



EE4: Small Solar Car

Coach: Tan YE

Process Report

Team Members

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Introduction:

This report shows the design and analysis of our racing solar car the power is obtained from solar panels on the surface of the vehicle. Photovoltaic (PV) cells convert the sun's energy directly into electric energy. The material we used in our project is a Plexi Glass. Overall, this project involves many processes, starting from the design concept, to the working model of our SSV.

PROJECT SYNOPSIS

The project contains designing and analysis of the solar car body for race. This project is to develop and improve its performance so that we win the race. In this project, we require a lot of skills and information, research and also knowledge such as Computer Aided Design Software (Auto Cad), Solid works software and knowledge in automotive industries and solar industry.

PROJECT PROBLEM and SOLUTIONS

1. First problem we faced is in gear ratio calculation, we made some mistakes in calculating appropriate gear ratio due to lack of proper knowledge in Matlab and Simulink but later with the help of other team members myself was able to crack the Matlab code and calculated our gear ratio

2. Next we had problems with solid works but divided the work among the team and we came up with a design and remodeled it several times according to our required dimensions
3. The biggest problem we got latter was that the material we used for our SSV made our car heavier approximately about 2kgs so our coach gave us some suggestions and we followed them and figured out our design mistakes, made several changes to our solar car and now the weight is about 1.5 kgs
4. Due to overweight and more stiff materials we had to increase the gear ratio to 15 in order to attain maximum velocity. This was the final change we made in our SSV
5. We dint have any problem in choosing right number tooth for the gears because our teams mates have an idea different types of gear transmission so we could easily use compound gears to our SSV.

Overview:

All my team mates had put their maximum effort especially Aoyu sun, Bin Wu , Eswara Prasad they always went to fablab in time and worked hard to complete the SSV. Right from day 1 everyone showed interest in doing their work and myself veera followed them and tried to complete our work before deadline. Amar and Ramesh took intiate to start SSV part 2 report and they were responsible for the whole report. In ester holidays they both sat together and worked on Sankey diagrams and gave us more relief and time, meanwhile we worked on solid works.

Who is Responsible for what?

Veera – solid works, Simulink.

Eswar Prasad – report corrections and technical drawing.

Amar – Calculation's and SSV part 2.

Ramesh – Documentation and SSV part2.

Aoyu Sun – matlab, SSV part 1.

Bin Wu – Simulink, SSV part1.

Cost Analysis:

The university provided us a solar panel and Dc motor. We purchased gears from Conrad, an online store and the material for chassis from fablab. The materials used for hitting materials and shaft were bought from India.

Gears	=	12 Euros
Plexi glass (4mm)	=	9 Euros
Shaft and hitting material	=	2 Euros
Glue Stick	=	3 Euros
Total	=	<u>26 Euros</u>

Conclusion:

It was such a nice experience to work with my co students and two Chinese guys, I have learnt so much from this EE4 and this kind of working environment always helps in future.