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# SOLARBASED WATER PURIFICATION SYSTEM

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ABSTRACT :**This system has designed a water purification system to argument the village' s water distribution system. The system utilizes sediment filtration supplemented with ultraviolet light to effectively filter and sterilize contaminated well water as it is pumped to the village reservoir. The goal of the project was to meet the needs of the village and provide a long term water treatment solution. The purpose of this report is to present an overview of the entire project including: the design solution, project cost, construction, and maintenance information, testing and evaluation results and future field testing plans.**

1. Introduction:**The most important natural resource in the world is water and the safe drinking water availability is a high priority issue for quality of life and human existence. In developing countries water-borne disease leads to millions of deaths and billions of illnesses annually. Water disinfection is one of several interventions that can improve public health, especially if part of a broad program that considers all disease transmissions routes and sustainable involves the community. The decreasing availability of water has necessitated in the search for fresh sources of drinking water. The available water in many areas in the country is brackish, saline or impure. Salinity is a major problem in the coastal areas of Kutch and Gujarat.**

**In our country pure drinking water is a major problem in tribal/rural area . the methods used include physical processes such as filtration, sedimentation and distillation, biological processes such as slow sand filters or biologically active carbon, chemical processes such as flocculation and chlorination and the use of electromagnetic radiation such as ultraviolet light. There are many parameters which can be used to measure the quality of water, of which a common one is turbidity, the purpose being to measure impurities in the water. In sense of physical, turbidity is a reduction in the clarity of water indicator of the general condition of drinking water. Furthermore, turbidity has been used for many decades as an indicator of the efficiency of drinking water filtration and coagulation processes, so that it is an important operational parameter for this reason.**

**The high turbidity values refer to poor disinfection and possibly to fouling problem in the due to the presence of colloidal particles or suspended, and commonly it is used as an distribution network, so that it should be minimized. And other processes available for purification of drinking water like Chlorine tablets , Pot chlorination of wells, Slow and rapid sand filters, Fluoride removal , Reverse osmosis plants, etc .In this project, we are making a water purifier which works on solar energy.**

**The basic principle behind this project is reverse osmosis. We are using solar energy which is a renewable source, abundant and cheap. In case of power failures, this purifier will continue to work as solar energy can be stored. This purifier can be used in remote and rural areas where there is no electricity. It can also be used in places affected by natural disasters. It also reduces the salt content in sea water. It provides pollution free operation.**

