



Off grid solar drier

Solar drier for jameed and other food of plant origin

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Solar dryer

Yet solar energy is well developed to be involved in different sectors including agriculture. Solar radiation is utilized in heat and electricity generation. Both energies are key factors in food processing. The electricity is used in driving mechanical power and controlling processes, whereas, heat is utilized in maturing, concentration, drying, sterilization different other processes. Sun drying is traditionally used in different part of the world to dry various fruits like grapes, figs, as well as in concentrating of jams but also drying of animal origin foods like jameed that is a dairy product. ICARDA developed and tested innovations where solar power is utilized such as enhancing milk quality through innovative solar cooling. The suggested solar dryer consists of tables with covers that form a tunnel where the product is placed inside. The walls and the cover consists of polycarbonate sheets that are fixed in a metal frame. Each table is 3 m long and 1 m in width. The walls are 15-30 cm in height. The tables are raised 40 cm from the earth by metal legs (shown in the illustration in diagram section). The dates will be placed on a mesh so that the air will flow also below the product for enhanced drying.

Innovation

The dryer consists of 4 tables that could be put together to form a 12 m tunnel. The solar drier is equipped with a DC fan 12V 40 W, that is installed on a separated part with the control unit. The system is designed to have an autonomy of 6 hours working period during day and 2 hours during night. The dryer is controlled by temperature sensor. The solar system consists of one panel and a control unit.



Solar dryer

Material

Item	Specification	Quantity
Polycarbonate board	8-10 mm	2
Fiber board	Dark color 6mm	2
metal bars	3×3 cm thickness 2mm	20
metal bars	2×2	10
metal hinges	Small size max 10mm	8
Fan	12 V 40-80 W	1
Battery 1	12 V 55A	1
Solar panel		1-2
Charger control 1	Off grid 12 V 20 A	1

