

Minutes
September 12th, 2017

Team Crumbletech Meeting

Attendance:

All Present

Old Business:

Each team member to come up with at least 3 questions for Forest Concepts regarding the nature of their requirements and also research different types of sensors that could be applicable to this problem.

New Business:

Anthony's Questions

1. Will we be able to see the process of changing out the crumbler head, and possibly receive a copy of the SOP of the crumbler head being changed, to better understand our project?
2. Will the machining of the crumbler head if we need to do this be done at the university or at your facilities?
3. Are we going to be creating a sensor design for one of your crumblers or multiple different Crumblers?

Jacob's Questions:

1. Will you be willing to share a CAD file with us for modeling?
2. What are the restrictions for modifying the existing crumbler head/casing?
3. Do you have an existing digital readout display or are we building the first item of this nature?
4. Ideally how many sensor points would you like along the heads?

Feifan's Questions:

1. What are your specific requirement for the accuracy of the temperature measurement?
2. Are there other interference factors we need to considered into during the crumblers operation?
3. How much do we need to control the cost of the sensor?
4. Are people on duty or the whole automatic process when crumbler operation? (would we need an alarm of sorts?)

5. Does the maximum temperature allowed differ by the material entering the grinder?

Aziz's questions:

1. What kind of materials would you like to have in sensor apparatus?
2. Do you have a lower threshold for the temperature?
3. What material are the teeth of the heads made out of?
4. How much dust or other debris is produced as a result of this process?
5. What are the most common materials that are ground up?

Set up schedule meeting after meeting with Dev on Thursday.

Action Items:

Meet with whole team in GJ Senior Design Suite at 4:30pm on Thursday, Sept 14th

Minutes
September 14th, 2017

Team Crumbletech Meeting (GJ108)

Attendance:

All Present

Old Business:

Anthony's Questions

1. Will we be able to see the process of changing out the crumbler head, and possibly receive a copy of the SOP of the crumbler head being changed, to better understand our project?
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5. What are the most common materials that are ground up?

- Set up schedule meeting after meeting with Dev on Thursday.

New Business:

- Make an agenda before each meeting
- Set up meeting with FC next week
- Reminder email for every meeting
- Think of 3 options for sensors for client

Action Items:

- Jacob to send email to Forest Concepts to meet next week
- Aziz to write agenda for next meeting
- All to set up calendars on outlook

Minutes

September *19th*, 2017

Team Crumbletech Meeting (Chief's Room)

Client Interview

Attendance:

All Present

Old Business:

- Make an agenda before each meeting
- Set up meeting with FC next week
- Reminder email for every meeting
- Think of 3 options for sensors for client
- Set up schedule meeting after meeting with Dev on Thursday.

New Business:

Anthony's Questions

1. Will we be able to see the process of changing out the crumbler head, and possibly receive a copy of the SOP of the crumbler head being changed, to better understand our project?

-Yes, most of it will be from the CAD and he will send a video file through the google drive

2. Will the machining of the crumbler head if we need to do this be done at the university or at your facilities?

-Forest Concepts will probably just make a new plate with our specs

3. Are we going to be creating a sensor design for one of your crumblers or multiple different Crumblers?

-We will be working primarily for the P series (8" diameter, 150 RPM, 1300 lb processing head) but would like to be able to transfer to M series (4" diameter, 450 RPM, 300 lb processing head)

Jacob's Questions:

1. Will you be willing to share a CAD file with us for modeling?

-Yes, Google Drive

2. What are the restrictions for modifying the existing crumbler head/casing?

-We can drill holes in the side plates, etc.

3. Do you have an existing digital readout display or are we building the first item of this nature?

-They have a PLC, would like our output as 0-10V, 0-5V, or 4-20mA

4. Ideally how many sensor points would you like along the heads?

-Ideally sensor array (with monitoring at different points along the head)

Feifan's Questions:

1. What are your specific requirement for the accuracy of the temperature measurement?

-No exact accuracy requirement (+/- 10-15 degrees)

2. Are there other interference factors we need to considered into during the crumblers operation?

-Located next to 3 phase electric motor (need parameters from that)

3. How much do we need to control the cost of the sensor?

-If it's expensive, be able to switch the sensors easily to other heads/crumbler, if inexpensive, located in each crumbler.

4. Are people on duty or the whole automatic process when crumbler operation? (would we need an alarm of sorts?)

-People are on duty but largely automatic (one guy checking the PLC)

5. Does the maximum temperature allowed differ by the material entering the grinder?

-Wood at 300C scorches, 400-600 the tip materials can be altered, **200F max temp**

Aziz's questions:

1. What kind of materials would you like to have in sensor apparatus?

-N/A

2. Do you have a lower threshold for the temperature?

-N/A

3. What material are the teeth of the heads made out of?

-A2 Tool steel, expimenting with 8670 plate material and carbide tips

4. How much dust or other debris is produced as a result of this process?

-depends on the material, largely AG materials have a lot of dust but others might not

5. What are the most common materials that are ground up?

-Wood, switchgrass, corn stock

Action Items:

- Create Google Drive (engr.crumbler@gmail.com, Password : engr.crumbler1)
- Anthony to write agenda for next meeting
- Jacob to bring arduino to meeting

Minutes

September *21th*, 2017

Team Crumbletech Meeting (GJ108)

Client Interview

Attendance:

All Present

Old Business:

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- Anthony to write agenda for next meeting
- Jacob to bring arduino to meeting

New Business:

Dev agrees we are on the right track, think about measuring heat of outgoing product and determine correlation to crumbler head.

Once decided on a sensor, order sensor to start testing.

Action Items:

Meet on Tuesday at 11am in the Chief's room again to compare other sensor ideas, be prepared to order sensor.

Anthony to write pros and cons of each measurement idea:

Thermocouple, IR, and measuring end product.

Minutes

September *28th*, 2017

Old Business: NA, met to make sure our Sensor we want to try out is agreed upon

New Business:

- 10/02/2017 create a nice schedule possibly Gant Chart for the portfolio
- Talked about Emissivity
- Anthony Ponzini research Emissivity for next meeting 10/02/2017, and share with group.
- 10/10/2017 Snapshot day possibly the sensor with a material and the code reading out the temperature, as well as a 3-d model of our sensor housing in the plate wall with the Crumbler housing itself. Basically, a small 3D model of our desired end product.
- Next Tuesday 10/03/2017 drop off lab note books, and first meeting notes along with the answered Questions.
- Monday 10/02/2017 Portfolio final meeting before handing in and creating the portfolio and getting it all figured.

Action Items:

- Tony Research Emissivity and report to group
- Aziz bring 3' 3 ring folder
- Jake bring sheet dividers and folders, and screenshots of Solid Works sketches
- Feifan create Agenda for Monday

CrumbleTech.

09/07/2017

Attendance:

All Present

Old Business:

- None First Meeting

New Business:

- Generate a schedule in the future after more communication with Forest Concepts.
- Next Meeting is at Thursday from 3:30 to 4:45
- Reviewed our Team Contract with Lead Instructor
- Review the questions we come up with

Tasks assigned this meeting with Due dates:

- Generate 3 Questions per member for ForestConcepts by Tuesday 09/12/2017 All members
- Research different sensor types and their pro's and con's 09/12/2017 All Members
- Contact ForestConcepts about a meeting time 09/12/2017 Jake Miller