
NAKUJA PROJECT INTERNSHIP

— PROGRESS REPORT —

Tasks completed last week

- [#19] Static Test #2, #3 & #4
- [#32] Test stand PCB Etching
- [#85] Preparation of Potassium Perchlorate
- [#107] Dashboard Testing and Implementation
- [#56] Iterative fuel preparation and improvement
- [#68] Igniters improvement

Potassium Perchlorate Preparation (Failed)

- Synthesis failed
 - Failed to reach required temperature



STATIC TEST #2

Report

- 1. A faster burn was achieved, moisture content was significantly reduced
- 1. No data was found
- 1. Data logging to raspberry pi was successful
- 1. Implemented wireless ignition



STATIC TEST #3

Report

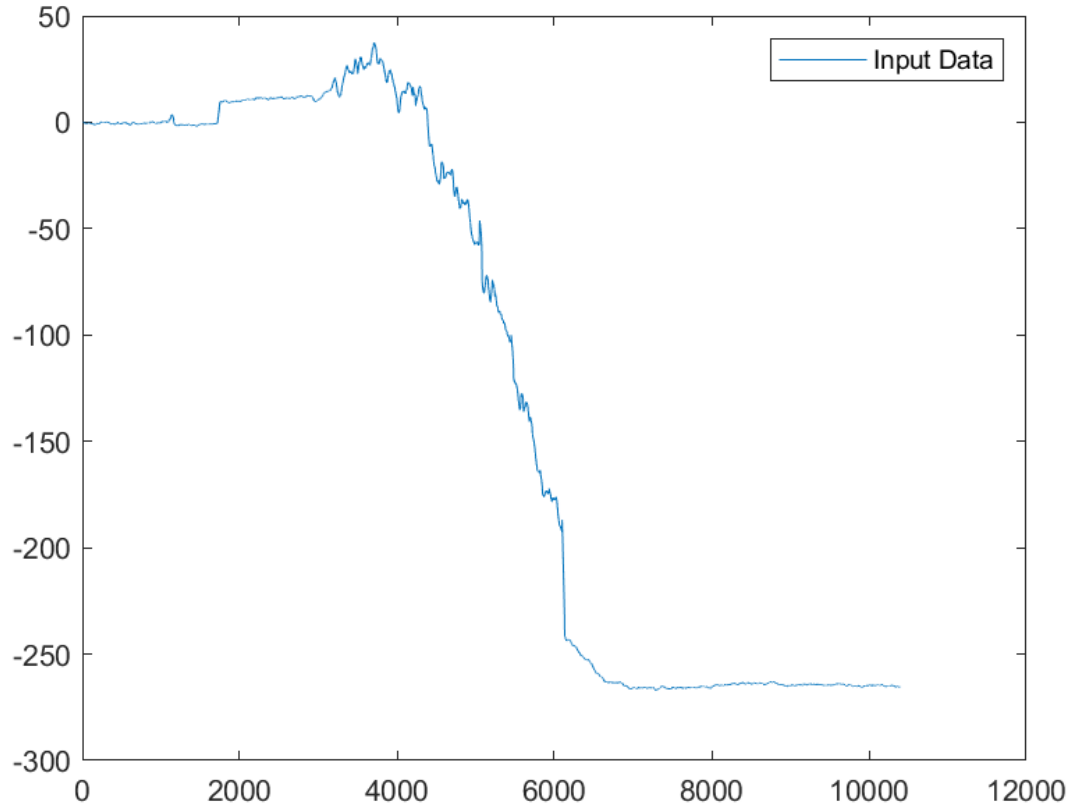
1. A slower burn was achieved, moisture content was significantly reduced. The slower burn was due to too much time curing
1. No data was found
1. Data logging to raspberry pi was successful
1. Wireless ignition failed



COMBUSTION AFTERMATH



DATA COLLECTED



Max Thrust collected → **0.5 Newtons**

Still too little!

