Parabolic solar cooker

Low-tech with Refugees - Low-tech & Réfugiés

https://wiki.lowtechlab.org/wiki/Cuiseur_solaire_parabolique/en

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Difficulté **Moyen**

Durée **3 heure(s)**

Coût **13 EUR (€)**

Description

The parabolic or concentrated oven consists of a parabolic-shaped reflector. Its shiny mirror-effect surface captures the sun's rays, concentrates them, and then reflects them onto the cooking surface located on the grid.

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Introduction

The solar concentrated oven is a device that uses a mirror-effect surface to concentrate solar light onto a very narrow focal point. This focal point can reach extremely high temperatures, up to several thousand degrees Celsius, making it a very powerful tool for producing thermal energy. Concentrated solar ovens are considered a clean and sustainable energy source that can replace conventional energy sources such as fossil fuels.

Matériaux

- Two parabolic reflectors with support
- A support with wheels
- A grid
- Screws
- A mirror effect film

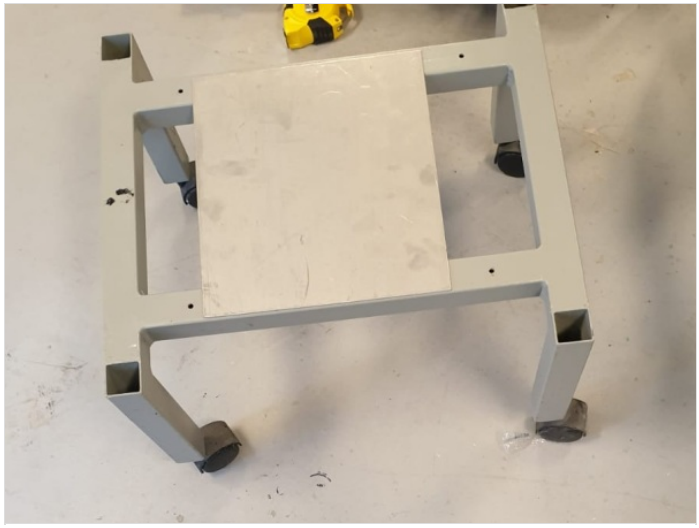
Outils

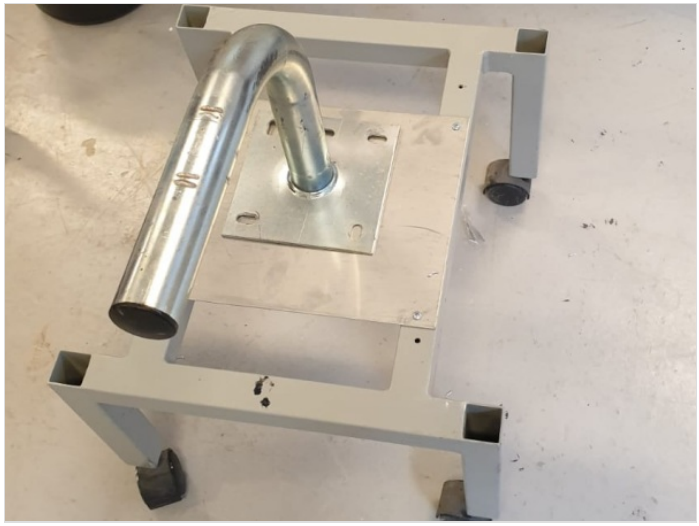
- Wireless drill
- Scissors
- Hammer
- Wrench
- Pliers
- Measuring tools
- Vice
- Spacers
- Copper wire


WINDOW MIRROR FILM

Étape 1 - Preparation of the rolling stand

Use a rolling table, with a rectangular sheet that needs to be fixed with a drill and screws on the stand to place the tube that will support the parabolic dish later.





