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Seawater Purification Using Earth Source Energy

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Abstract: ***Lack of fresh water is a general concern and will increasingly become a threat to societies in the future. The water problem is particularly acute during the summer season in the Mediterranean region when the number of people staying there increases considerably. The number of tourists is expected to double by 2025. Drinking water scarcity is likely to increase because of a changing climate. This represents a massive economic, social and environmental threat to semi-arid regions such as the Mediterranean. An important technology to tackle this problem is desalination making fresh drinking water from saline seawater. Most of the current methods, however, are neither cost efficient nor environment friendly. Therefore, there is an urgent need to develop a technology that would fulfil both criteria.***

Keywords: Mediterranean, Saline Seawater, Desalination.

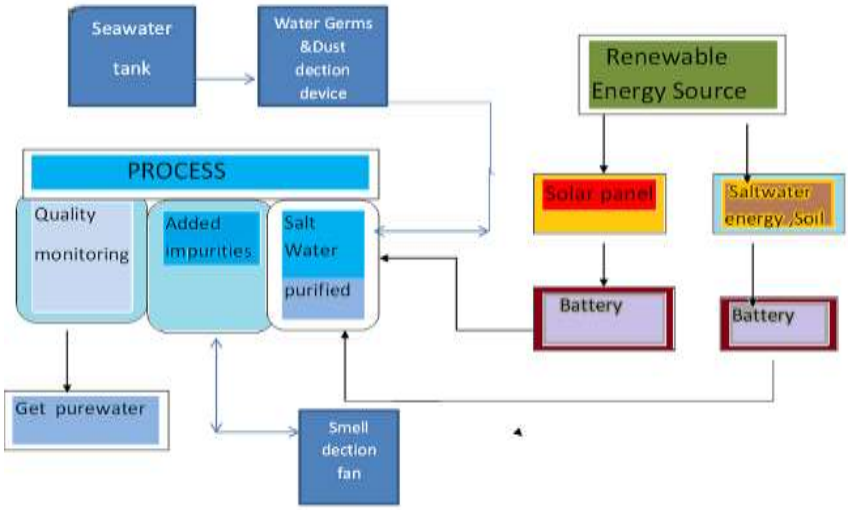
INTRODUCTION

Lack of fresh water is a general concern and will increasingly become a threat to societies in the future. The water problem is particularly acute during the summer season in the Mediterranean region when the number of people staying there increases considerably.

Drinking water scarcity is likely to increase because of a changing climate. This represents a massive economic, social and environmental threat to semi-arid regions such as the Mediterranean. An important technology to tackle this problem is desalination, making fresh drinking water from saline seawater. Most of the current methods, however, are neither cost efficient nor environment friendly.

This technology and is seeking opportunities to optimize the system (components, costs), installation procedures, maintenance requirements (materials, knowledge availability), and the process (dependence of direct sun, heat storage soil, recovery etc.). Upgrading the system's current capacity to a production level of fresh water of 1liter/ day. Applications in developing coastal countries deserve special attention as such technologies converting polluted - salt water into fresh drinking water will improve quality of life, without harming the local ecosystem

BLOCK DIAGRAM



WORKING STEPS

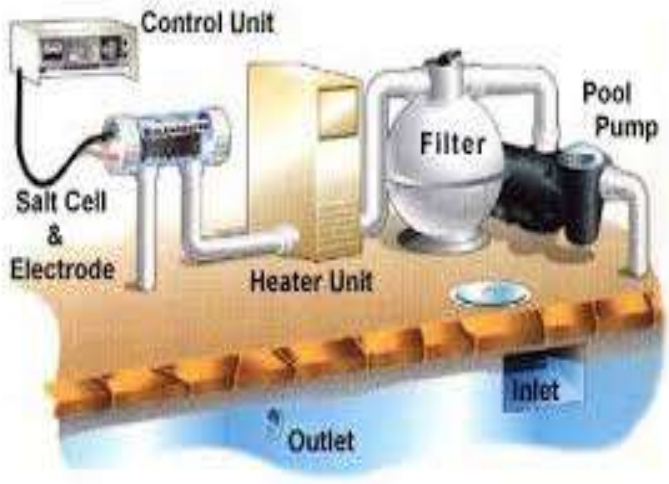
- Seawater filled in the tank.To check germs and dust. And it detects the device. The earth source energies are1.solar energy, 2.soil energy, 3.saltwater energy.
- It produced an electricity. Then the connect battery.
- Saltwater can be purified and additionally added healthy impurities.
- To check water quality and monitoring the water level.
- Detect unwanted smell, to get purified healthy water.

