

Stardust 1.0, the first rocket to run on biofuel

TAGS: GS-3: Science & Technology

CONTEXT:

- On January 31, **Stardust 1.0** was launched from **Loring Commerce Centre in Maine, US**, a former military base, becoming the **first commercial space launch powered by biofuel**, which is non-toxic for the environment as opposed to traditionally used rocket fuels.

Stardust 1.0:

- Stardust 1.0 is a **launch vehicle** suited for student and budget payloads. The rocket is **20 feet tall** and has a mass of roughly **250 kg**.
- Payload:** The rocket can carry a **maximum payload mass of 8 kg** and during its first launch carried three payloads. The payloads included a cubesat prototype built by highschool students, a metal alloy designed to lessen vibrations.
- Made by bluShift:** The rocket is manufactured by **bluShift, an aerospace company based in Maine** that is developing rockets that are **powered by bio-derived fuels**.
 - Stardust 1.0 is being developed by the company since 2014 when the company was founded by its CEO Sascha Deri.



Advantage:

- To help launch small satellites called cubesats into space in a relatively cheaper way than using traditional rocket fuel
- Less toxic for the environment.
- Easier and cheaper access to space to lay people
- To make access to space cost-effective for purposes of
 - ✓ Academic research,
 - ✓ Corporate technology development and
 - ✓ Entrepreneurial ventures among others.
- Easier access to space to not only experienced researchers but also to students who are part of educational institutions

Other Space company:

Blue Origin:

- There are other companies working towards **making access to space easier**. One of them is **Amazon founder Jeff Bezos's space company called Blue Origin**.
- Last year in October, the company **tested a rocket system called New Shepard**.
- Space Tourism:** The rocket system is meant to take tourists to space eventually and offers flights to space over 100 km above Earth and accommodation for payloads.
- Such efforts are a part of a growing number of commercial space companies that are working to provide

Virgin Galactic:

- Founded by British entrepreneur Richard Branson called Virgin Galactic signed a **Space Act Agreement with NASA's** Johnson Space Center in June 2020.
- To **encourage commercial participation** in orbital human spaceflight **to the International Space Station (ISS)** and help in the development of a Low Earth Orbit economy.

What is biofuel?

Biofuels are obtained **from biomass**, which can be **converted directly into liquid fuels** that can be **used as transportation fuels**.

Two most common kinds of biofuels in use today are **ethanol and biodiesel** and they both represent the **first generation** of biofuel technology.

Ethanol, for instance, is renewable and made from different kinds of plant materials.

Biodiesel on the other hand is produced by combining alcohol with new and used vegetable oils, animal fats or recycled cooking grease.

Source: Indian Express

MCQs:

Q. Stardust 1.0 was recently in news. Which of the following statement is correct regarding it?

- a) It is a satellite internet constellation being constructed by SpaceX.
- b) It has been launched wherein air quality information is available to public.
- c) It is the first commercial space launch powered by biofuel**
- d) It is a NASA asteroid-study and sample-return mission.

ANS: C