PROCESS REPORT

Remmy Nshuti
Nele Rath
Praveen Saragadam
Varsha Manda
Regis Hakizimana
Abel F. Abraham

1. Designing the SSV:

Our work mainly revolved our decisions which were made during meetings which were conducted on Tuesdays every week. These meeting were the backbone to our progress. Every member had to explain what new features, advancements, problems, or information he /she have found. He/she had the task to explain his/her part in a mini demonstration or sometimes manual calculation. This will give an idea to everyone where we are going as a team. The work progress was made smooth by this action.

During the 1st week it was a formal group introduction. It was a get together to know each other. Although all of us were from the same group it was a randomly picked group and it was first time for us working together. We had to submit the gent chart,WBS and cooperation contract. The tasks were divided individual.

During the 2nd week we had to hand the deadline so everyone was quite busy finalizing those details. It was completed with little problems since it was same thing as we have done for other EE projects.

During the 3rd week we had our 1st seminar on solar cell characteristics and we were ready to measure our ideal power we can get for our motor from the solar panel. With the help of our coach it went well. We got all our results and got ready to put them all together.

The 4th week begun with a meeting where we made some import decision on the base, basic shape, wheels and also new tasks were assigned. There was a pitch from members of the team, after some discussion we chose ideas we considered to be good and agreed to move forward with that. We also did a restructuring of tasks to fit this new change. We all agreed to do our tasks individually and present our finding and question during 5th week.

The 5th week was a mini presentation for each other. We explained to each other how calculation, designs and similink were done. We saw good results and also some problem. We agreed to ask our coach and do further work on them.

During the 6th week, we had to hand in case ssv part 1, Simulink and technical drawing and start working on our design.

We wanted our car to weigh less and took decisions for the design based on this. For the frame, we initially settled on Plexiglas or MDH. But both posed a certain disadvantage in our design and we had to carry out a

more extensive search on the material that is apt for our design. We finally settled on Balsa wood, which we thought was light weight and also stronger compared to Plexiglas and MDF. For the wheels we chose mini CD's as they have less friction, low air resistance and are light weight and also easily available. We also used an axle and two bearings for our design. The problems we encountered was mostly regarding the materials we had to use for the car to make it weigh less.

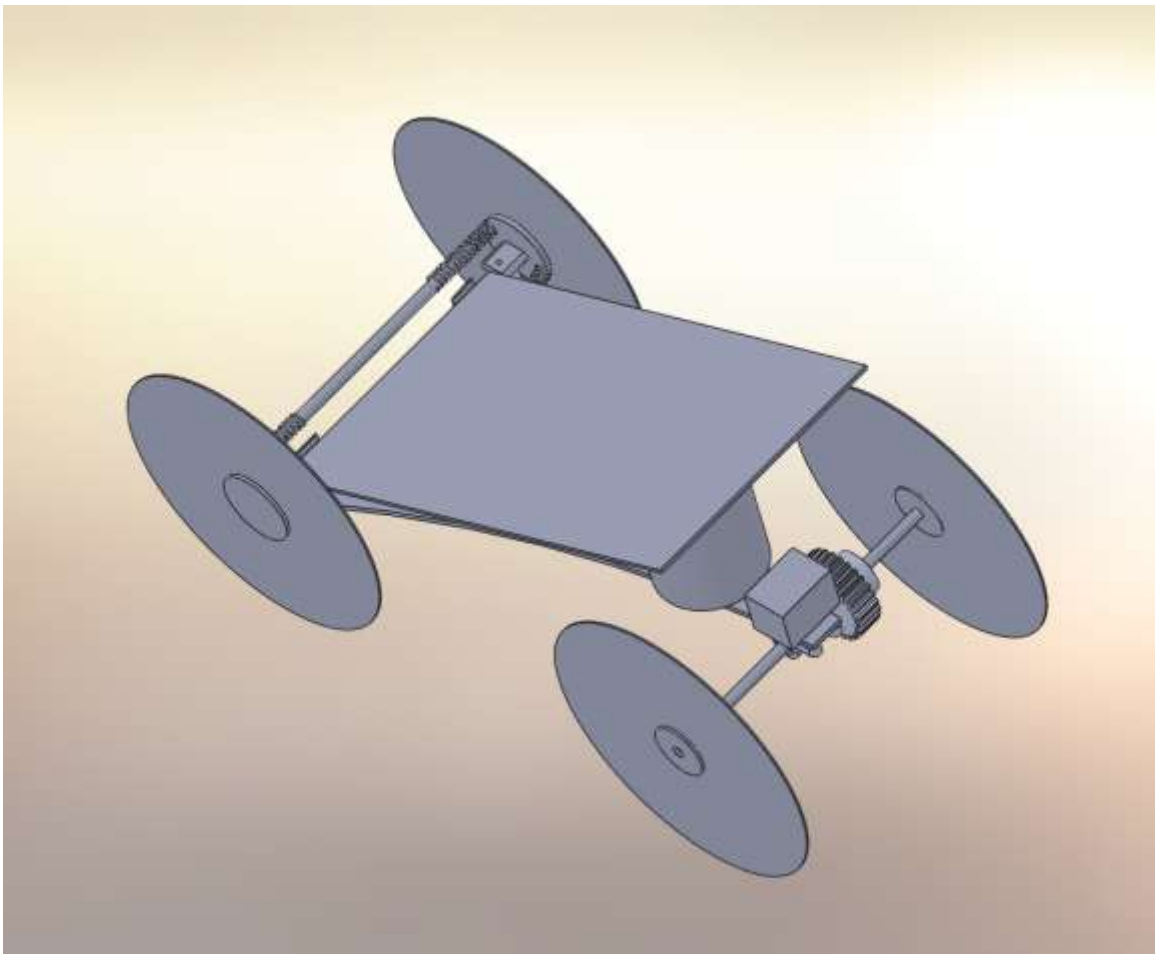
However, when we did test our design, we found that the car never went in a straight line and crashed too often. The design we had for absorbing collisions did not work at all. We tried to make the design more effective but due to lack of time and also ideas, we had to re-model it into a more safer and simpler option. When we did test the new design, it worked perfectly completing the race in about 4 seconds with a 9V battery.

