

Materials used in space re-entry vehicles

S.A.Saktheesh & R.Ajay Srinivasan

IIInd year, Department of Electrical & Engineering,

Sri Sairam Engg. College, West Tambaram, Chennai-44.

S.A.Saktheesh, e-mail id:s.a.saktheesh@gmail.com

Atmospheric reentry is the process by which vehicles that are outside the atmosphere of a planet can enter that atmosphere and reach the planetary surface intact. Atmospheric re-entry issues will strongly impact the development of reusable vehicles and the planning of exploration missions. Two re-entry vehicles projects, aimed to demonstrate reusable technologies maturity, are being considered in this paper. The working of [Spaceship One](#) which features a rubber-nitrous oxide hybrid rocket engine and cold gas attitude control thrusters; a graphite/epoxy primary structure; 3-place, sea-level, shirt-sleeve cabin environment; a low maintenance thermal protection system; and a unique feathered reentry system have been discussed. We have also studied that gliders solve the problem of achieving good re entry by towing the vehicle like a glider at take off in order to save using fuel in the early part of the flight, thereby starting at high altitude with full propellant tanks. Also the X-37 has been billed as an unpiloted, autonomously operated vehicle designed to conduct on-orbit operations and collect test data in the Mach 25 (reentry) region of flight. The Boeing-built X-37 is geared to be a test bed for airframe, propulsion and operation technologies designed to make space transportation and operations significantly more affordable.