Étape 2 - Placement of the mirror film on the parabolic dish

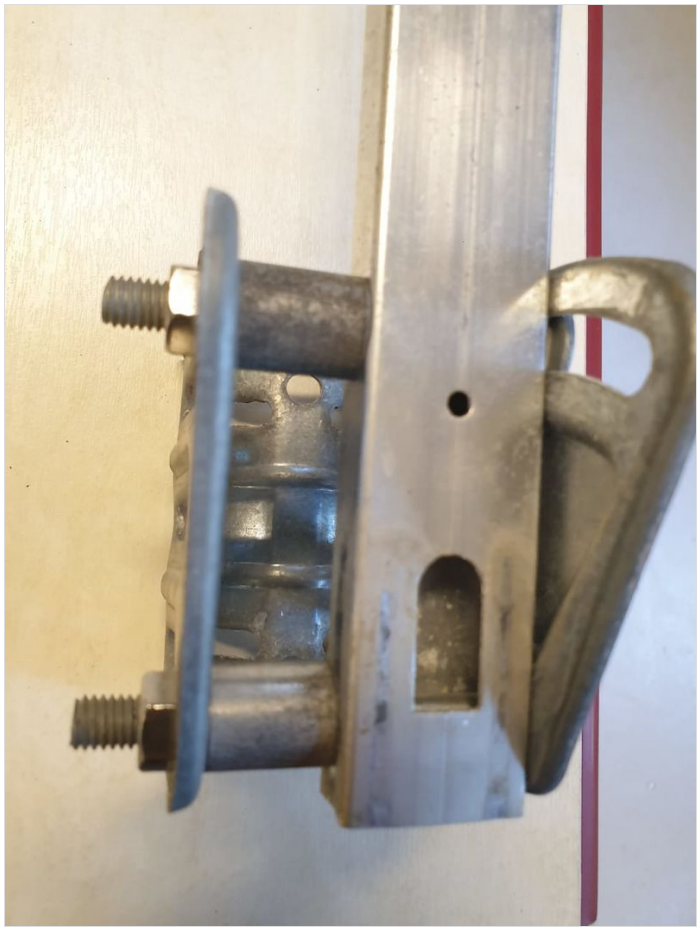
Stick the mirror film onto the entire surface of the parabolic dish by cutting it into small pieces to prevent bubbles from forming.

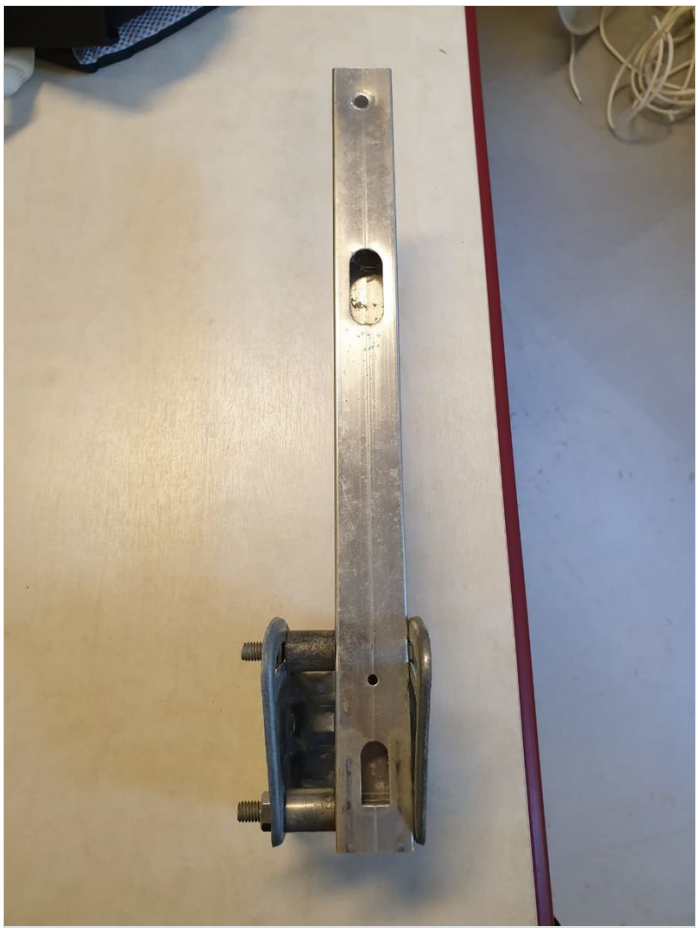
Étape 3 - Attachment of the parabolic dish to the stand

