Sustainable Construction of a Desalination Model with Supplementary Heating and Photovoltaic Conversion

Souza, Caio (School: Escola Estadual Gabriel de Almeida Cafe)

The use of photovoltaic solar energy for the generation of electric energy has been increasingly considered in several countries as a great alternative to reduce the environmental impacts caused by man. Therefore, the lack of water resources has led to investigate and develop sustainable mechanisms for the use of salt water and brackish water for freshwater production. The research was conducted in my region in the north of Brazil - District of Sucuriju, bathed by the Atlantic Ocean. The actually the population uses rainwater stored in cisterns. I propose a desalinator through the construction of a prototype with alternative material and photovoltaic conversion for the production of alternative electric energy. I realized research qualitative-quantitative, with tests of photovoltaic conversion, physical and chemical analysis of water before and after the process. Supplementary heating positioned on the sides of the desalination system channeled solar rays to solar plate, and a device in the glass slope has collected the condensed water. The proposed model desalinated 950 mL of water in a day, reached a maximum temperature of 35 ºC outside the desalinator and 88 ºC inside. The battery of the system was fully charged inside of the solar cooker charged by 14 hours. In this sense, it is emphasized that the research had an applicability with a largely social character. An ecologically correct idea that can improve the problem of the absence of electric energy and water resources, as well as the applicability in other places that present the same problem.

Awards Won:
Qatar Foundation, Research &amp Development: Award of $1,000