

Investigatory: solar cooker and shoe carton box essay sample



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This study aimed to find out if an old shoebox and a thick tin foil can be converted to a more useful piece of cooking equipment. The feasibility of a reflective solar heated grill that is built from a cardboard box, tin foil, and poster board as an alternative cooking equipment was studied in this research project. The cardboard box was cut and shaped, the tin foil is settled in the middle making it look like a slide. We go outside in the heat of the sun. The barbecue sticks were placed in the spot where reflection of the sunlight focuses on the hotdog. Just like a real skewer the hotdog were cooked therefore minutes later we tasted it and voila. Real hotdogs on stick just like mom used to cook.

INTRODUCTION

A solar heated grill can be built from a cardboard box, tin foil, and poster board. Sunlight hits the reflective surface and focuses on the hot dog held in the center. Students can work in pairs or individually if there are enough materials. This is a parabolic cooker we built a while ago, so unfortunately we can't show step by step photos of its construction. However, it's relatively easy to see how it was put together. It makes a great Physics project. Unlike most, you'll actually get some use out of it afterwards. Some of the principles it demonstrates are: 1. Optics: focusing parallel rays of incident light through the use of a parabolic mirror. 2. Energy transformation: light to heat

3. Renewable energy: solar power

OBJECTIVES

General Objective: This study thru physics aims to find out if an old shoe carton box can be useful to make an alternative cooking machine.

SIGNIFICANCE OF THE STUDY

This study aims to find out if an old shoe carton box can be useful to make an alternative cooking machine. It is significant to different sectors for various reasons:· Serve as an eye-opener for those who don't have a grill in their backyard who want to convert their old shoe box carton into a hotdog grilling machine.· Provide information to students and teachers with respect to the recycling of carton box or old shoe box ·

serve as motivating factor for the schools or institutions to direct their students and to further strengthen their capabilities for developing old carton box into a cooking grill and other processes to maximize the recycling of old carton box . Furthermore, the outcome of the study will provide empirically ² based information to policy makers in Ecological recycled Waste Management. (RA 9003) junk cartons are usually stocked or thrown out elsewhere . Converting these non-functional cartons does not only support RA 9003 but it also opens an avenue to develop technology in the community.

METHODOLOGY

Materials/Equipment:

1. Two pieces of heavy cardboard (like the side of a cardboard carton). The first piece must be at least ten inches square and the second smaller piece must be at least four inches by five inches. 2. A piece of light poster board <https://assignbuster.com/investigatory-solar-cooker-and-shoe-carton-box-essay-sample/>

eight inches wide and sixteen inches long. 3. Twelve-inch wide aluminum foil. (You will use about 32 inches of the material.) 4. Some masking tape. (You may experiment with other types of tape.) 5. Nine inch long sticks about 1/16 inch in diameter. You may also use lengths of heavy wire.

Procedure

1. Select a long narrow box; the longer the box the more heat collection is possible. Choose a focal length between 5" and 10" and design a parabolic curve as seen in the picture. One template could be used for all the cookers. Trace the curve on the open end of the box so that it is centered and straight.
2. Cut out the curve with a utility knife. Stress the importance of being exact. Measure and cut a piece of posterboard that will fit flush against the opening to the box. Attach this with tape beginning at the center and working toward to edges.
3. Cover the curve with white glue and apply aluminum foil shiny side out. Start in the middle and smooth toward the edges. Try not to wrinkle or fold the foil; you want it as smooth as possible.

RESULTS AND

DISCUSSION

This chapter presents the data, analysis and interpretation of findings. It is in this part whereby the data have been sorted out, tabulated, subjected to statistical analysis and then the findings were interpreted . after we had produced the hotdog grill out of recycled old carton box. and grilled the

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hotdog there thru spotted sunlight reflections on the tin foil. We asked somebody to rate the taste and acceptance of the food.

