

## AIMS

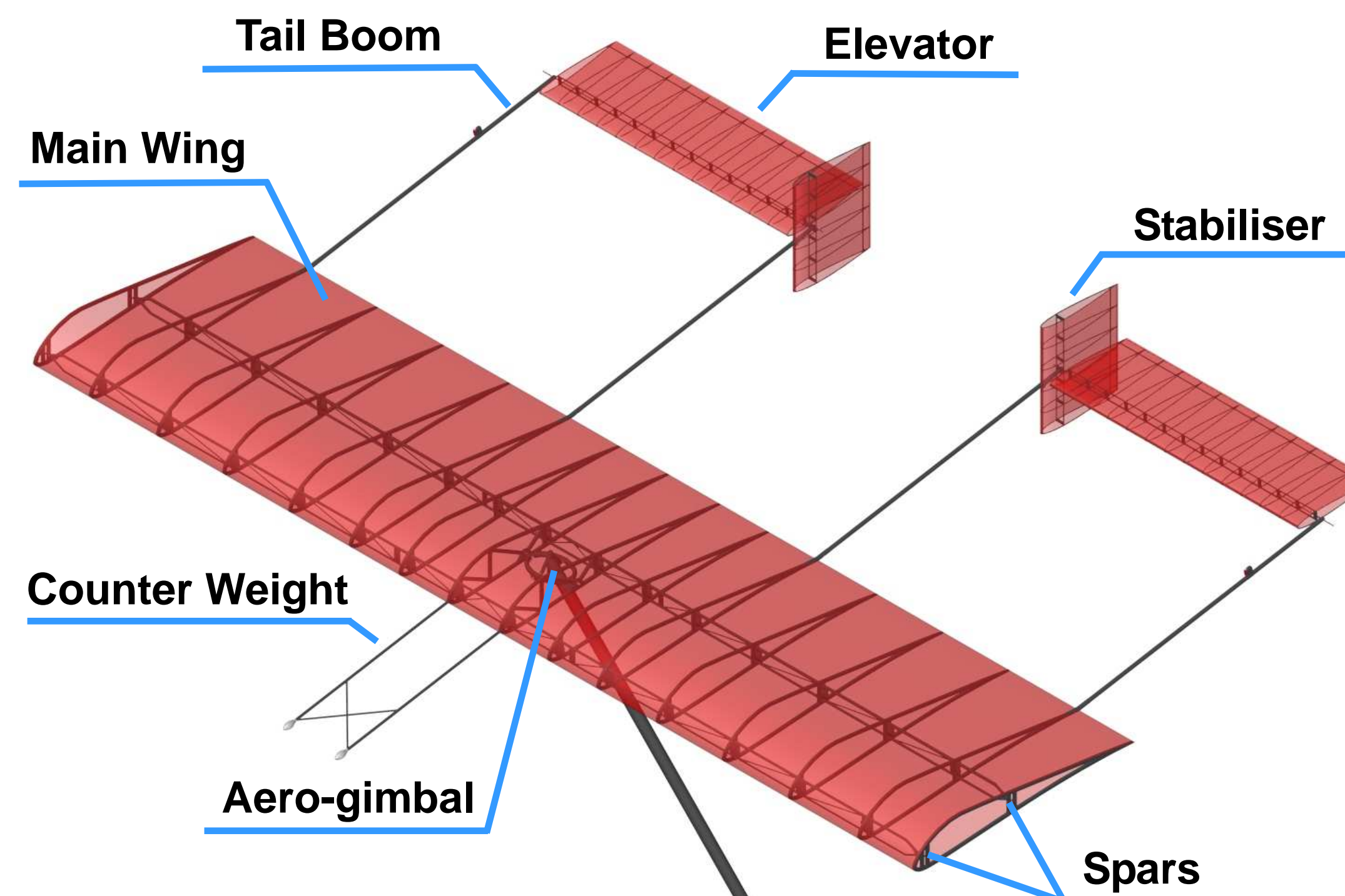
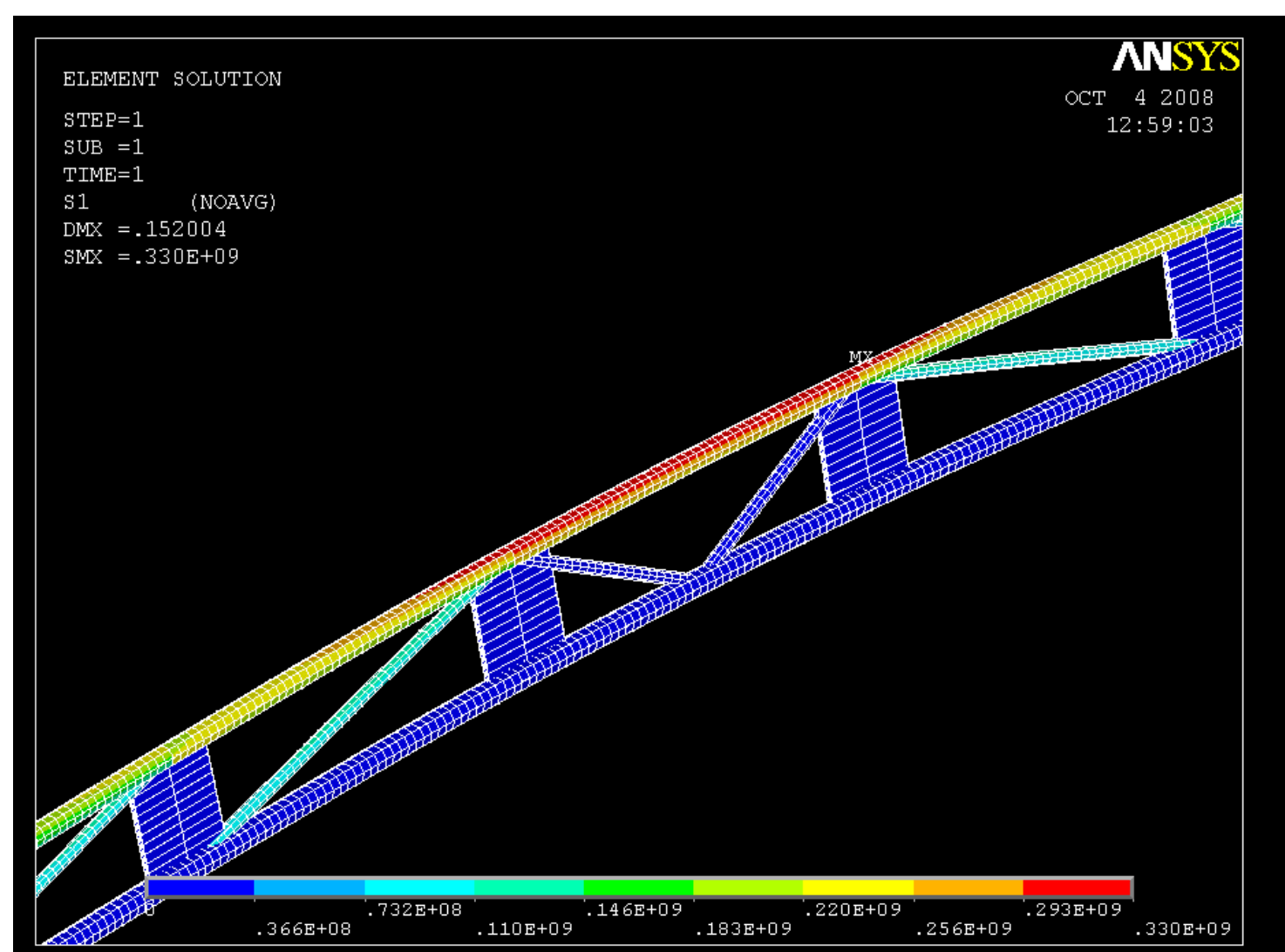
- Complete a detailed design of the entire assembly
- Begin construction of all components
- Design a rig to test the completed assembly

