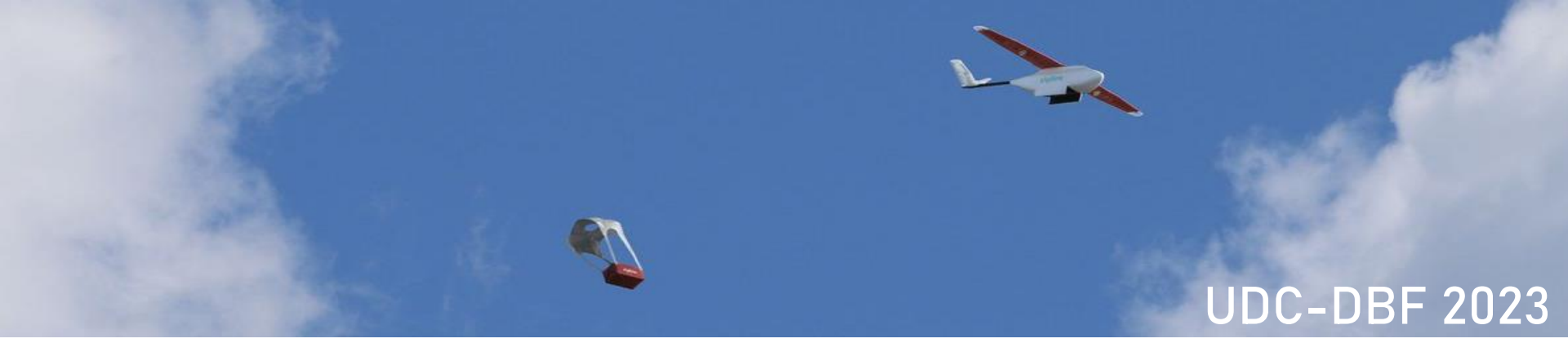

3rd Design Iteration

Team Name: GENEI RYODAN

➢ Note: lengths should be in (cm), angles in (deg).

Wing Information	
Airfoil	SG6042
Span	158.7
Root Chord	25.4
Tip Chord	25.4
Offset	0
AR	6.25
S_w	4030.88
Incidence Angle	0
Twist	0
Dihedral	0

Vertical Tail Information	
Airfoil	Flat plate
Semi Span (Total Length)	34
Root Chord	11.36285
Tip Chord	8.5
Offset	2.5
S_v/S_w	0.0911
AR_v	3
V_v	0.045
Incidence Angle	0
Tail Arm	74.3
Shifted Length in Z-Direction	-7

Horizontal Tail Information	
Airfoil	Flat plate
Span	49.789
Root Chord	16.6
Tip Chord	10
Offset	6.5
S_H/S_w	0.205
AR_H	3
V_H	0.6
Incidence Angle	-2.5
Tail Arm	74.3
Shifted Length in Z-Direction	-7

Propulsion System Information

Input					
Model Weight (Drive included or without)	2300				
Desired Flight speed	57.042Km/h				
Brushless Motor	Manufacturer	Model	Voltage Constant [KV]	No Load Current [A]	Resistance [ohm]
	Turnigy	D3548-4	1100	3.1	0.023
Battery	Manufacturer	No. Of Cells	Voltage	Capacity [mAh]	C-Rating
	LiPo	4	3.7	2200	25/35C
Propeller Size (Diameter x Pitch)	10*4.7				
Speed Controller (Current Rating Value)	60				

Output	
Load	18.4
Mixed flight Time	5
Max. Current	44.4
Max. Power	530.3
Static Thrust	2074
Available Thrust [at the desired flight speed]	1456
Drive Weight	505
All Up Weight	2300
(Power/Weight) Ratio [Watt/lb]	118
(Thrust/Weight) Ratio	0.9

Flight Phases

Phase 1 (payload isn't deployed)

MTOW	2300
X_{CG}	0.0849
Static margin (%)	15
CL_{Cruise}	0.3566
V_{Stall}	7.75
V_{Cruise}	16
α_{Trim}	1.66
Required Static Thrust	1.48
Required Dynamic Thrust (at V_{Cruise})	0.2405

Phase 2 (payload is deployed)	
Mass	1400
X_{CG}	0.0849
Static margin (%)	15
CL_{Cruise}	0.355
V_{Stall}	6.75
V_{Cruise}	12.5
α_{Trim}	1.676
Required Static Thrust	1.2
Required Dynamic Thrust (at V_{Cruise})	0.1