

Sustainable Scramjet for Space

March 24, 2021

Boeing and Australia-based Hypersonix Launch Systems have signed an agreement to investigate the design of a sustainable hypersonic vehicle powered by the Hypersonix SPARTAN scramjet engines.

Hypersonix and Boeing Research & Technology (BR&T) will conduct a joint study on the design of a reusable hypersonic vehicle to be used for the sustainable launch of satellites to Low Earth Orbit (LEO). This low cost, reliable, reusable and rapid turn-around launch of small satellites to LEO would be the first application of scramjets for space launch.

"The agreement with Hypersonix Launch Systems demonstrates Boeing's continued commitment to building out critical sovereign capability, supporting the development of Australia's space industry - safely and sustainably - and also partnering with small- and medium-sized enterprises," said Brendan Nelson, president of Boeing Australia, New Zealand and the South Pacific.

Boeing has been involved in hypersonic flight for more than 60 years, having created innovative hypersonic vehicle designs, developed advanced scramjet propulsion integration concepts and high-temperature materials, and designed, built and flown experimental and operational hypersonic vehicles such as the X-15, Space Shuttle, X-43A, X-51A, X-37 and HIFiRE-4. Boeing has been involved in the Australian hypersonic technology development since early 2007 as a core partner in the HIFiRE program.

Hypersonix has developed a fifth-generation green hydrogen powered scramjet engine: SPARTAN. SPARTAN is a fully composite reusable accelerating scramjet engine, capable of speeds of MACH 12.

Dr. Michael Smart, Head of R&D and Co-Founder of Hypersonix said: "Our Hypersonic space launch system provides satellite network operators a green and sustainable way of launching satellites to low earth orbit. We 'fly to space', are fully re-usable and we use green hydrogen to provide a high cadence and flexible LEO launch service. Boeing's long history with sophisticated high-speed airframe design and hypersonic flight makes them an ideal partner for Hypersonix."

"Only Boeing has the technological expertise, regulatory knowledge and proven track record to lead the safe introduction of next generation hypersonics technologies and platforms," said Dr. Kevin Bowcutt, Principle Senior Technical Fellow and Chief Scientist of Hypersonics, BR&T. "Boeing has had decades of experience testing and operating hypersonic technology, including supporting NASA and USAF in flying the very first air-breathing hypersonic test vehicles. This makes Boeing the right company to partner with to develop a revolutionary new approach to delivering payload to space in a sustainable way."

Last year, Hypersonix received an Accelerating Commercialisation Grant from the Federal Department of Industry. Hypersonix is also working with BOC on the supply of green hydrogen as fuel for the SPARTAN scramjet.

