Solar Sausage for Water Desalination

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Introduction:

Motivation: Many of the developing countries lack access to clean drinking water

Goal: Utilize the Solar Sausage in mass production for desalinating water

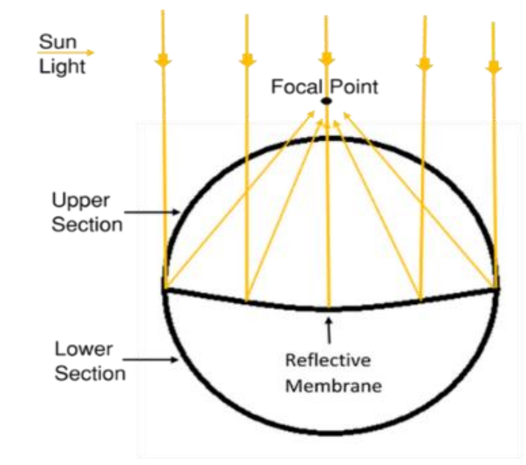


Figure 1. Visual display of the Solar Sausage technology

- The Solar Sausage is an inexpensive alternative to parabolic solar collectors
- Desalination provides clean water where saline water is abundant
- $5,000 entrepreneurial project

Objectives:

- Must be inexpensive and simple for mass production and commercialization
- Must support a small family
- Easily transported and easily deconstructed
- Meet water standards set by World Health Organization

General Layout:

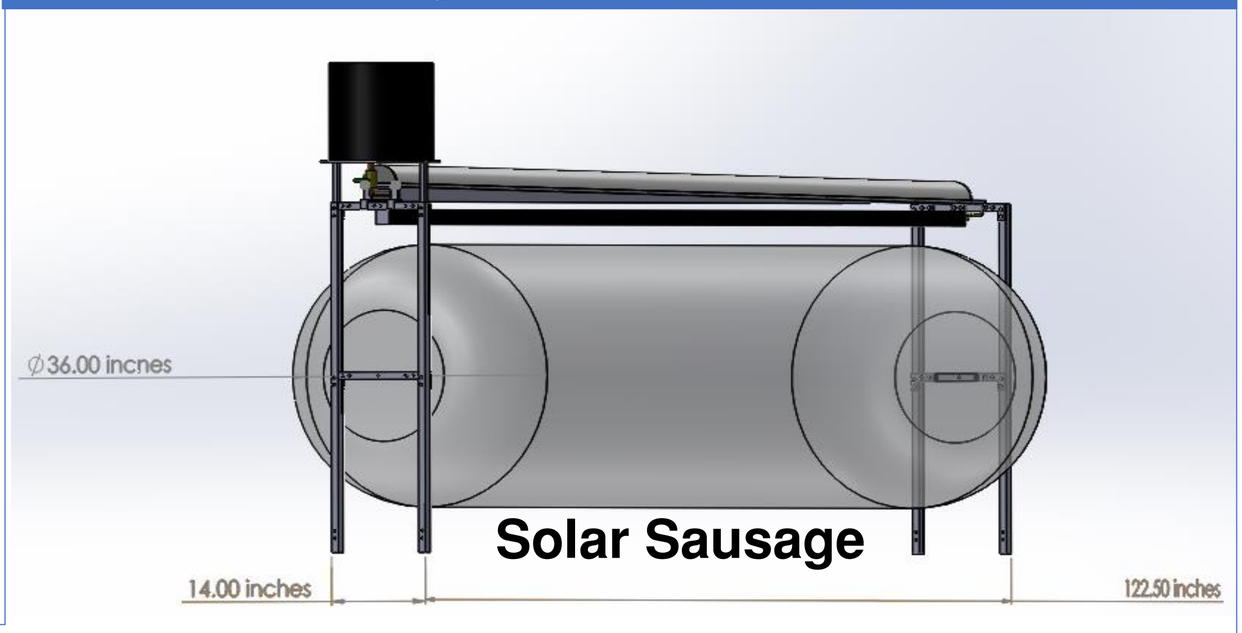
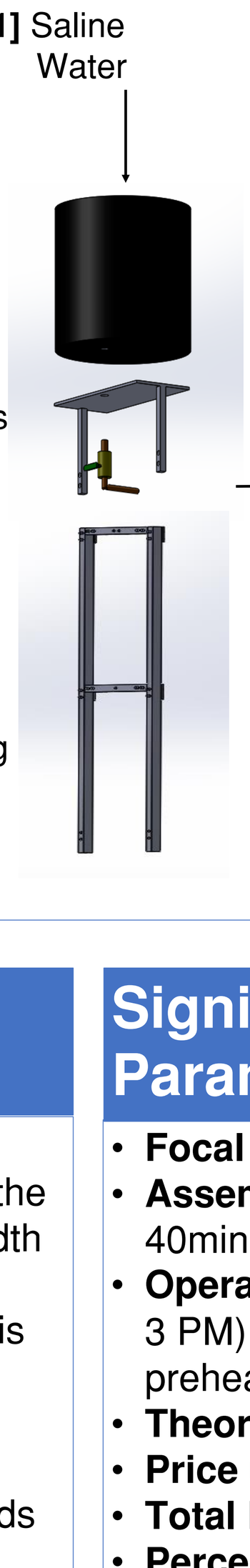


Figure 2. System process flow with assembled and exploded view



Storage Tank

- 5 Gallon Bucket. U.N Water Safe
- .5 inch Ball Valve controls water flow

Stand

- Constructed of 1 inch square Aluminum Tubing

Condenser

- Water vapor collected, condensed and channeled to collection pipe.
- 2 inch elevation at one end
- Condensing Hood made of 4 Mil Transparent Plastic

Trough

- Solar Sausage heats the bottom of the trough
- Water vapor rise, salt collects in the bottom of the trough

Focal Point and Temperature:

Figure 3. Visual focal point on trough

- Temperature increases as the focal point width decreases
- Temperature is highest in the center and decreases moving towards the stands

Significant Parameters:

- **Focal point:** 3/8 in. to 2 in.
- **Assembly/Disassembly time:** 40min / 10min
- **Operation time:** 6 hrs. (9 AM - 3 PM) *includes one hour preheat time
- **Theoretical yield:** 3 gal. / day
- **Price unit price:** 81 ¢ / gal.
- **Total Price:** $1,485.62
- **Percent of total budget:** 30%

Future Work:

- Test system as a whole unit
- Improved pressure pumping system
- Test potable water output with varying conditions
- Increase output or decrease cost where possible

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