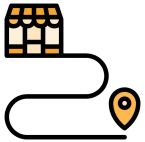
Hydration to Everyone

Providing clean drinking water to every household without the need of treatment or transportation

Problem: 2 bn people lack access to safe & reliable drinking water

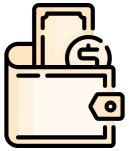
Safety

Diarrheal diseases due to unsafe drinking water is responsible for approximately **485,000 deaths a year**[1]



Accessibility

Water access is often far from the home; women and girls spend **200 million hours daily** collecting water for their homes[2]



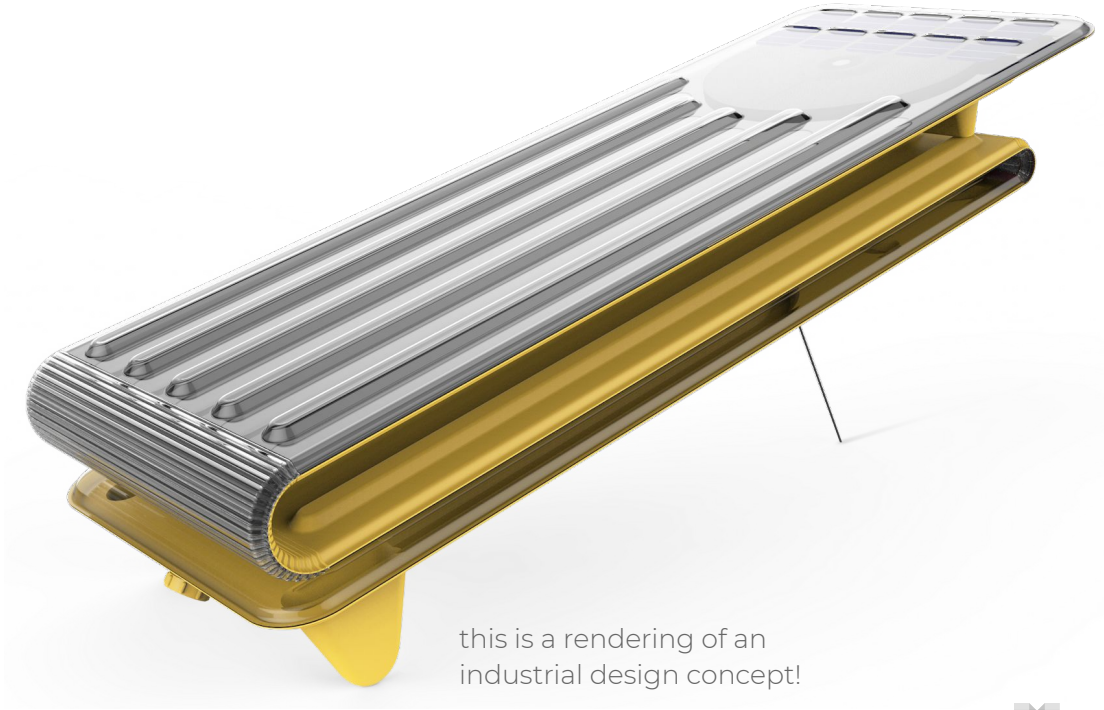
Affordability

WHO estimates that it will take **$203 billion** in infrastructure investment to provide piped water to people currently underserved[6]

Solution: Atmospheric Water Harvesting

Providing clean drinking water to every household without the need of treatment or transportation

- $150 target price point
- Solar powered
- Captures ambient humidity and condenses it into clean water
- Produces enough drinking water for for two adults per day



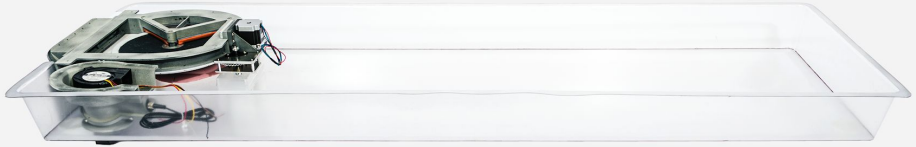
this is a rendering of an industrial design concept!

