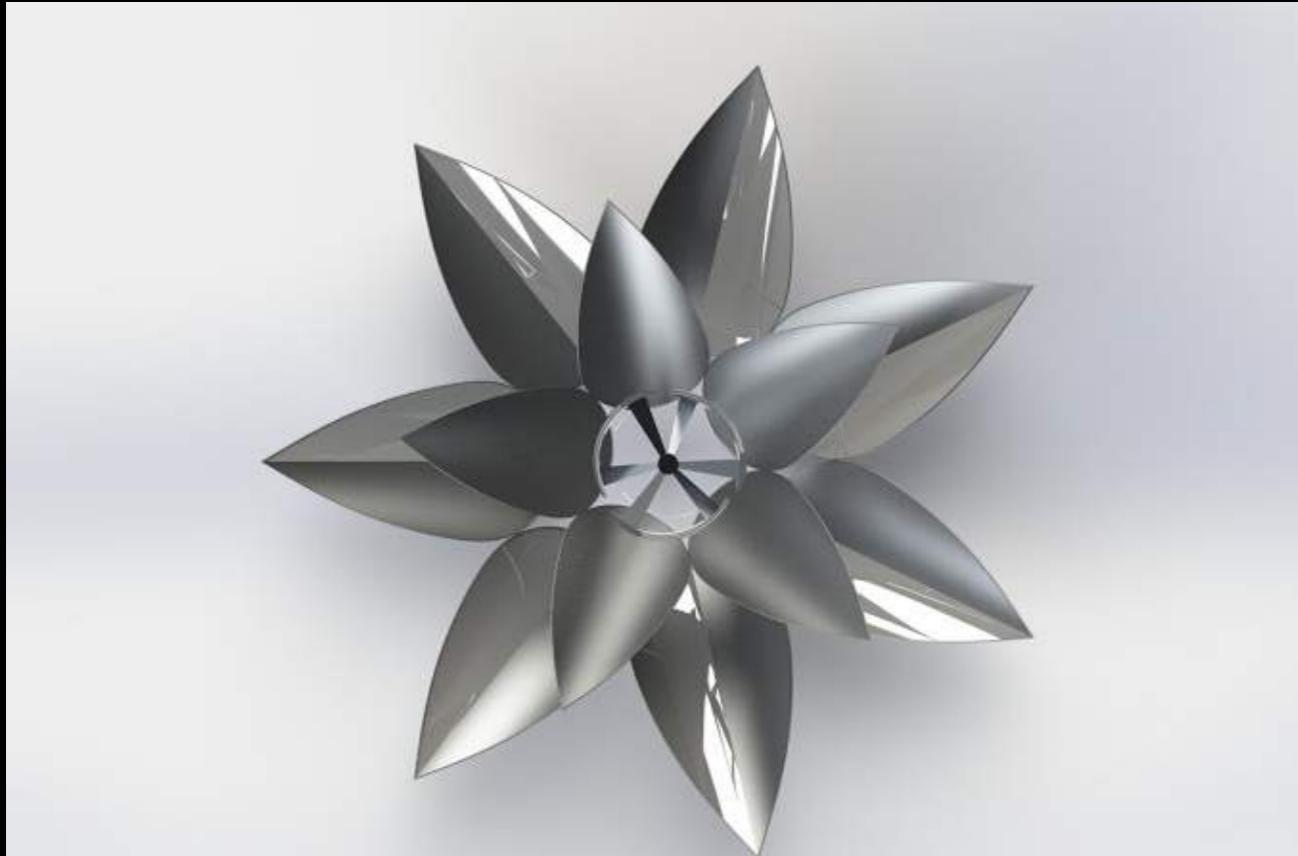
- copper or aluminum helicoidal geometry
- material surface area dissipates heat
- gear ratio to multiply rotation speed and increase duct flow

