Composite Aircraft

Summer Project'19

AEROMODELLING

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Team:

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AIM

To design and fabricate a twin boom pusher using composite material

Model chosen: Twin Boom Pusher.

Why twin boom pusher?

- The propeller of a pusher is at the end, which makes it aerodynamically more stable by giving the plane a natural tendency to pitch up rather than down.
- Having a twin boom gives the tail more stability and strength, and also place to fix the propeller.

Why composite aircraft?

- we are using GLASS FIBRE and CARBON FIBRE in our plane.
- high tensile strength, low weight, high stiffness more strength

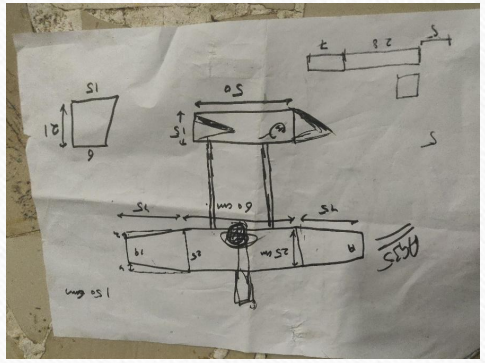
CARBON FIBRE

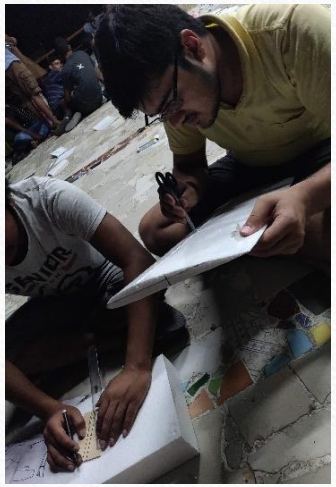
- high stiffness
- high tensile strength
- low weight
- high chemical resistance
- high temperature tolerance
- low thermal expansion

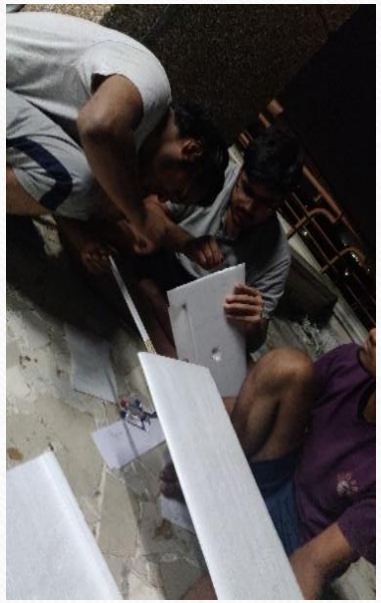
GLASS FIBRE

- numerous extremely fine fibers of glass.
- not as rigid as carbon fiber
- significantly less brittle when used in composites

