



## 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°) 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.

### 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