EXPLANATION

a. Seawater Purification Process

For sea water desalination projects, there are various disposal venues, including deep well, ocean, surface discharge, ponds. As with all alternatives, there are challenges to each. Finding a compatible aquifer for using a good method, the distance to the sea, the compatibility of surface water ecosystems, and the cost of land for evaporation ponds are some of the considerations.

For seawater desalination, returning the concentrate back to the sea is currently the only practical method, and typical design parameters center on the proper diffusion of the concentrate to minimize aquatic life impact as well as subsurface and subterranean compatibility to pipe infrastructure



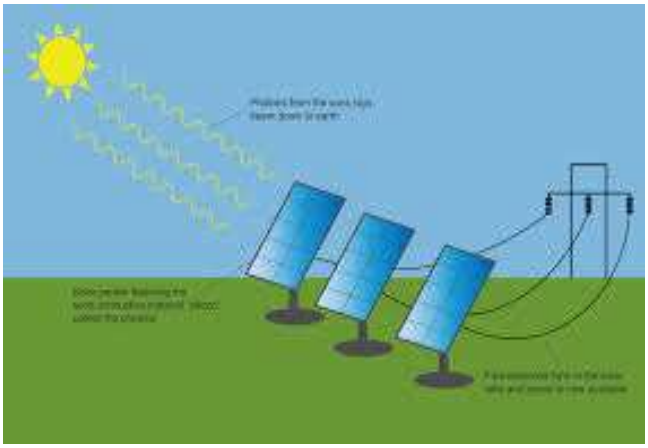
In today's water scarce regions, water recovery is becoming less of a cost/benefit type of analysis than in the past. The value of brackish and fresh water in The future is becoming difficult to calculate, and high water recovery design of brackish and water reuse projects is becoming an institutionalized norm to secure long-term economic sustainability, political stability while reducing environmental impact.

b. Soil battery

Thus an "earth battery" is a pair of electrodes, of two dissimilar metals, with moist earth used as an electrolyte. To create the battery, Bain buried plates of zinc (anode) and copper (cathode) in the ground about one meter (3.2 feet) apart producing an output voltage of approximately 1 volt. Have students create earth electrodes out of two dissimilar metals. Ask them to hypothesize what soil conditions are best for creating an earth battery. (Suggestions include: swamp or marsh muds, dry sand (no moisture), lawn soils, clay, sandy soils, acid forest soils, salty soils on roadsides after a season of winter salting. Go hunting for iron bacteria (see Blog: Hunting Iron Bacteria) and use these iron-rich muds as the battery source material

c. Solar Energy

1. The pump is used to reduce the pressure inside the chamber to around 20 kPa to ensure boiling takes place at 60° C.
2. The sunlight is captured by the glass cover and absorbed by the black floor of the top reservoir.
3. Water gets heated up and evaporates thus making the air saturated with vapour.
4. This water also supplies to the two stage troughs by means of tubes running down and flow is controlled by the level control valves.
5. When this saturated air comes in contact with cooler glass cover it condenses and forms droplets. Due to the combined effect of inclination and gravity, the droplets move and drop into the collector. This water is conveyed to the storage from here.
6. In the lowermost reservoir the water is heated up by means of the collector tubes – this serves dual purpose, first it introduces turbulence in water and hence enhances evaporation also it takes water from lower cooler layers and constantly heats it up to supply to the top layers thus mixing the heat evenly in the volume of water.
7. Water evaporates in the lowermost reservoir taking up the heat for raising temperature and phase change. When this condenses on the cooler ceiling it gives out the latent heat and small amount of specific heat to the reservoir above it. Hence no heat is lost in the water going out in form of condensate but is reformed as useful heat for the next subsequent stage. This improves efficiency tremendously.
8. The same process as described in 7 repeats in the next two stages. This ensures maximum utilization of the captured heat and finally, all the water falls into a common collector system which is so designed to minimize any sort of losses.