Burn time was pretty long - Approx 34 seconds

STATIC TEST #4

Report

1. A much faster burn was achieved, moisture content was significantly reduced. The slower burn was due to too much time curing
1. No data was found
1. Data logging to raspberry pi was successful
1. Wireless ignition failed



<https://youtu.be/j0wPfhOrMrk>

CASTING DIFFERENCES

Static test #2 - Fuel spent too much time in the dessicator

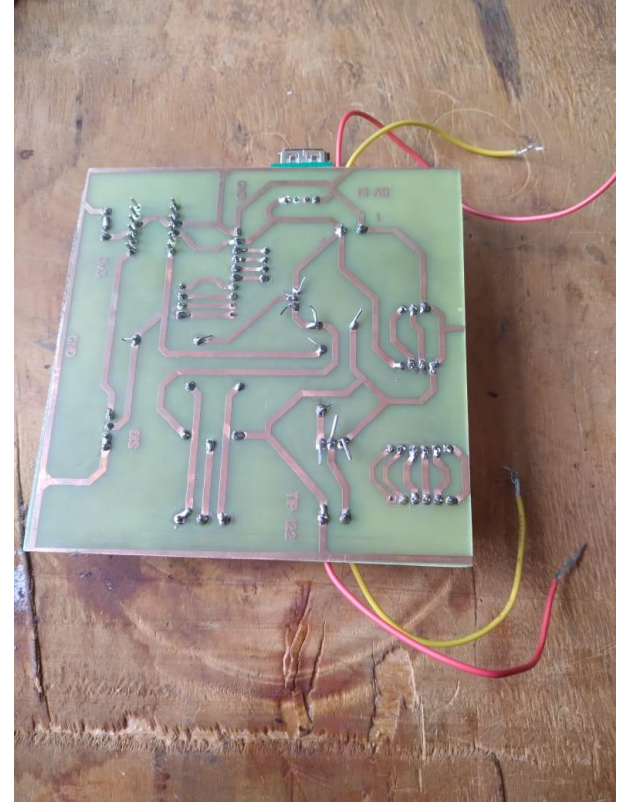
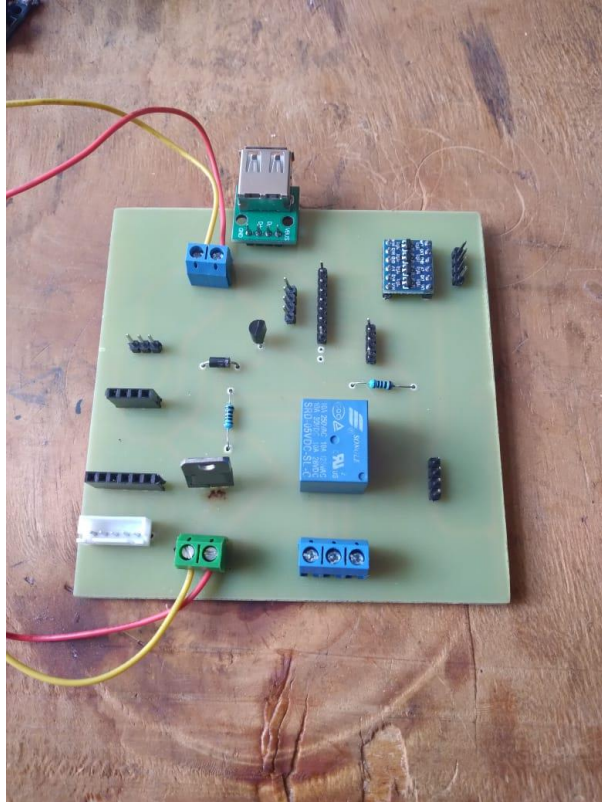
Static test #3 - All moisture was removed, Potassium Nitrate not ground

Static test #4 - Potassium Nitrate was ground

Static test #5(Today) - Potassium Nitrate ground & Sifted

Static test #6(Tomorrow) - Fuel/Oxidiser ratio → 68/32

ETCHED TEST STAND PCB



TIP122, RELAY & LLC FAULTS

Logic Level Converter does not shift up voltage levels

Relay does not work

TIP 122 got burnt during first ignition

Tasks in this week

- [#11] Casting Tools Fabrication [Curing under pressure]
- [#19] Static Firing Tests #6, #7, #8 & #9
- [#32] Test stand PCB Etching [Yet another! #5]
- [#98] Temperature & Pressure measurement during static testing
- [#99] Camera mount for test stand
- [#108] Implement servo controlled wireless ignition

Timeline

Month	Intern week	Tasks
Jan		
	Week 1	Designs [Fuel, Casing, Nozzle, Bulkhead, Casting tools, Test stand]
	Week 2	Fabrication of items
	Week 3	Fuel Fabrication and test stand revamp
Feb	Week 4	Fabrication of items & Fuel casting
	Week 5	Iterative Fuel tests
	Week 6	Launch Pad design and iterative fuel tests
	Week 7	Iterative fuel testing and improvement