
APP Minimum Required Input Data

Configuration

- Operating weight empty
- Fuel mass
- Positive g-limit
- Negative g-limit
- Mach-limit table (Mach/Altitude) (Fig. 1)

Aerodynamics

- Reference area
- Zero-lift drag coefficient table (Mach/ C_{D0}) for selected altitudes (Fig. 2)
- Drag polar table (C_L/C_{D1}) for selected Mach numbers (not including zero-lift drag) (Fig. 3)
- Lift coefficient table (AoA/ C_L) for selected Mach numbers (Fig. 4)
- Maximum lift coefficient table (Mach/ C_{Lmax}) (Fig. 5)

Propulsion

- Propeller Diameter, Gear Ratio, Maximum and minimum Engine RPM (Fig. 6)
- Advance Ratio – C_P Table for one Mach Number (Fig. 7)
- Advance Ratio – C_T Table for one Mach Number (Fig. 8)
- Max. Shaft Power – Altitude – RPM Table (Fig. 9)
- Min. Shaft Power – Altitude – RPM Table (may be set to 0 if unknown) (Fig. 10)
- Fuel flow table (Thrust/Fuel flow) for selected Mach numbers for selected altitudes (Fig. 11)

Comments

- two or more input sets for maximum thrust settings can be defined
- All engine data are installed performance
- For Takeoff and Landing calculations: performance data at sea-level is very often sufficient

Preferred Units:

Altitude: [m], [ft]
Area: [m²], [ft²]
AoA: [deg]
Thrust: [N], [kN], [lbf]
Fuel flow: [kg/s], [lbs/hr], [t/hr]

	Altitude [m]	Placard Mach [-]
1	0	1.2
2	11000	1.5
3	20000	1.5
4		
5		

Fig.1: Mach-limit table

	Mach [-]	CDo [-]
1	0	0.021
2	0.3	0.02
3	0.5	0.0195
4	0.8	0.019
5	0.85	0.019
6	0.9	0.021
7	1	0.039
8	1.05	0.041
9	1.1	0.041
10	1.3	0.04
11	1.4	0.039
12	1.6	0.04

Fig.2: Zero-lift drag coefficient table

	CL [-]	CDI [-]
1	0	0
2	0.2	0.00555515
3	0.3	0.0129301
4	0.4	0.0242406
5	0.6	0.056
6	0.8	0.118
7	1	0.215
8	1.1	0.3
9	1.2	0.39
10	1.3	0.520001
11		

Fig.3: Drag polar table

	AoA [deg]	CL [-]
1	0	0
2	45	3.15
3		
4		
5		
6		
7		
8		
9		
10		
11		

Fig.4: Lift coefficient table

	Mach [-]	CLmax [-]
1	0	1.33
2	0.3	1.33
3	0.5	1.27
4	0.8	1.15
5	0.85	1.17
6	0.9	1.18
7	1	1.125
8	1.05	1.05
9	1.1	0.925
10	1.3	0.72
11	1.4	0.68
12	1.6	0.6
13		

Fig.5: Maximum lift coefficient table

Propeller	CP	CT	Max. Shaft Power	Min. Sha
Propeller Diameter	0.9		[m]	
Gear Ratio	1		[-]	
Max. Engine Revolution	5400		[rpm]	
Min. Engine Revolution	900		[rpm]	
<input checked="" type="checkbox"/> Fixed Propeller				

