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Gravity fed power generation system

**Idea:**

First things first, there are two separate ideas here. One is to feed a power generation system with water by using a funnel-type system that feeds the UV system without having to use the pump. The constraints with this idea are that the person has to pour the water into the funnel, the funnel might need to transfer the water at a certain rate, and the possibly 40lbs of water needs to be supported because it could create a higher center of mass.

A cheap structure could be developed to support the water funnel and the cost of the funnel system must be lower than the cost of the pump system. The funnel could be developed to have a height that is below the shoulder height of the average woman in these developing countries.

The strictest constraint is the controlling of the rate that the water flows out of the funnel.

The concept would work if the funnel was supported and was filled by the user, then the user would sit down, apply some sort of force to start up the UV bulb, then when something indicates to the user to release the water, the user would pull the water blocking system (gate valve), and the water will be released and then begin to flow through the UV system. The gate valve will have to be locked in before the water is poured in. The water will be flowing at a set rate, which will be delegated by the diameter of the end of the funnel and the gate valve, which will be manual so different settings could regulate the speed of the water.

Shape of the funnel doesn't seem to have an effect unless we can prove it mathematically that it affects the rate but no sources has proved this or disproved it.

**Idea 2:**

Second, same ideas in feeding the power generation system or UV system, but having the water create some energy on its way. The idea behind this is similar to how a hydroelectric dam works, the water travels from the funnel to the pinwheel and spins the wheel, which turns a motor which generates the power to be used in some form. The constraints with this is that the feed mechanism has to somehow connect to the area that needs power, the water needs to keep a pressure high enough to produce enough rpms on the motor to produce power, and can the motor produce enough power to be useful.

Without the pinwheel	
Pros	Cons
Potentially cheap structure and funnel	Higher Center of Mass
Could eliminate the pump and the power needed for the pump	If power is generated from it then the power might not be enough to transfer or worth it to capture the power
Less effort needed if less power is needed	people need to lift the water into the funnel
	Might not have enough power from the rate water
	If rate wanted to be monitored for any reason, water speed sensors are expensive
	Not OTS

	Risk Item	Effect	Cause	Likelihood	Severity	Importance	Action to minimize risk
1	Weight of water tipping entire unit	Unit tips and breaks	High Center of mass when full	3	5	5	
2	User strain when trying to fill the funnel	User can't use the BWM due to strain or due to not being able to fill funnel	Water is heavy and has to be lifted higher to get into the funnel	??	3	4	
3	End of batch of water in funnel not enough pressure	If a pinwheel is involved, then loss of power from pinwheel. If no pinwheel involved then ???	As amount of water in funnel decreases the water pressure decreases	5	3?	4	
4							
5							
6							
7							
8							
9							

Scale 1-5 (1 being lowest)

**Sources:**

<http://www.eon-uk.com/EnergyExperience/356.htm>

<http://www.greenoptimistic.com/2010/01/10/pinwheel-gravity-engine/#.Ujuv58bOmRk>

<http://www.dteenergy.com/pdfs/hydroKids.pdf>

<http://ask.metafilter.com/58126/water-through-a-funnel>

<http://www.math.umbc.edu/~rouben/2010-01-math481/proj1.pdf>

<http://www.youtube.com/watch?v=9F0yRc4TkN0>