NAKUJA PROJECT INTERNSHIP

PROGRESS REPORT

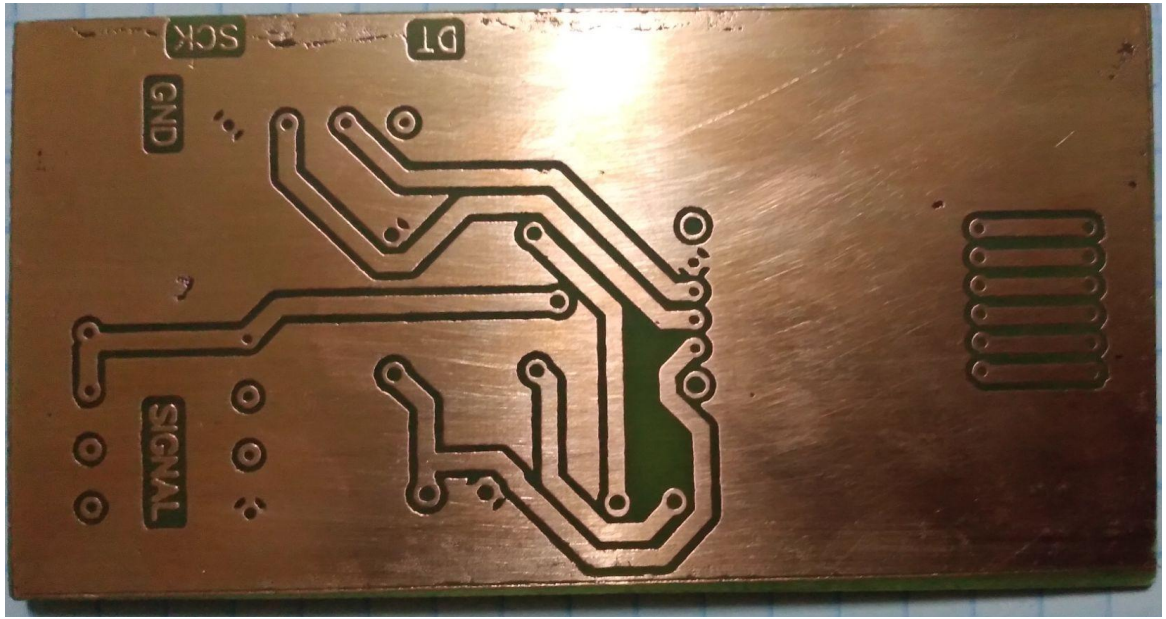
WEEK 2 (20TH JANUARY - 26TH JANUARY)

Tasks achieved:

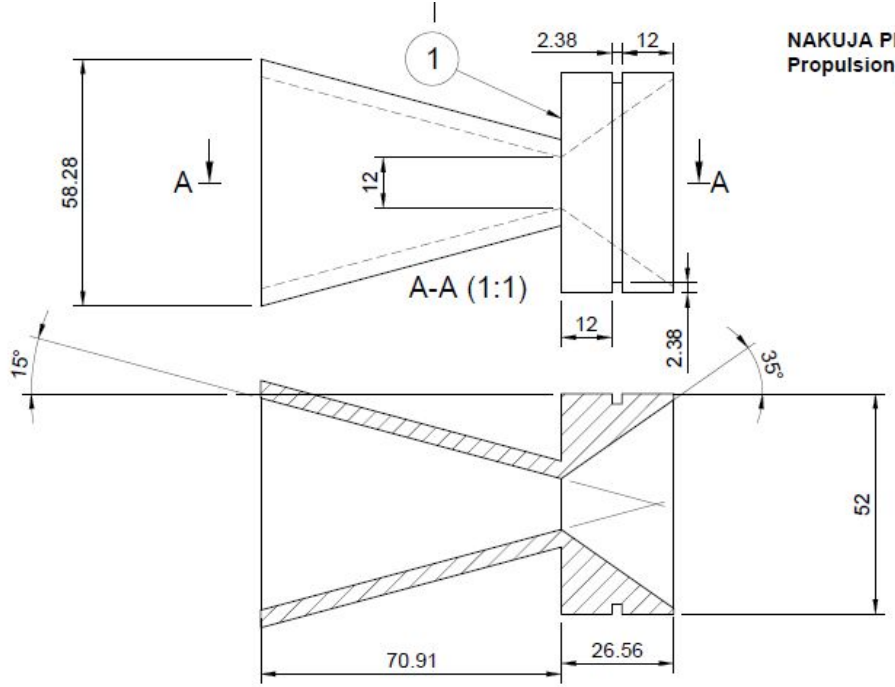
- Purchase of items. - Issue #36
- Bulkhead design. - Issue #35
- Casing design. - Issue #6
- Design and 3D printing of electronics hub. - Issue #16 & 9
- PCB Design & Etching. - Issue #33 & 32

