

Solar ovens and cookers, powerful didactic tool for green building

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Abstract.

Renewable energies and energy efficiency are two important sections of ecological building. **Bioclimatic design of buildings** can be considered the best use of solar energy. Green building is a very important factor in combating climate change. To build and to use ovens and solar cookers allow teaching **many technical concepts**: Design, Orientation, Collection of sunlight, Conservation of heat, Isolation, Thermal inertia, Movement of the sun, Solar azimuth and altitude, Seasons of the year, Greenhouse effect, Transformation of light into heat, Energy economy... Students learn from the teacher's explanations, observing how the food boils, touching the hot pot and feeling the high temperature, smelling the aroma of cooked food and finally tasting the food. We can sum it up as **"learning from the five senses"**. In this way, the most exciting and successful didactic experiences are achieved. This **teaching tool is very flexible**, it can be applied to many areas and it is possible to work at all levels of education. It also enables people without previous studies to help their communities reduce their energy dependence on fuel wood or conventional fuels for cooking or heating their homes, to move towards sustainable development, use renewable energy, reduce deforestation and increase energy independence. This work is based on **more than 20 years of teaching experience using solar ovens and cookers**.

Learning and enjoying with the five senses



SIGHT



HEAR



TOUCH



SMELL

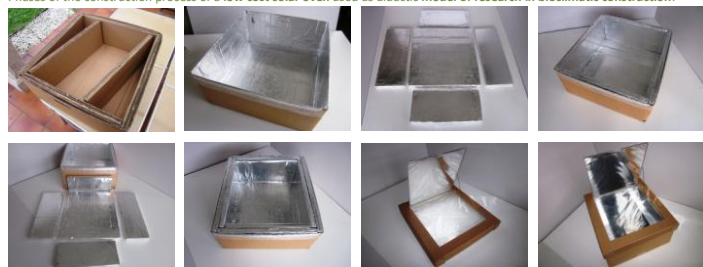


TASTE

Using adequate materials and techniques

The initial proposal of work is to make a simple solar oven using **materials available in the same place**, low cost, using simple working techniques and tools and materials that are easy to get.

Phases of the construction process of a **low cost solar oven** used as didactic model of research in bioclimatic construction:



A simple evolution

Common elements: walls, floor, windows ...

Changing scale and cost but getting identical concepts.

In Spanish, just change one letter:



CAJA



CASA

Bioclimatic experimental module "A Vieira"
CIFP Someso. A Coruña. Spain

Seasons of the year



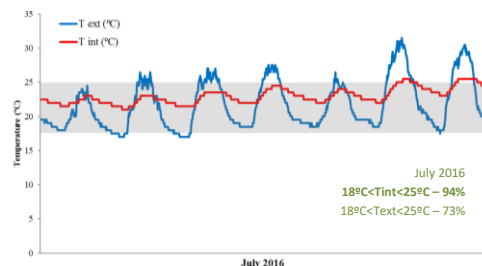
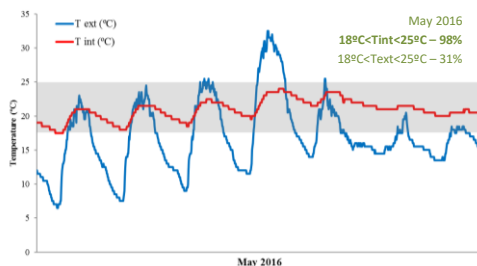
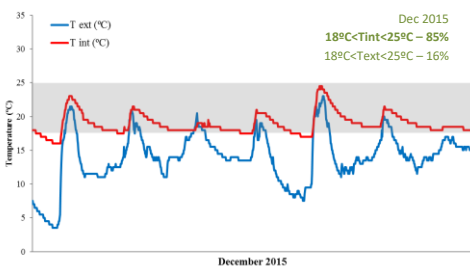
WINTER



SUMMER

Relative thermal comfort. Bioclimatic experimental module "A Vieira" in CIFP Someso. A Coruña.

Conclusions obtained in collaboration with Sustainable Energetic Applications Group
Faculty of Physics. University of Santiago de Compostela



Position facing the Sun. What if there were buildings inside the solar ovens? First lesson in bioclimatic town planning.



Bioclimatic district "Valdespartera". Zaragoza. Spain. 9600 homes.