UNIVERSIDADE DE ÉVORA

Sun Cook: from Plastic to Cork

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The Sun Cook : a product of SunOk

. Brief presentation of the Sun Cook (Box type oven , concentrator: an industrial product, with **plastic** as basic material)

. Technical characteristics

. The need for evolution

. A new concept: the introduction of **cork**

. An invitation

Plastic enables:

- large scale production at low cost
- a curved configuration of the internal box walls, to produce a sophisticated optic, concentrating the incoming radiation, without making production costs go up
- excelent mechanical resistance and durabilty
- good aesthetics : form and colours

Materials

Plastic

- Box: UV- resistant
- bottom/inner basket: resistant to temperatures up to 200ºC

Mirrors

- Aluminum sheet with 0.4 mm thickness
- Total reflectivity for the solar spectrum 87%

Glass (double)

- tempered
- 3 mm thikness
- Transmissivity between 91% and 92%

Bottom plate

- Aluminum coated with black teflon

Dimensions

Box (exterior)

- 580 x 550 x 280 mm3

Aperture (Glass)

- 455 x 460 mm2

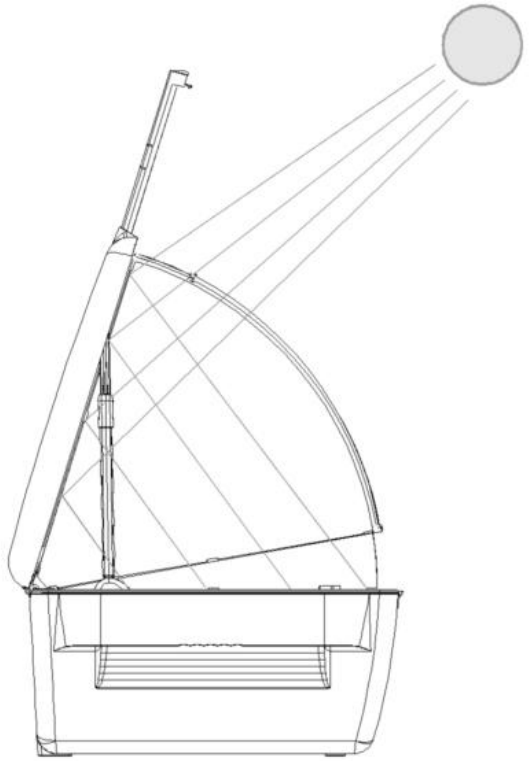
Total useful internal height

- 170 mm

Bottom plate

- 350 x 410 mm2

Augmenting Mirror

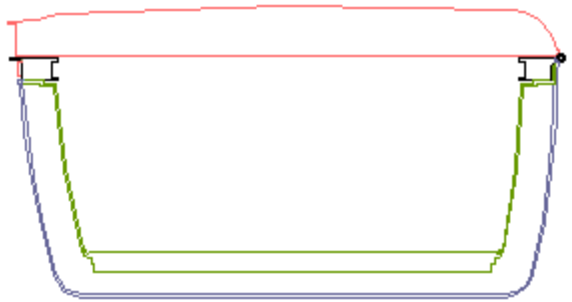


Lateral mirror

Solar clock : cooking time control

Double glass lid

Sun Cook is a (n.i.o.) concentrator



Front and back: 2 CPC assymetric concentrators: θ= 66 º and 60º

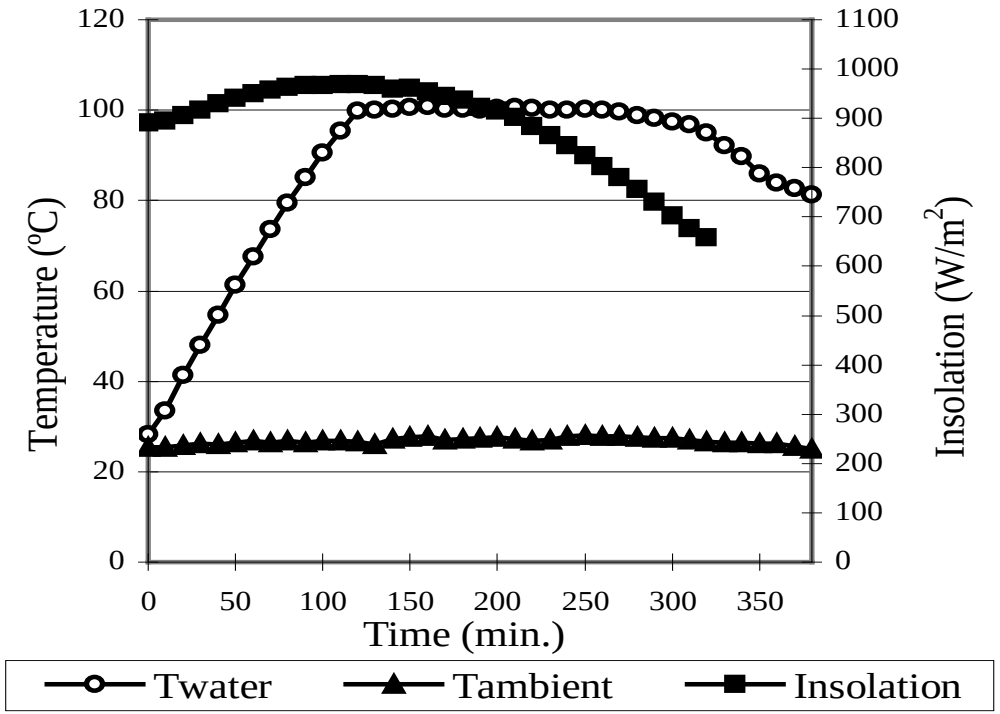
Left and right : 2 CPC identical assymetric concentrators : θ = 45º

Final internal Concentration: C=1.5X

2.5X (average) with mirror on the lid

Tests

2.5kg of water



Merit figures:

Mullick et al

F1 = 0.158

F2 = 0.168

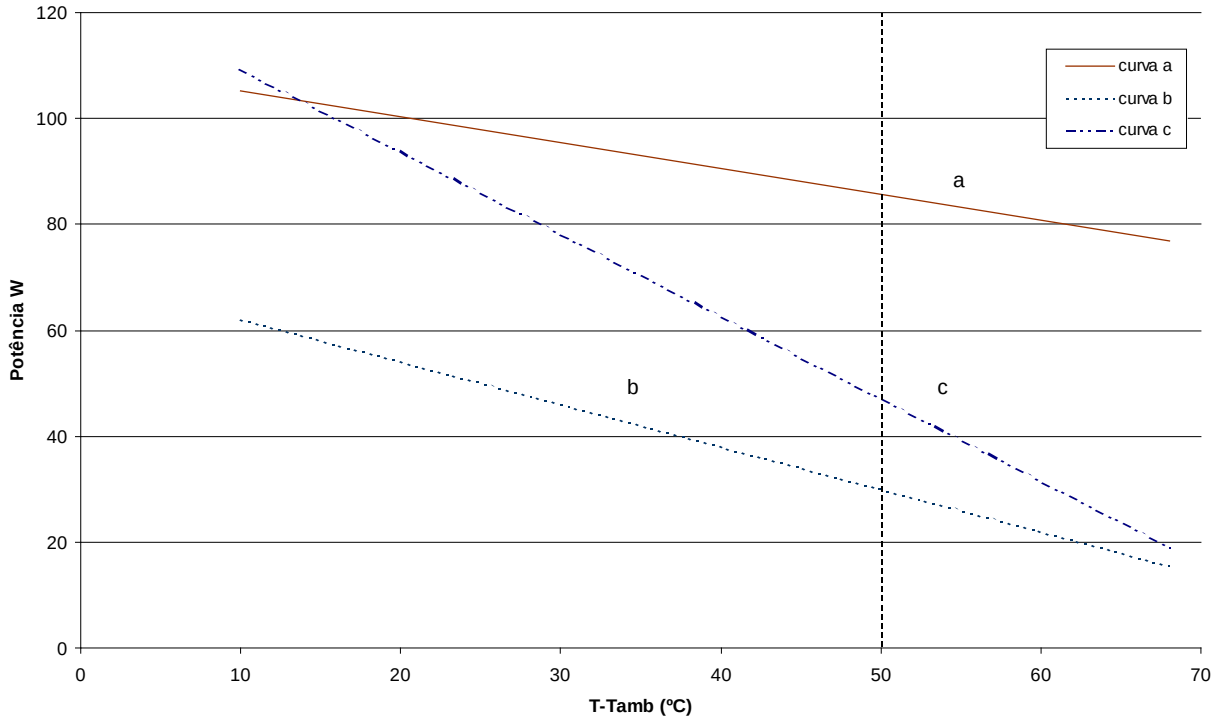
Esteves et al.