3D PRINTED ELECTRONICS BAY

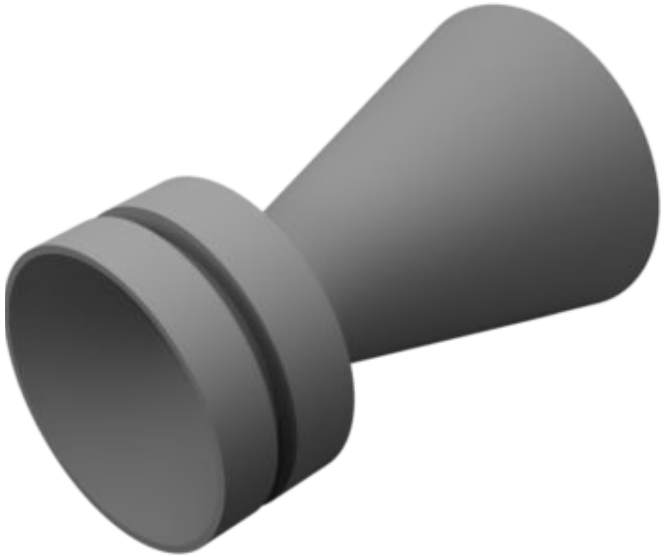
TEST STAND PCB



NOZZLE DESIGN



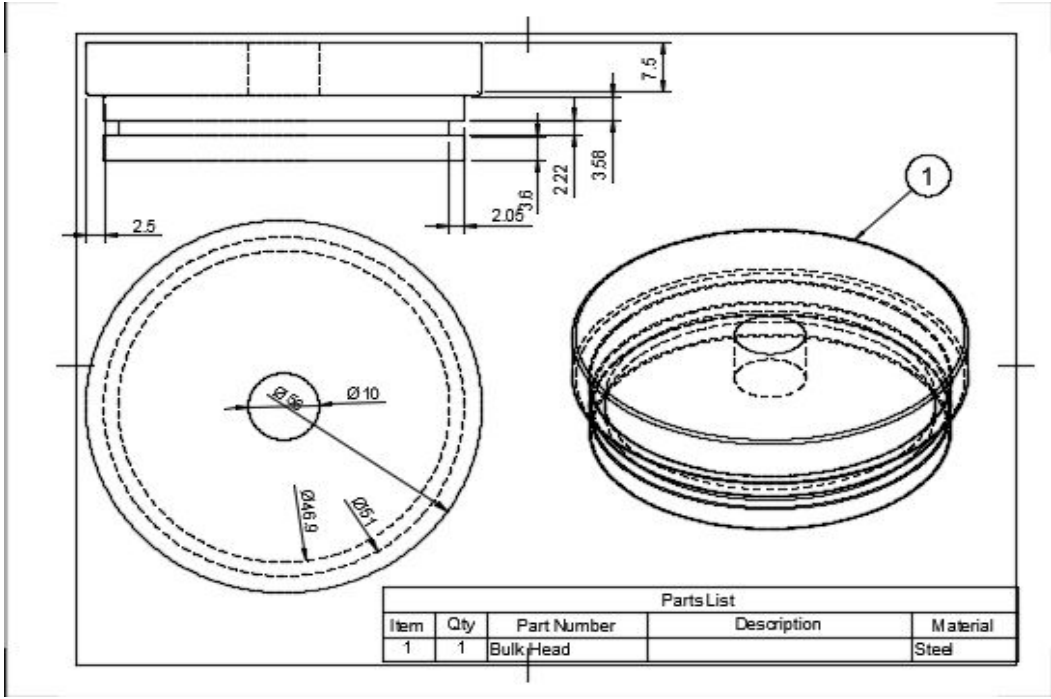
NAKUJA PROJECT
Propulsion group

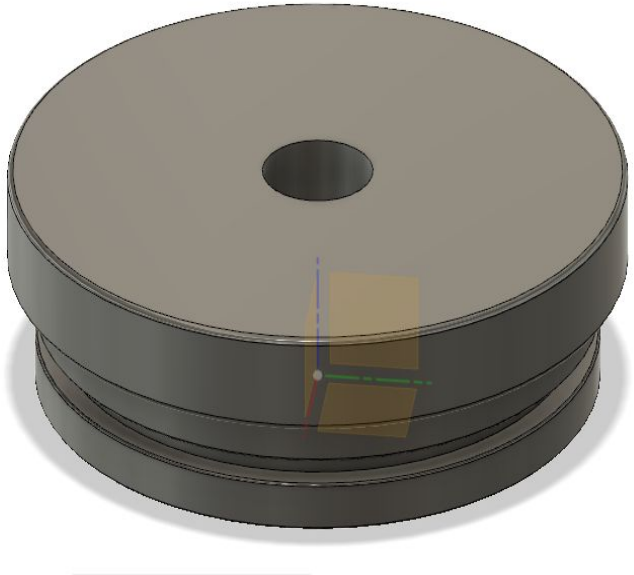


Parts List				
Item	Qty	Part Name	Description	Material
1	1	Nozzle design	Nozzle 1 for N2 rocket	Aluminum

