



Introduction To Engineering Design -GE 105-

1435 – 1435, First Semester

Advanced Car Shading System



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Introduction

During summer, the temperature inside the cars increases significantly causing high temperature in the inner parts of the car, such as steering wheel and driver seat and other parts of the car.

Objectives

Primary objectives:

- The main objective is to create a new compatible system that solve and overcome the inner heat of the cars.
- Able to be used in all weather seasons.

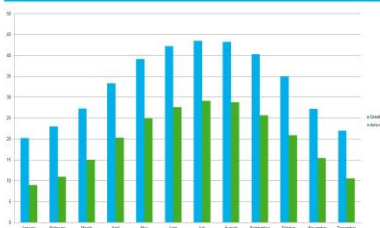
Secondary objectives:

- Easy to use
- Efficiency and low economic cost compared to other competitors

Needed information

- Knowing the annual temperature schedule.
- Study car windows dimensions and sizes.
- Search in the chemical and physical properties of insulating materials

The Annual Temperature Schedule



Knowing the temperature throughout the year to extract the highest, lowest, and the average temperature.

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Morphological Analysis

material				
aluminum	steel	wood	plastic	
power supply				
batteries	solar cell	car battery	no power	
operation				
manual	automatic	both		

Professional scenario/ weight

Option 1 : aluminum / car battery / both manual and automatic.
Option 2 : steel / batteries / automatic.
Option 3 : plastic / no power / manual.

	Manufacturability	Efficiency	ease of use	low cost	score
weight	15	35	35	15	
option 1	6	10	10	7	895
	90	350	350	105	
option 2	8	8	2	7	575
	120	280	70	105	
option 3	10	2	10	10	720
	150	70	350	150	

Concept



The shading system starts from one end and goes automatically to the other end, just after the driver turns off the car.

Best Design

Best design is options-1, which uses the car battery as a power supply, and the main parts of it is made from aluminum because it is solid and light in weight at the same time. The design can be operated either automatically or manually for best efficiency.

constraints

- Ease of install and use.
- Quality and price commitment
- Suitable size.

Criteria

- Provide maximum heat isolation possible.
- Used in all-weather seasons.
- Provide the product to most types of cars.
- Quality commitment.

Need Analysis

- Reduce the temperature difference between outside and inside the car.
- Light and easy to install and use.
- Fit and cover all the car glasses
- Can be started automatically when the car is turned-on.
- Low economic cost

Human Factor

Physiological Factor

Living in a suitable thermal environment is an important psychologically factor for humans, and driving your car in a high weather temperature is very annoying and uncomfortable. One of the important functions for this product is to reduce this annoying heat inside the car.

conclusion

The main purpose of the product is to control the temperature difference between outside and inside the car.

The product can be used in cold season also by keeping the warmth inside the car.