

## Success Story



## NETL Issues Licenses for its Arc Position Sensing Technology

The U.S. Department of Energy's National Energy Technology Laboratory (NETL) has issued two licenses involving its Arc Position Sensing (APS) technology to KW Associates LLC, an Oregon-based company founded by the technology's inventors. APS technology is a patented, award-winning measurement technology developed for the specialty metals industry to identify arc distribution conditions during arc melting. The unique technology allows operators to optimize the processing to improve material yield, decrease energy use, and improve safety systems.

Specialty metals, such as titanium or zirconium, that are used in aerospace, airline, and other advanced applications often undergo a metallurgical casting process called vacuum arc remelting (VAR) to refine an alloy's chemical and physical homogeneity. During the process, electrical power heats a consumable electrode by means of an electric arc—a luminous electrical discharge like a lightning strike—and the melting material drops into a water-cooled copper crucible. Poor processing can lead to defects in the resulting ingot; the defects, in turn, can cause failure in engineering applications, so manufacturers must perform extensive testing on all ingots.

NETL's APS technology is a first-of-its-kind technology that can digitally monitor arc locations during VAR. Knowing where the arcs are helps the engineer control them and the melting process to produce consistently defect-free materials. Ultimately, the technology is expected to increase a manufacturer's yield and decrease the energy required to manufacture high-quality alloys.

One license issued to KW Associates is exclusively for application to three fields of use: steel, specialty steel and alloy processing, and industrial microwave processing. The second, non-exclusive license is

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for application to solid state energy systems and other high-temperature industrial processes. With these two licenses, KW Associates plans on building, testing, and selling APS systems.

KW Associates was founded in 2014 specifically to bring NETL's APS technology to market. NETL's Dr. Rigel Woodside, who helped develop the technology, is working with KW Associates to refine the technology for deployment on industrial-scale furnaces.

APS technology earned an R&D 100 Award from R&D Magazine in 2013 as one of the top 100 innovations of that year. The technology also won an award from the Federal Laboratory Consortium's Far West Region for Outstanding Technology Development, and it was featured in an in the December 2011/January 2012 issue of Innovation Magazine.



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