

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Emerging Global Space Ventures, including Reusability and other Innovations (9-D6.2)

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RURLS – (RE USEABLE ROCKET LAUNCH SYSTEM)

Abstract

Space Agencies have now started to focus on the problem of space junk, space agencies have started to find a new way to overcome this very efficiently by using rocket which can land on the surface of the earth back, but have not found an easier and efficient way out yet. This problem could be solved by restarting the engine back to land by counter reacting with the force to land on the ground, this way is surely a good idea which can be potentially used to land a rocket but it is much complex a really hard way to land a rocket and has many chances of the rocket blowing up and causing a huge damage, to land a rocket we can potentially use a parachute and this will also not need the TVS (Thrust vectoring system) that aligns the rocket the right way to land instead the parachute will automatically make the rocket align at the right position. The parachute can be used only to properly align the rocket and speed down the rocket only till a certain limit then the rocket has to just land in water, but the challenge to do that is it has to not harm any people while landing as it could end up crashing in to the land, to prevent that we will use the fins of the rocket to steer the rocket in any direction. Now the other issue is after landing in water how can it be reused to launch again, the structure will be made by 3D printing (ABS) which will be made strong enough by covering the inside with carbon fiber this will not only make it strong and cost effective but it will also make us able to land in the ocean easily as ABS is water proof, the tanks of oxidizer and fuel will be also water proofed, the next problem is the nozzle which can not be made of ABS as it need to sustain the heat which can not be sustained by ABS so we will eject the nozzle after coming to a safe distance above the ocean the nozzle will be immediately recovered after splash down in the ocean and after that the rocket will be recovered and after attaching the nozzle back the rocket will be good to go for launch again.