Technology

H_2E's Vacuum Formed Prototype
Exploded View Photograph

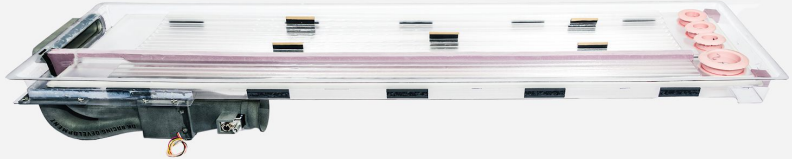
1. Heating
natural sunlight is used to heat recirculating air to a temperature of 80-100 C

2. Humidifying
the hot air draws in moisture from ambient air with the help of a sorbent material



3. Recuperating
heat is recycled increasing the efficiency and water output of the device

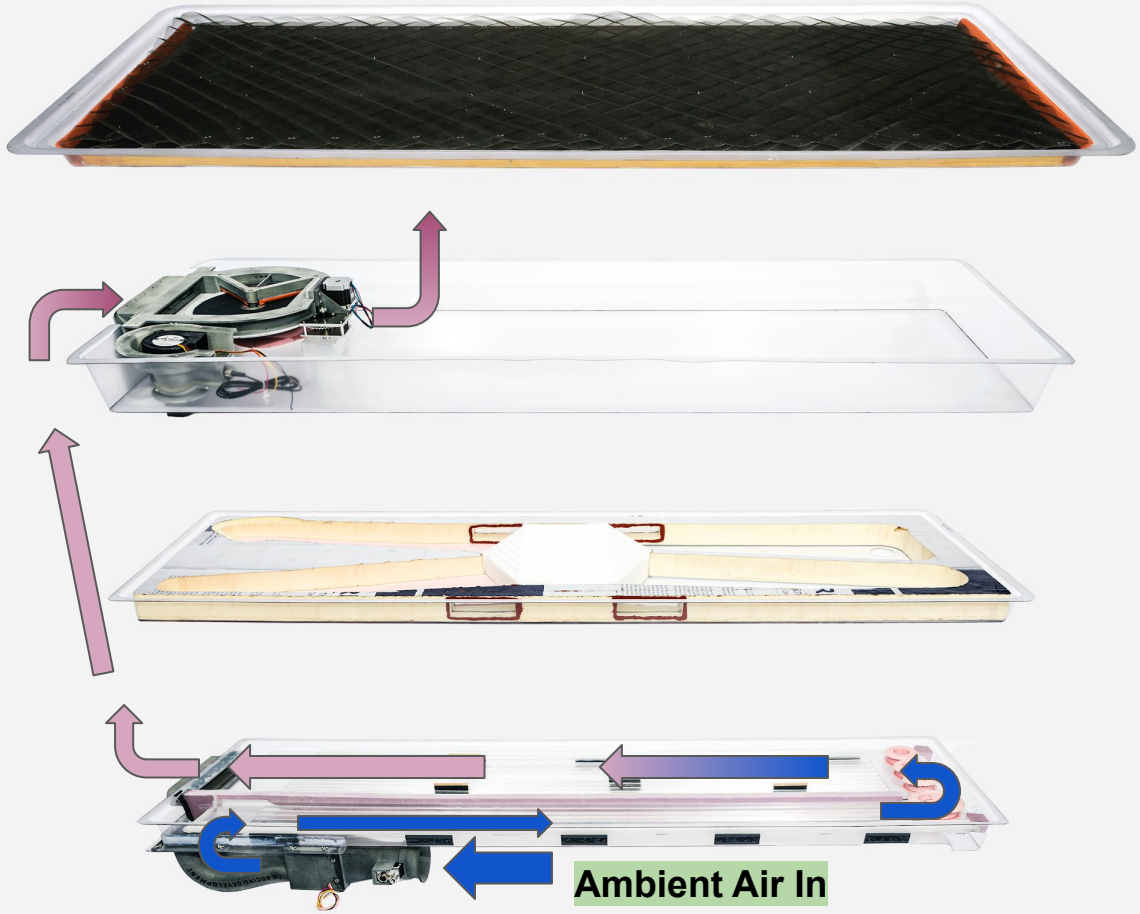
4. Condensing
water appears as it condenses at ambient temperature and without any refrigerants



this is a photo.

Air-Flow Path: Humidity supply

Moisture enters the drive through a stream of ambient air that is passed **through a desiccant**, depositing humidity before **exiting the device**



Air-Flow Path: Recirculated Stream

Air acts a working fluid , heating, **absorbing moisture** from the desiccant, flowing through heat exchangers, **to cool** and **condense out water**, and finally cycling back through the device.

