

Sheet1

Materials and fuel costs estimate for 1 Cameron basic proof of concept

M Diameter of Balloon	13.00	
M Radius of Balloon	6.50	
Pi	3.14	
M ² Surface Area Of Balloon	530.93	
M ³ Volume of Balloon	1150.35	
Kg of H2 per cubic meter NTP	0.09	
Kg Mass of H2 to fill Balloon	103.42	
Kg of 1 cubic M of Air at STP	1.29	
Kg Lifting of 1 Cubic M of H2 at STP	1.20	
Kg Lifting 1 H2 Balloon STP	1382.72	
Kg Total Lift	1382.72	
Kg of HTP & H2 Engine	110.00	
Kg of HTP fuel tanks & Pipework	50.00	
Kg of Electronics	5.00	
Kg of Payload if any	1.00	
Kg of planned HTP	516.72	
Kg of 1 Cameron Balloon	700.00	
		ISP@0G
£ Cost of H2 per KG	1.00	3519.00
£ Cost of 85% HTP per KG	5.87	1610.00
£ Cost of 1 Cameron Balloon	38550.00	
£ Cost of H2 to fill 1 Balloon	103.42	
£ Cost of planned HTP	3033.12	
£ Cost of HTP & H2 engine	5000.00	
£ Cost of HTP fuel tanks & pipework	1000.00	
£ Cost of electronics	5000.00	
Approx Total Dry Mass of prototype Kg	866.00	
Approx Total Mass of prototype +H2 Kg	969.42	
H2 Fuel Mass/Energy equivalent when LTA	1014.51	
HTP Fuel Mass equivalent when LTA	5068.98	
Fuel Mass equivalent when LTA	6083.49	
Approx Total Mass of prototype +H2 +HTP	1589.55	
Approx Total Cost of prototype	£52,686.54	
Dry Mass to fuel actual Ratio	0.7	
Dry Mass to fuel equivalent Ratio	7.0	
Note 110Kg HTP engine can give 4309Kg Thrust	42271.29 Newtons	
85% HTP Water to Oxygen ratio after catalyst 60:40		
Planned HTP would produce Kg of O2	206.69	
Planned HTP O2 would burn Kg of H2	25.84	
O2 left over	-77.58	
Cost per kilo payload	£52,686.54	
Total ISP seconds from H2	363921.1289	
Total ISP seconds from HTP	831911.6927	
Total ISP seconds	1195832.822	
Delta V in meters per second	1380.869309	