

# LIQUID PROPULSION WEEK 3 REPORT

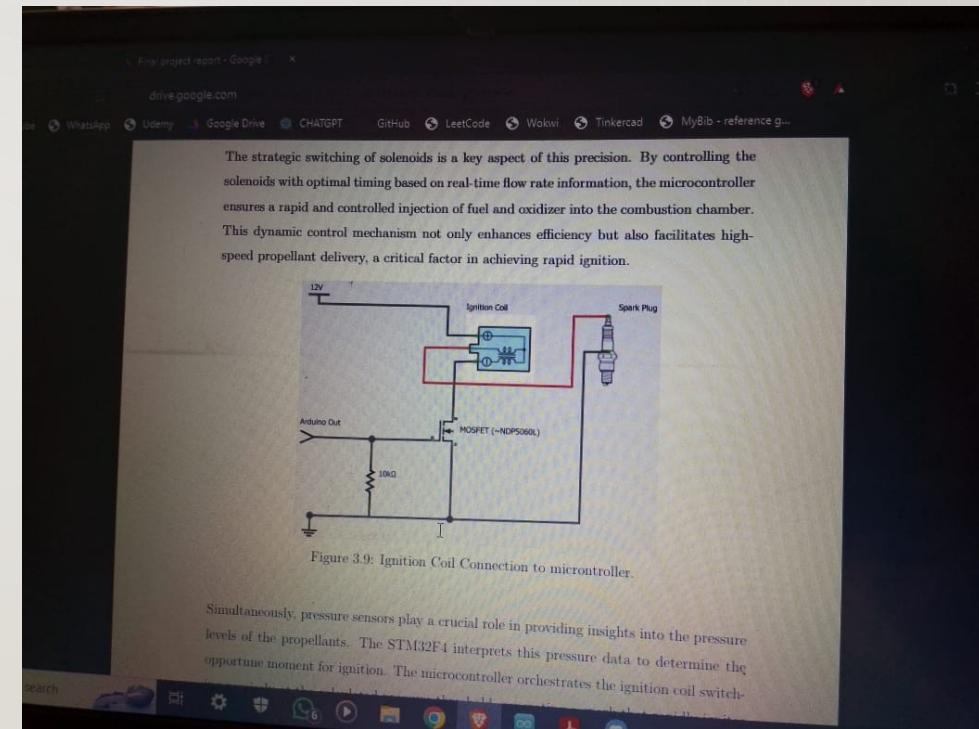
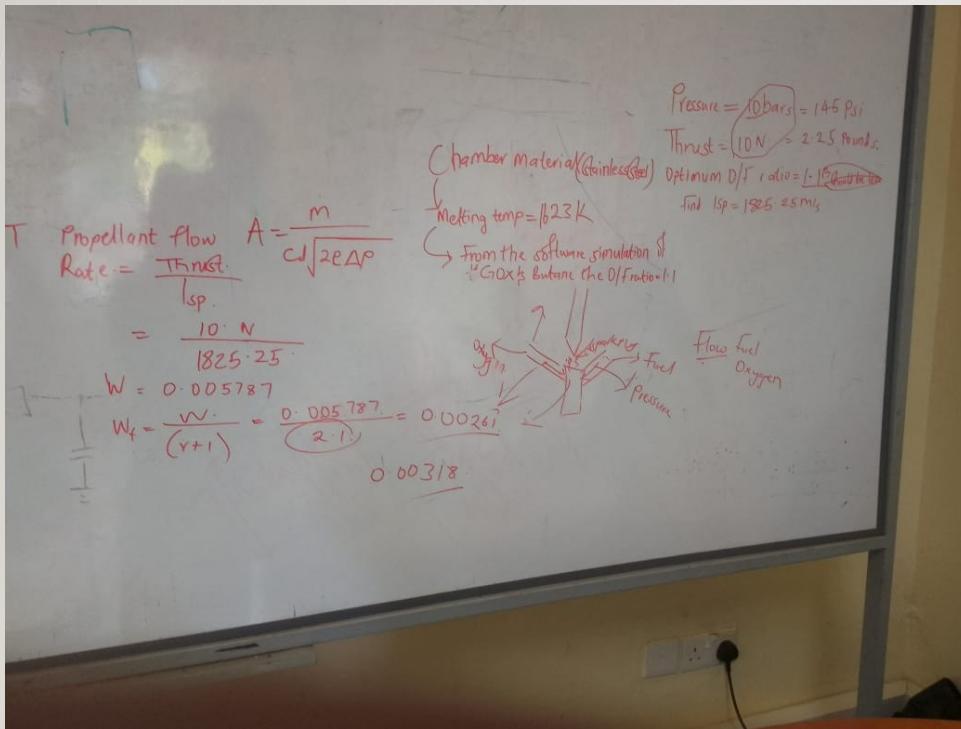
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# TASKS ACCOMPLISHED THIS WEEK

