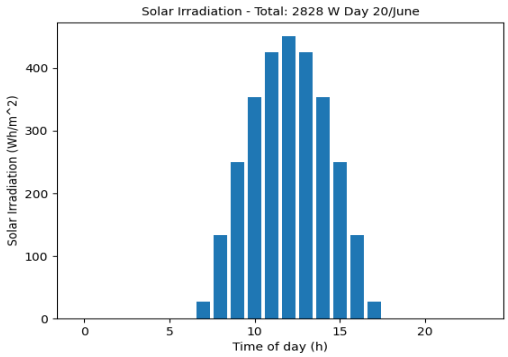
Solar UAV Sizing Report

Solar Resource

Location: Praça Marechal Eduardo Gomes, 50 - Vila das Acacias, São José dos Campos
Available Solar Energy: 2828.38 W
Day of the year with less incidence os sunlight: 20/June
Hours Without Sunlight: 13.41 h

---------- **Solar Energy Distribution** ----------

hour (h)	power (W)
07	27.01
08	133.86
09	249.52
10	353.26
11	425.13
12	450.82
13	425.13
14	353.26
15	249.52
16	133.86
17	27.01



Mission Profile

Take off altitude: 700 (m)
Cruise altitude: 800 (m)
Flight Speed: 9.27 (m/s)
Flight Endurance: 3.02 (h)
Payload Power: 0.13 (W)
Payload Weight: 0.15 (N)
Airfoil Model: xf-e210-il
Battery Model: Panasonic NCR 18650
Solar Cell Model: SunPower C60

UAV Solution 1

---------- Wing Settings ----------

Wing Area: 0.45 (m)
Wingspan: 2.15 (m)
Aspect Ratio: 10.28
Standard Mean Chord: 0.21 (m)
Solar Panel Area: 0.14 (m)

---------- Power Settings ----------

Total Energy Collected: 71.75 (W)
Total Energy Consumed: 41.11 (W)
Propulsion Power: 13.10 (W)
Power for Takeoff: 17.38 (W)
Climb Power: 57.42 (W)
Total Climb Power: 1.52 (W)

---------- Weight Settings ----------

Total Weight: 9.81 (N)
Airframe Weight: 4.33 (N)
Solar Panel Weight: 0.97 (N)
Battery Weight: 2.00 (N)
Propulsion Group Weight: 1.03 (N)

---------- Aerodynamic Settings ----------

Lift Force: 11.08 (N)
Drag Force: 1.12 (N)
Climbing Speed: 10.56 (m/s)
Takeoff Distance: 4.86 (m)
Landing Distance: 5.21 (m)
Total Time for Climb: 74.55 (s)
Time for Takeoff: 0.66 (s)
Time to climb: 36.59 (s)
Time to Landing: 0.70 (s)
