

Group number: 1707

Project title: Electromagnetic Train

Client &/Advisor: Professor Song Jimming

Team Members/Role:

- 1. Yap Yong Sheng (Team Leader)**
 - 2. Norfarahin Nordin (Communication Leader)**
 - 3. Chung Sheng Su (Webmaster)**
 - 4. Shi Xiang Lim, Larry (Concept Key Holder 1)**
 - 5. Mustafa Hafez(Concept Key Holder 2)**
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○ **Weekly Summary**

Throughout this week, we held an official meeting with our advisor. In this week meeting, we already finalized all the item that we wanted to purchased. All the information such as the brand of the item, the company that sells it, and the dimension of each item is recorded and the list is submitted to the advisor. The magnet has been purchased an we shall receive it in a week time.

● **Past week accomplishments**

In this part, every group member describe specifically on what they contribute for the project progression:

Yong Shen

This week, we finalist the magnets and the copper wire with Professor Song. On Tuesday meeting with Professor Song, Professor Song said the lists of wire is too expansive and we need Bare Copper Wire. So, Larry and I went search for bare copper wire on the net. The

table 1 below is what we found on Tuesday. Late Wednesday, Professor Tuttle contacted us and said we can't order parts from eBay. So, Larry and I found some companies that have bare copper wire and send it to Professor Song (Table 2). On Friday, Lee Harker contacted me about the copper wire for the project is here. He explained that the copper wire is from eBay. After I went to find him, I brought the copper wire straight to Professor Song and we discussed the project for a while.

February 21, 2017

No	Company	AWG	Cost (\$)	length	Shipping (days)
1.	ebay	18 AWG	45.90	600 ft	5-7

Table 1

http://www.ebay.com/itm/18-AWG-SOLID-BARE-COPPER-SINGLE-GROUNDING-WIRE-600-FT-3-Lb-Spool/282249494813?_trksid=p2141725.c100338.m3726&_trkparms=aid%3D222007%26algo%3DSIC.MBE%26ao%3D1%26asc%3D20150313114020%26meid%3De9c49b8755b54ddebda4a767367486b3%26pid%3D100338%26rk%3D5%26rkt%3D30%26sd%3D281905553428

This information is for the eBay: We want to build a 1 meter diameter circular track, and we need 600 ft worth of copper wire for each track.

We are planning to get 2 quantities of 600 ft 18 AWG copper wire, which should cost around \$100. The cheapest supplier we could find is linked below.

We need solid bare copper for our project.

The shipping fees is excluded. However, it is on sale only for the next 44 hours. The original price is \$51 per 600 ft.

February 23, 2017

No	Company	AWG	Cost (\$)	length	Shipping (days)
1.	Glutco	18 AWG	39.24	195 inch	5-7
2.	Glutco	18 AWG	139.78	995 inch	5-7

Table 2

1. <https://glutco.com/products/bare-copper-wire-bright-18-awg-0-04-diameter-195-length-pack-of-1>

2. <https://glutco.com/products/bare-copper-wire-bright-18-awg-0-04-diameter-995-length-pack-of-1>

Larry Lim

- Got links from alternate suppliers as the previous one was rejected.
- Confirmed shipment arrival.
- Plan on how to start the project.

Chung Sheng Su

This week, we have placed an order for the copper wire and permanent magnets which is the main materials used in the project. Thus, I went online to look up for the methods to coil the copper wire. There is a Youtube video by Wayne Schmidt on the whole process of building the simplest electric train that mentions how to coil the wire best. The link of the video is shown at the end of this reflection. In the video, he uses a half inch diameter steel conduit and duct-taped it to an electric drill that has variable speed control. Next, he uses bamboo skewers to control the gap between the copper wires as they coil. Since in the video, the track built is used to build for AAA battery sized, we might also need a 5/8 inch diameter steel conduit to coil the track for AA battery. As for the distance between each turn, in the video, he did an experiment and found that 12 turns per inch creates the highest velocity for the electric train. But he still prefers to use about 9 turns per inch as it will create a better view to see the electric train. So, I think that we will try out creating tracks from 9 turns per inch to 12 turns to see what is best for us.

Link: <https://www.youtube.com/watch?v=BWW4kPid4yc>

Mustafa Hafez

Larry and I checked for the exact specifications on the parts we needed. Also, how we would want to implement them in our project to make everything work as we expect (as far as any issues we may encounter-that's going to require a bit of experimentation so we can see how the physics works out in reality).

Norfarahin Nordin

- Throughout this week I did the calculation for the the coil length and thickness. This is because Yong Shen has some issues in purchasing the suitable coils in the market. A lot of the coil has a coating which is not what our group wanted.

○ **Pending issues**

- Mustafa and Chung Shen: confirm the size of the magnet that supposed to match the diameter of the battery.
- Larry and Yong Shen: Waiting for one more company replies regarding the coil shipment duration issue, buy the materials needed for the project, and research more on topic.
- Norfarahin: Calculate the sizing of the tube needed, includes the thickness of the tube.

○ **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Yong Shen	Worked on the finalizing purchase item.	4	17
Farah Nordin	Calculations of the coil length and thickness.	4	17
Larry Lim	Make phone calls to the coil suppliers	4	17
Chung Sheng	Confirm all the details and information regarding the magnet used; size, materials, and strength.	4	14
Mustafa Hafez	Confirm all the details and information regarding the magnet used; size, materials, and strength.	4	14

○ **Comments and extended discussion**

The project is progress as following the timeline of the group project. We have received the coil for the time being.

○ **Plan for coming week (please describe as what, who, when)**

Set up parameters and start the project.

○ **Summary of weekly advisor meeting**

Finalize all the purchases made.