# Radiative Condensing

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Above-ground

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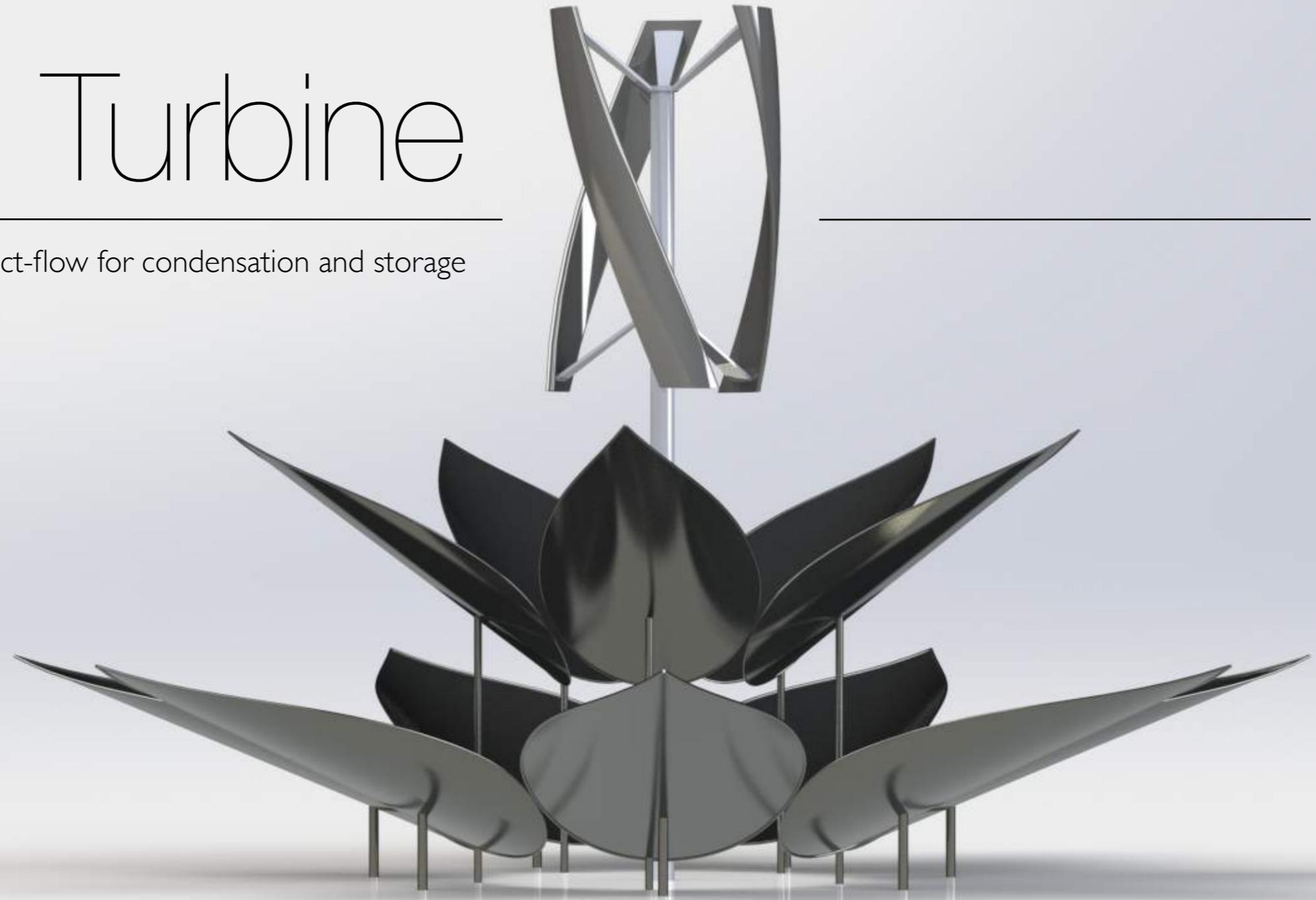
-Designed to remove water's latent heat of vaporization from the air to allow condensation to occur

-Curved panels allow for efficient rain collection

# Helical Turbine

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and below-ground passive duct-flow for condensation and storage



