

Nuclear thermal engines: The 'gateway' that could allow humans to set foot on Mars in just 3 months.

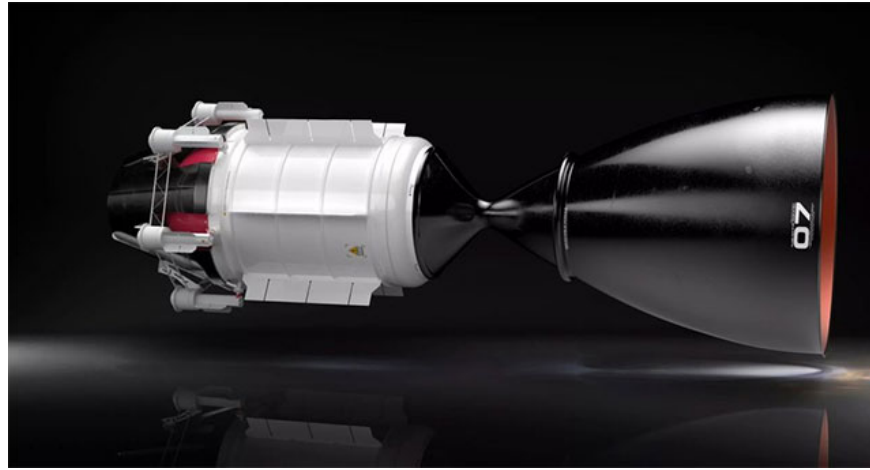
Using thermal nuclear propulsion systems as a propulsion engine is not actually a new idea.

Ultra Safe Nuclear Corporation (USNC), one of the world's largest privately held companies in the field of nuclear physics, has just made a shocking announcement in the astronomy and physics research community. Specifically, the company claims to have successfully designed a completely new thermal nuclear propulsion system with incredibly impressive performance: capable of transporting astronauts to Mars in just three months — and returning to Earth in the same amount of time.

Notably, by using low-enriched uranium (HALEU) fuel, the USNC nuclear thermal propulsion (NTP) system not only offers better performance (reducing travel time to Mars by half) and greater operational sustainability, but is also significantly safer than current technologies.

"The biggest challenge is creating a nuclear reactor that is light enough and safe enough to use outside of Earth's atmosphere – especially if the spacecraft is carrying a crew," a USNC representative said.

Using nuclear thermal propulsion systems is not actually a new idea. The core element here is leveraging the immense heat generated by nuclear reactions to propel rockets at supersonic speeds, and ensuring sustained operation. USNC's technology was successfully developed just months after Elon Musk suggested that nuclear propulsion could be the key to sending astronauts to Mars. For the SpaceX CEO, the top concern in any space mission is the health and safety of the astronauts. The longer the journey to Mars, the longer the astronauts will be exposed to unusual cosmic radiation. Therefore, creating new, more efficient propulsion systems to shorten the journey time will be a crucial task.



In terms of basic operation, the USNC's NTP system derives energy from nuclear fission, working by pumping liquid propellant through a nuclear reactor core, where atomic splitting occurs and heat is generated. Generally, the 'mini' reactor in the USNC's nuclear thermal propulsion system has a design quite similar to that of the micro-reactor systems currently being researched by many countries. However, the USNC reactor uses HALEU fuel and Fully Ceramic Microencapsulated (FCM) technology for superior safety at extremely high temperatures.

"The key to USNC's design is the 'conscious overlap' between land-based and space reactor technology," USNC-Tech CEO Paolo Venneri said in a statement. "This allows us to leverage advances in nuclear technology and infrastructure from ground-based systems and apply them to our space-based reactors."

The USNC says its engine provides twice the thrust of conventional chemical engines, while using less enriched fuel and operating much more stably than previous nuclear reactor thermal designs. The NTP system promises to significantly reduce space travel times and allow for carrying much larger payloads than even the most advanced chemical rockets currently available.

USNC stated that it has submitted the design concept to NASA for further validation and to move on to more in-depth real-world testing.

You finished reading the article "**Nuclear thermal engines: The 'gateway' that could allow humans to set foot on Mars in just 3 months.**" edited by the [TipsMake](#) team. We hope this article has provided you with many useful tech tips and tricks. You can search for similar articles on tips and guides. Thank you for reading and for following us regularly.