

## PURIFICATION OF WATER USING SOLAR ENERGY

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**Abstract:** Solar cookers have existed since the 1800s, but in the past decade or so, there has been a sudden explosion of interest in this area resulting in hundreds of new solar cooker designs. However, that one kind of solar cooker that would make it an every household's commodity is missing. Through our design of a solar cooker, we aim to attain regular, desired cooking temperatures, at minimized costs. Apart from this our design also helps to purify water and get DISTILLED WATER. We modified the existing solar cooker so as to collect distilled water apart from cooking food. The idea was to capture, condense and collect the water vapour which is produced from the water in the containers of the solar cooker by using sunlight. The initial setup passed the captured water vapour through a plastic tube and into a container surrounded with ice. As it had very low efficiency some modifications were made to certain sections of the equipment.

The position of the solar cooker (with respect to sun) and the condensing point was also changed. After several modifications made to the equipment and experiments were performed. The final modification was to change the point of condensation by adding a jacket around the pipe which acted like a heat exchanger thereby reducing the temperature of the water vapour. This helped provide a larger area for heat exchange and condense the water vapour there by improving efficiency.

The apparatus is assembled as in the diagram. (The diagram represents a batch apparatus, as opposed to a continuous apparatus.) The tap water is put into the round bottomed vessels and the fractionating column is fitted at the top. As the mixture boils, vapor rises up the column. The vapor condenses on the glass platform and some vapor condenses inside the column, and runs down into the bottle below which is known as distillate. The results are encouraging wherein solar cooker and a solar still could be integrated.

Property/sample	Tap water	Sample collected	Pure water
Ph	7.69	7.38	7.0
T.D.S	0.201	0.195	0
Conductivity	0.268	0.306	0.55



**Keywords:** solar cooker, solar still, distilled water