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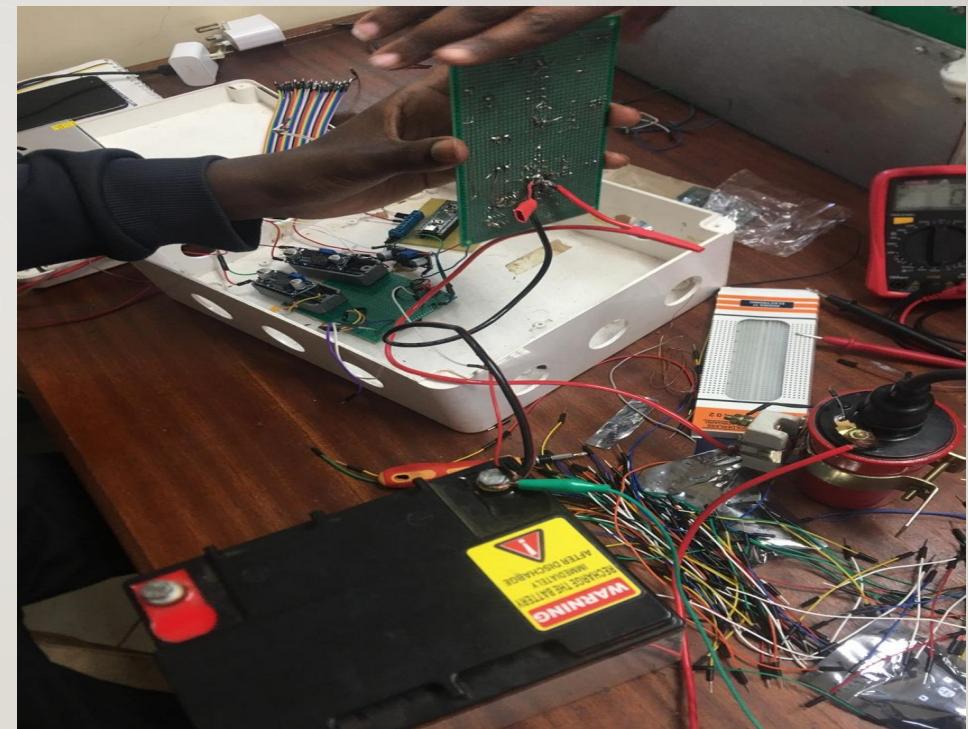
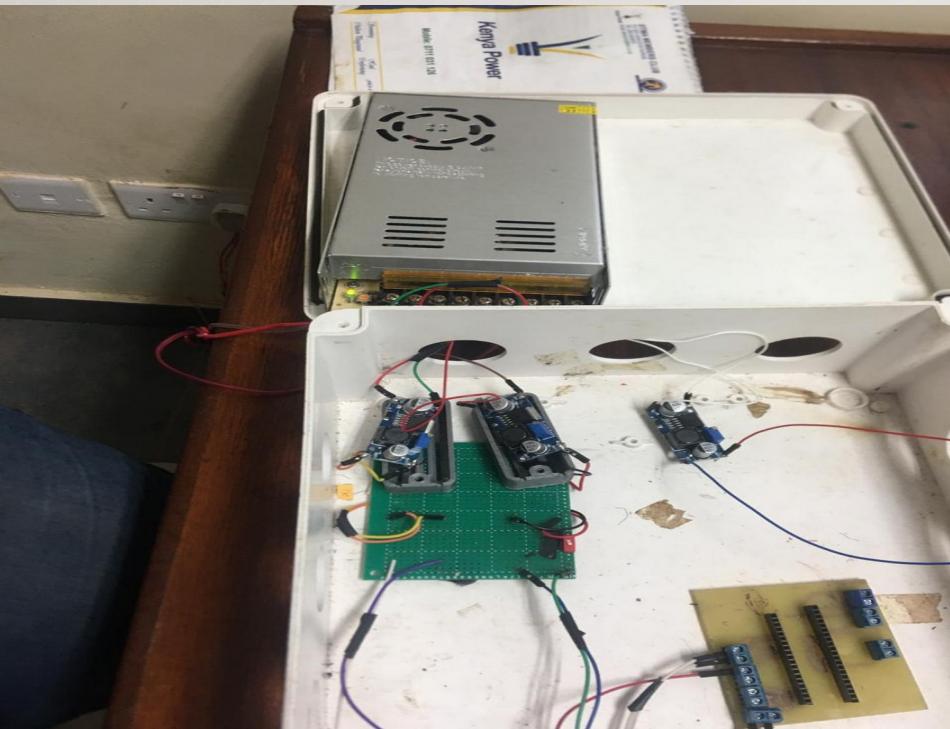
- Setting up of the solid motor rocket ignition circuit
- Literature review of the previous liquid group's reports
- Calibration of the load cell for the static test
- Debugging and testing of the liquid ignition system
- Purchase of electronic components and microcontrollers
- Fix the spark plug circuitry