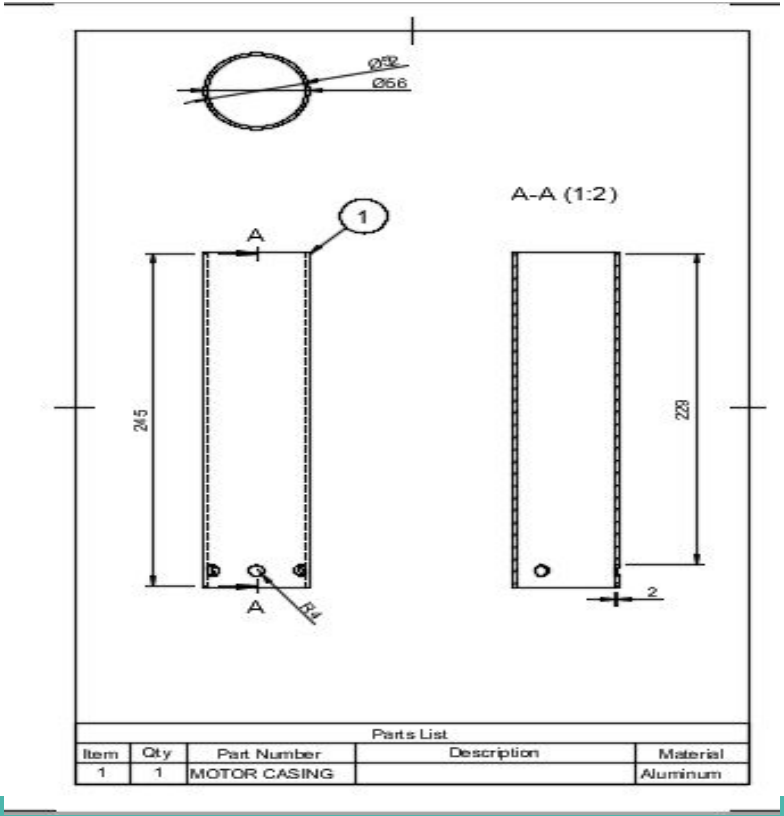
NOZZLE FABRICATION

BULKHEAD DESIGN

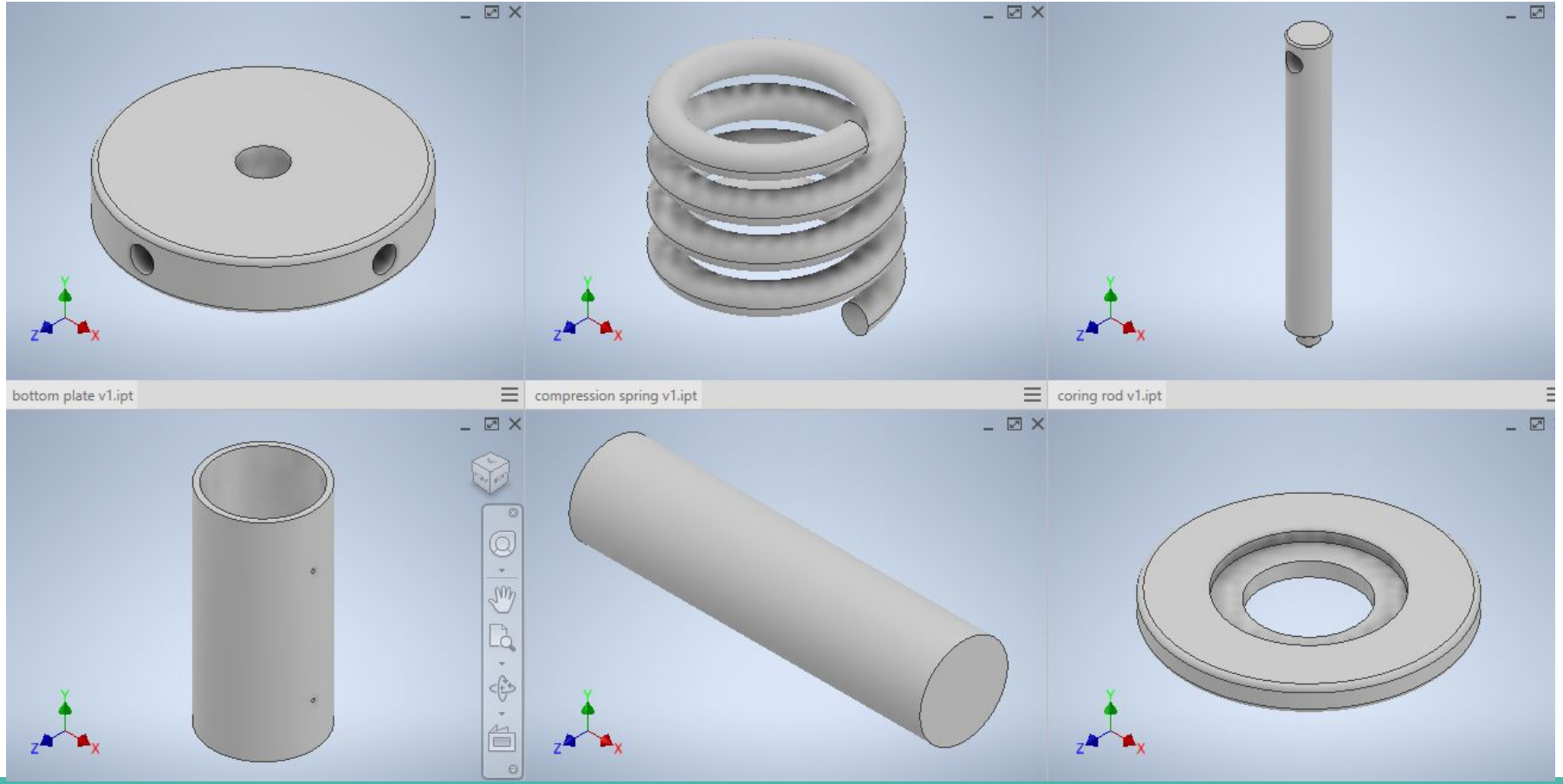




CASING DESIGN



CASTING TOOLS DESIGN



MOTOR SIMULATION DATA

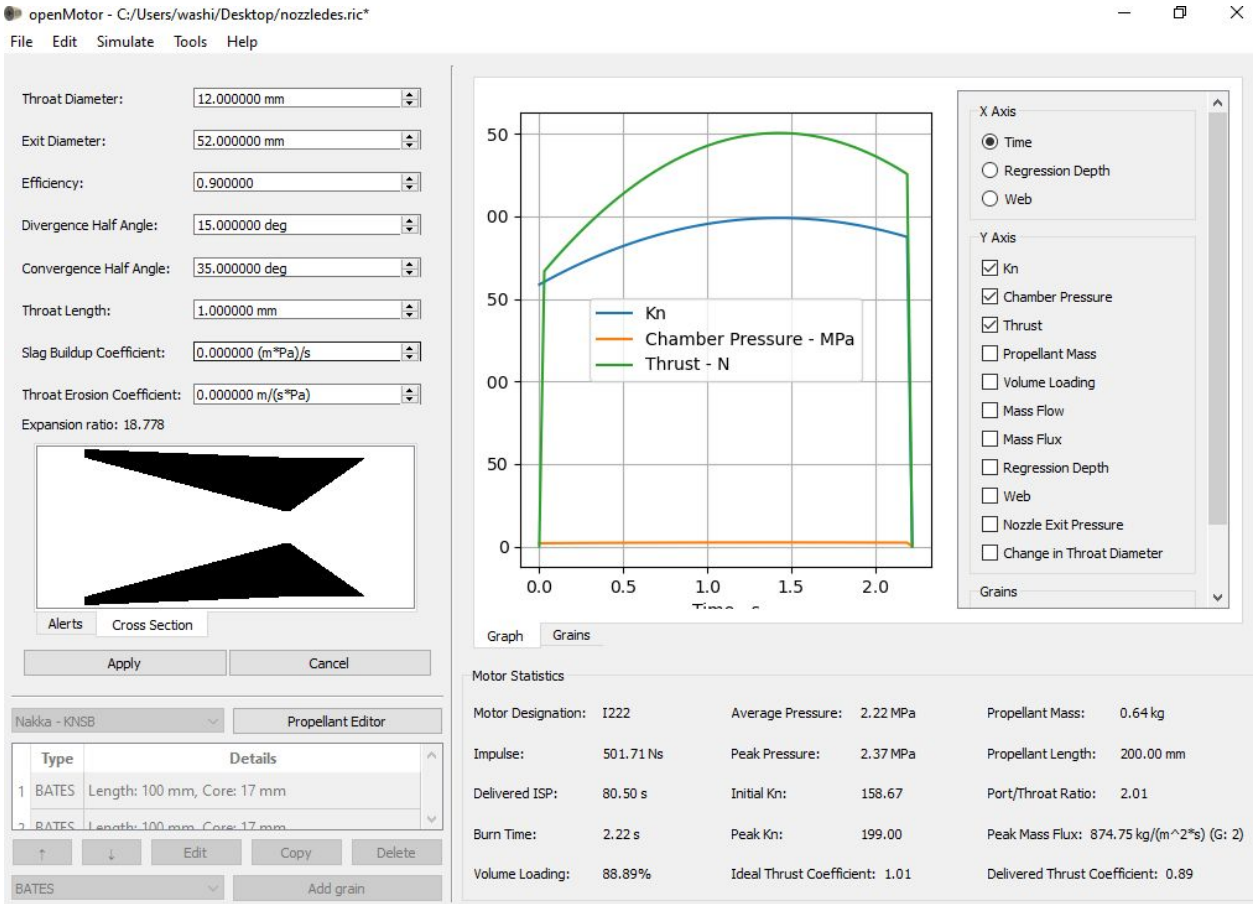
501 Ns

Core dia - 17 mm

Nozzle throat - 12 mm

Casing thickness - 2 mm

Design Pressure - 3 Mpa



openMotor - C:/Users/washi/Desktop/nozzledes.ric*

File Edit Simulate Tools Help

Throat Diameter: 12.000000 mm

Exit Diameter: 52.000000 mm

Efficiency: 0.900000

Divergence Half Angle: 15.000000 deg

Convergence Half Angle: 35.000000 deg

Throat Length: 1.000000 mm

Slag Buildup Coefficient: 0.000000 (m*Pa)/s

Throat Erosion Coefficient: 0.000000 m/(s*Pa)

