

SOLAR OWENS BUILT WITH VERY BASIC MATERIALS FOUND IN RURAL AREAS

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Abstract:

One of the important factors of solar cookers design is finding prototypes that can be built by the same people who will use them, this way the users can understand and repair them. This is important because solar cookers are especially useful for people with very low incomes. In the case of Sahel's rural areas relatively common materials such as wooden planks, screws, brackets or aluminum sheets can be too expensive. Even cutting wood by following straight lines, getting carton boxes, finding insulators like rock wool or reflectors like aluminum foil can be difficult.

That is why three prototypes of solar ovens have been developed trying to use as few industrial materials and tools as possible. We decided to construct ovens without reflection since the construction of reflectors requires flat surfaces and this can be problematic if adequate materials are not available.

The result has been three ovens that use a structure of wood (in two of them just sticks without metallic elements of union) and paper glued with white glue or flour glue. A mud and paper adobe is used in the interior areas to withstand indoor temperatures. The insulator used is paper. The only industrial materials that could not be replaced are the glass and the wood panels that get the door closed (the latter has been tried with mediocre results).

The resultant ovens get temperatures that exceed 100 degrees in temperate latitudes (central Spain) without the use of reflectors, which is comparable to other prototypes constructed with more sophisticated materials. The construction with this type of materials is simple and does not require special skills or tools, although it is laborious and requires patience.

Keywords: solar oven, low cost, low complexity, self-construction, rural areas.