# REVIEW OF THE PREVIOUS LIQUID TEAM'S LITERATURE



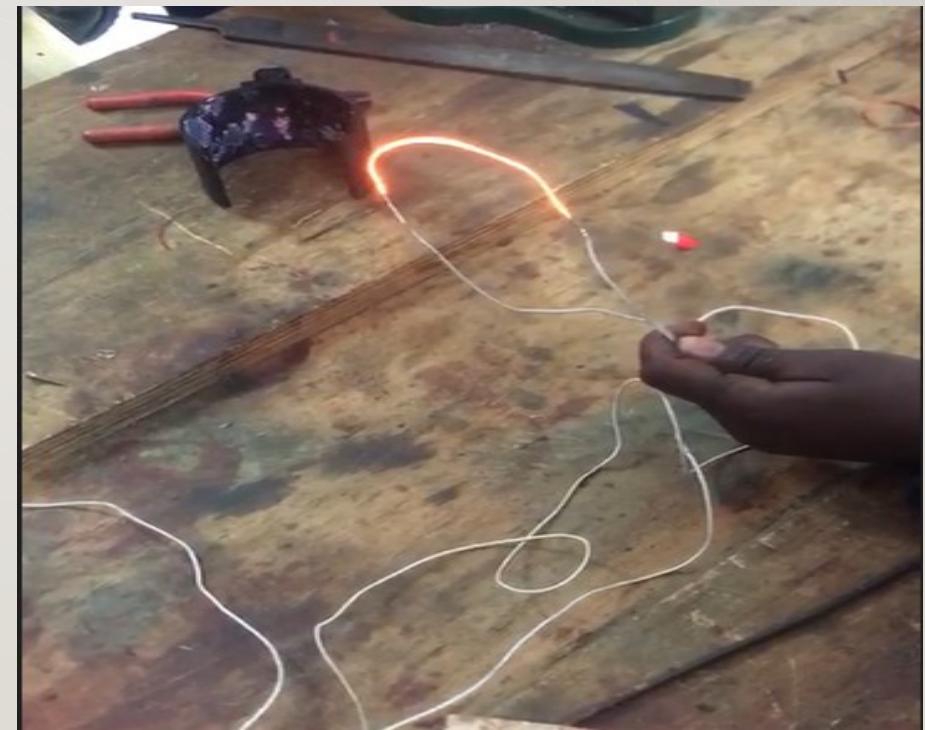
# #31: DEBUGGING OF THE LIQUID IGNITION CIRCUIT

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# #17: SETTING UP THE SOLID MOTOR IGNITER CIRCUIT

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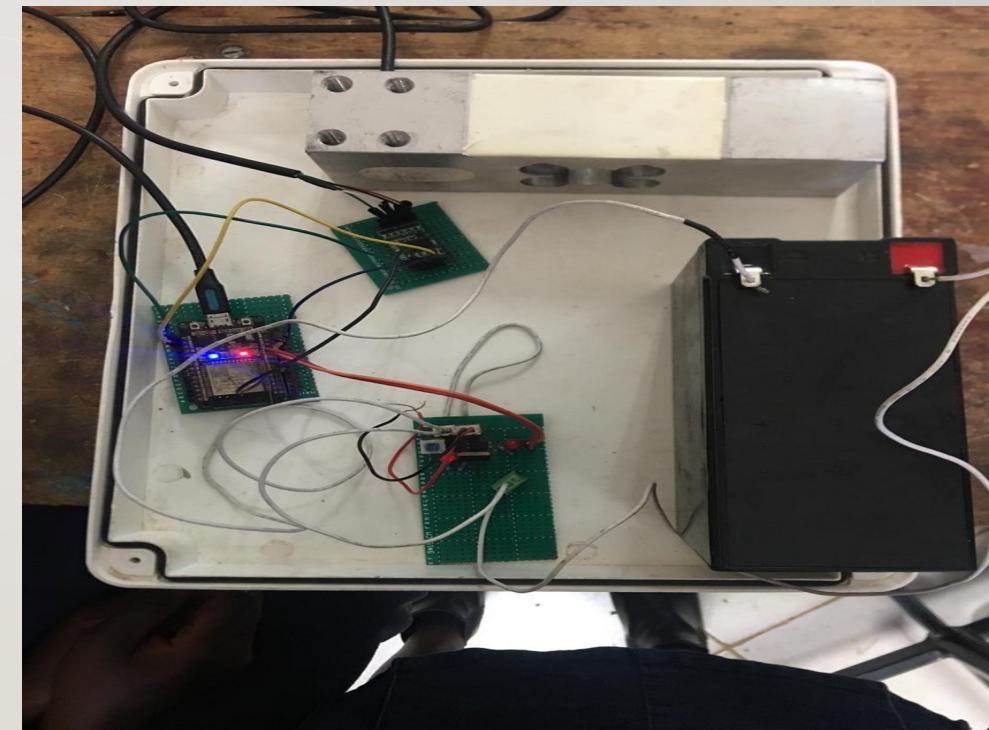


# #32: CALIBRATION OF LOAD CELL

The screenshot shows the Arduino IDE interface. The top menu bar includes File, Edit, Sketch, Tools, Help, and a dropdown for the board ('ESP32-WROOM-DA M...'). The left sidebar contains icons for file operations like Open, Save, and Print. The central code editor window displays the 'LoadCellCal.ino' sketch. The code is as follows:

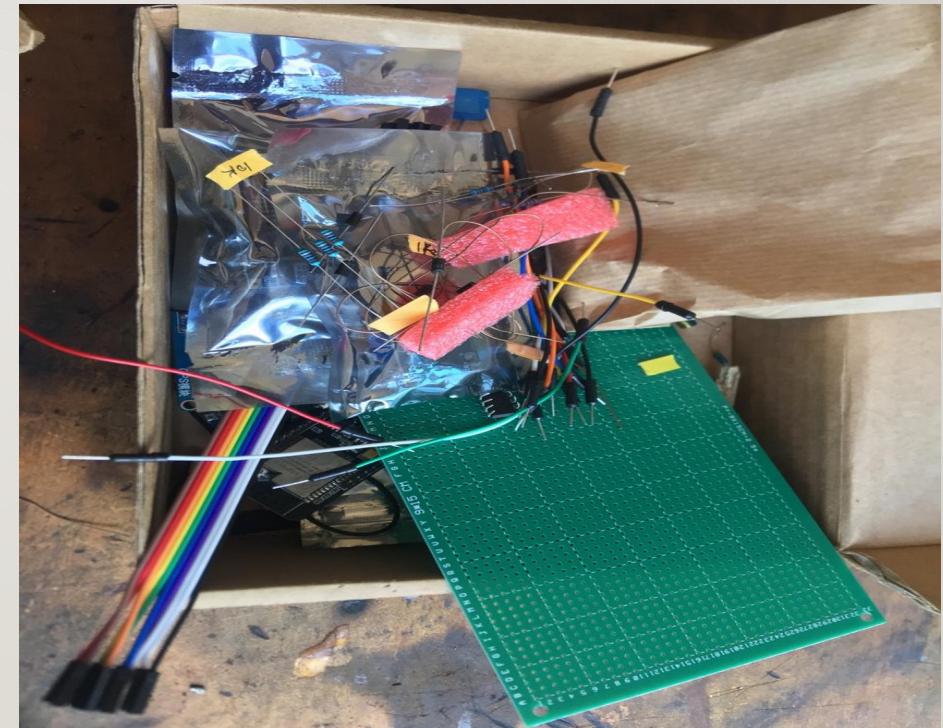
```
File Edit Sketch Tools Help
ESP32-WROOM-DA M...
LoadCellCal.ino
31   |     while (1);
32   | }
33   | else {
34   |   LoadCell.setCalFactor(calibration
35   |   Serial.println("Startup is compl
36   |
37   |   attachInterrupt(digitalPinToInterr
38   }
39 }
40 //interrupt routine:
41 void dataReadyISR() {
42   if (LoadCell.update()) {
43     newDataReady = 1;
44   }
45 }
46 }
47
Output Serial Monitor X
Message (Enter to send message to 'ESP32-WROOM-DA M...' )
5849.12
5848.23
5848.94
5849.48
5850.73
5851.62
5851.44
5849.84
5848.05
5845.38
5840.74
5832.71
5819.16
5803.28
5790.98
5779.20
```