2.Description of the design:

Our car had:

- Frame made of Balsa wood, four wheels and rear driven
- Wheels made out of mini CD's with the front wheels rotating on a separate axis, that is attached via a pin connection to the main frame.
- The back wheels have a rear axle attached to it which rotates within two pillow block bearing that are attached to the main frame. This axle is made out of aluminum
- The solar panel will be supported by the main frame in the front, keeping it in place by two brackets, attached to the main frame. The Solar panel will then be propped up in an adjustable angle by a Double Cardan Joint.

2.1 Drawing of the design



3. CURRENT DESIGN DESCRIPTION

The new design had

- A broader shape in the back allowing the self made Pillow Block Bearings to be spread further apart, giving the back axle more stability.

- A freely rotating wheel in the front.
- Wheels on either side of the frame to prevent collision with walls.
- The Double suction cup holder design that is used to fix the solar panel to the main frame.

3.1 DRAWING OF THE NEW DESIGN:

4. REFERENCES:

- CASE SSV 1

"Engineering Experience 4: Design a Small Solar Vehicle/EN/Team PM21/SSV CASE 1 - Wikiversity". 2013
http://en.wikiversity.org/wiki/File:SSV%2BCASE%2BPART%2BI.pdf

- WBS AND GANTT CHART

1. "Engineering Experience 4: Design a Small Solar Vehicle/EN/Team PM21/EE4 WBS Team T - Wikiversity". 2013
http://en.wikiversity.org/wiki/File:EE4_WBS_TEAM_T.pdf

2. "Engineering Experience 4: Design a Small Solar Vehicle/EN/Team PM21/EE4 " – Wikiuniversity

http://en.wikiversity.org/wiki/Topic:Engineering_Education/Engineering_Experience_4:_Design_a_Small_Solar_Vehicle/2013:_Team_PM21

- CASE SIMULINK

"Engineering Experience 4: Design a Small Solar Vehicle/EN/Team PM21/Case Simulink - Wikiversity". 2013
http://en.wikiversity.org/wiki/File:Case%2BSimulink.pdf

- Meeting report

"Engineering Experience 4: Design a Small Solar Vehicle/EN/Team PM21/Meeting report - Wikiversity". 2013

http://en.wikiversity.org/wiki/Topic:Engineering_Education/Engineering_Experience_4:_Design_a_Small_Solar_Vehicle/2013:_Team_PM21#Meeting_Reports

- CASE SSV 2

"Engineering Experience 4: Design a Small Solar Vehicle/EN/Team PM21/Case ssv 2 - Wikiversity". 2013

http://en.wikiversity.org/wiki/Topic:Engineering_Education/Engineering_Experience_4:_Design_a_Small_Solar_Vehicle/2013:_Team_PM21#Report_Case_2