## DESIGN GOALS

- To construct a lightweight aerofoil assembly capable of generating 1750N of lift
- The assembly must be controllable in pitch and roll and must be easily transportable
- Weight goal: 10kg for self-righting

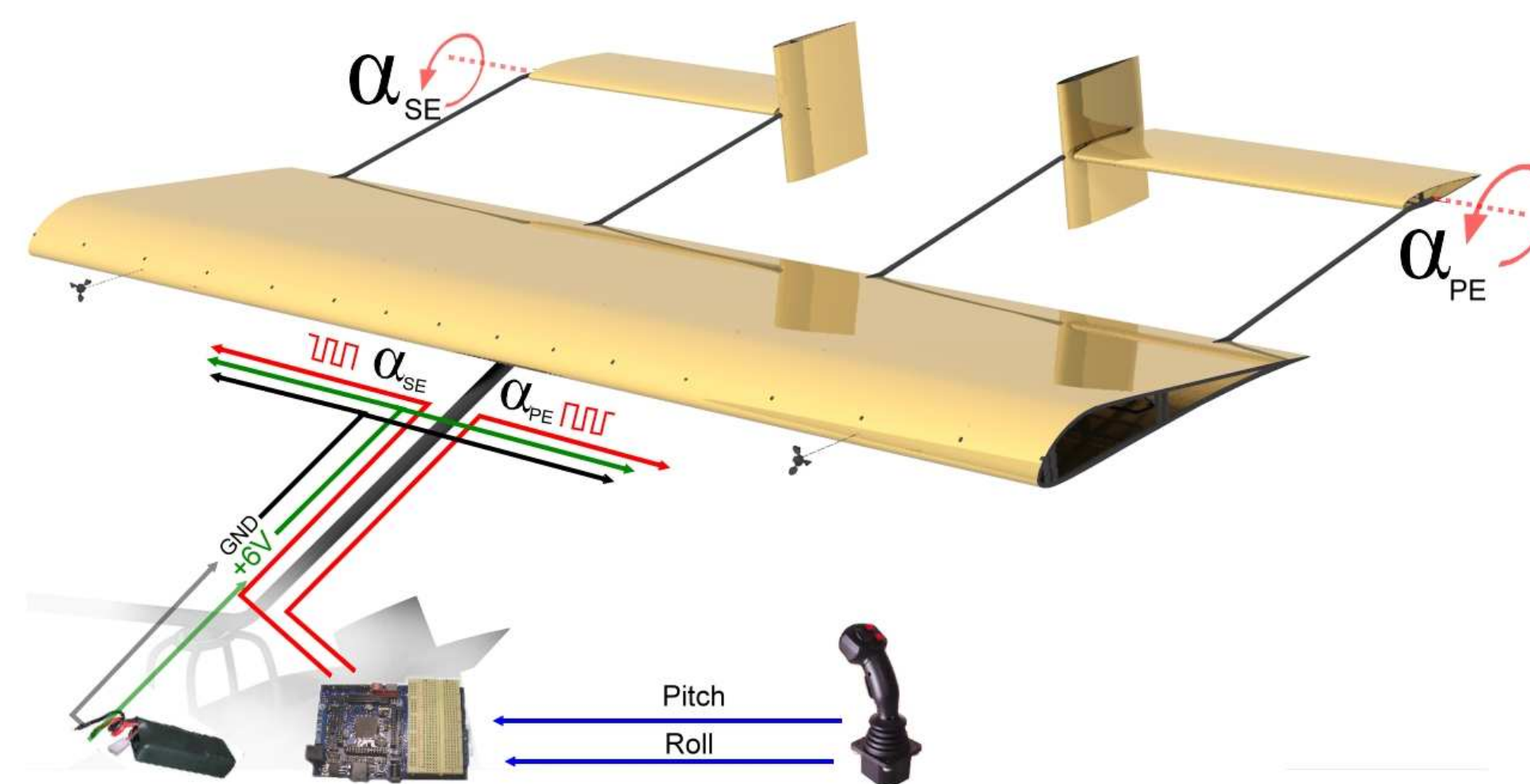
## METHODS

- A parametric model was created to assist in optimising parameters of the design
- Structural integrity of the main wing is attained through two spars located at 5% and 45% chord
- The structural components were analysed using FEA