The 'Serial Monitor' tab is open, showing a series of numerical values starting from 5849.12 and decreasing to 5779.20. The bottom status bar indicates the connection to 'ESP32-WROOM-DA M...'.



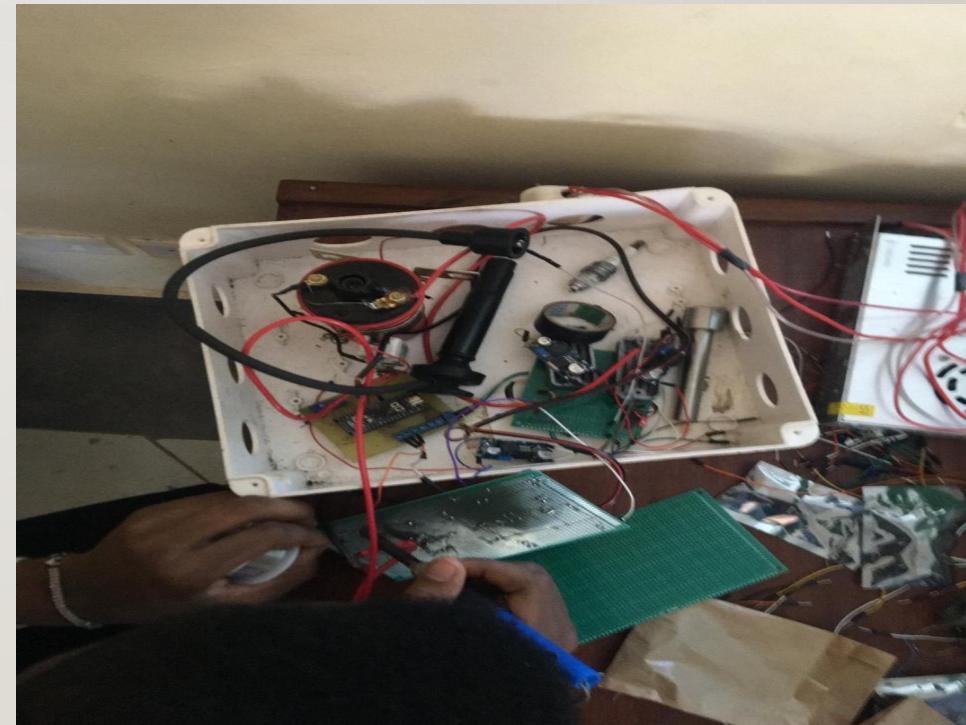
# PURCHASING OF COMPONENTS

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## #36: REPLACING & SOLDERING OF DAMAGED COMPONENTS ON THE PROTO BOARD

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## TESTING OF THE SPARK PLUG

