

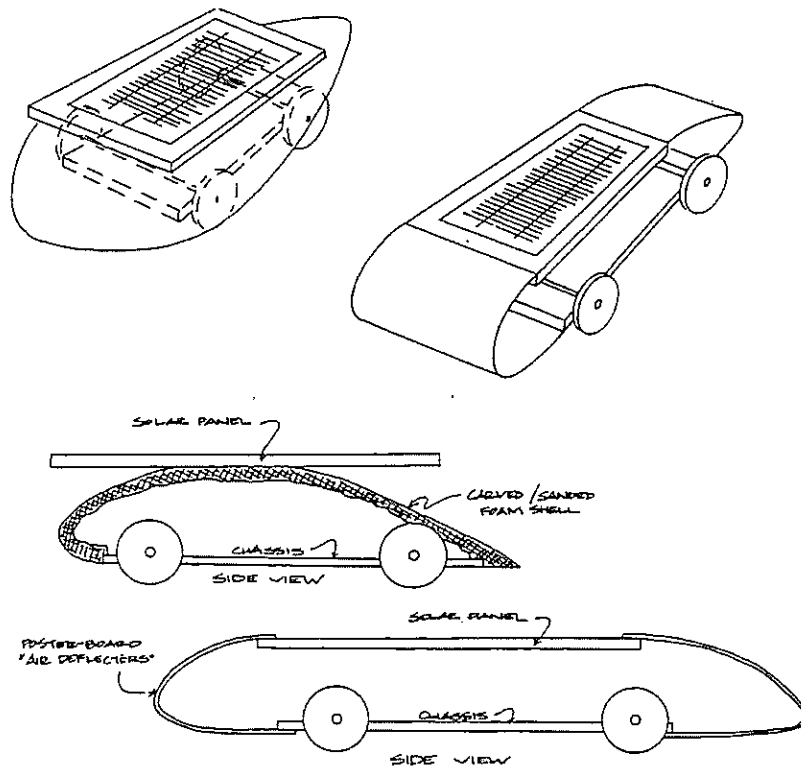
Body/Shell

Purpose

The body or shell of a real car has several purposes. It protects the passengers from wind and rain, it provides added safety in case of a crash, and it improves how the car looks. But it also changes how the car performs because a well designed shell can reduce the force of air on the car as it moves.

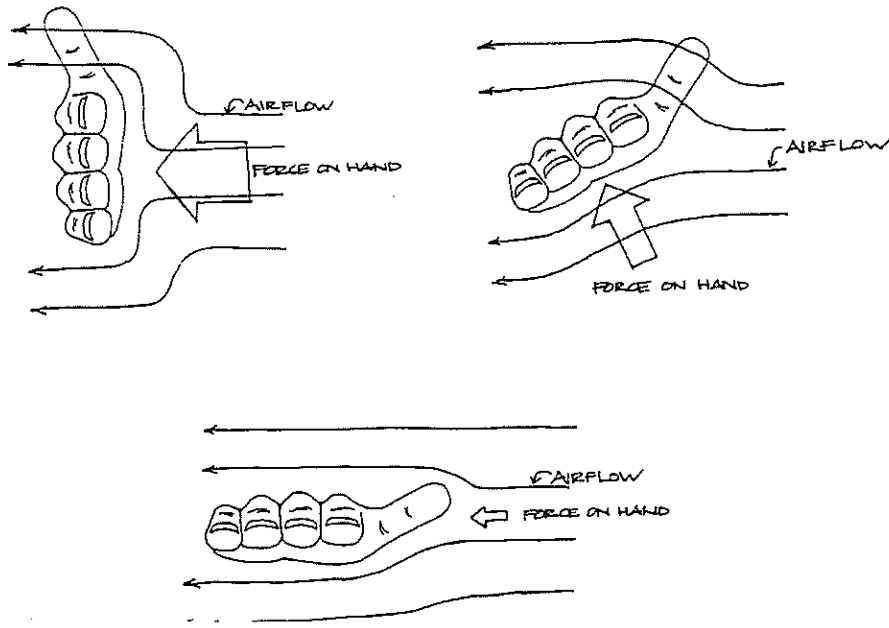
Ideas

Some ideas for shells are given below:

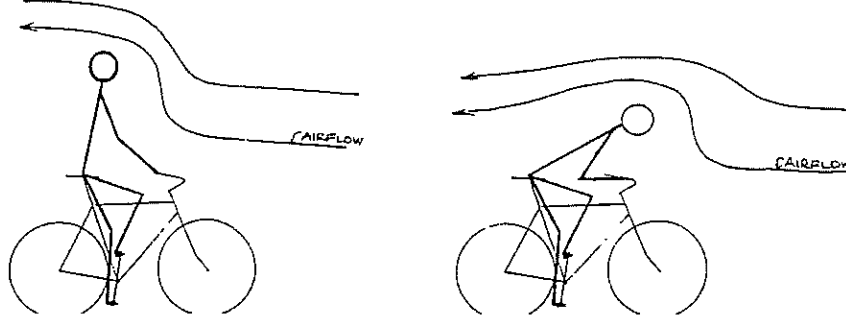


Concept: Aerodynamics

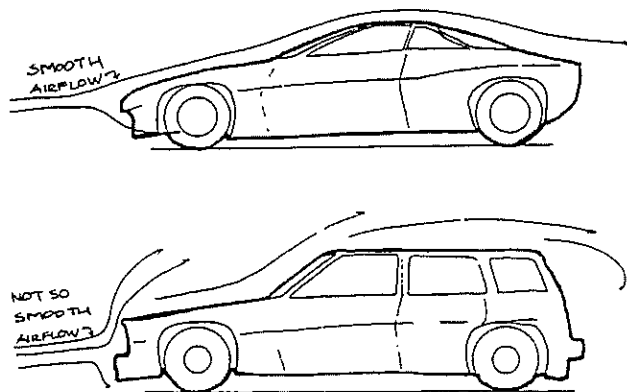
To see how much force air can have, you can try some simple experiments. While driving in a car, try (carefully!) holding your hand flat, and sticking it out of the window. Feel how much force the air has on your hand. What happens to the force when you tilt your hand?



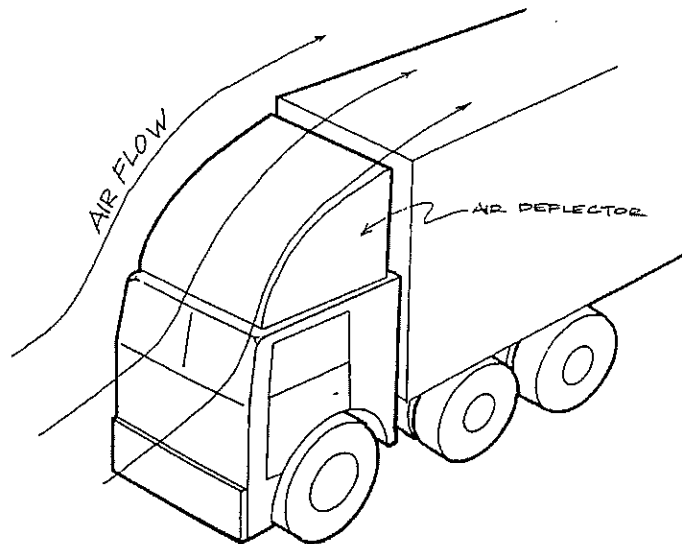
Or while riding a bike down a hill, compare how fast you can go while sitting upright, or by leaning forward. If you crouch down, the air can go over you instead of hitting you in the chest, so you should be able to go faster. In other words, the force of the air on your body when you crouch down is less, so you are more *aerodynamic*.



Look at things that move through the air, and notice how they are shaped:



Fast cars are shaped so that, when you move more quickly, they can cut more easily through the air. As another example, you may have seen tractors-trailer trucks with big air deflectors on them. The reason for this deflector is to make the truck more aerodynamic, so the truck's engine doesn't have to work as hard and the truck driver saves money on gas.



In some situations, the force of air helps you instead of hurting you. For example, what if you want to *slow down* very fast? How about using a parachute? Now the force of the air is helping you.

Materials

So how do you reduce the force of air on your solar car? One way might be to add a body or shell to it that deflects the air around the car. Some possible materials you might use are:

- poster board
- cardboard
- foam core
- stiff insulation foam (e.g. "Foamula" – can be bought at lumber stores)
- mylar or plastic sheet.

Insulation foam can be carved to shape, made smooth with sandpaper, and even painted to look nice. (Warning: some paints, like spray paint, will "melt" foam, so always try your paint on a piece of scrap foam that you don't need before using it on the real thing.)