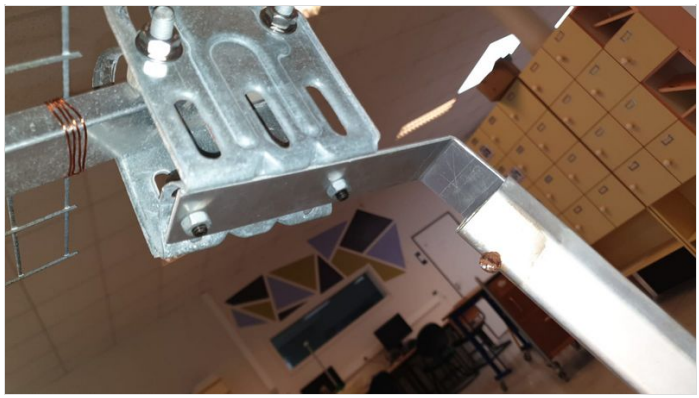
Attach the parabolic dish to the stand using the wrenches

Étape 4 - Preparation of the plate support

Use the metal part of the parabolic dish that allows you to adjust the angle to align the plate's orientation with that of the parabolic dish by aiming at the focal point that will allow us to cook. We needed two spacers to tighten the bar against the stand in order to change the angle of inclination of the plate and adjust it with the angle of the parabolic surface stand. A bent metal sheet (using a vise) was also used to secure the bar on the parabolic dish.

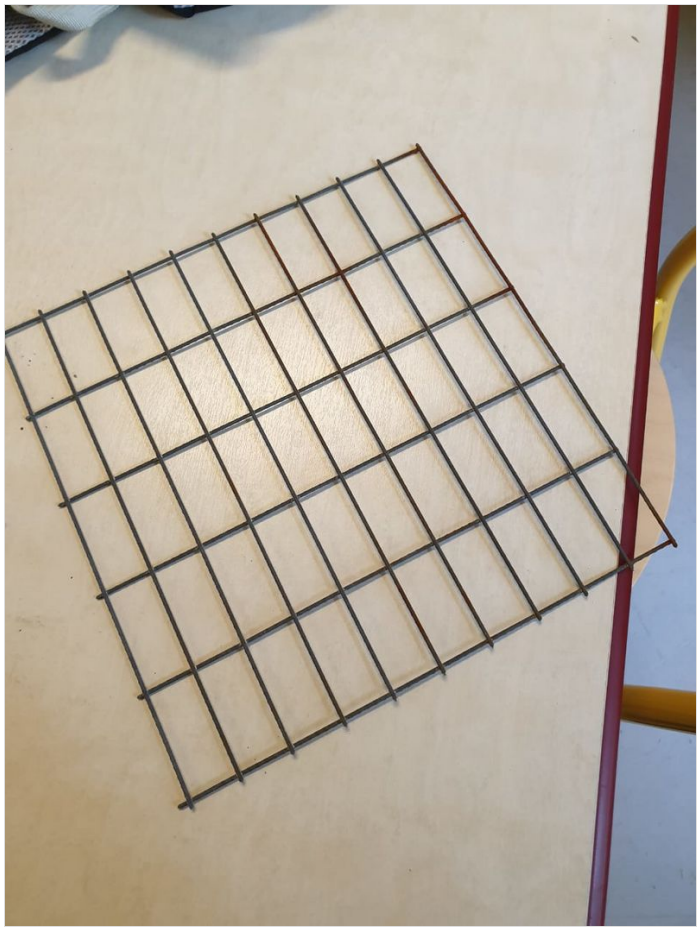






Étape 5 - Grid attachment

Cut the grid to the desired size and secure it using copper wires.



Notes et références

Safety Precautions when using a Solar Concentrated Oven

- Intense Radiation: The concentrated solar light can produce dangerous levels of ultraviolet and infrared radiation, so it is important to take protective measures for the eyes and skin, such as protective glasses and protective clothing.
- Equipment: The equipment used to concentrate solar light, such as mirror effect films, must be regularly inspected to ensure that they are in good condition and functioning properly.