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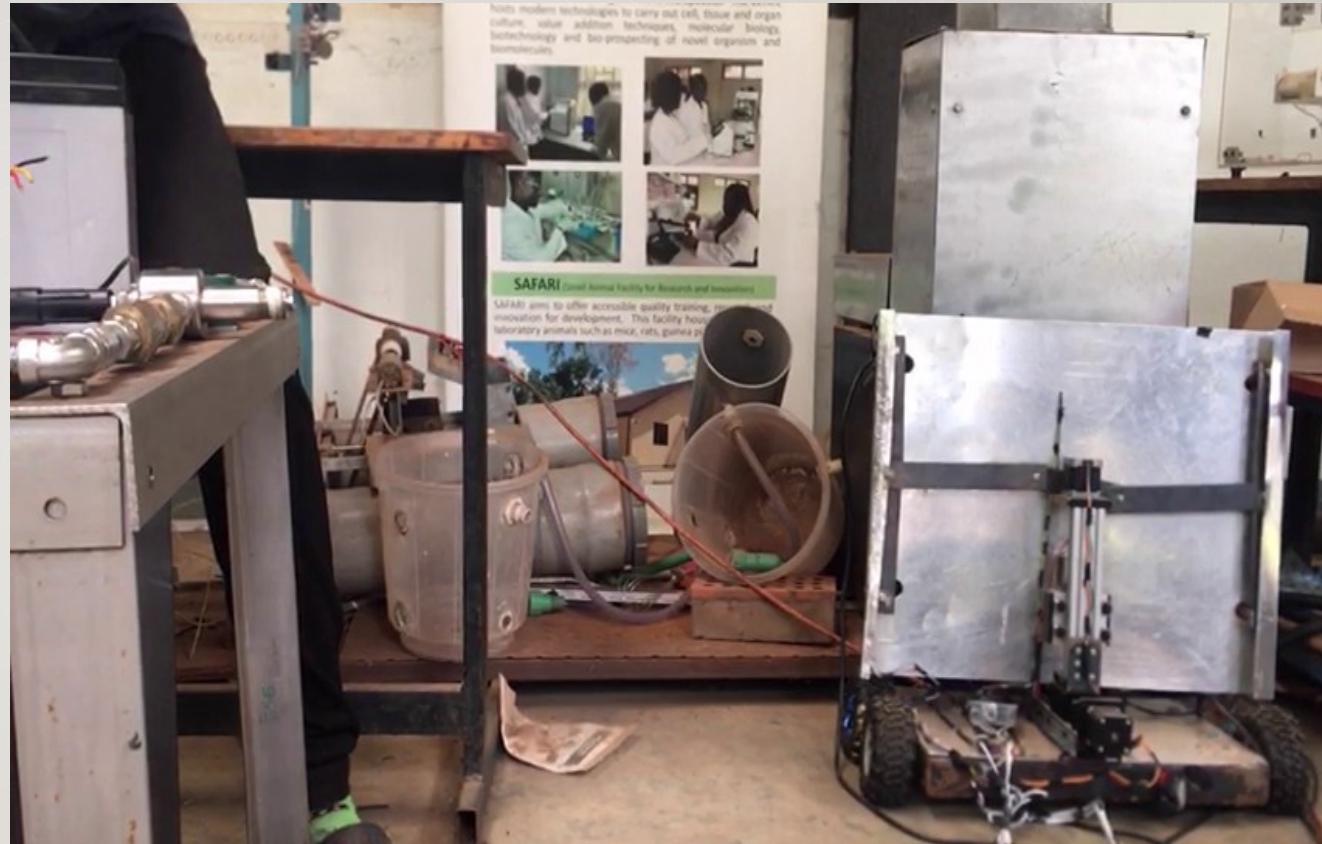
The ignition coil power issue was fixed



## TESTING OF THE ENTIRE LIQUID IGNITION CIRCUIT

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The spark plug work successfully with the solenoid valves to ignite a flame.



# TASKS TO BE DONE NEXT WEEK

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- Design of a PCB for the liquid ignition circuit
- Familiarize ourselves with the combustion simulation software e.g. CEA, RPA, etc.
- Integrate pressure sensors and flowmeters into the current liquid ignition circuit
- Assist the solid team to add temperature and pressure sensors into their igniter system
- Understand the P&ID diagrams for the liquid plumbing system

# THANK YOU

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