

*EE/CprE/SE 492 WEEKLY REPORT 4 (2/28/2020 - 3/13/2020)*

*Group number: sdmay20-27*

*Project title: Gauss Sensor for Magnet Array Filter*

*Client: Dennis O'Neel*

*Advisor: Dr. Mani Mina*

*Team Members/Role:*

*Muhammad Lutfi Latip -Team Manager*

*Irfan Rafie – Test Engineer*

*Vishal Patel – Meeting Scribe*

*Muhammad Aiman Zulkefli – Research manager*

*Wei-nee Long – Report Manager*

**o Weekly Summary**

For the past couple of weeks, the team was working on transitioning onto the surface mount sensor design as we determined that the orientation/angle of the sensor should change. On the other hand, we also prepared the testbench for the upcoming testings that will be conducted.

**o Past week accomplishments**

**1) Experiment method pertaining to the mixing of iron particles**

- Changes to the original circuit for the testbench was done. The contamination reservoir was placed before the fluid enters the filter.
- This method allows us to inject iron particles directly into the filter.
- We also decided to swirl the flask manually in order to ensure the homogenous mixing of the iron particles within the contamination reservoir.

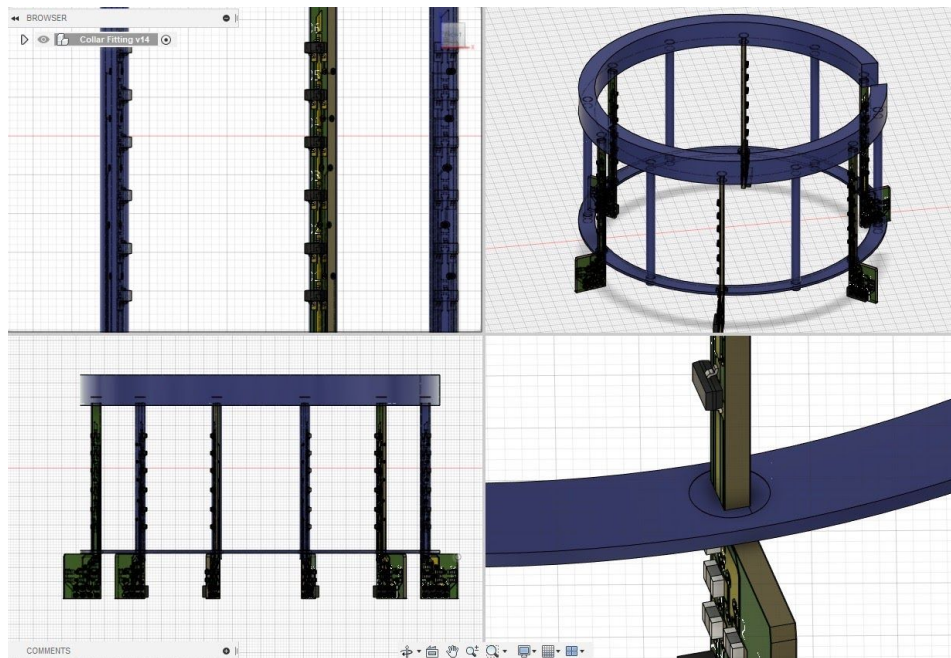
## 2) Determining the correct sensor orientation

- The team tried to determine the correct sensor orientation by manipulating the angle and observing the output data.
- If the sensor is oriented perpendicularly facing the magnet, maximum output should be expected.

### o Pending issues

#### 1) PVC ring cannot hold the sensors firmly in one place:

- Designing the bracket to hold the sensors is challenging as we had to consider the limited and non-homogenous spacings between the magnets in the magnet array collar.
- The team is still trying to improve the design and we also decided to 3d print the bracket that would hold the sensors.



## **2) Determining the best model of sensors to be used:**

- This has not yet been determined as we are still waiting for the new pcb to arrive.

### **Advisor/Client meeting summary**

#### 1) Brief the client regarding our new design

- Before transitioning, we seek the approval from our client regarding the new design and new sensors.
- Seek the clients comments and advice regarding the new design.

o **Individual contributions**

<b>NAME</b>	<b>INDIVIDUAL CONTRIBUTIONS</b>	<b>HOURS THIS WEEK</b>	<b>HOURS CUMULATIVE</b>
Muhammad Lutfi	<ul style="list-style-type: none"> <li>- Setting up meetings</li> <li>- Collection of data during assigned shifts.</li> <li>- Devising testing plan.</li> <li>- Ordering sensors.</li> <li>- Writing Biweekly Report 4</li> </ul>	18	144
Irfan Rafie	<ul style="list-style-type: none"> <li>- Collection of data during assigned shifts</li> <li>- Devising testing plan.</li> <li>- Ordering SOT sensors.</li> </ul>	18	144
Vishal Patel	<ul style="list-style-type: none"> <li>- Improvising the design of the board to make it smaller in order to fit into the collar</li> <li>- Collection of data during assigned shifts</li> </ul>	18	144
Muhammad Aiman	<ul style="list-style-type: none"> <li>- Collection of data during assigned shifts</li> <li>- Devising testing plan.</li> </ul>	18	144
Wei-nee Long	<ul style="list-style-type: none"> <li>- Setting up the test bench</li> <li>- Setting up meetings with advisor and instructor</li> </ul>	18	144

**o Plans for the upcoming week**

- 1) Testings on the new pcb using the new sensors should be done.
  - a) After receiving the pcb, the team will solder the surface mount sensors and straight away test the new design.
- 2) Determine the orientation of the sensors for various sizes of the magnet array collar.
- 3) Decide which design should be applied for the final product.
- 4) The team should get the 3d printed bracket done so that we could mount it to the magnet array collar and be prepared to test it along with the new sensors.