Expansion ratio: 18.778

Alerts | Cross Section

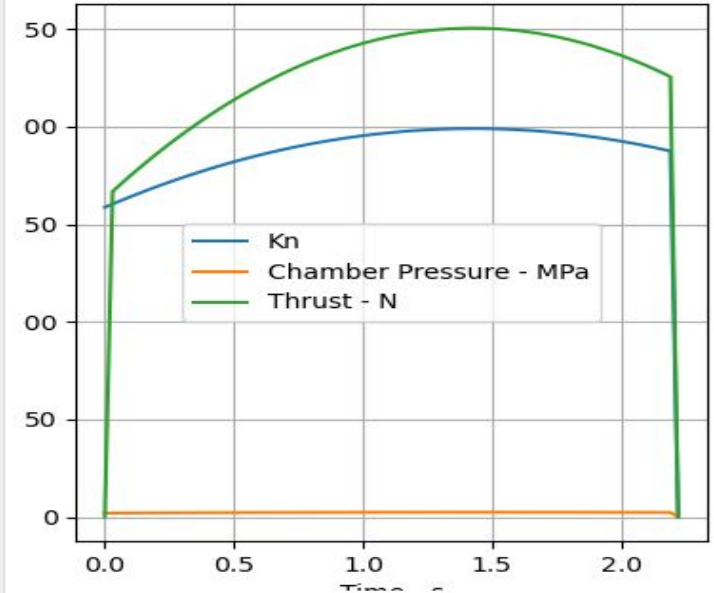
Apply | Cancel

Nakka - KNSB | Propellant Editor

	Type	Details
1	BATES	Length: 100 mm, Core: 17 mm
2	BATES	Length: 100 mm, Core: 17 mm

↑ ↓ Edit Copy Delete

BATES | Add grain



X Axis
- (•) Time
- ( ) Regression Depth
- ( ) Web

Y Axis
- [x] Kn
- [x] Chamber Pressure
- [x] Thrust
- [ ] Propellant Mass
- [ ] Volume Loading
- [ ] Mass Flow
- [ ] Mass Flux
- [ ] Regression Depth
- [ ] Web
- [ ] Nozzle Exit Pressure
- [ ] Change in Throat Diameter

Grains

Graph | Grains

Motor Statistics

Motor Designation:	I222	Average Pressure:	2.22 MPa	Propellant Mass:	0.64 kg
Impulse:	501.71 Ns	Peak Pressure:	2.37 MPa	Propellant Length:	200.00 mm
Delivered ISP:	80.50 s	Initial Kn:	158.67	Port/Throat Ratio:	2.01
Burn Time:	2.22 s	Peak Kn:	199.00	Peak Mass Flux:	874.75 kg/(m^2*s) (G: 2)
Volume Loading:	88.89%	Ideal Thrust Coefficient:	1.01	Delivered Thrust Coefficient:	0.89

Tasks in progress

- Nozzle fabrication.
- PCB fabrication - (Soldering)
- Design of casting tools.
- Purchase of items.

Tasks to be done

- Fabrication of Casing and bulkhead.
- Nozzle fabrication (Finalising)
- Casting tools fabrication
- Test stand optimization.
- Cast fuel.

TIMELINE

MONTH	WEEK	ACTIVITY
JAN	1	Designs [Casing, Nozzle, Bulkhead, Casting tools, test stand]
	2	Fabrication [Casing, Nozzle, Casting tools]
FEB	3	Casting of fuel and Test Stand revamp
	4	Iterative static firing tests
	5	Iterative static fires and fuel improvement
	6	Launch Pad design and Fabrication
MAR	7	Iterative Static Fires
	8	Launch