AASHRAY RAJ MATHUR
AASHRAYRAJM@GMAIL.COM

REUSABLE LAUNCH ROCKET

ABSTRACT

Over the years, nearly every part of a rocket used to propel shuttles and satellites into orbit has been designed for one-time usage. Generally, after the first stage rocket (which amounts to 70% of the total cost of a rocket) is used, the rocket falls back to the Earth's surface, burning up in the atmosphere and being destroyed. The reusable rocket is an attempt to resolve this dilemma. SpaceX, the leading company pursuing the technology of reusable rockets, has successfully developed rockets capable of multiple launches. Being able to reuse a rocket is a daunting task that requires multiple processes.

The main goal of this project is to create an alternative to the falcon and New Shepard that have been developed by SpaceX and Blue Origin respectively. Our project basically uses 4 motors which can provide thrust to provide a smooth landing, and initially to reduce the gravitational pull of the rocket when it enters into the earth's atmosphere, the rocket uses its flaps which are placed at the top of the rocket. We'll be using ESTES motor for the launch of our vehicle.

The thrusters are programmed in such a way that it can automatically stabilize the rocket at the time of descending. With the help of the motors when the rocket reaches a suitable height during its descent, throttle is given so that the thrusters are activated(manually) so as to give it a smooth landing.

After landing, the rocket undergoes an inspection and then it is ready for relaunch. With the help of the motors, it can be made to travel from one port to another port without the use of other transportation. While this is still a relatively new technology and process, the benefits of reusable rockets are apparent: time, money, and materials are dramatically conserved. By conserving these valuable resources,

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reusable rockets prove to be a sustainable option for space exploration. This sustainable technology will facilitate greater space access, allowing a deeper understanding of the universe. There is much to be gained from increased space exploration including the obtaining of materials, the development of new technologies and possible colonization of other celestial bodies such as Mars.