

2015 Jan 26 **PROJECT--Thru-wall solar cooker prefab parts, door frame and reflector box**

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The two main prefabricated parts that fit together for a thru-reflector wall solar cooker for a house are the cookware door frame and attached nonimaging fixed reflector box. This project is for a low cost house with earthen masonry, compressed stabilized earthen block (CSEB) walls (24cm thick/around 9.5in). A construction sequence plan is the two prefabricated parts are transported to a house construction site and attached together in alignment as they are placed securely on partly built walls in accord with the specified counter height above the finished floor level of the kitchen.

Design, fabricate prototypes, and cost estimate a thru-masonry-wall solar nonimaging fixed reflector unglazed cooker reflector box and door frame for mass production. Select a site latitude range and masonry wall thickness of. This project is for low cost small houses with low cost building materials and CSEB (compact stabilized earth blocks) walls are suggested for this project for possible coordination with the Earth Architecture program of UNESCO. Consider masonry shrinkage and construction accuracy tolerances.

Select a a top-hinged non-insulated solar cooker door size made of a rectangular frame with attached anodized reflective aluminum based on clearance for the selected cookware that will slide in-out of the cooking solar caustic zone thru the door. The part of the prefab wall directly above the cooker door should not overhang the reflector box for gluing flat glass mirrors without mechanical fasteners, and the incline is related to the latitude of the selected region. A grill is supported for sliding cookware in-out of the cooking zone. The reflector box is sized so that the selected cookware is blocked from wind. A full size mock-up physical model is pictured.

The manufacturing process is for mass production and cost estimate selected production quantities: 100, 1000, 10,000. Evaluate injection molding manufacturing with bio-plastics and recycled materials. Quantify thermal energy process requirements.

