Thermal Engineering for Space - Teacher Notes

Workshop Time – approx. 1 hour

Materials Needed

- Netting
- Cotton wool
- Synthetic wadding
- Bubble wrap
- Tin foil or medical thermal blankets
- Beakers (enough for one between two)
- Thermometers (enough for one between two)
- Scissors
- Sellotape
- Staplers
- Kettle
- Paper
- Pens/pencils
- Calculator
- Kitchen scales
- Laminated sheet with 10cm circle on (or 10cm tube section)

Introduction

We start off with the question of 'Is space hot or cold?'. The answer is that it is both hot and cold depending on how close you are to a star and what protection you have from the heat e.g. the Earth's atmosphere.

We talk about the difference between heat and temperature and then the methods of heat transference.

This introduction is nice and interactive as you can get the students involved in telling you what they know about space and heat transference.

Challenge: Make an effective insulation jacket for your beaker of hot water. You must be able to remove the jacket and the thermometer must not be fixed in. The beaker and jacket must fit into the rocket housing!

Split the group into pairs (or 3 at most).

- 5 minutes to look at materials and design insulation
- 20 minutes to construct the insulation jacket
- 10 minutes testing

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- 1 minute presentation at the end.

See the presentation slides for more details on how to deliver this activity.