PORTABLE WATER DISPENSER BY DESALINATION AND MOISTURE ABSORBER USING SOLAR ENERGY AND WIND ENERGY

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Abstract:
One of the very important thing to keep living things alive is ‘Water’. It is very important to use the water wisely. Now a day it is very difficult to get consumable water easily because of the nature imbalance due to many mistakes of human being. At present, there are many desalination methods are available but either they are costly or they not working efficiently. So, we come up with an idea, that is portable desalination equipment which is useful in both summer and winter season and it doesn’t need any power or battery. We are using the solar energy to desalinate the water. The model is portable and we can use it in oceans, in polluted lakes, ponds to obtain unusable water to usable water for human consumption.

Objectives:
- The main objective is to utilize the inherently available solar energy to obtain the consumable water from oceans and polluted lakes where the water is unfit to drink.
- Desalination of water using solar energy in the sea shores which helps people to get consumable water. Also mineralize the water by using proper attachment.
- Getting fresh drinking water for the needy is the objective of the project.
- The objective of the work is to develop an affordable portable water system.
- It doesn’t need any power or battery to function.

Methodology:
The Portable water dispenser is built using the following materials: -

- Hollow Aluminium Frame
- Fresnel Lens
- Rectangular Glasses
- Angular Hinges
- Nuts and bolts
- Water collector
Project Model in 3D drawing:

3-D Model of Portable Desalination Water Dispenser

Picture showing actual focal points of Fresnel lens
Result:
- The input volume of water in the model was 1 litre and this level was maintained throughout.
- The results obtained for that same amount of water are:
  For 1 litre input of salty water the output obtained was around 700-800ml of potable water in just more than an hour on a sunny day.
  The rate of evaporation and condensation was high during 11 a.m.-2 p.m. This is the time when the rate of sunlight is very high and thus the rate.
- The amount of fresh water varies depending upon the sunlight condition and also the level of salinity in the water.

Conclusion:
The project main objective was to achieve clean drinkable water from dirt or salinized water, hence this desalination model made it possible using simple principle by condensation of steam to drinkable water. The clean drinkable water can be obtained around 70-80% from supplied dirt or salinized water without using any electricity. Hence analysing the function vs cost with the presently available equipment in market, our portable desalination equipment is more efficient and less in cost.

Future scope:
- The plant can be setup near oceans to continuously generate drinking water. We can increase the desalination process faster with the help of bigger Fresnel lens.
• We can also use some attachments to add useful minerals before dispensing pure drinking water.
• Can also use for high capacity purification by assembling number of portable water dispenser units.
• When the plant is big, the moist absorber can also be put into place to absorb as much water as it can. Although, the moisture absorber will not be very efficient compared to current desalination plant but we need to take use of the available resources.
• This portable unit can also be used in life boats so obtain drinking water in case of emergencies.
• Also, the floating arrangement at seashores of lakes and oceans will help to provide the drinking water for visitors.