Fig. 6: Propulsion Data

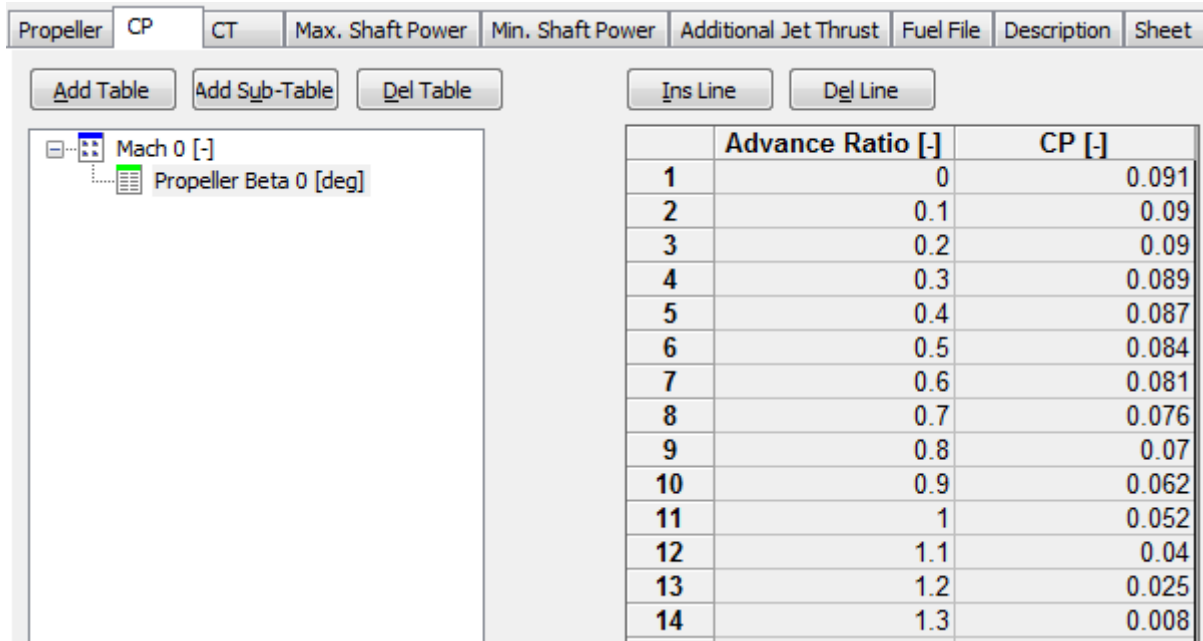


Fig. 7: Advance Ratio – CP

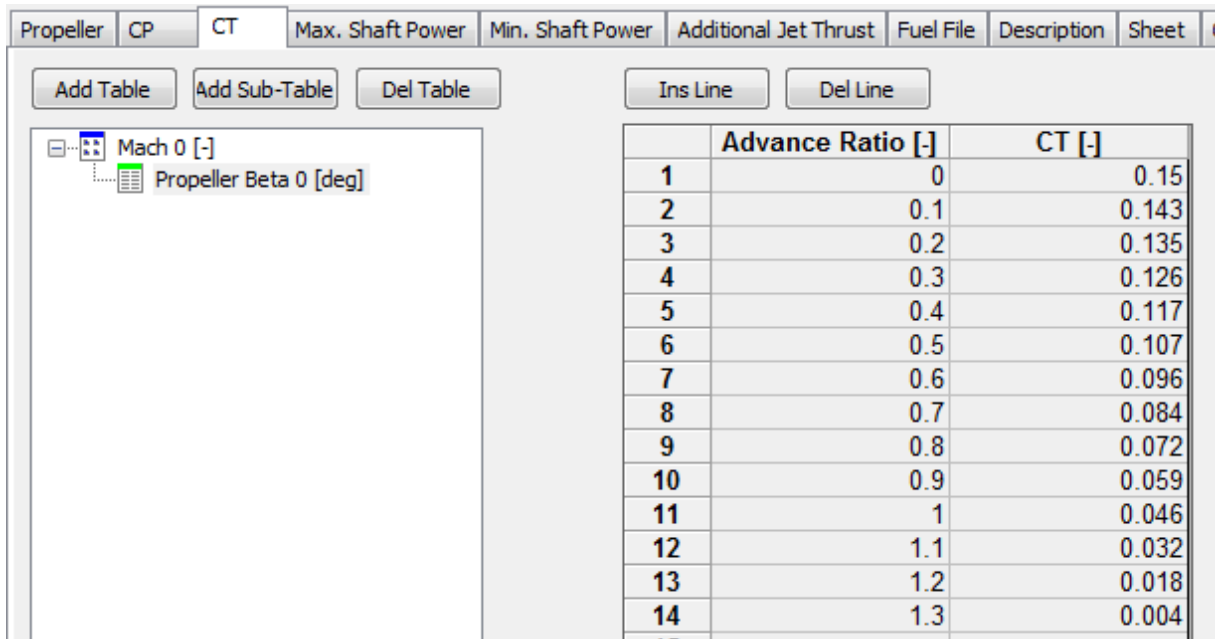


Fig. 8: Advance Ratio – CT