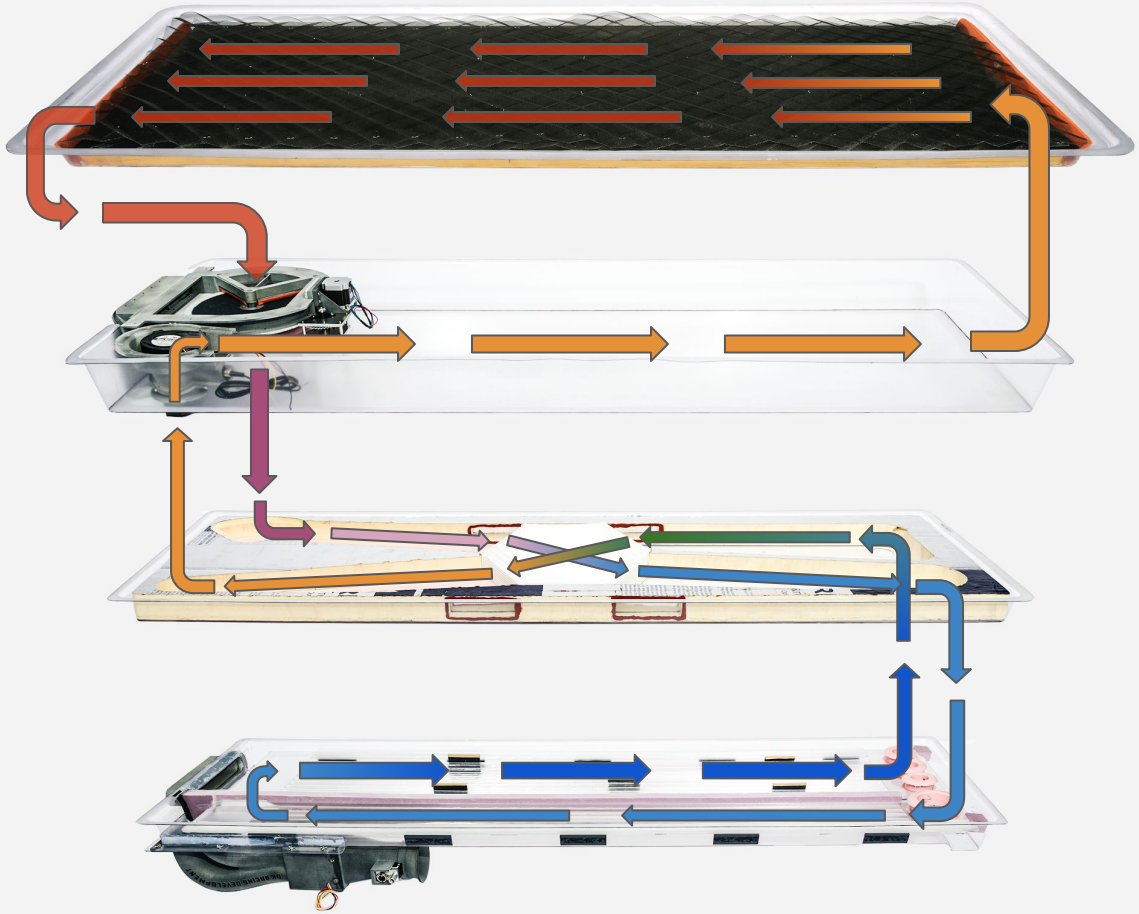


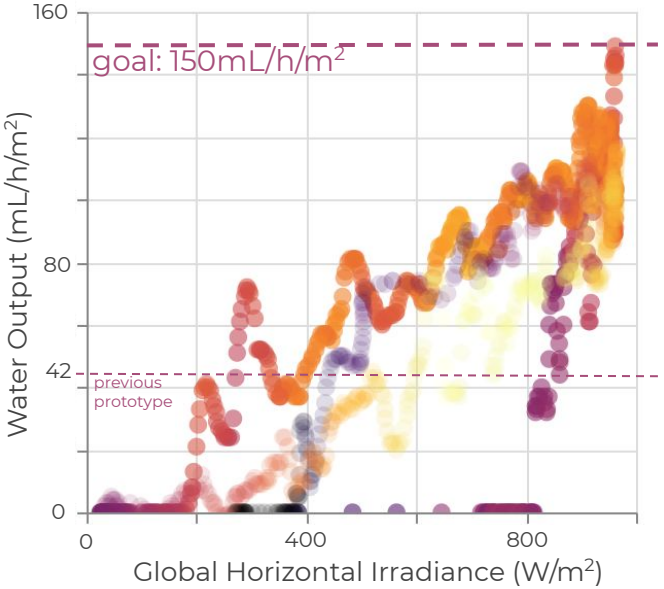
Photo of Appearance Mock without the Experimental Gear