Diagrams

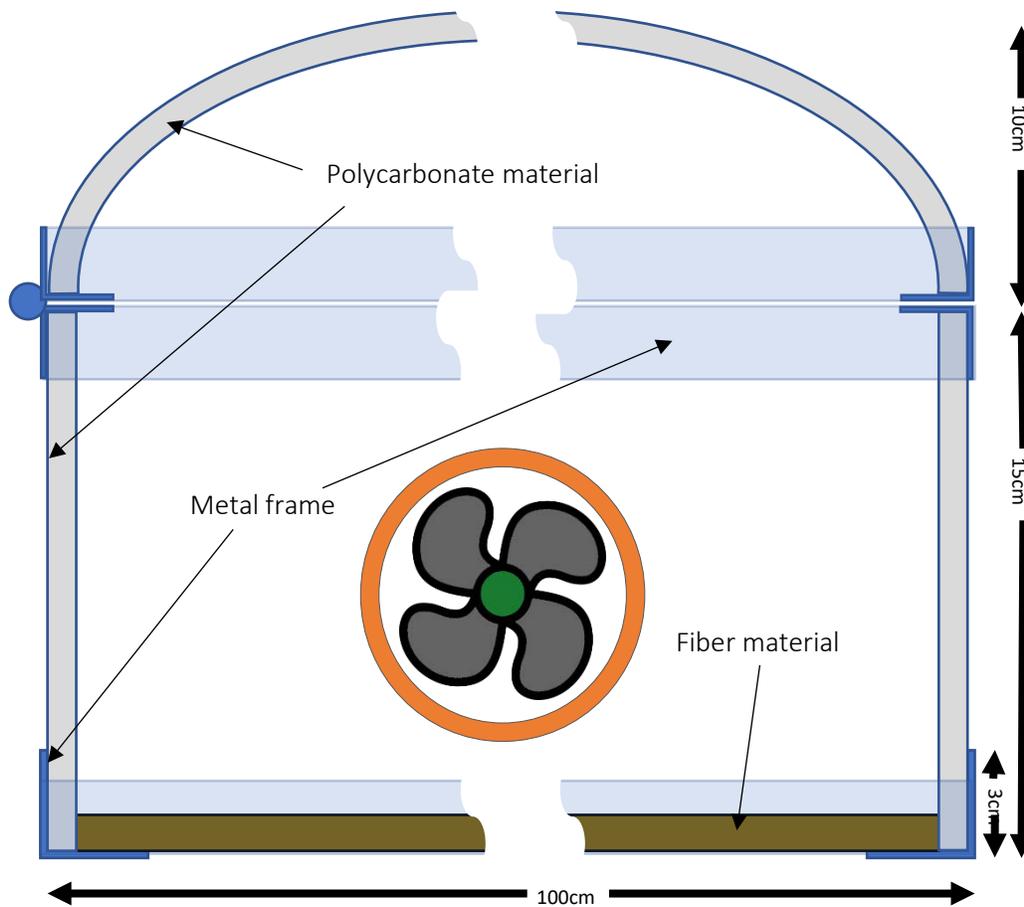


Diagram 1. Side view, the width view

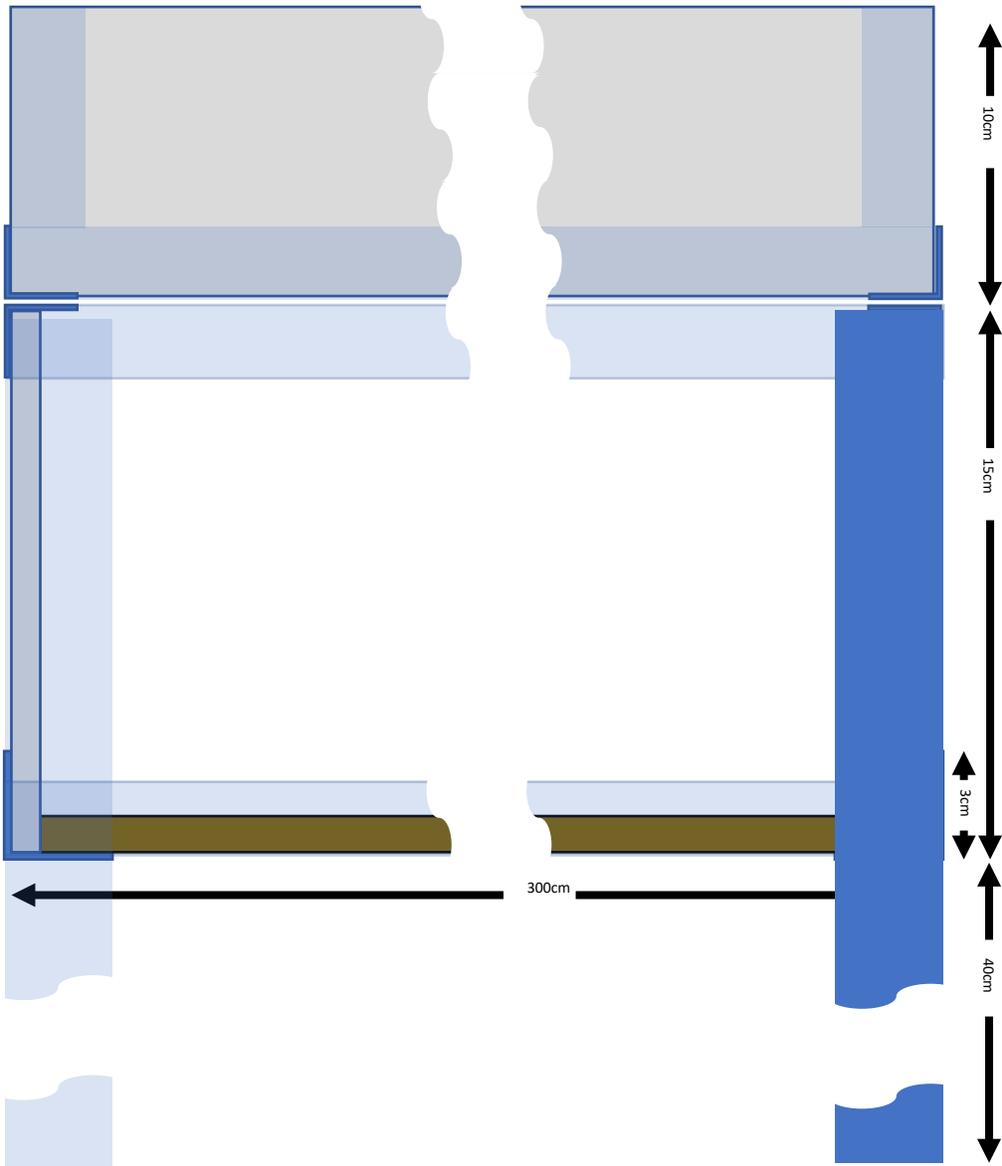
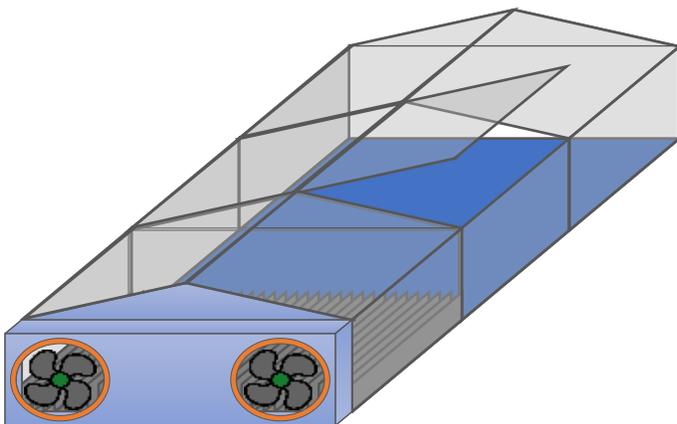


Diagram 2. Length view





The solar panel and specification



Drying of almonds