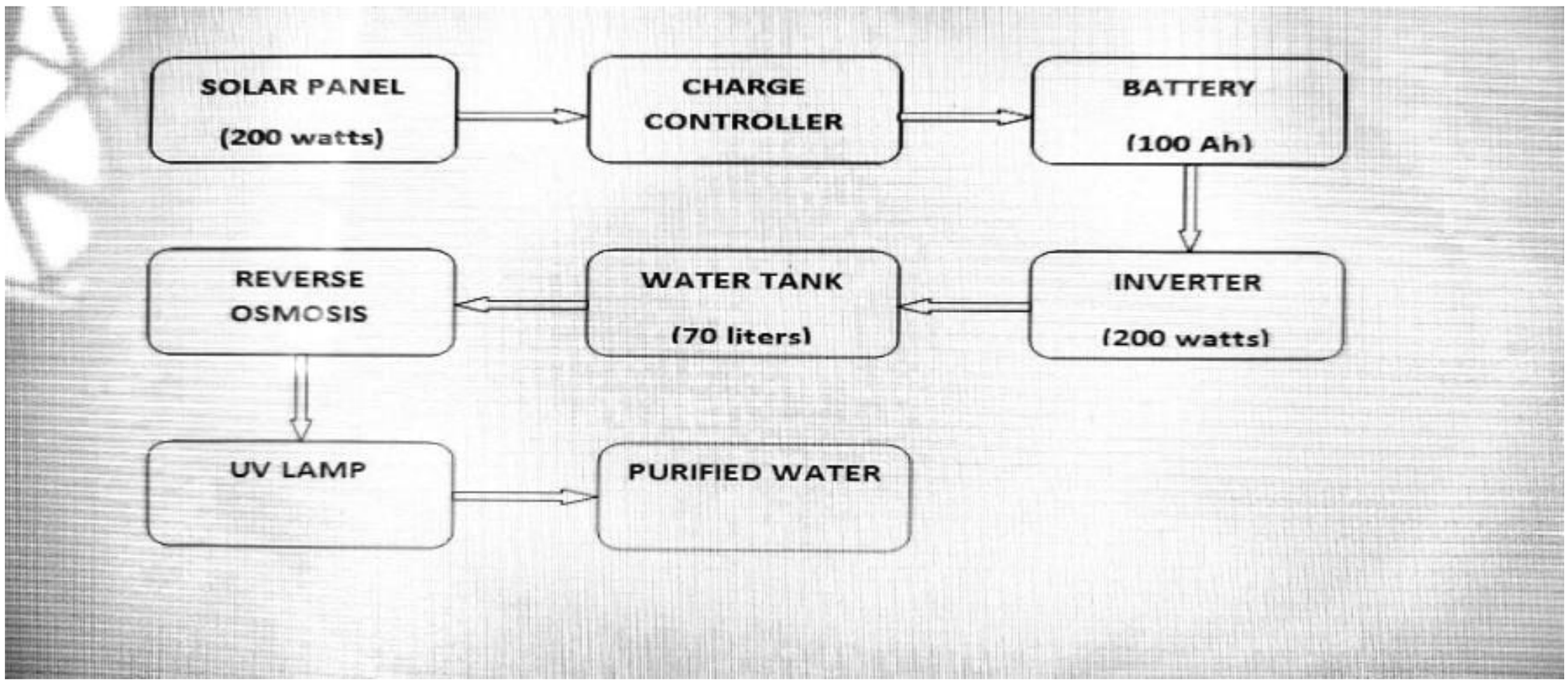


**Fig (a): Block Diagram**

## 2. WORKING PRINCIPAL

**The SOLAR RO system is made up of two parts: a power generation unit and a desalination unit. Because the RO unit requires a stable power supply, the system's electricity will be supplied by the solar PV array, and batteries will be linked to provide that power. The PV-generated energy is stored in a battery bank. The loads are powered by the stored energy. On the brine side, the RO desalination process comprises of a high-pressure pump, membrane unit, and pressure control valve .The solution is forced against the membrane by a pump, and water molecules pass through the membrane, reducing the concentration of the solute known as permeate, while the remaining water, which contains high salt concentrations, is rejected as a waste known as brine. The brine side valve is used to manage the amount of brine discharged as well as the system pressure.**


**Fig(b): Output Module**

## 3. CONCLUSION

**This paper focuses on economic and simple design of solar water purifier. This product is totally eco friendly. In addition to having no carbon dioxide emissions, the Solar Water Purifier doesn' t produce any noise. Proper safety steps should be taken as heat and electricity are involved. Proper selection of materials and components will prevent electrical components from overheating and causing potential burn hazards. Insufficiency of pure drinking water leads thousands of our people to danger every day. This product expected to mitigate drinking water crisis both in urban and rural area in Bangladesh. In rural areas, it can be done in big**

## 4. ADVANTAGES

**SODIS improves the microbiological quality of drinking water.**
**SODIS can serve as an entry point for health and hygiene education.**
**Public water supply systems in developing countries often fail to provide water safe for consumption. SODIS provides individual users a simple method that can be applied at household level under their own control andresponsibility.**
**SODIS is easy to understand.**
**Everybody can afford SODIS, as the only resources required are sunlight, which is cost free.**
**SODIS does not require a large and costly infrastructure and therefore easily is replicable in self-help projects.**
**.**

## 5. FUTURE SCOPE

**Improves the microbiological quality of drinking water.Does not change the taste of water.**
**This is applicable at household level.This is simple in application.**
**Relies on local resources and renewable energy.**
**This is replicable with low investment costs.**
**Treatment of impure water for drinking and other useful purposes.**

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