F´1 = 0.060

F´2= 0.063

M. Collares Pereira, J.P Almeida ***DESCRIPTION AND TESTING OF A NOVEL SOLAR BOX TYPE COOKER INCORPORATING CPC TYPE OPTICS-*** *ISES World Congress 2003*

Power (Sun Cook): Comparison with other ovens



Curvas de potência : (a) SUN COOK (b) forno tipo Nandwani, de tamanho comparável [1] construído pelos autores (c) forno bem isolado e de tamanho comparável, referido em [9] (Finck)

Many thousands of SunCooks sold in the World

Evolution : from plastic to …

Significant experience accumulated…

Some challenges:

- reduce production costs
- accomodate two large cooking pots at the same time (it favors a rectangular shape)
- make the optic even better (it favors a rectangular shape)
- reduce condensation effect on the glass surface facing down

(…)

Evolution: from Plastic to CORK

2 ways for the future:

1- reduction of cost as absolute priority: keep plastic and simplify the product; at the same time change some aspects of the presente configuration and operation

A project for the future…

2- high performance, aesthetics, simpler and more flexible operation

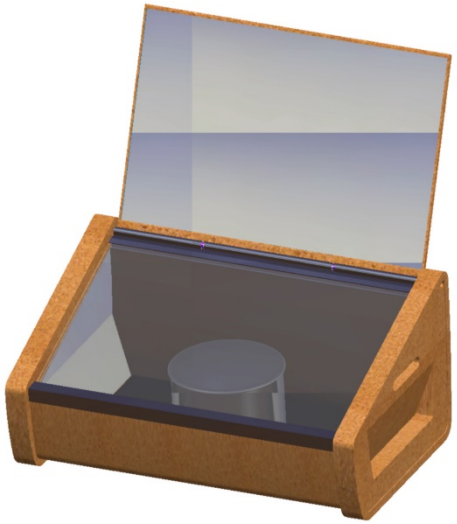
Cork!

A natural element

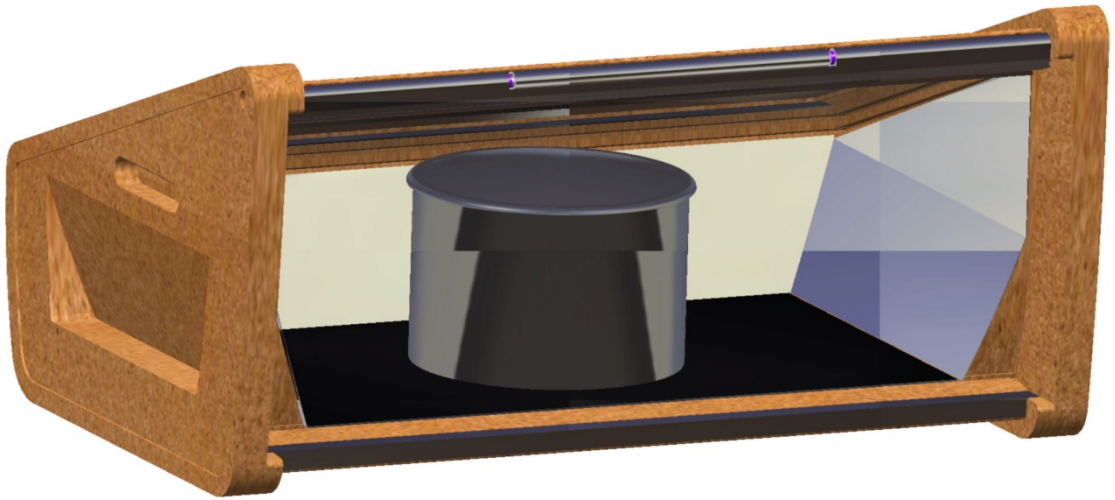
A structuring and insulating material, all in one!