# Turbine and Gear Train

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## Above-ground

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- Swept airfoil promotes rotation from multi-directional wind sources
- Gear train multiplies axial rotation by changeable factor
- Increased rotation in lower fan increases condensation efficiency
- Lower fan placed at pipe entry forces ambient air into the shaft



# Heat Extraction

## Below-ground

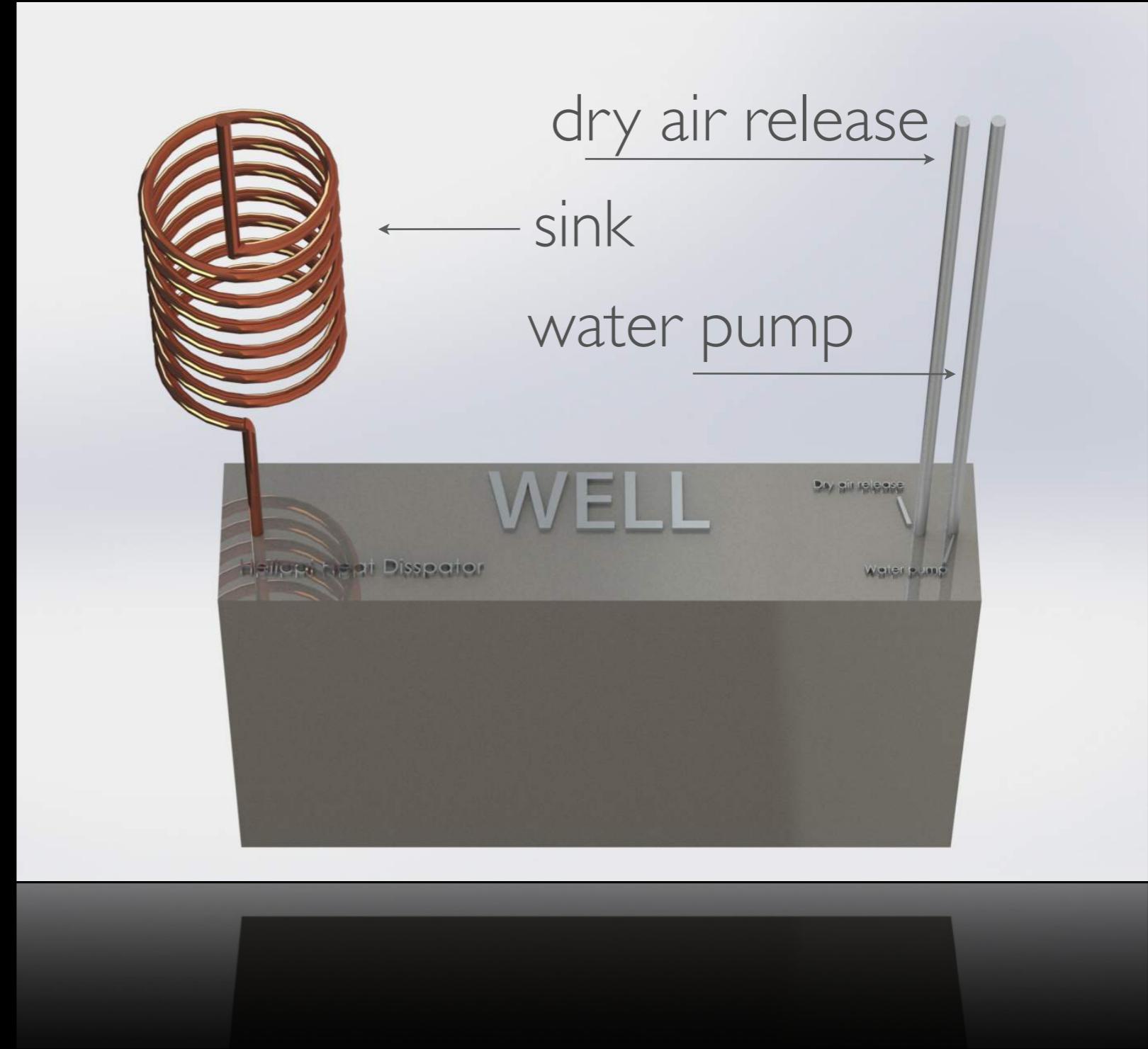
- Utilizes cool ground for expedient thermal transfer out of pipe

