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SOLAR ICE MAKER

© Victor Torres Toledo

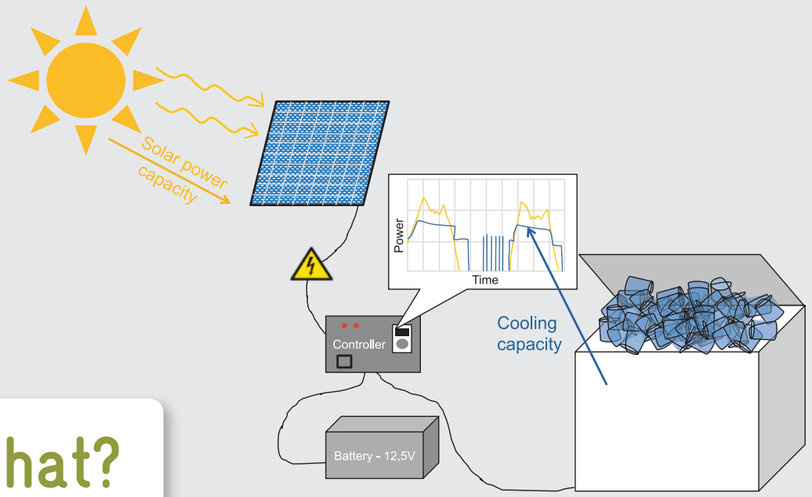
Why?

Around a third of the food produced worldwide never reaches the table, but goes to waste beforehand. In developing countries 40 % of the losses occur post-harvest and during processing, which is in large measure due to inadequate refrigeration. Particularly perishable food such as fish, meat and dairy products need continuous cold storage.

Fish, which for example remains fresh for 15 days at 0° C, becomes unfit for consumption after just two days at 15 °C.

Solar ice-making has the advantage that it can be employed anywhere to chill a variety of food. Owing to its high thermal capacity, ice can be used successfully for energy storage, so that even without sufficient sunlight it can provide stand-alone refrigeration for four days.

What?



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Photovoltaic cells enable ice to be produced in a chest freezer. This can be used for various processes such as chilling milk, meat or fish. The solar cells generate 600 watt-peak to power a 160 litre DC chest freezer and two 65 Ah batteries via a modified control unit.

Depending on the solar irradiation, up to 16 kg ice can be produced daily, while the freezer has space for 60 kg of ice. The ice is produced during the hours of daylight, and at night, the battery keeps the blocks of ice at 0 °C. The cooling system costs about € 1,900.

With Whom?

University of Hohenheim 1818

BBV-Landfrauen Internationale Zusammenarbeit GmbH

zef Center for Development Research University of Bonn

ICARDA Science for Better Livelihoods in Dry Areas

Where?

There is great potential for the use of this technology in a large number of developing countries. The solar ice-maker is currently being trialled in Tunisia, Kenya and Colombia.

More?

Energypedia: Solar Cooling
https://energypedia.info/wiki/Solar_Cooling
https://energypedia.info/wiki/Solar_Milk_Cooling_with_Insulated_Milk_Cans

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