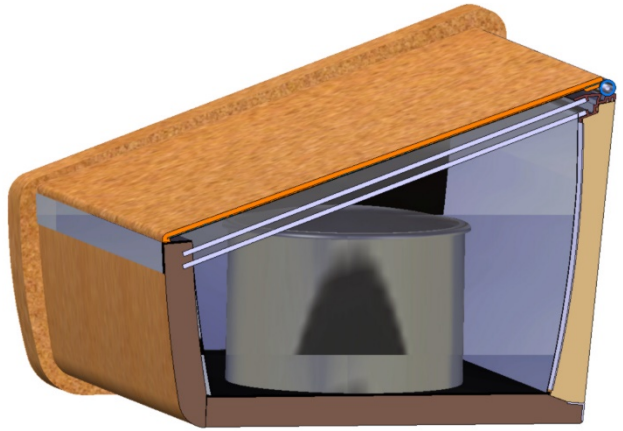
A new oven resolving some of the operational limitations of the Sun Cook

The Sun Cork



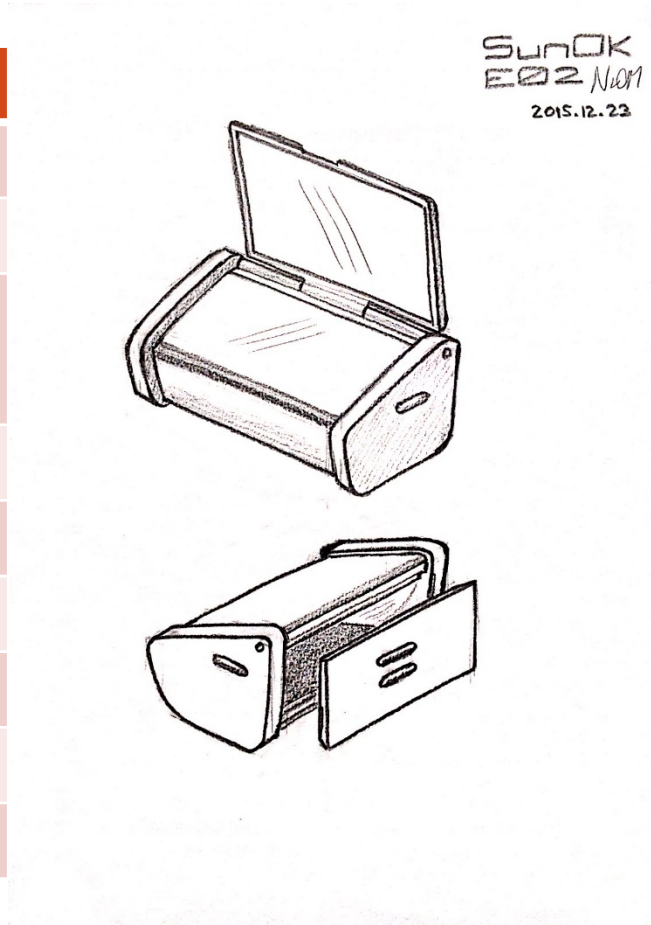
Sun Cork (interior views)





Sun Cork

version	Family	Light
Width	68 cm	52 cm
Depth	42cm	42cm
Height (closed)	32,5cm	32,5cm
Height (open)	71cm	71 cm
Glass tilt angle	20°	20°
Aperture	60x35 cm2	44x35 cm2
Useful areal	52x30 cm2	36x30 cm2
Estimated weight	11 kg	9 kg
Materiais	Cork, aluminum and glass	



Conclusions

Solar cooking is one of the technologies that **can contribute** the most to the atenuation of Climate Change and to aleviate Poverty around the World

It is also a technology for the well-to-do

The Sun Cook has proved to be higly reliable, easy to use, durable and e which indeed sets a standard on the market

Truly low cost evolutions are being studied

AND THANK YOU FOR YOUR ATTENTION!

In the meantime a new product - the **SUN CORK** - is about to be laur h a diferent aesthetics, using a natural and noble base material (cork), t characteristics, sharing with the Sun Cook its high performance, ease

INVITATION