SCOPE OF THE DEVELOPMENT

Seawater purification developed an environmentally friendly and efficient method that desalinates seawater using solar, wind, soil or mud, saltwater energy provided by renewable earth energy collectors.

The process can resolve the two world demand problem,

1. Demand for water,
2. The demand for electricity.

It's used for the energy of day time using solar energy and during a night time using soil or mud energy. Additionally to perform that saltwater energy. The vacuum is generated by gravity generated by a continue flow of the condensed fresh water falling from a predetermined high.

Added to the impurities are mainly recommended a child to old man is no side effect. The poor economic countries will be developed from a best position of India. The purified water well as improving agriculture purpose so better growing from the plants, trees, etc.

The salt water is converting pure water and remove the arsenic, ultra violet. It's self-power to produce electricity .we using this method to produce healthy water and it's solved to the demand water in this world

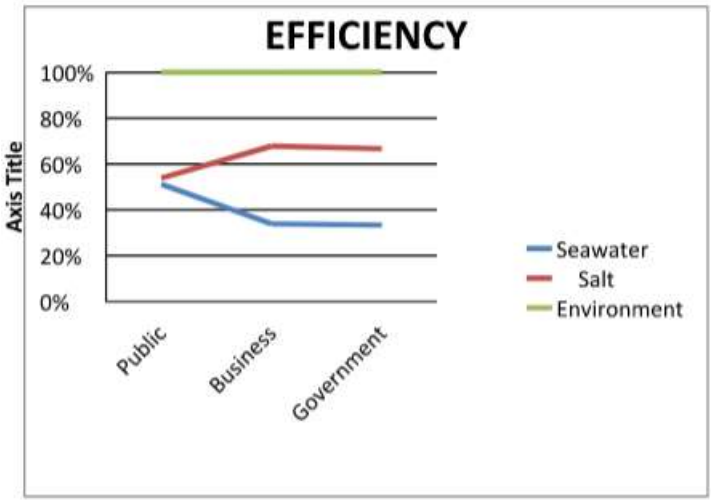
ADVANTAGES

- The earth energy sources are pollution free.
- Less cost.
- Maintain easily.
- Safely to remove Ar+, UV, UF, alkaline.
- Added mineral

DIFFERENT AREAS	**IMPORTANCE(OR) USE**	**ELLIGIBLITY CRITERIA**
Public	**Good Health Condition**	**100%**
Business	**Improve Share Market**	**100%**
Government	**Develop for Countries**	**100%**

APPLICATION

- The self-powering to produce electricity in earth resources.
- Safe to convert to pure water.
- Society growth increases.
- Business areas are
    1. Food industries.
    2. Chemical industries.
    3. Agriculture.
    4. Medical industries



CONCLUTION

From this exhaustive literature review, it is found that various methods are developed for distillation of water. These methods are subject to the demand for fresh water, quality of water source and the involved expense. Conventional Reverse Osmosis systems are currently prevalent domestically but at the cost of plenty of waste water. Non-conventional water purifiers like solar stills have unlimited potential but their usage is inadequate due to lesser output rate. Humidification dehumidification process is the most appropriate option for fresh water production and combined system for simultaneously hot water production. The multi-effect distillation method can be used for mass production of fresh water. The detailed review reveals that there is a need to develop a hybrid system of water purification which can overcome the limitations of all existing water purification systems

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