

## Yageo/Kemet: Nevada Plant Looms As Potential Stumbling Block

Yageo's (TPE:2327) \$1.8 billion bid for Kemet (KEM) likely will raise serious U.S. government questions about the Taiwanese company gaining control of a Nevada plant that produces a metal in powder form that Defense Department contractors use in vital electronic components, national security experts said.

Through its Kemet Blue Powder (KBP) subsidiary, Kemet operates a Carson City plant that's one of only two in the U.S. that produces tantalum powder, which is found in high-performing, rugged capacitors for U.S. military communications, satellite and missile systems. The plant has helped the Fort Lauderdale, Florida-based company become the world's largest producer of engineered powders and wire used to manufacture capacitors and semiconductors, controlling a 30% market share, according to Paumanok Publications, an industry researcher.

The Nevada plant also is the only one owned by a U.S. company that produces tantalum anode powder, a premium version of the material that allows capacitors to hold more electric charge in a smaller space—qualities increasingly sought by the U.S. military in their electronics, experts said. Kemet is the only company with operations in every segment of the tantalum supply chain: In addition to the powder plant, it's the second-largest supplier of tantalum capacitors to U.S. government contractors, according to Paumanok Publications. The company also has forged [partnerships](#) for mining tantalum in the Democratic Republic of the Congo.

The unique strategic value of the Nevada plant and the advantages of Kemet's vertically integrated tantalum business will probably raise red flags during the Committee on Foreign Investment in the United States' (CFIUS) national security review of the Yageo transaction, the experts said.

“The company has so much control over the global supply chain that it will be a challenge for Kemet to prove their case,” said an expert who requested anonymity due to dealings with CFIUS.

CFIUS will likely be reluctant for the New Taipei City-based Yageo to control the Kemet plant and the company's other valuable tantalum-related assets since the interagency panel views Taiwanese and Chinese companies as similar national security threats due to the growing [ties](#) between the two, the experts said.

CFIUS will, in particular, consider the potential risk of supply chain disruptions that would result from the acquisition, said Giovanna Cinelli, a former Naval Intelligence officer who's a CFIUS adviser at Morgan Lewis.

If disruptions did occur, DOD contractor customers of the Nevada plant likely would find few alternative tantalum powder suppliers with significant processing operations, the experts said. Further complicating matters, Boeing, United Technologies, Lockheed Martin and BAE Systems, the largest tantalum capacitor customers for defense and space applications, are restricted in their ability to switch suppliers due to their participation in the DOD's [Trusted Foundry Program](#) for safeguarding electronic component manufacturing from infiltration and sabotage.

CFIUS could insist on some continued U.S. control over the Kemet plant, some experts said.

“CFIUS might seek assurances that U.S. contracts will continue to be supported and perhaps that some production will remain in the United States,” said Damara Chambers, a partner at Vinson & Elkins who's co-leader of the firm's National Security and International Trade practice.

The committee could be concerned enough, however, to press Yageo to divest the plant, a move the company might resist because the plant's acquisition is one of the primary reasons behind the deal, some experts said.

Spokespeople for CFIUS, Yageo and Kemet didn't respond to requests for comment.

CFIUS accepted the companies' filing notification on January 23, spurring an initial 45-day review that's expected to end March 9. CFIUS has the option to extend its review an additional 45 days, and the companies could decide to pull and refile their notification, which merging parties have typically done in the past to give the committee more time. If needed, the investigation can add 15 days for a presidential review of the deal.

**Scarce supply options.** Through the 2012 [acquisition](#) of Niotan, Kemet became one of two companies operating tantalum powder processing plants in the U.S., according to Paumanok Publications. The other is a Boyertown, Pennsylvania-based plant owned and operated by Global Advanced Metals (GAM), a Kemet rival.

Kemet's biggest global competitor in the \$600 million market for engineered powders and wire is China's Ningxia Oriental Tantalum, which holds a 20% share, followed by GAM and Germany-based H.C. Starck, each with 17%, and Kazakhstan's NAC Kazatoprom with 10%, according to Paumanok Publications. Both GAM and H.C. Starck also have operations in Japan.

The companies extract tantalum from the mineral tantalite or recycle it from discarded electronics. The powder is then used to make capacitors that are more resistant to extreme temperatures and corrosion than ceramic, the other main material used to make the components. Capacitors, which

are ubiquitous in computers and other electronic devices, store electric charges, preventing memory loss on software applications during a power failure.

The Nevada plant's tantalum anode powder production makes it especially important to defense contractors, experts said.

"There are other plants that process powder for metallurgical-grade applications but no others [in the Western Hemisphere] that process for an anode," Paumanok Publications Founder and CEO Dennis Zogbi said.

Kemet competes globally with H.C. Starck and Ningxia Oriental Tantalum in producing tantalum anode powder, relying on a [patented](#) method of manufacturing at the Nevada plant.