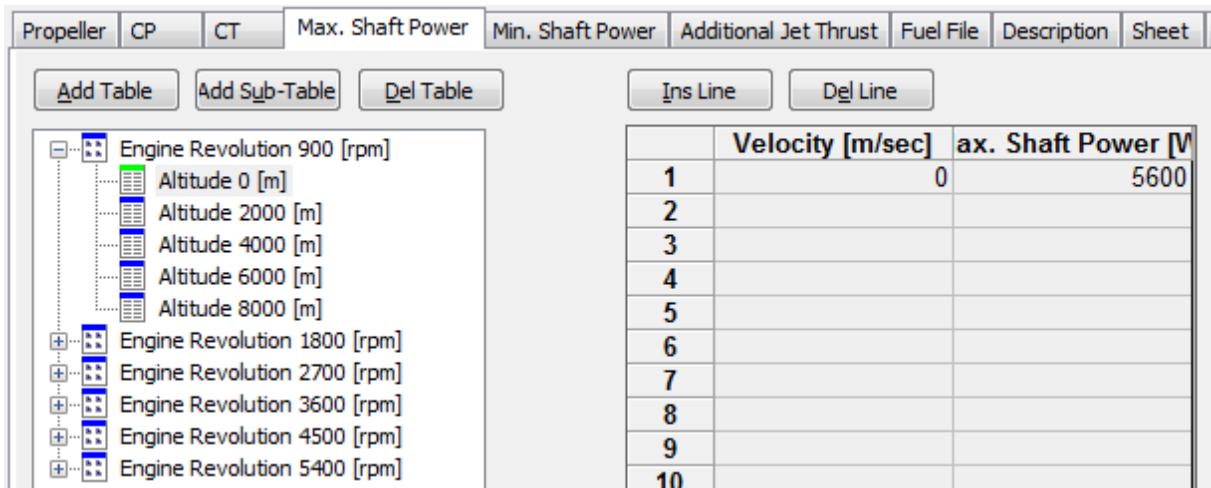


Fig. 9: Max. Shaft Power

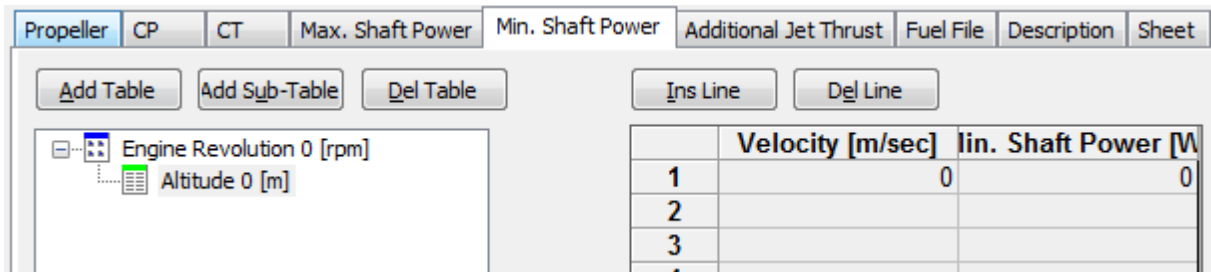


Fig. 10: Min Shaft Power

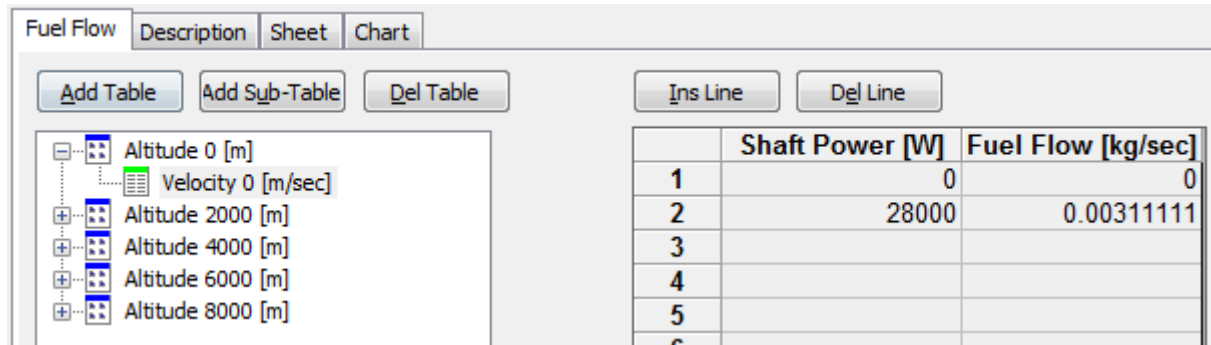


Fig. 11: Fuel Flow Table