Our works on the prototype plane

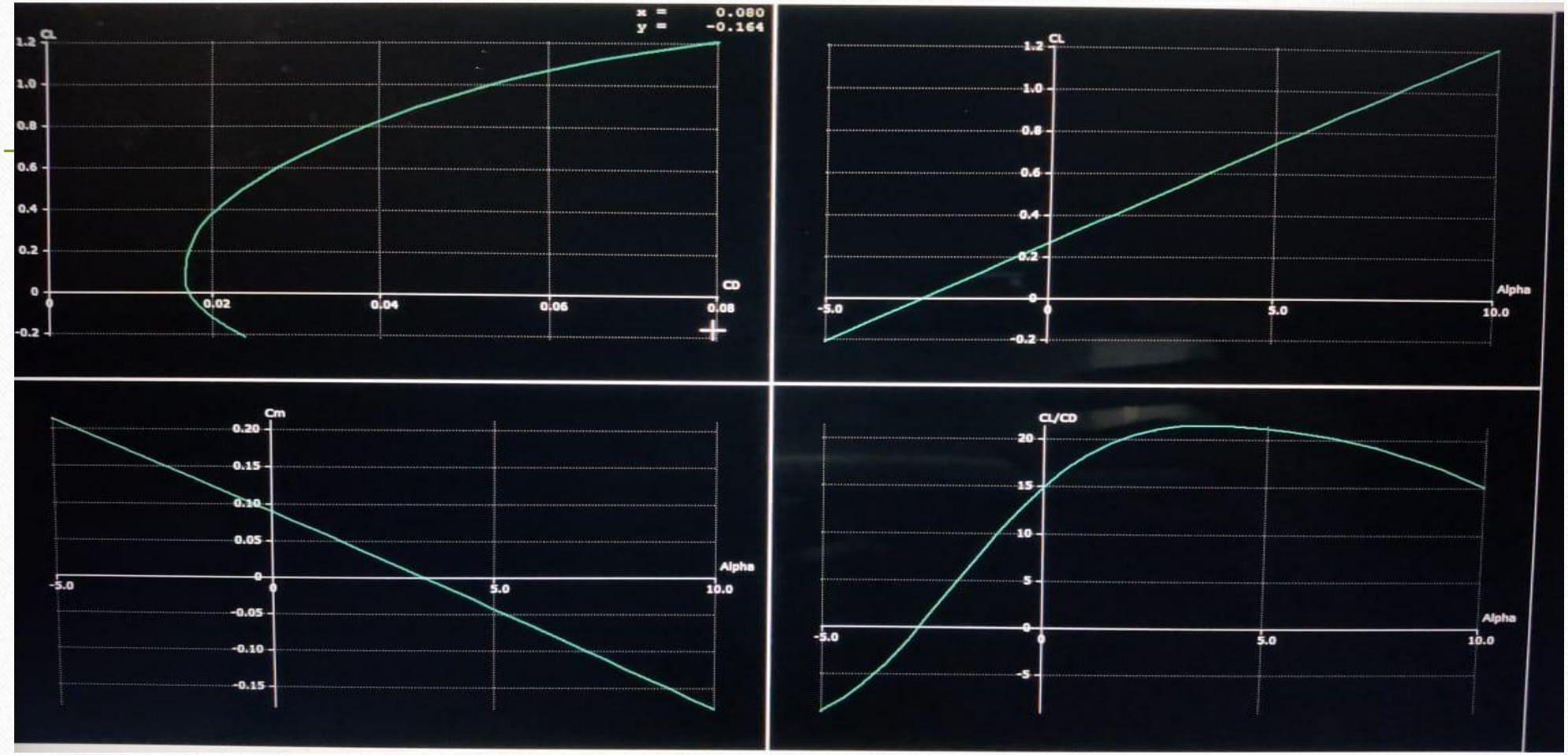




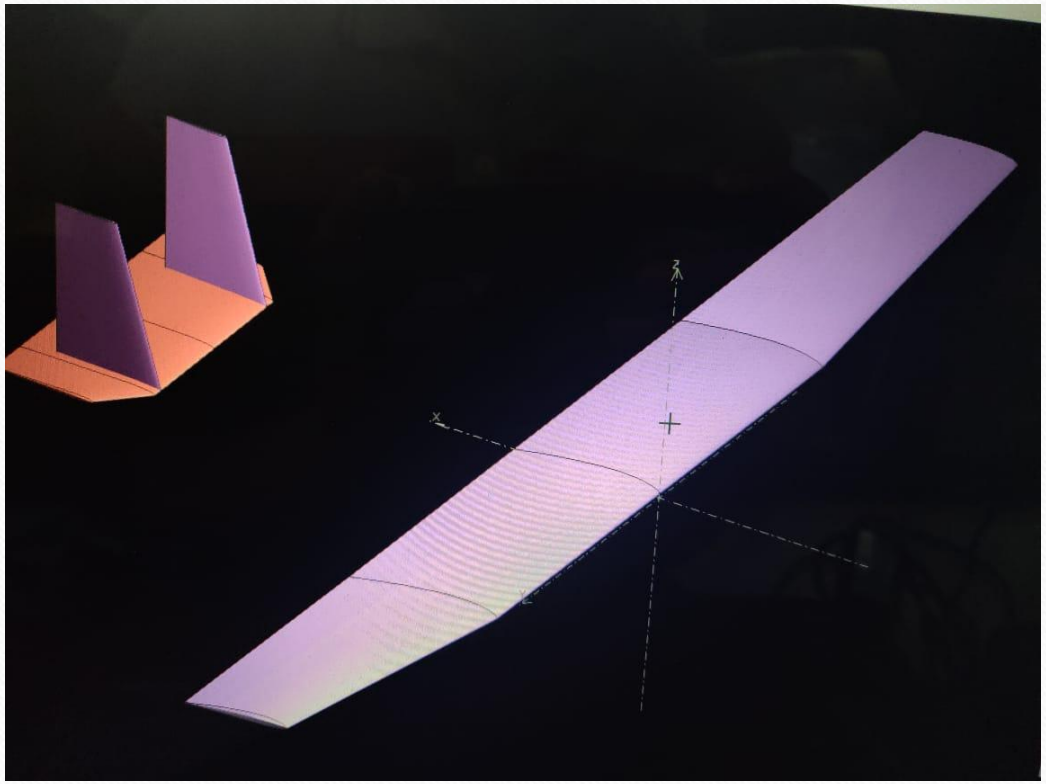


