Solar energy is energy from the sun. Solar energy is a **renewable resource** because it is a source that replenishes naturally and will always be available to us. Earth receives more energy from the sun in one hour than our entire planet uses throughout an entire year. You may have learned in the solar nightlight experiment that you can use energy (heat) from the sun to power electronic devices by directing light through a solar cell. You can also use the energy emitted by the sun to trap heat and use it to cook food.

In this experiment, we are going to create a homemade oven that uses energy from the sun, rather than electricity, to heat foods to about 200°F. This is a great temperature for reheating leftover pre-cooked foods such as pizza. You can also use your homemade oven to melt cheese for nachos or to make delicious s'mores!

Experiment Materials:

Pizza box

- Aluminum foil
- Plastic wrap
- Clear tape
- Sharpie marker
- Box cutter
- Ruler
- Glue

Experiment Process:

Step 1

Use a ruler and a black marker to draw a square on your pizza box lid. The square should have a 1 inch border from the edge of the pizza box.

Step 2

With adult assistance, use a box cutter or x-acto knife to cut out three sides of the square, leaving the edge of the square along the back edge of the pizza box lid attached. Close the pizza box lid and fold back the flap.

Step 3

Glue aluminum foil to the inside of the flap and smooth out wrinkles and creases. The foil will reflect sunlight into the pizza box. Carefully cut of any excess foil, being careful not to rip it.

Step 4

Cut out a square of clear plastic wrap that is larger than the flap. Open the pizza box and tape the plastic to the underside of the flap opening. Be sure to pull the plastic wrap taught before taping it down.

Step 5

Cut a second piece of plastic wrap and tape to the top side of the flap opening. This will create a window that lets light through but keeps heat trapped inside. Ensuring that your pizza box is airtight is an important step!

Step 6

Glue a layer of aluminum foil to the bottom of the inside of the pizza box. This will help to insulate your homemade oven.

Step 7

Glue black construction paper or felt on top of the aluminum foil on the bottom of the inside of the pizza box. Black surfaces absorb more heat.

Step 8

Glue aluminum foil to all of the inside edges of your oven for even better insulation.

Step 9

Go outside and find a good spot with full sunlight to use your oven. Adjust the angle of the flap to find the best sun angle for your pizza oven. Cut a plastic straw or wooden chop stick to prop up the flap at the angle you have chosen. Preheat your oven for 30 minutes by letting it sit in the sun and get warm.

Step 10

Heat your food. Place a slice of leftover pizza or other food (ask an adult for suggestions) into your oven in a heat-safe container. Place food items in the center of the oven under the plastic wrap window, close the lid and leave the flap propped up at the optimal angle. Check on your food every 15 minutes until it is ready to eat!

Conclusions:

Solar energy is a renewable resource that humans can access and use from most locations on the surface of the Earth. Now that you've made your oven, it is simple to use it again and again whenever the sun is shining. You can use your homemade solar oven to heat up food on camping trips, during power outages or even on a regular day just to save electricity at home.