CONCLUSION

Our hypothesis was right. The hot dog grill made of cardboard can really cooked delicious hotdogs which is acceptable in the real world, the cooker is cheap if built because the materials are not expensive. produced hotdog is the same as it is cooked in the grill. We think that if a reflective hot dog cooker can be built from a cardboard box, tin foil, and Poster board is feasible that hotdog can be cooked there just like mama used to cook. We think that it is cheaper and economical since we live in a tropical country, we think that this will be acceptable in our time.

RECOMMENDATIONS

On the basis of the conclusions formulated, the following recommendations are offered for possible further study. 1. Information disseminations to the people on the proper recycling of old and dilapidated Carton boxes and other recycled wastes should be intensified. 2. People should know the values of recycling not only the biodegradable and non-biodegradable wastes but also for them to do their part to cut down on waste pollution that affects the environment. 3. carton users should be guided accordingly on how to recycle destroyed shoe cartons rather than to junk them elsewhere, because dumping them else where , will eventually can cause messy surroundings. For them also to help reduce the fire which are fatal to human beings.

APPENDICES

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Solar Cooking Frequently-Asked Questions

What are the basic kinds of solar cookers?

There are three basic kinds:

Box cookers -This type of cooker has been the advantage of slow, even cooking of large quantities of food. Variations include slanting the face toward the sun and the number of reflectors. You'll find an article discussing solar box cooker designs here.

Panel cookers-This recent development was sparked by Roger Bernard in France. In this design , various flat panels concentrate the sun's rays onto a pot inside a plastic bag or under a glass bowl. The advantage of this design is that they can be built in an hour or so for next to nothing. In Kenya, these are being manufactured for the Kakuma Refugee Camp project .

Parabolic cookers -These are usually concave disks that focus the light onto the bottom of a pot. The advantage is that foods cook about as fast as on a conventional stove. The disadvantage is that they are complicated to make, they must be focused often to follow the sun, and they can cause burns and eye injury if not used correctly . Some of these concerns have recently been reduced by Dr. Dieter Seifert's design . There is a detailed document here showing a large number of variations on these themes. You can also listen to a good introduction to solar cooking here.

Who made the first solar cooker?

The first solar cooker we know of was invented by Horace de Saussure, a

Swiss natural is experimenting as early as 1767. See this article for more info.

Where are solar ovens being used the most?

Box cookers with one back reflector don't need to be turned unless you are cooking beans which take up to 5 hours. Panel cookers need to be turned more often than box cookers, since they have side reflectors that can shade the pot. Parabolic cookers are the most difficult to keep in focus. These need to be turned every 10 to 30 minutes , depending on the focal length.

Should I take the time to build a box cooker out of “ real” materials like plywood or glass or is cardboard good enough?

Unless you need a cooker that can stay outside even in the rain, you'll do just fine with a cardboard cooker. Cardboard is much easier to work with and holds heat just as well . Some people we know have used the same cardboard box cooker for over 10 years.

Would a mirror make a better reflector?

While mirrors are more reflective than simpler materials such as aluminum foil, but the added gain is probably not worth the increased cost and fragility involved with using a mirror.

What kind of pots work best?

Ideally, you want to use a dark, light-weight, shallow pot that is slightly larger than the food you will cook in it. Metal pans seem to cook best.

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Hardware stores in the US usually carry dark, speckled, metal pans called Graniteware. Shiny aluminum pots—so common in developing countries—can be painted black or can be blackened in a fire . Cast iron pots will work, but extra solar energy is used to heat up the pot as well as the food, so they will not work in marginal conditions.

If solar ovens are so good, why isn't everyone using one?

There are many factors at work here. First and foremost, the vast majority of the world's population does not even know that it is possible to cook with the sun. When they find out about it there is almost universal enthusiasm, especially in regions where the gathering of cooking fuel and the process of cooking over a smoky fire is a great burden. There are many factors that need to be in place to make it possible for poor people to solar cook on an on-going basis. The most successful projects have been ones where the need was the greatest, the weather the most favorable, and where the solar cooking promoters have taken a long-range approach to the transition. An example of this is the work by Solar Cookers International in the Kakuma refugee camp in Kenya.