Tyfast & US Vanadium Launch Effort to Industrially Scale New Class of Metal Oxide Anode for Heavy Duty Vehicle Batteries

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SAN DIEGO AND HOT SPRINGS, AR, AR, UNITED STATES, May 27, 2025 /EINPresswire.com/ -- Tyfast Energy Corp., a pioneer in advanced metal oxide anodes, and US Vanadium LLC, a leading producer of ultra-pure vanadium products, are pleased to announce a joint development effort focused on scaling the domestic production of ultra-fine-grain vanadium oxide materials. This raw material is critical for producing Tyfast's novel lithium vanadium oxide (LVO) anode for high-performance lithium-ion batteries.

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> *Darryll Castle, CEO of US Vanadium LLC*

The collaboration aims to optimize the synthesis of high-purity vanadium oxide powders sourced from post-industrial waste streams at US Vanadium's facility in Hot Springs, Arkansas, for use in Tyfast's proprietary lithium vanadium oxide (LVO) anode. Tyfast's patented anode unlocks exceptional performance characteristics, including:

- Up to 10X faster charging than conventional lithium-ion batteries
- Up to 10X cycle life, exceeding 10,000 full-depth cycles
- Superior performance at extreme temperatures, including fast charging at -20 °C
- Enhanced safety compared with traditional graphite anodes

These attributes make Tyfast's batteries especially well-suited for electrifying heavy-duty vehicles in demanding sectors such as construction, mining, trucking, and defense—markets that have struggled to adopt EV technology due to extreme duty cycles, environmental conditions, and uptime requirements. Deployment of Tyfast LVO anode technology can enable diesel-level uptime and durability while enabling lower operating costs using electricity by up to 60%.

Tyfast's LVO-based batteries, produced using high-purity vanadium oxide from US Vanadium have already been delivered to leading heavy duty OEMs in construction, mining, trucking and defense. The joint development effort is focused on further optimizing vanadium oxide

processing and powder properties to lower costs and maximize LVO anode performance for next□generation, domestically produced batteries.. When fully scaled, the effort will deliver unique and economically attractive economics to Tyfast's battery technology.

"Tyfast's LVO technology offers unmatched combination of lithium-ion battery power density, cycle life, and durability in severe operating conditions - exactly what heavy-duty equipment manufacturers need to electrify their equipment and driving better operating margins versus existing diesel," said GJ la O', CEO of Tyfast Energy. "Our partnership with US Vanadium not only localizes our supply chain but also advances circular manufacturing by utilizing post-industrial waste streams to create high-value battery materials right here in the U.S."

"This collaboration exemplifies the future of sustainable advanced manufacturing," said Darrell Castle, CEO of US Vanadium. "By leveraging our existing capabilities in high-purity vanadium oxide and expanding into precision-milled battery-grade materials, we are supporting critical defense and energy storage applications while building U.S. industrial leadership."

As part of the joint program, Tyfast will install precision milling equipment at US Vanadium's production facility in Hot Springs, Arkansas enabling in-situ production of controlled vanadium oxide particle sizes requied for lithium-ion anode active materials preparation. This processing capability is key to achieving the electrochemical performance needed for high-rate, high-durability lithium-ion anodes.

Tyfast has received multiple U.S. government awards to demonstrate its novel LVO anode technology. The U.S. Army has funded Tyfast to demonstrate next-generation batteries for ground vehicles. The Defense Logistics Agency has supported Tyfast in scaling the technology for DOD applications. The U.S. Air Force recently selected Tyfast to demonstrate extreme power batteries for directed energy applications for countering low-cost drones. The National Science Foundation and the Department of Energy have supported Tyfast to demonstrate high-performance batteries using the LVO anode technology for passenger and commercial vehicle applications.

US Vanadium was recently awarded funding from the U.S. Defense Logistics Agency to enable the production of high-purity vanadium oxide that is needed in the production of aerospace-grade titanium alloys in the U.S. US Vanadium produces in Arkansas some of the world's highest-purity vanadium oxide for applications in defense, manufacturing, chemicals, vanadium flow batteries, and a variety of markets.

US Vanadium is majority owned by Techmet Limited, a leading global critical minerals investment company. TechMet is partially owned by the U.S. Government through a series of investments by the U.S. International Development Finance Corporation (DFC), the first of which was in 2020.

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MEDIA CONTACTS:

Tyfast Energy: GJ la O', contact@tyfast.energy
US Vanadium: Jim Sims, js@usvanadium.com, +1 (303 503-6203

ABOUT TYFAST

Tyfast is a San Diego-based battery materials company commercializing a new class of high-performance anode material, lithium vanadium oxide (LVO), to electrify workhorse applications in heavy duty (HD) commercial and defense vehicles. The LVO anode enables 10x faster charging (10-mins), 10x cycle life (10,000 cycles), new charge capability below freezing (-40 Celsius) and high energy density (200 Wh/kg) to deliver high vehicle uptime, reduced maintenance, all-weather operations and commercial driving range. Tyfast's mission is to deliver the lowest operating cost energy technology for the heavy duty sector to maximize industry margins and drive economic growth. For more information, visit https://www.tyfast.energy

ABOUT US VANADIUM

Arkansas-based U.S. Vanadium produces and sells a range of specialty vanadium chemicals, used in the global chemical, catalyst, and titanium alloy industries, and a large variety of specialty vanadium-based chemicals. US Vanadium is able to produce some of the world's highest-purity vanadium pentoxide (V205) from post-industrial waste streams. For more information, please see https://www.usvanadium.com.

Jim Sims
US Vanadium LLC
+1 303-503-6203
js@usvanadium.com
