

Senior Capstone- Crumbletech

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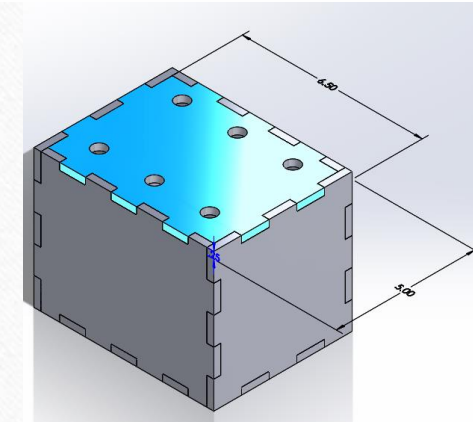
COORDINATOR (5): Shrestha, Dev (devs@uidaho.edu) - Lead instructors and Mentor

Prototype Feedback

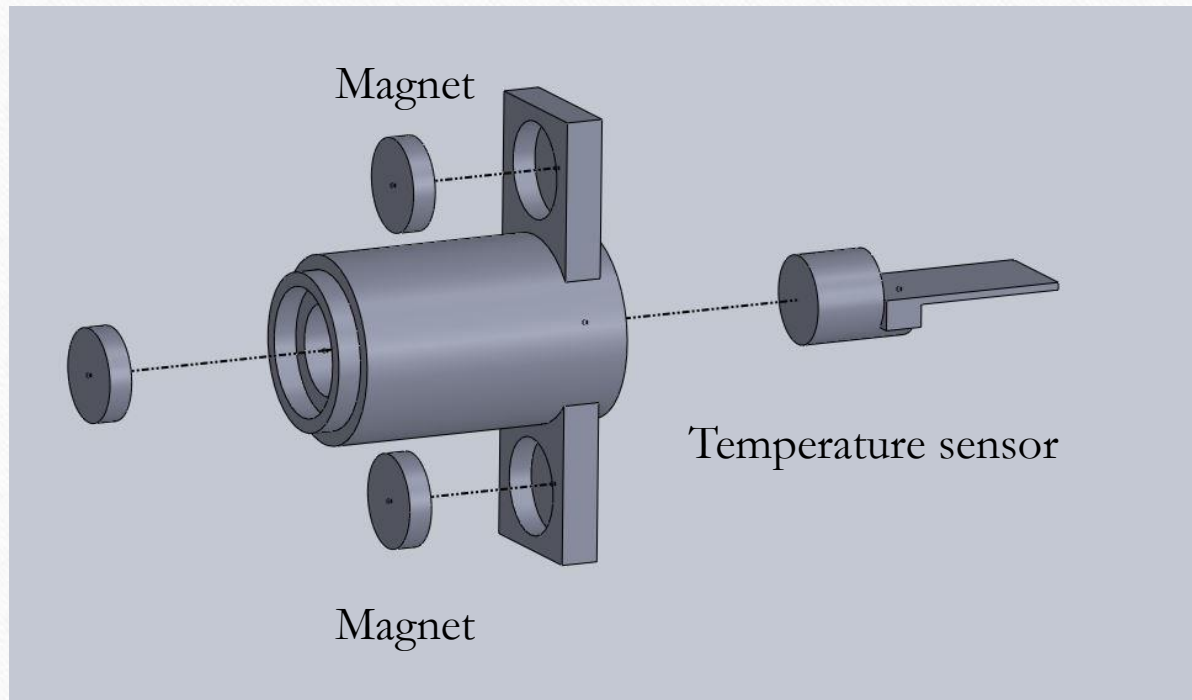
- Positives and Negatives
 - Happy with general direction of design?
- What changes should be implemented for the final product?

Final Housing for the Microboard and cables

- Will be similar to the prototype
- No longer wooden but Polycarbonate
- Will be made more compact than the Prototype
- On the right the new housing shape and old housing



Sensor Housing



Moving forward all cables will have clipped connections for durability



Design Achievements

Project Deliverables		
Customer Needs	Metric no.	Quantification
Sensors for P-Series head translatable to other crumblers	1	self-contained sensor apparatus not specific to P series head
Digital Output readable by PLC	2	0-5V output, 4-20mA output
temperature reading across head length	3	Sensor Array (5 sensors per head)
Accuracy	4	(+/-) 10 to 15 degrees
Notification of overheating	2	Personell monitoring PLC will be able to read this
Not too hot to damage material	5	display critical temp at 200F
Verification of effectiveness	6	possibly monitor outgoing material
Our Needs		
modifying existing casing		OK to drill holes into side sheet
CAD Files		Stored in Google Drive
Does the sensor meet these metrics?		
	Robotshop IR Sensor	Omega IR Sensor
1. Sensor housing easily removable	yes	
2. Arduino Output configurable	yes	
3. easy to configure multiple sensors to 1 board	expensive	
4. $\pm 2^{\circ}\text{C}$ Full Scale Reading	yes	
5. -30-330 C reading range	yes	
no	no	

Budget

Items	Item Cost	Total Cost	Status	Qty
IR Temp. Sensor	\$18.70	\$37.4	shipped	2
Arduino A000067 Dev Brd, ATMEGA2560 Arduino Mega 2560 R3	\$42.99	\$42.99	shipped	1
Neodymium Magnets 100 pcs	\$11.98	\$11.98	Shipped	1
120 pcs Dupont Wires with ribbon cables kit	\$9.99	\$9.99	Shipped	1
Mega Protoshield Prototype with mini breadboard	\$9.99	\$9.99	Shipped	1
5 pin Connectors	\$12.99	\$12.99	Shipped	1
Total cost so far	\$125.34			

Next Steps

- Create the final Housing
- Order the final IR Sensors and Cables
- Finish coding for implementation of 10 more IR Sensors
- Finish the wiring to the Arduino Mega of 10 more Sensors
- Have a Final Product by May 4th
- Calibrate for emissivity changes(Possibly)

Questions?