- Copper SA dissipates latent heat quickly

- 100% pure water

- Mitigates evaporation and contamination by condensing and storing underground

- Well acts as part of the cooling body

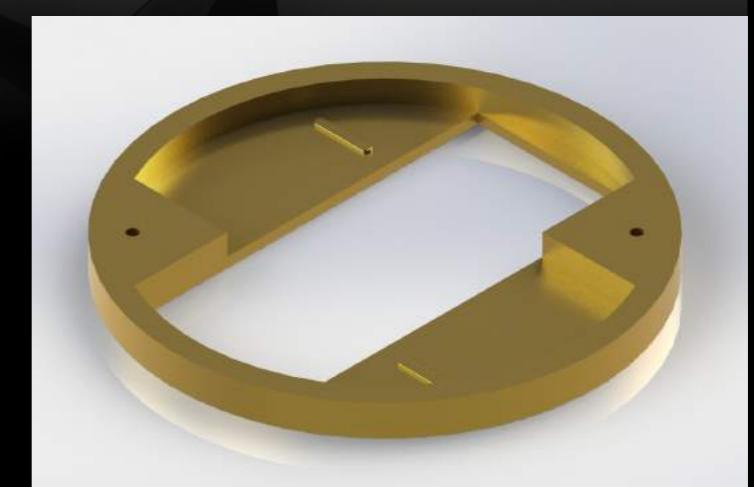
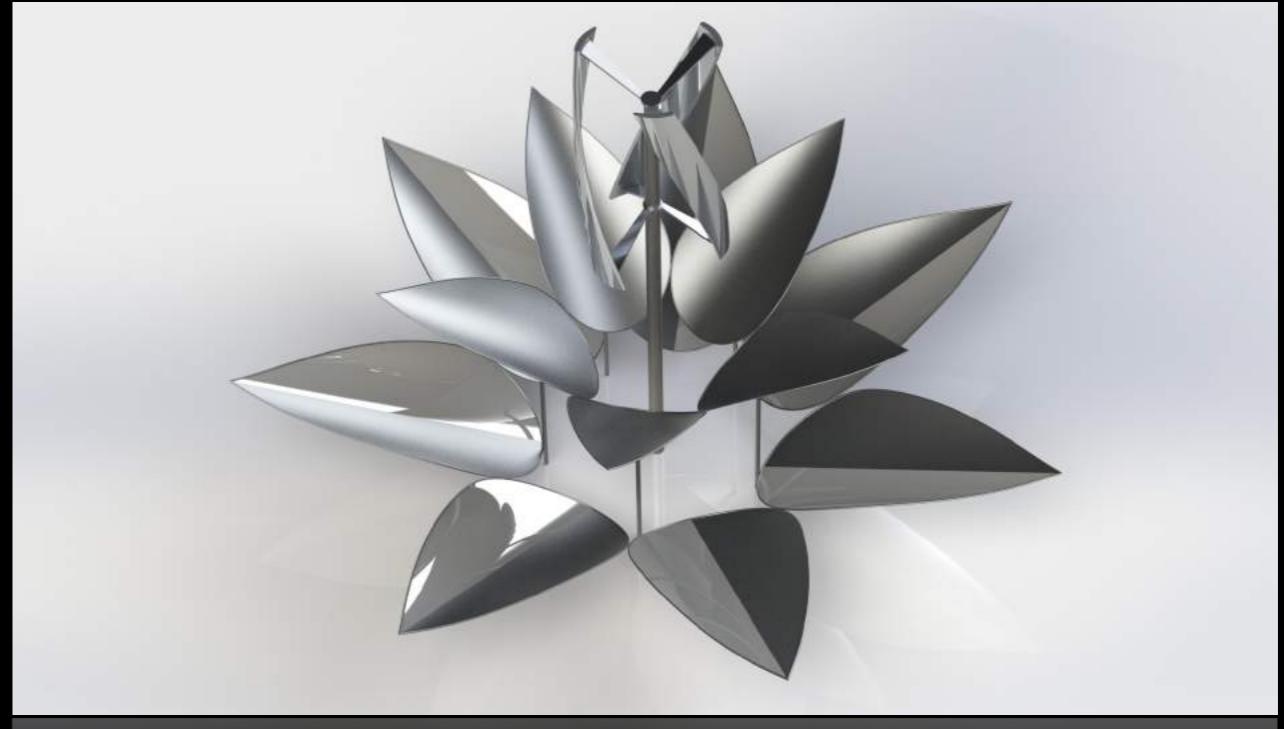