Kemet plans to transfer that expertise south: The manufacturer in a recent Securities and Exchange Commission [filing](#) disclosed plans to move the Nevada plant's equipment to a company facility in Matamoros, Mexico.

CFIUS will likely be less concerned about the operation's relocation in Mexico than in how Yageo would handle Kemet's DOD contractor customers, Vinson & Elkins' Chambers said.

**Trusted Foundry Program.** Kemet doesn't publicly disclose all the DOD contractors among its customers, but it has supplied at least two of the biggest government contractors that use tantalum capacitors, Boeing and Lockheed, according to the Kemet [website](#) and a Lockheed regulatory [filing](#).

Those companies and other DOD contractors that are significant tantalum capacitor customers are part of the Trusted Foundry Program, which began in 2004 to secure the supply chain for computer chips used by the U.S. military.

Hacked chips can be difficult to detect or fix as adversaries remotely activate "backdoors" and "kill switches" built into the hardware during the design and manufacturing phases. A German missile battery at the Turkish-Syrian border was [reportedly](#) hacked in 2015 and performed "unexplained commands." A "foreign source" likely gained access to the system through a computer chip that guides the missiles, according to media reports.

In 2008, researchers at the University of Illinois at Urbana-Champaign [modified](#) logic on integrated circuits, which use capacitors, allowing a hacker to log in to a computer and launch virtually undetectable attacks.

To protect against such tampering, accredited Trusted Foundry Program suppliers must get security [clearances](#) for their facilities and employees, and ensure the components they're using haven't been tweaked for malevolent purposes. "If a Trusted device is needed, Trusted services are required at each part of the supply chain," according to a [presentation](#) by Defense Microelectronics Activity, the DOD unit that oversees the Trusted Foundry Program.

If CFIUS decides Yageo's control of Kemet's operations is a security vulnerability, it won't be easy for DOD contractors to switch to other suppliers of tantalum powder or tantalum anode powder because most of those companies are foreign.

**Supply chain concerns.** In addition to examining the strategic value of Kemet's Nevada plant on its own, CFIUS probably will look at the company's importance within the tantalum capacitor supply chain. Kemet boasts on its website about its vertically integrated tantalum business—from mining to capacitor manufacturing. In each segment of that supply chain, Kemet provides products and capabilities that are hard to duplicate, experts said.

The company produces with a patented process "multi-anode" tantalum capacitors that [store](#) more electric charge than rivals' components, making them the preferred choice for high-end and military electronics.

"Kemet can be considered unique in the high-reliability capacitor segment," said Tomas Zednicek, president and CEO of the European Passive Components Institute, an industry research group.

Only Kemet's rival Vishay supplies more types of tantalum capacitors to large defense contractors. Vishay meets all six military specifications for the capacitors and Kemet meets five while other competitors are only capable of including one or two in their products, Zogbi said.

Kemet [holds](#) a 33% share of the \$1.7 billion global tantalum capacitor sector. That market position and the company's 30% share in the engineered powder and wire market could prove problematic with CFIUS.

DOD, a CFIUS member, typically views a company that controls more than 20 percent of a supply chain as a concern because they have the power to disrupt the department's access to vital components and equipment during wartime, Morgan Lewis' Cinelli said.

Congress and the Trump Administration have become increasingly concerned about securing the tantalum supply chain. Legislation outlining DOD budget priorities for fiscal year 2020 added the metal to a list of materials considered critical to the nation's security that shouldn't be subject to

adversaries' disruptions. The law also prohibits the department from getting tantalum from Russia, China, Iran and North Korea.

A 2018 executive order issued by President Donald Trump lists tantalum among 35 minerals deemed critical to the national security and the economy. Fears about U.S. adversaries controlling the tantalum supply have even seeped into the popular culture, providing the plot for the second season of Amazon's "Tom Clancy's Jack Ryan."

**Potential mitigation.** CFIUS may impose measures to ensure that current relationships between Kemet and its suppliers remain unchanged, according to experts. Kemet could be required to provide supply guarantees to its DOD contractor customers and appoint an independent trustee who's a U.S. citizen to oversee information access and ensure that defense-related components and patents aren't transferred abroad without authorization, they said. If these remedies don't alleviate concerns, the committee could require the plant's divestiture, according to the experts.

But Yageo probably won't part with the Carson City facility without a fight. The plant's value is apparent in the [terms](#) Kemet agreed to when purchasing Niotan. Kemet said it would pay \$30 million initially when the transaction closed and additional deferred payments of \$45 million in the following 30 months. Kemet also was required to make quarterly royalty payments totaling \$10 million for tantalum powder that Niotan produced for more than two years after the deal's closing.

Now Kemet's position in tantalum-related markets is so significant that the Yageo transaction, if unaltered, could unintentionally expose DOD to supply chain risks, experts said. "Even if people are having a good intention of not wanting to disrupt the supply chain, there are circumstances that fall outside of people's control," Cinelli said.