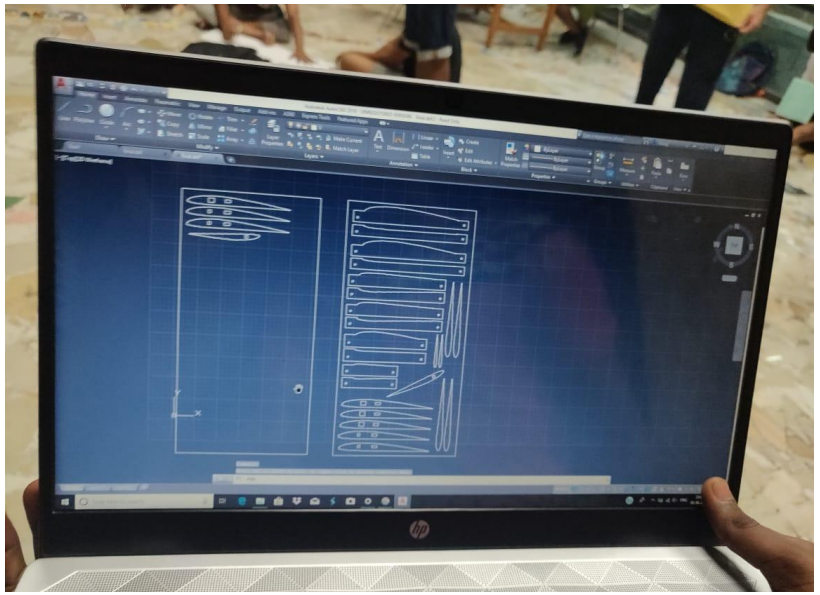
Successful flying of the prototype plane.

