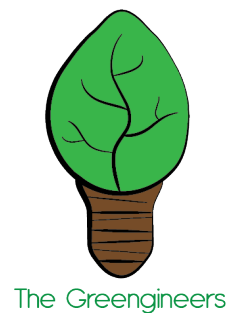


# Solar Food Dehydrator

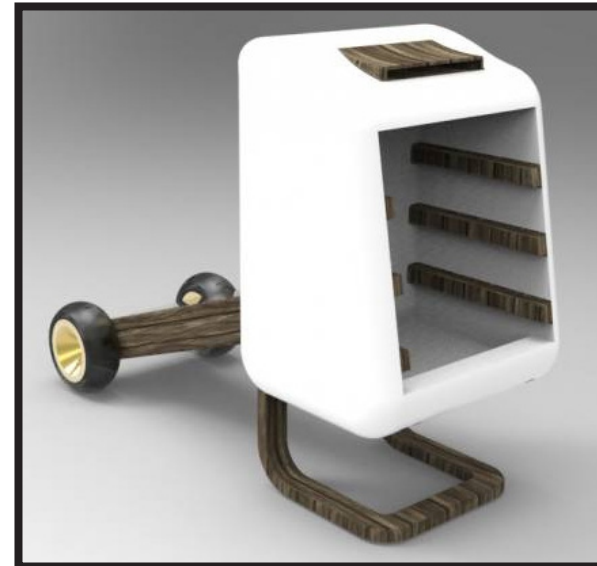


## Introduction & Project description:

The solar dehydrator is designed to extract moisture from fruit and vegetable. The device is built to work in an autonomous manner. The process of drying is enabled by a constant airflow and controlled temperature and level of humidity. All the innovative technical features are powered by solar energy, so as to make the product sustainable.

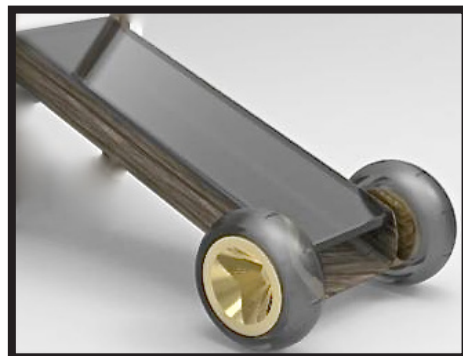
## Research & Methods:

The choice of methods and materials used for the final product result from thorough research and a detailed comparison of various concepts of solar dehydrators.



### 1 - The Heating Tunnel

The heating tunnel gathers fresh air from the outside through an opening between the wheels. It is made mainly out of pine wood. Only the top surface is glass: Once the tunnel is inclined at the right angle, the sunlight can pass through the glass surface and heat the black aluminum plate that is inside the tunnel. The use of glass for the top surface is justified through its following property: It lets the Infrared sun rays pass through, while blocking out a part of the harmful Ultraviolet rays. When the metal plate is hot, it will irradiate this heat to the air inside the tunnel. The hot air will then rise towards the bottom air vent.



### 2 - Bottom Air Vent

Between the top of the heating tunnel and the dryer box, there is an air vent, which lets the hot, dry air into the box.



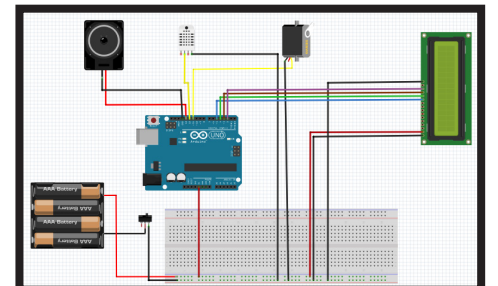
### 3 - Dryer Box

This is the central part of the dehydrator. It is made out of pine wood. Inside, there are five shelves on which the food is loaded to dry. The air that passes through the bottom air vent rises up to the top of the box, through the shelves, thereby drying the thin slices of fruit and vegetables. The three decisive parameters inside the dryer box are a constant and controlled airflow, the temperature and the humidity level.



### 4 - Electronic Control & Monitoring Unit

A humidity and temperature sensor measures the values inside the dryer box, which are then displayed on the LCD screen.



### 5 - Top Air Vent

At the top of the dryer box is a second air vent. Once the air has risen up through the shelves and reached the top of the box, it has a higher level of humidity and will therefore be rejected through top vent, keeping the humidity level inside the dryer box from rising.



### 6 - Special Features

The design includes a folding mechanism for the tunnel and a set of wheels, which make the device portable. Small protection nets are mounted at the openings, to small animals, insects or leaves from entering the dryer box.



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