



IT'S TIME TO CARE!

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ERASMUS+ 2018-2020

PROJECT DURATION: 1 SEPTEMBER 2018 - 31 AUGUST 2020



SUSTAINABLE ENERGY

Methodology

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Experiment carried by the team of Olaines 1.vidusskola on the topic Sustainable Energy. Model of vacuum solar collector house.

Introduction

Align with decrease of the reserves of fossil fuel, as well as the impact of use of fossil fuel on the climate, more attention in the world has been paid to renewable sources of energy, including solar energy. Solar energy in Latvia also has been used, mostly in solar collectors for hot water production.

However, in Latvia because of its geographical and climatic conditions there are some specific features in comparison with traditional solar energy that is used in other countries. In Latvia in the length of days in summer excides 12 and maximally reaches 17 hours, accordingly there is also a long path of the sun, but rather small height of the sun (maximally 56° above the horizon) and therefore also small intensity of solar radiation. There is also frequently considerable nebulosity.

In winter the height of the sun is very small (10°C) and the length of the day is 7 hours , therefore, use of solar energy in winter in Latvia is not possible. Because of the mentioned features above a traditional flat plate collector without tracking to the sun is not appropriate enough for use in Latvia, but new collector constructions are required, that would be able to collect the energy from all sides as well as to use the diffused radiation more efficiently.

Vacuum solar collector



a) These kinds of collectors are ideal in northern latitudes, especially in Latvia. Vacuum solar collectors perform better in winter and cloudy weather.

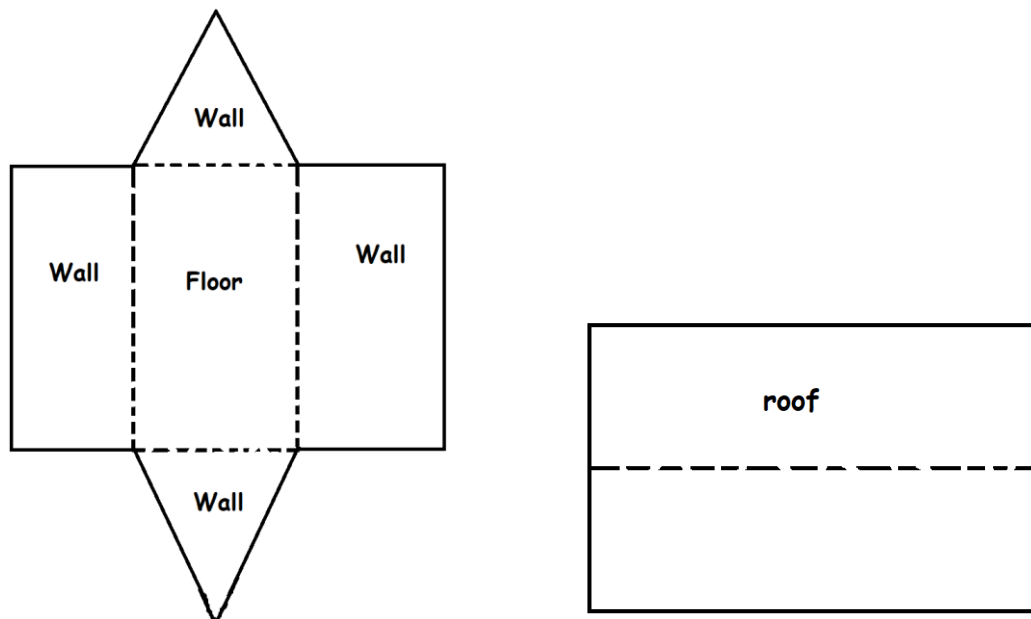
b) Vacuum tube solar collectors warm up water for household use where higher-temperature water is needed

Procedure:

Model of vacuum solar collector house in winter style (like in Latvia)

