

## Product Design Specifications: PDS

### Engineering World Health (EWH) Water Filtration Project

#### Team Roles:

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#### Problem Statement:

Many people in developing regions around the world have either limited access or one at all to purified drinking water due to contaminated water sources. This problem results in preventable diseases and even death. Water filtration systems are necessary to rid the local water from bacteria, pesticides and viruses. In order to make these systems effective in the respective regions they must be made from material found near the region of interest, require low maintenance and be efficient.

#### Function:

Our design filters dirt particles, bacteria, pesticides and other toxic chemicals from water. It is completely self-sufficient because it uses solar energy and a photo-catalyst.

#### Client Requirements:

- Sterilizes water found all around the world.
- Can transport the device, or sterilized water to rural regions of developing countries

#### Design Requirements:

##### 1. Physical and Operational Characteristics

- Performance Requirements:** Must produce purified water at an efficient rate. The water will be used to drink from and clean infections and wounds.
- Safety:** It must clear the water of bacteria such as giardia and e-coli, pesticides and other toxic chemicals.
- Accuracy and Reliability:** A system must be in place to measure the purity of the water from time to time.
- Life in Service:** Must last at least a year in service. Health professionals are only able to make one trip a year to developing regions. If it breaks down we cannot expect the people there to fix it no matter how easy it is.
- Shelf Life:** Storing the product will have no effect on its ability to perform.
- Operating Environment:** This device will be used in developing countries around the world, specifically outside on the sides of houses.
- Ergonomics:** The device should be able to be operated by an untrained adult, but settings should be determined by a professional.
- Size:** The device should be compact and easily portable.
- Weight:** The device should be light enough to be lifted by a child.
- Materials:** The device should utilize materials that can be found in the area it is used in.
- Aesthetics, Appearance, and Finish:** Not applicable.

**2. Production Characteristics**

- a. **Quantity:** Our team will be developing one water filtration device.
- b. **Target Product Cost:** \$100

**3. Miscellaneous**

- a. **Standards and Specifications:** Not applicable
- b. **Customer:** The client wants to be able to either transport sterile water long distances or have a portable device that sterilizes water on the spot.
- c. **Patient-related concerns:** Not applicable
- d. **Competition:** Not applicable