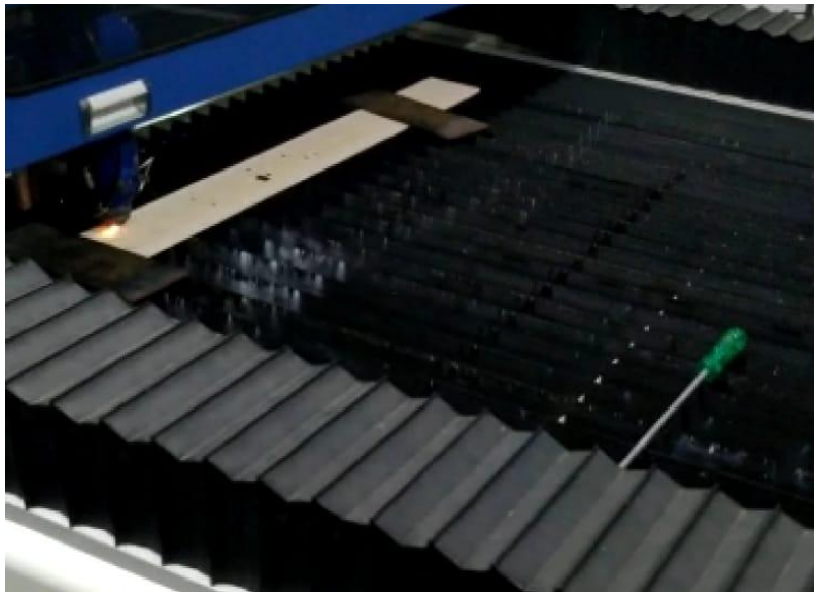
Works done on Xflr5



Final Model on XFLR5





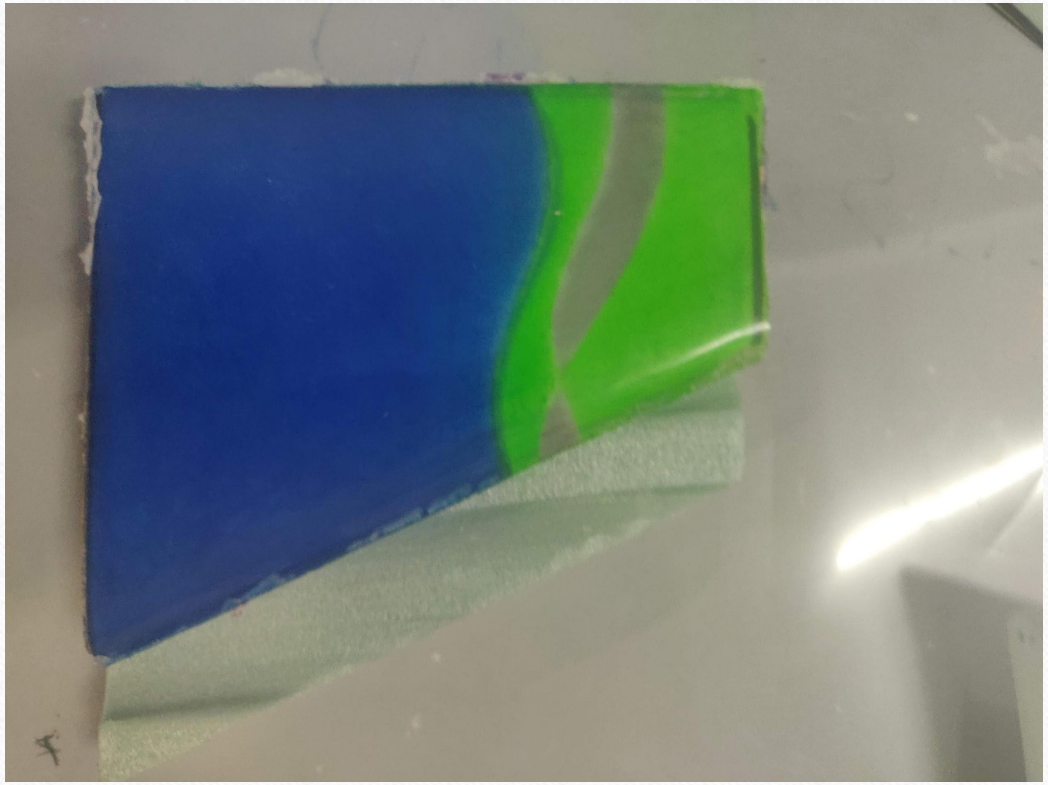


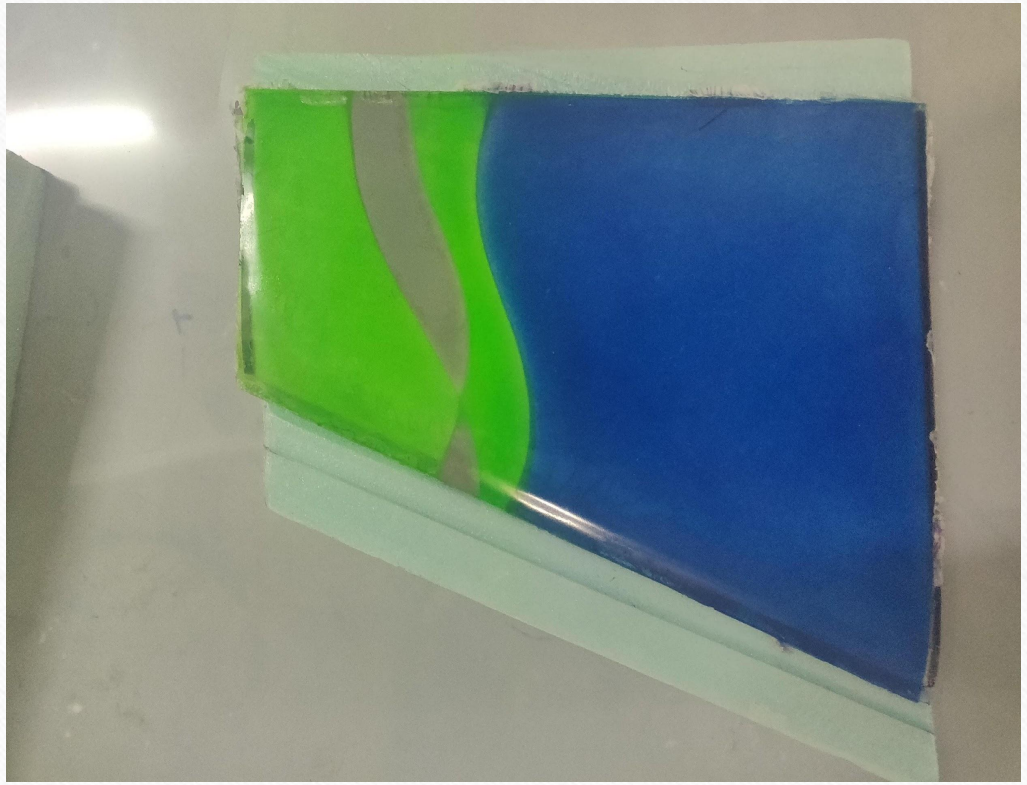
Autocad of the airfoils for balsa cutting and laser cutting of balsa.

Vacuum bagging

