HELIAC

SCI WORLD CONFERENCE 2017

HELIAC SOLAR COOKER

Solar Cooking for all.

The World Health Organization estimates that there are >3 billion people worldwide without access to clean cooking facilities. Their only option is to burn wood, coal, kerosene or even garbage in open fires. This causes major health problems and kills >4 million people each year.[1] It also causes deforestation and major greenhouse gas emissions. Solar cooking, on the other hand, only uses the energy from the sun to heat, cook or pasteurize food or drink.

Purpose: to make solar cooking easy and accessible to all.

Solar Based	Fuel Based	Wood Burning
Eco Friendly	CO_2 emissions	Deforestation
No operating cost	Expensive	Health hazardous
Time saving	Non-renewable resource	Finding firewood is time-consuming

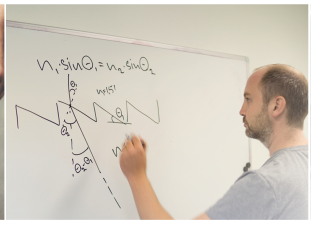
Concept & Production.

Our solar cookers are made from polymer foil sheets containing micro-sized Fresnel lenses. Those are produced through a unique combination of established industrial packaging technology, extrusion coating, and modern microtechnology.

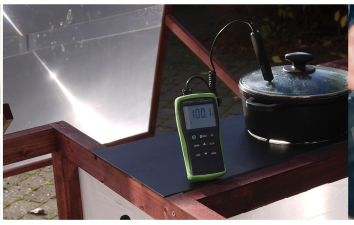
Performance

The solar cooker has an efficiency > 50% and depending on foil size focuses ~750-1000W of sunlight to the bottom of the pot. It boils 1L of water in ~15 minutes , depending on the location, the pot, and the clarity of the sky. Meals such as chicken curry(40min), spaghetti bolognese (50min), beef stew (40min) and rice (20min) have already been prepared with the cooker. By replacing the pot with an insulated box, the cooker easily transforms to an oven.

High delivery capacity



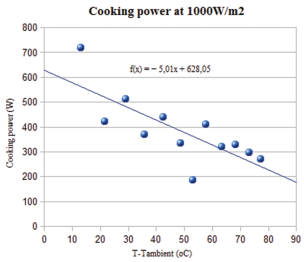
Design of microstructures



Boiling 1L of water

Chicken curry

The solar cooker is made by stretching the foil onto a frame. A simple tracking device helps aligning the foil with the sun. The pot is placed on a support exposed at the bottom. A foil based mirror reflects the sunlight to the bottom of the pot, which is painted black. The specifications for construction can be freely accessed from Heliac offering a DIY manual for local craftsmen/women to be guided or inspired by. Heliac merely sell the mirror and light-focusing foil. Remaining material costs are estimated to $20 and are readily available in any hardware store.



While the Heliac solar cooker has prooved itself to be effective Heliac will continue to develop and optimise the cooker to maximize its effect It is furthermore Heliacs vision that cooker builders can share designs and ideas in order to increase the attractiveness and use of solar cookers.

Results

- Simple tracking
- Cooking plate and oven
- Boils 1L of water in 15min under 1000W/m2
- Easy to build with free do-it-yourself manual

Conclusion

Efficient and low-cost solar cooking facilities, which can prepare hot meals for any household that uses wood for cooking, can now be made available.

SCI SOLAR COOKERS INTERNATIONAL ASSOCIATION

[1]http://www.who.int/indoorair/en/, accessed: 11-11-2016

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