# Determining capabilities for Cryowing Observer (RC)

* Cruise speed
  + Maintain a safe altitude (>120m AGL) and vary throttle input and see how aircraft responds to stick inputs at different speeds.
  + If aircraft can maintain good performance at a certain throttle input over a longer period, then this can be a cruise speed (read off airspeed indicator).
  + For trainer: As the trainers don’t have an airspeed indicator, the cruise speed is determined as follows:
    - Locate at which throttle setting the aircraft flies stable and is manoeuvrable. Note this throttle value as “cruise speed”.
  + (Cruise speed can be chosen mathematically, but this is omitted in these tests)
* Stall speed
  + Flaps up and power off
    - Keep aircraft level. When aircraft starts upset mode (stalling on one wing side), note this as stall airspeed.
  + Half flaps and power off
    - Keep aircraft level. When aircraft starts upset mode (stalling on one wing side), note this as stall airspeed.
  + Full flaps and power off
    - Keep aircraft level possible. When aircraft starts upset mode (stalling on one wing side), note this as stall airspeed.
* Max take-off weight (MTOW)
  + First with no payload and see how aircraft behaves with current weight and CG (centre of gravity)
  + Adjust CG if needed
  + Then add 1 kg payloads (depending on standard empty weight)
  + Check overall performance (throttle needed to stay level, manoeuvrability of stick inputs (is it slow/irresponsive?))
  + If performance difference is unaffected, increase payload weight.
  + When the aircraft becomes less responsive but controllable, decrease payload weight slightly (perhaps by 25% of current payload). This can be noted as MTOW (suggestive).
* Max useful load

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* = Coefficient of lift
* = density of air
* v = air speed
* s = Wing surface area

Calculate/approximate minimum battery ampere hours

Propeller size: TBD after testing. Most likely 1206.