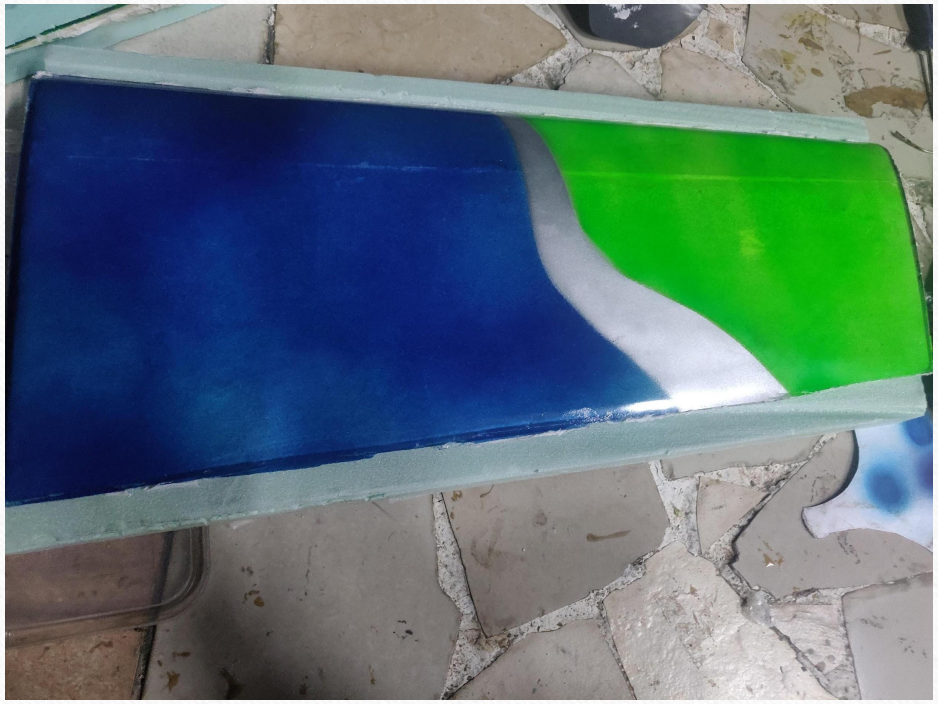
- Technique employed to create mechanical pressure on a laminate during its cure cycle.
- Epoxy (resin and hardner) is used.
- The paint gets stuck to the parts.
- Mylar gives the parts are polished finish.
- the bagging gives uniform pressure for the laying.