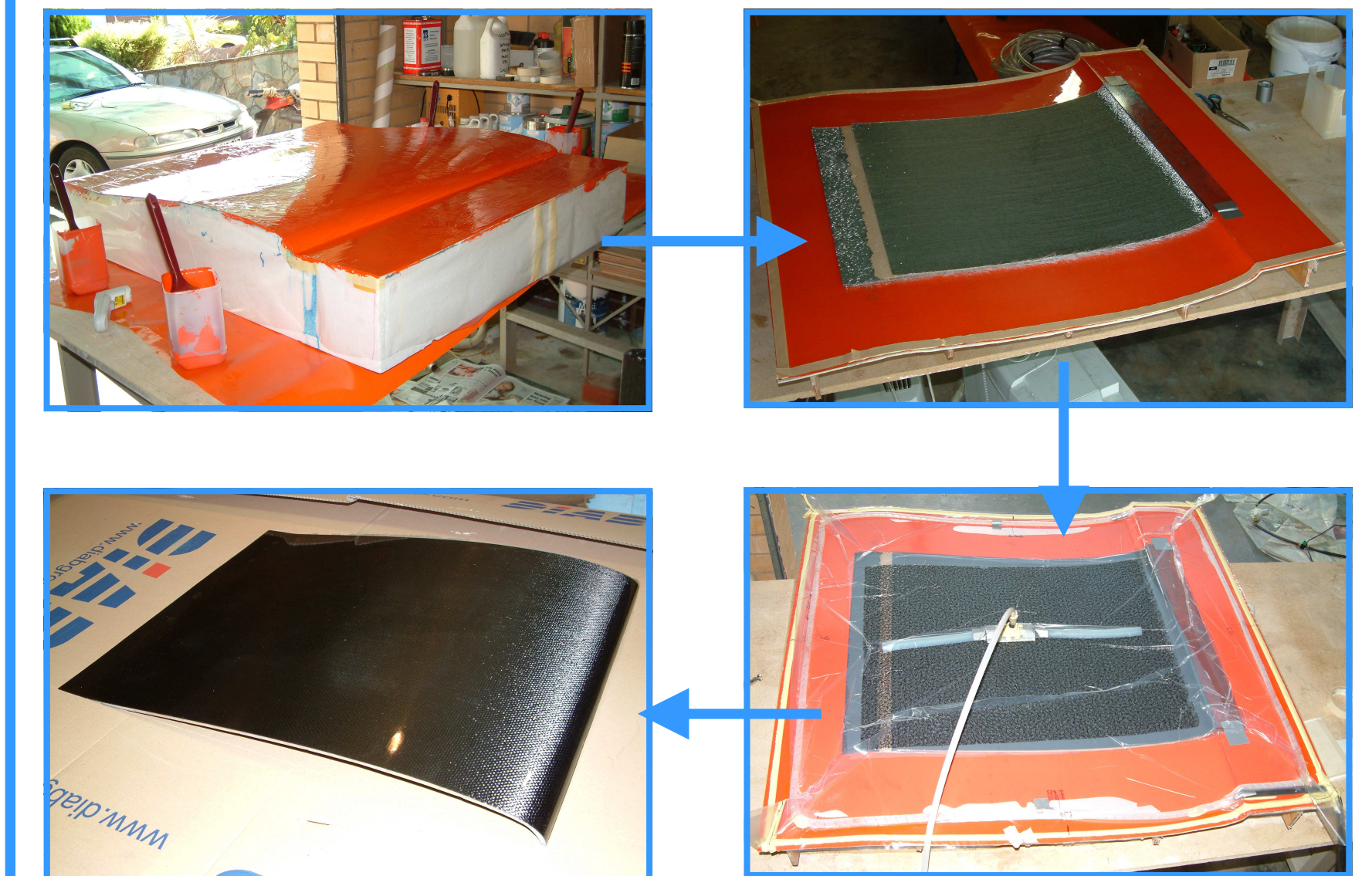
## CONTROL

- An aft mounted tail allows control of the pitch and roll of the assembly and keeps the assembly in trim at high velocity
- A warping design was decided upon as a lightweight method of roll control



## MANUFACTURE

The elevator and stabiliser ribs were manufactured from carbon fibre using a vacuum bag infusion process.



## OUTCOMES

- A lightweight aerofoil assembly has been designed
- Incorporates a unique warping wing design to control roll motion
- Dismantles to fit inside a narrow trailer for transport
- A test rig has been designed incorporating a load cell to measure lift and drag

## CONCLUSION

The detail design of the aerofoil assembly is finished and construction has commenced. Components will be statically and dynamically tested once constructed.