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P 17 Design and fabrication of a solar thermal driven desalination unit

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This paper discuss on design, development and fabrication of a solar thermal driven desalination unit to produce fresh water by using saline/ brackish water. At present, only 1% is available for the needs of all plants, animal and human life as fresh water in the world. Shortage of fresh water is becoming a severe threat that is continuously rising in Sri Lanka and highly affected not only in coastal areas, but in the other areas as well. Due to the lack of pure fresh water, a large number of fluorosis has been identified in the area of North Eastern and South Eastern provinces, which lying on dry zone. Skeleton fluorosis and Mild dental fluorosis is major problem and kidney failures also have been increased due to usage of blackish water. As a solution to overcome this scarcity of pure fresh water, the desalination process can be used and the level of applicability need to be more explored based on Sri Lankan climate and socio-economic conditions. Therefore, the authors suggest a solution for this problem, which can be obtained from the nature itself. That is solar desalination which used solar energy for the water desalination process. Here, the authors developed a system to produce desalinated water from saline/ brackish water using solar energy as a sustainable solution. The process initially produces steam at a flash chamber and the collected steam is condensed to fresh water at the desalination unit. Three parabolic trough collectors were used as the solar collector and each collector has an aperture area of 2 m^2. At the testing stage, an average of 50 ml of distilled water was collected during 1 hour and 55min.

***Keywords**:* desalination, flashing, solar collector,