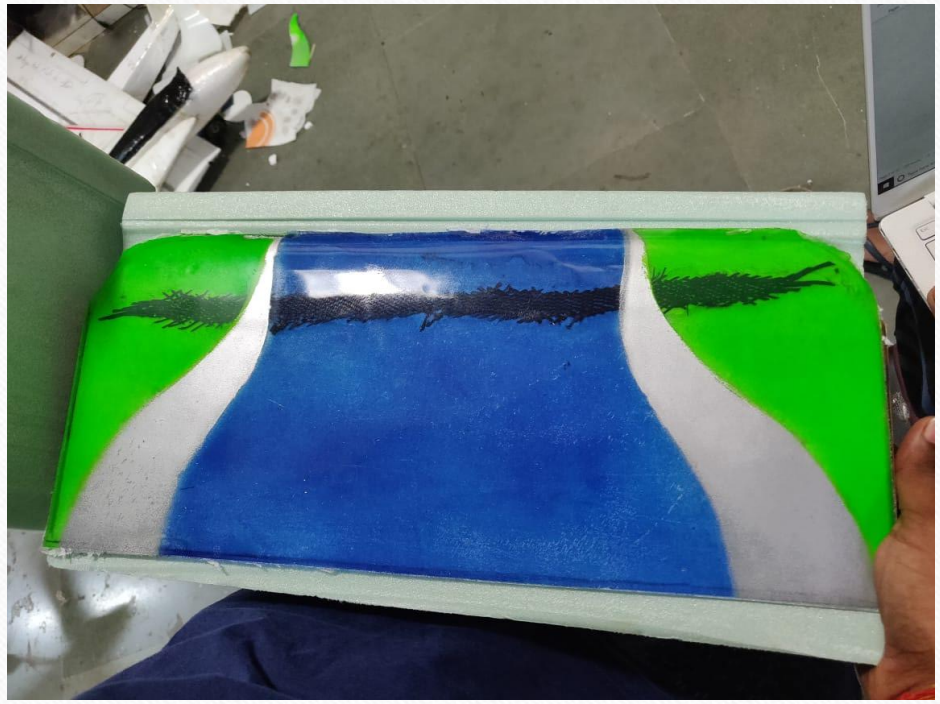
Our first SUCCESSFUL bagging





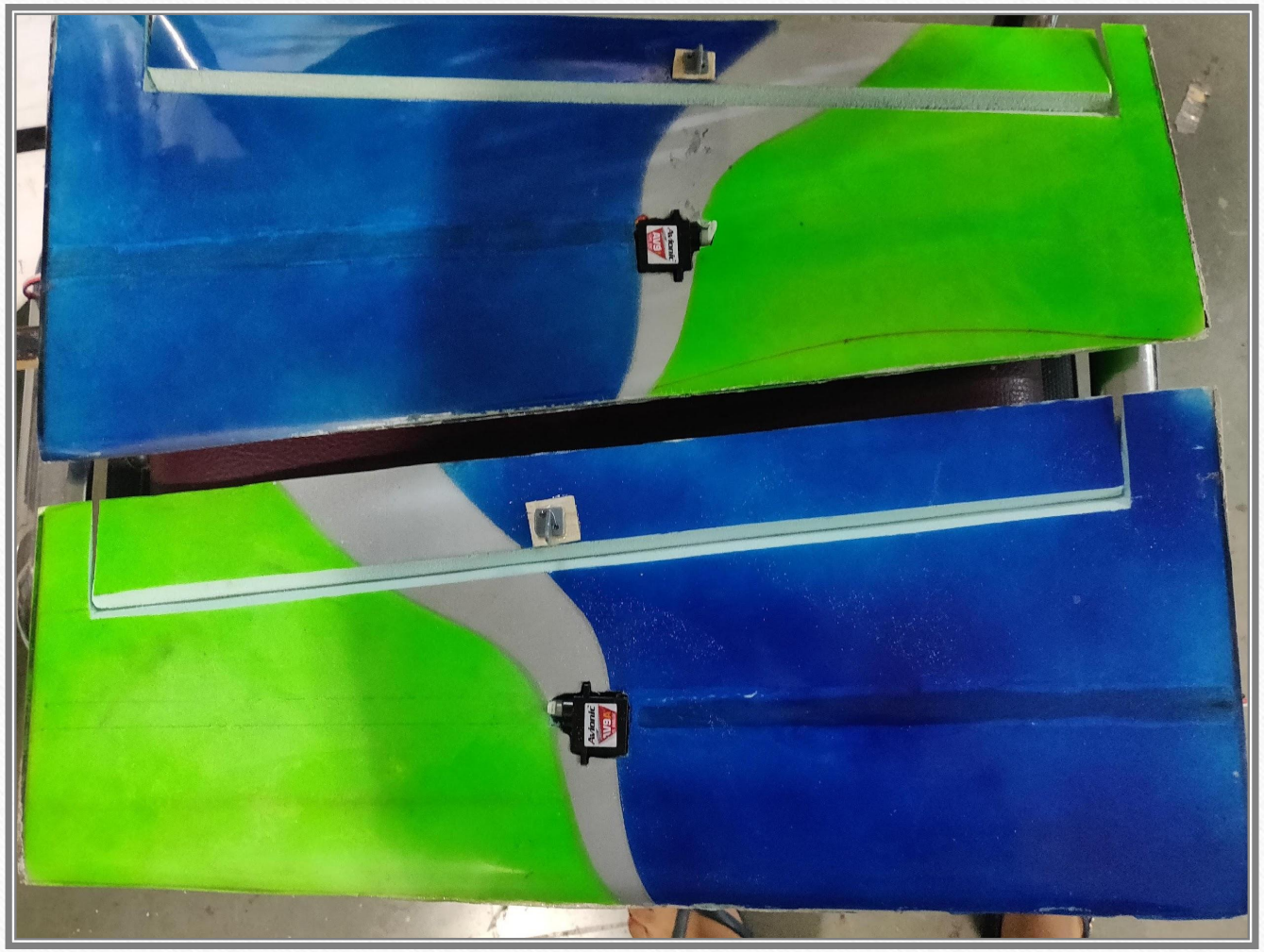
Bagging of rest of the parts





Grooving of wings for electronics and spar

Fixing the electronics

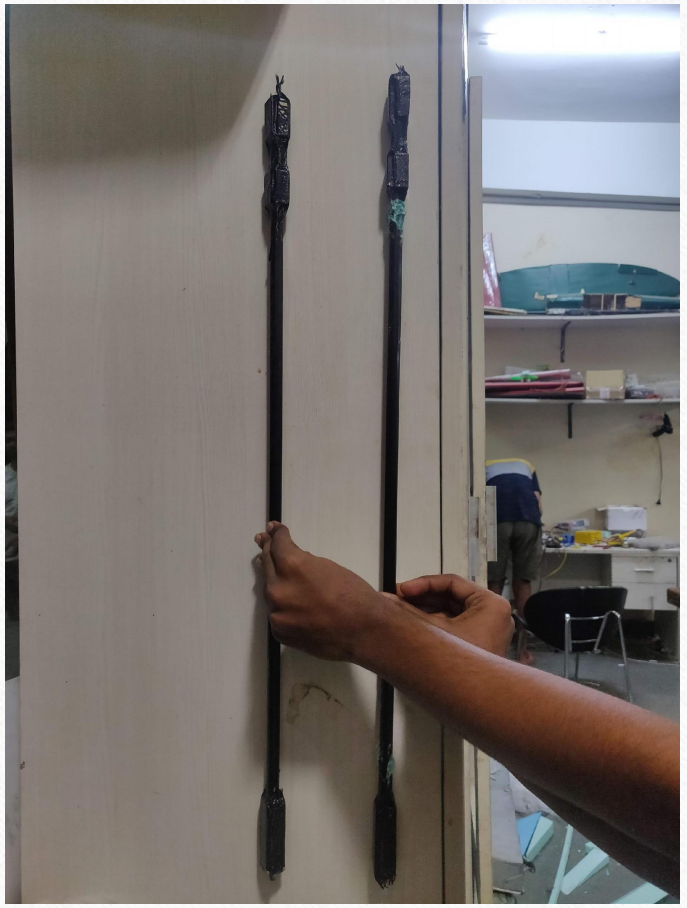