# Modular Form

Easy maintenance  
Modular expansion  
Site specific layout



Few tools are  
needed: just a  
wrench, shovel,  
and hammer



# Market Strategy

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# Niche Market

Appeals to **luxury** market through spectacle, and alignment with humanitarian efforts

Incentivize donations by rallying corporate sponsors to support

Practical and potentially life-changing in **developing nations**

Modular approach harnesses public exposure in flower form to build excitement for individual petal unit



# Development

Create jobs and liberate free time in rural communities

Involve the community in installation and artistic direction

Create a relaxing environment to rehydrate and rejuvenate

# Design Team

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**Jack Purvis**

*Visual Design | Cognitive Science*



**Ian St. Louis**

*Turbine & Gear Train | Mech. Engineering*



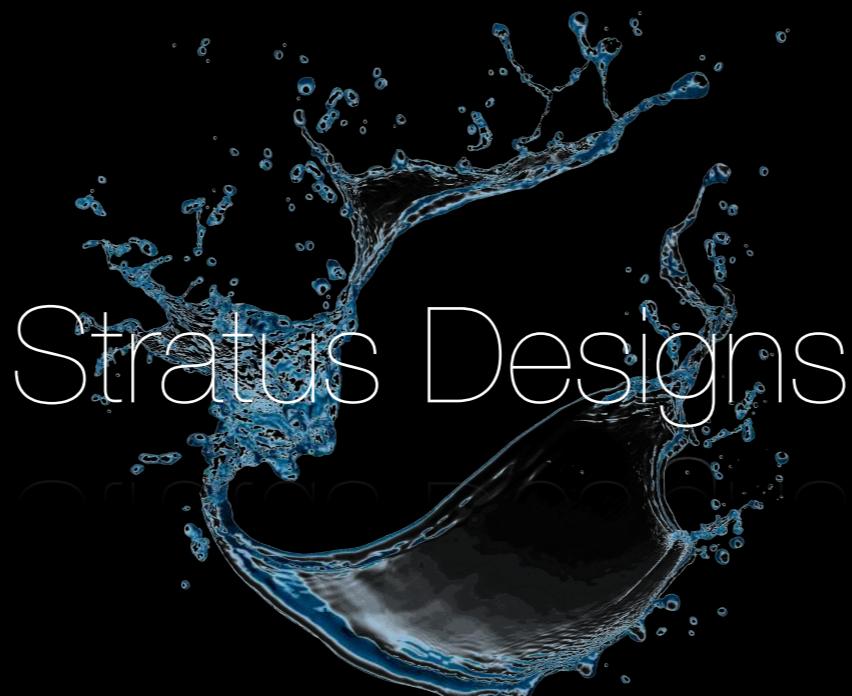
**Elliott Gutekunst**

*Fabrication | Political Science*



**Theo Fédrone**

*Mounting System | Mech Engineering*



**Trevor Hansen**

*Mounting System | Mech. Engineering*

# Influence

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Hayden Taylor  
*Asst. Prof. of Mechanical Engineering*



Robert Full  
*Prof. of Integrated Biology*

# Thank you

