



TOP OPTIMIZATION SUGGESTIONS:

- Success:  
Target altitude of 100 km already achieved!  
Impact: Current max altitude: 106.9 km

INITIAL CONDITIONS AND PARAMETERS

TRAJECTORY SIMULATION

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TRAJECTORY OPTIMIZATION PARAMETERS

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Target Altitude:100 km (100000 m)

Analysis Type:Trajectory optimization

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OPTIMIZATION ANALYSIS CATEGORIES

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1. Mass Reduction Analysis
2. Aerodynamic Improvements
3. Propellant Optimization
4. Staging Considerations
5. Trajectory Shape Optimization

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BASELINE SIMULATION PARAMETERS

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Material Used:Titanium Ti-6Al-4V

Fast Mode:True

Time Step (dt):0.01 s

Max Dynamic Pressure:82800.0 Pa

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CURRENT ROCKET CONFIGURATION

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Total Mass:442.375 kg

Dry Mass:198.295 kg

Propellant Mass:244.080 kg

Mass Ratio:2.231

Component Breakdown:

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propellant	244.080 kg ( 55.2%)
fuselage_shell	60.250 kg ( 13.6%)
fuselage_oxi	55.330 kg ( 12.5%)
helium_tank	43.500 kg ( 9.8%)
combustion_chamber	12.830 kg ( 2.9%)
nose_cone	10.230 kg ( 2.3%)
fins (calculated)	8.162 kg ( 1.8%)
nozzle	7.993 kg ( 1.8%)