Making mould of fuselage

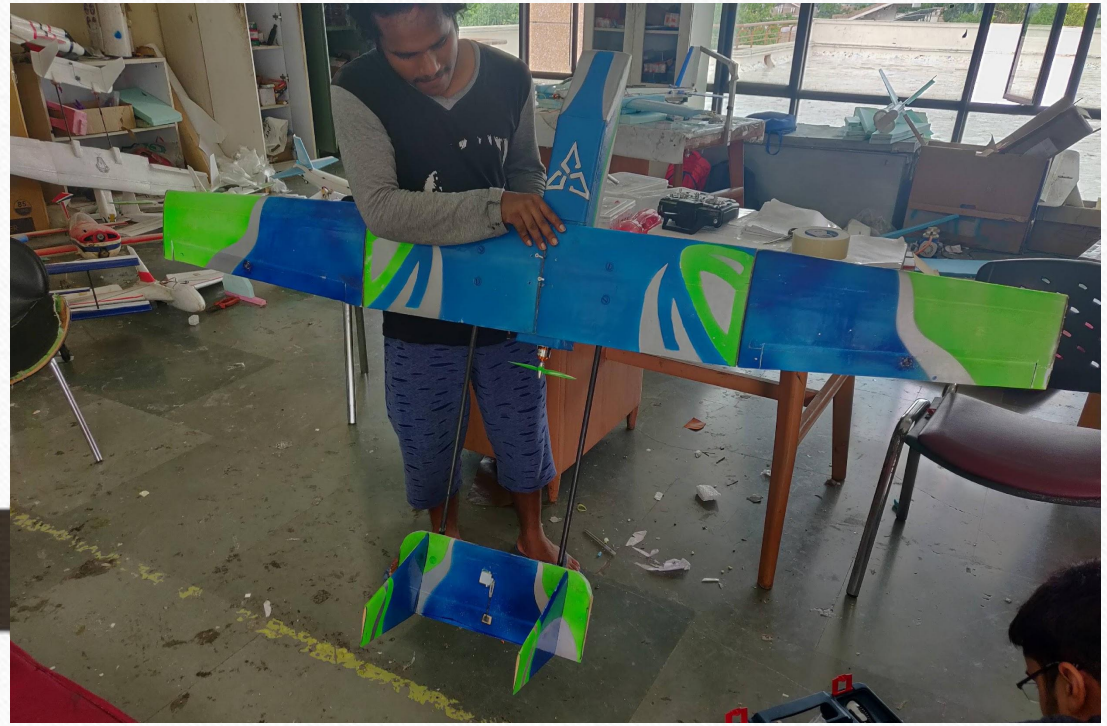
Mould making

A mould is a hollowed-out block that is made with layers of different thickness glass fiber and PVA and epoxy

Moulding is the process of manufacturing by shaping liquid using a rigid frame called a mould.



Making the twin boom and fixing them with clamps.



Assembling of the plane (detachable wings and boom)

Successful flying of the plane

What we have learned

- Working on Xflr
- Vacuum bagging and laying
- Making moulds

Thank You.

End Of Presentation.