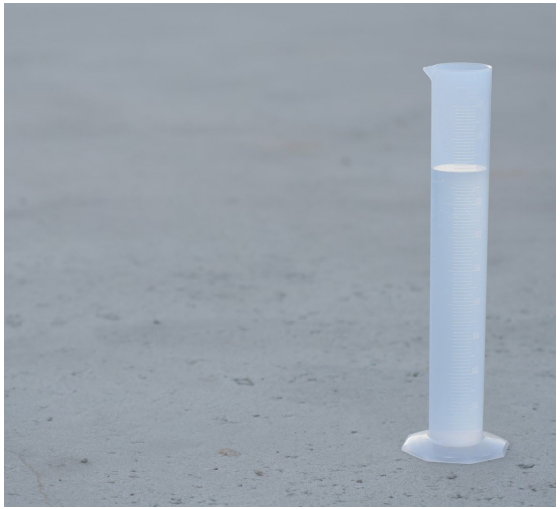
not functional as shown, but assembled from major vacuum formed parts also used on the functional prototypes

Heavily Instrumented Vacuum Formed Prototype

Outdoor Experimental Results 2020

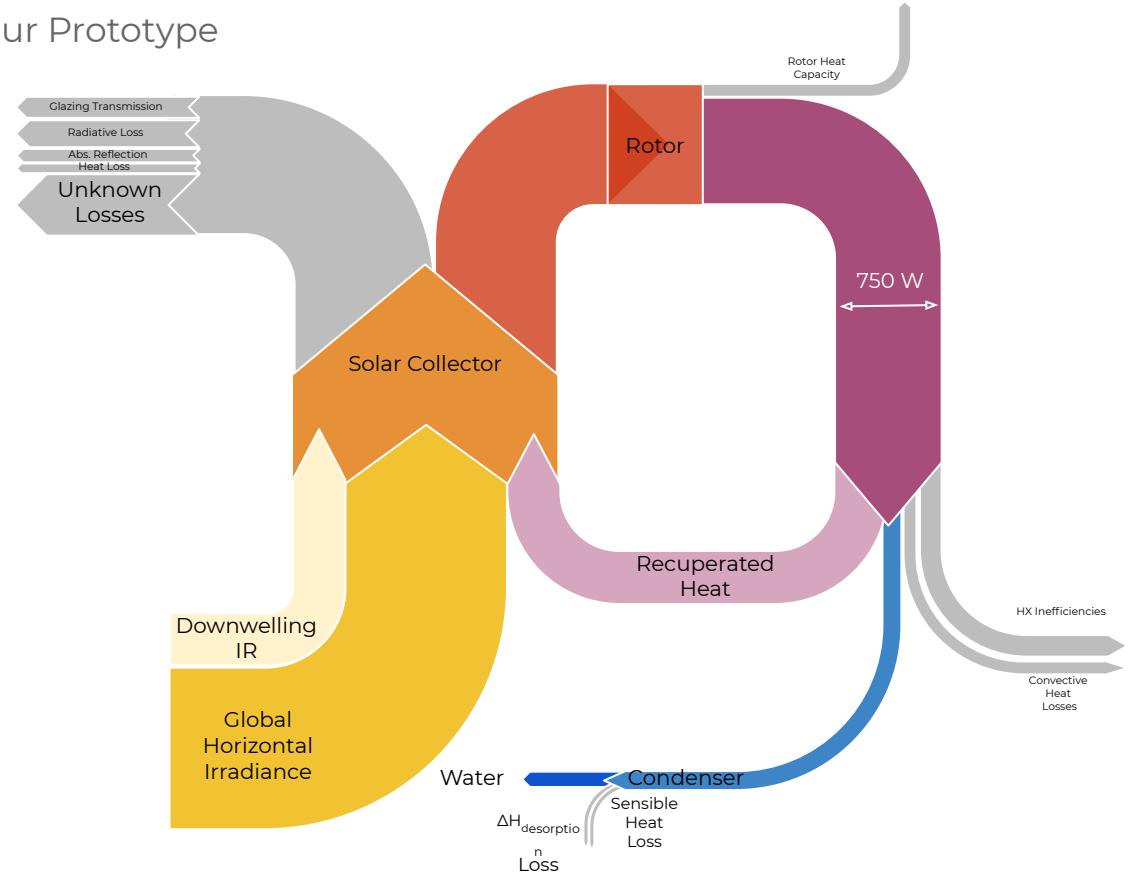

adapting to COVID by increasing priority of roof tests





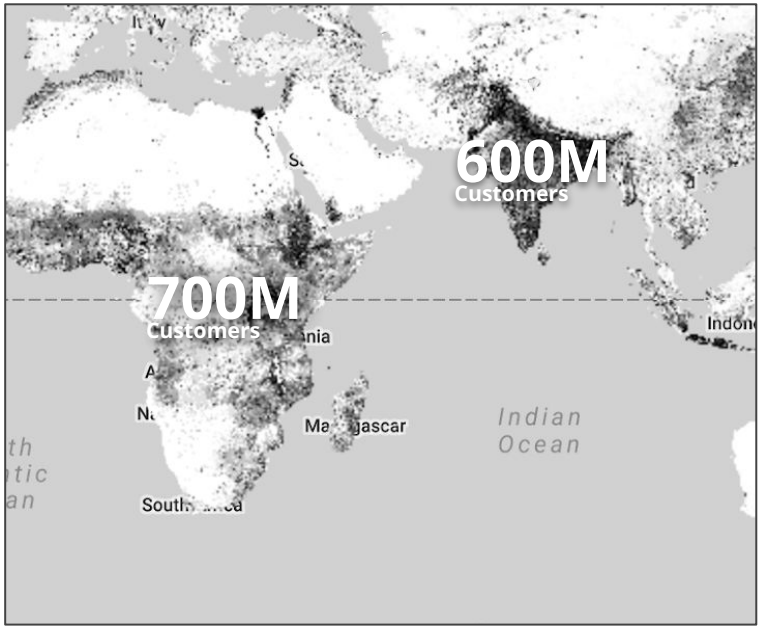
Device Losses of an AWH

Approximate Sankey Diagram of how Power flows through our Prototype

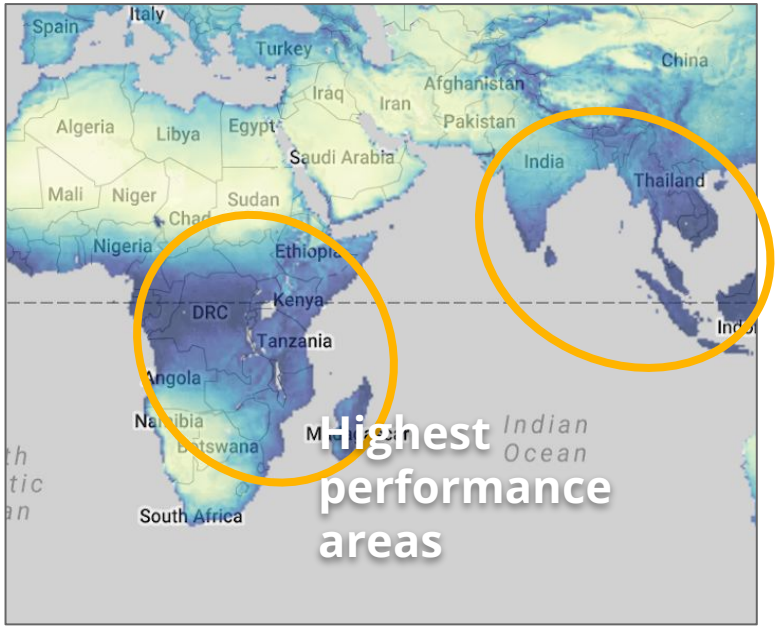


Market

Atmospheric Water Harvesting performs best where it is needed most



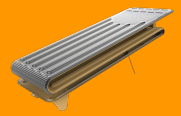
population density of potential customers $\log_{10}$(people / km^2)



average daily operating window of a water generator (darker = better)

known artifacts in this logarithmic plot due to local population hotspots, ike Europe's and China's many dense cities; these are negligible in sum.

How AWH compares to other technologies

	Surface Water	Surface Water + Treatment	Surface Water + Filter	Bottled Water	AWH
					
Free from bacteriological contamination	✗	✔	✔	✔	✔
Free from chemical contamination	✗	✗	✗	✔	✔
Water available at household without transportation	✗	✗	✗	✗	✔
Volumetric cost	$0 - $0.05 / L[2]	$0 - $0.07 / L[2]	$0 - $0.07 / L[2]	$0.04 - $1.00 / L[2]	~ $0
Capital cost	✗	✗	$15 - $150[5]	✗	target: $150
Total water cost	$0 - $0.05 / L[2]	$0 - $0.05 / L[2]	$0.01 - $0.10/L	$0.04 - $1.00 / L[2]	target~$0.03/L[6]

References

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6) *Assuming 1500 L/yr x 3 yr and remineralization and/or chlorination for residual protection