1. Step

Draw out the one piece of the standard house an roof on a piece of cardstock

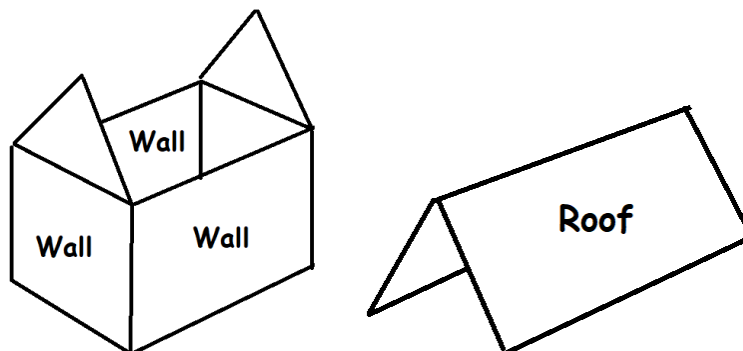


2. Step

Cut out the two pieces, using scissors.

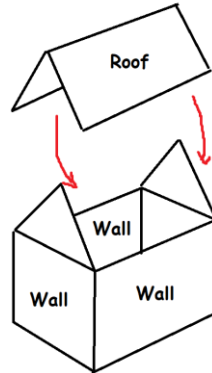
3. Step

Fold the cardboard along the dashed lines and make straight folds.



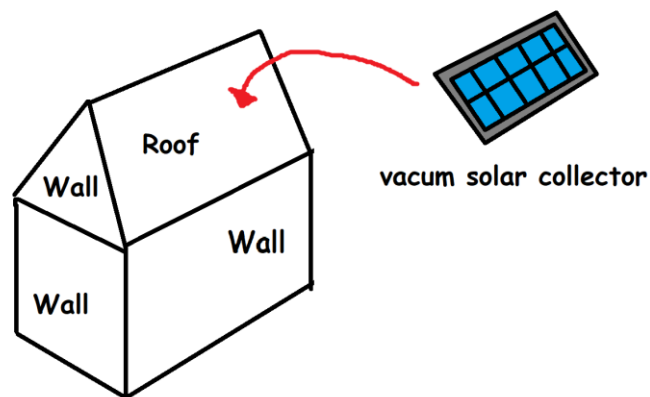
4. Step

Tape the edges together (walls and roof)



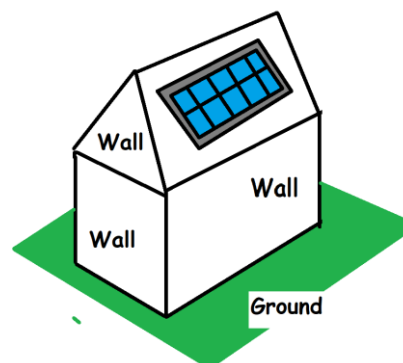
5. Step

Put and tape on roof vacuum solar collector



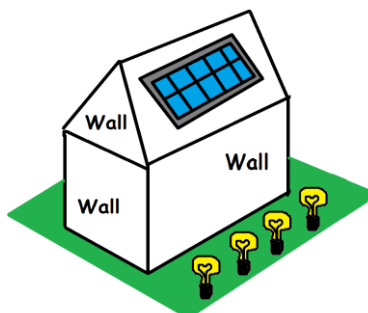
6. Step

Make ground for house



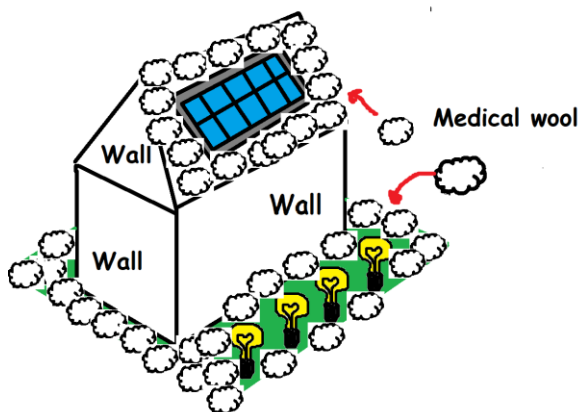
7. Step

Add bulbs to the house and connected with solar vacuum collector



8. Step

Decorate the house and land with medical wool to look like winter





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Results



Left side



Right side



Top side

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