



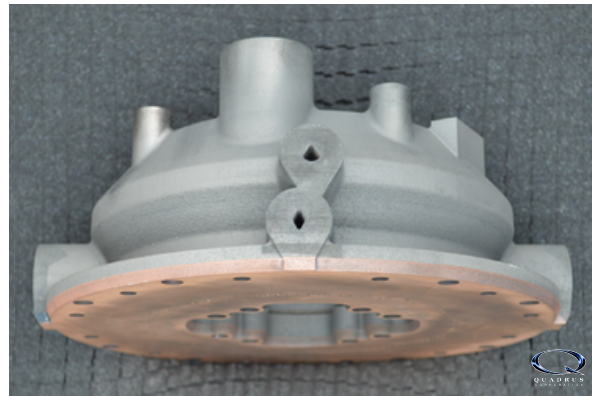
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# QUADRUS CORPORATION ACHIEVES INDUSTRY-FIRST BREAKTHROUGH

Huntsville, Ala., May 24, 2024 -- Quadrus Corporation's Advanced Manufacturing Division (QAMD) announces a groundbreaking achievement in the realm of additive aerospace propulsion technology.

Using innovative manufacturing techniques, QAMD has fabricated the world's first bimetallic rotating detonation rocket engine (RDRE) injector via Selective Laser Melting (SLM). This breakthrough is a culmination of a series of Small Business Innovation Research (SBIR) Phase II and Phase III Efforts managed by engineers at NASA MSFC.

RDRE injectors face significant challenges due to the intense heat generated by the spinning detonation waves. In response, QAMD manufactured a solution featuring a thin faceplate made from thermally conductive GRCo-42 and a manifold made of oxidation-resistant nickel-based superalloy Monel K500. GRCo-42 allows propellants to effectively cool the injector face while the oxidation resistance and strength of Monel K500 allows thinner walls in the manifold, resulting in a lighter design solution tailored to the demands of RDRE applications.



Quadrus Corporation's advanced manufacturing process overcomes numerous hurdles associated with bimetallic SLM fabrication including precise geometrical alignment, mitigation of the risk of material cross contamination, and the formation of high-strength bimetallic bonding. QAMD demonstrated strict attention to detail in all three areas while maintaining an orifice hole of 0.040 in. through the bimetallic region. This achievement underscores Quadrus Corporation's commitment to pushing the boundaries of additive manufacturing technology.

The bimetallic injector brings to a head a multi-year NASA SBIR effort focused on thermal management for combustion injector applications. The success includes the development of Quad Mesh, a groundbreaking approach to transpiration cooling for injector faceplate applications. Quad Mesh enables customizable permeability in high heat flux regions, synergistically complementing the SLM build process and depowdering techniques.

The bimetallic injector, along with a monolithic GRCo-42 injector that includes the Quad Mesh technology, is slated for hot fire testing at NASA's Marshall Space Flight Center during the summer of 2024, marking a significant step forward in advancing thermal management for rocket injector applications. Quadrus Corporation continues to drive innovation in the aerospace industry, exemplifying a commitment to excellence and pushing the boundaries of what is possible in space propulsion technology.

## **ABOUT QUADRUS CORPORATION:**

Quadrus Corporation is a leading provider of commercial software solutions, contract engineering services, integration, and advanced manufacturing techniques based in Huntsville, Ala. Visit [www.quadruscorp.com](http://www.quadruscorp.com) to learn more.