



News Release

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QORTEK SELECTED BY NASA TO DEVELOP NEXT GENERATION ALL-SOLID-STATE VALVES

QorTek, Inc. has been awarded STTR Phase II Program *Propellant Storage and Distribution System Based on Textured Ceramic Valves for Xenon EP Systems* by NASA Glenn Research Center.

NASA has awarded QorTek, Inc. and Colorado State University (CSU) a Phase II Small Business Technology Transfer (STTR) program to develop the next generation of all solid-state propulsion flow control and regulator valves based on QorTek advances in multilayer cofired textured ceramic actuators as the large displacement drive element in a new In-line valve (flow controller) design. QorTek will also be closely working with the Space Systems Division of Marotta Controls in the design and evaluation of this new advanced space propulsion system technology.

Offering to replace many of the existing magnetic-based valve designs, such as solenoid-based valves, used prolifically across satellite propulsion systems the new technology introduces several key performance advances into the space system valve market as to include true linearity and high bandwidth not available in magnetic-based designs. The new all-solid-state technology offers the ability to both operate at high temperature (150°C objective) and high inlet pressures. The technology further enables design space to include 350°C operating temperatures and >1kpsi inlet pressure. Its high temperature capability now allows for direct integration of the valve mechanisms with the high temperature subsystems such as thruster components, reducing sizings and complexity; the ability to operate to very high inlet pressures now allows this technology to replace pressure regulators in spacecraft propulsion systems.

Central to the innovation is the introduction of textured ceramic actuation. QorTek is the World leader in textured ceramic technology and our devices offer about double the stroke per unit length as any available piezoceramic actuation mechanism. Exploiting this much higher stroke capability in a new design approach that also lengthens the actuator without sacrificing overall form factor leads to a remarkable breakthrough in solid-state valve flow control technology.

Colorado State University will be supporting the program through both design, performance requirements, and flow control hardware testing on their Hall Effect Thruster testbed as a precursor to flight system testing. The technology will be integrated on the Electric Propulsion & Plasma Engineering (CEPPE) Laboratory at CSU to demonstrate accurate linear control Xenon propellant flow for both anode and cathode of their 1.5 kW Hall effect thruster testbed.

QorTek is already working with several developer/manufacturers of SmallSat thruster systems and valve that are supporting the program through performance requirements and will be further working with these associate companies to rapidly meet the need for flight-qualified higher performance capable flow control products.

For more information about NASA's investment in space technology, please visit: <https://www.nasa.gov/spacetech>

About QorTek Inc.

With about 80 employees including over 45 Engineers (EE, ME, MatSE), and 5 PhDs, QorTek is a world leader in smart material devices and high-density power electronics, innovating, developing, and providing quality solutions to a diverse array of industries including underwater systems, land & air systems, military & commercial space systems, medical, and industrial.

The dedicated and experienced team is committed to creatively advancing technology to promote sustainable business growth, driven by dynamic engineering enabled by advanced science and technology.

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