

Hypersonix places order with Amiga Engineering to manufacture the world's first 3D printed fixed geometry scramjet engine

Hypersonix has placed an order with Amiga Engineering for the Additive Engineering build of the SPARTAN scramjet.

SPARTAN is Hypersonix' fifth generation scramjet. It is a fixed geometry self-igniting hydrogen powered scramjet capable of accelerating from Mach 5 to Mach 12.

SPARTAN's fixed geometry means it has no moving parts, so the design lends itself to Additive Manufacturing (3D Printing). This reduces both the cost and time to produce the scramjet, whilst potentially adding to reliability and performance.

Additive manufacturing allows the creation of parts that have a complex design. Perfect for light-weighting, which is essential for the Space industry.

SPARTAN uses green hydrogen for fuel, so creates no CO₂ emissions. The hydrogen fuel also allows Hypersonix to utilise regenerative cooling on the combustor, in turn allowing the use of readily available high temperature alloys in place of more expensive and complex high temperature composites.

David Waterhouse, Managing Director and Co-Founder, Hypersonix said: "The use of Additive Engineering to manufacture a scramjet engine will fundamentally disrupt the cost structure of scramjets and an important step in providing more affordable access to hypersonic flight. We are very proud of Australia's world leading heritage in hypersonics and the ability of Australian companies to work together to demonstrate of Sovereign capability in this New Space technology."

Additive Manufacturing/ 3-D Printing techniques which is one of the key elements mentioned in the Australian Modern Manufacturing Strategy which among others includes priorities such as Space, Defence and Clean Energy.

The manufacture of the SPARTAN scramjet is being done under the Federal Government ACA Grant that Hypersonix was awarded in August 2020. Under this grant, Hypersonix is building a flight ready scramjet engine and fuel system. Hypersonix has been able to leverage the growing global hydrogen economy to repurpose off-the-shelf high-pressure composite hydrogen tanks. Hypersonix completed shock tunnel testing of SPARTAN in March 2021 and has completed the final design and thermal modelling of the scramjet. The project is on budget and in schedule and due for completion in March 2022.

Michael Bouchier, Founder and Managing Director Amiga Engineering adds: "In a demanding industry such as aerospace, additive manufacturing offers the cutting edge in component manufacture capable of creating very complex parts in some of the most exotic materials. With thousands of hours of research and development in every part, the aerospace industry settles for nothing but the best. We are extremely excited to work with Hypersonix Launch systems on the world's first 3D printed fixed geometry scramjet engine."

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Hypersonix is Australia's leading scramjet and hypersonic vehicle design and build company. Hypersonix is building its reusable hydrogen powered small satellite launch system, Delta-Velos Orbiter, to provide 'green' and sustainable high cadence satellite launch services by 'flying to space'. Hypersonix also has a research program with Aerospace primes including Boeing for the development of a sustainable scramjet powered hypersonic launch vehicle.

<https://vimeo.com/538520388>
www.hypersonix.com.au

Amiga Engineering, who was a Finalist Manufacturer of the year in the small business category in 2019 by the Victorian State Government, is a versatile manufacturer with many areas within the one business. It is the only company in Australia with CNC Machining & Fabrication, Polymer & DMP Metal 3D Printing, Industrial Gearboxes, 3D Scanning and 3D Systems equipment sales. Amiga is accredited to AS9100D for Aerospace, Space and Defence clients, and ISO9001:2015 for all other manufacturing. Amiga Engineering has the largest service bureau in Australia for Additive manufacturing, with a full suite of metal and polymer 3d printers. Additive manufacturing allows the creation of parts that have a complex design. Perfect for light-weighting, which is essential for the Space industry.

<https://amigaeng.com.au>

