



MATERION

CASE STUDY



SUPPLYING LASOS GmbH WITH CERAMICS AND A HIGH- QUALITY EDGE OVER THE COMPETITION

In the midst of industry consolidation and contraction, end-product quality can differentiate a company from its competition. LASOS Lasertechnik GmbH, based in Jena, Germany, is one of a limited number of argon laser manufacturers experiencing growth in a maturing and consolidating industry that has seen other manufacturers shutter operations or close their facilities. One of the last worldwide suppliers of argon lasers, LASOS has always focused on quality, and to meet their high-quality standards, the company uses beryllium oxide ceramics in their lasers and components.

LASOS manufactures solid state and argon gas lasers in the UV-visible spectrum, with a special focus on OEM applications in biophotonics, Raman-spectroscopy and holography. Producing a high quality end product depends on using high quality materials, said Steven Büchner, a purchaser for the company. Chief among those inputs is Thermalox® 995 beryllium oxide (BeO).

“ALONG THE WAY WE’VE CONSIDERED DIFFERENT MATERIALS OTHER THAN BERYLLIUM OXIDE,” BÜCHNER SAID. “BUT NONE OF THE OTHER MATERIALS TESTED RETURNED THE RESULTS WE NEEDED. ONLY BERYLLIUM OXIDE DELIVERED THE TECHNOLOGICAL CAPABILITIES WE WERE LOOKING FOR.”

Unique thermal and electrical properties make beryllium oxide (BeO) ceramics, or beryllia, the material of choice for a wide range of photonics and laser applications. Materion offers a range of BeO ceramics from the standard 285 W/m•K for lasers up to the higher thermal conductivity of 325 W/m•K.

BeO ceramic is the best electrically insulative, isotropic thermal conductor, next to diamond. Structural beryllia components can typically be found in lasers with the most demanding applications, such as medical devices for DNA analyses where the highest beam quality or output power are required. Beryllia substrates are also employed in laser diode submounts due to the beneficial thermal conductivity that BeO provides.



BeO ceramics have also traditionally been employed in laser bores, which are the main component of a gas laser, as well as a waveguide in CO₂ lasers, which are used for industrial marking of items such as integrated circuits and PC boards. For new photonics applications, we are also developing E-materials, which are electronic-grade beryllium and BeO metal matrix components, which can now be found in laser diode bars and as heat sinks in CCD cameras. The thermal conductivity and lightweight of these metal matrix composites provide an edge over traditional materials such as aluminum silicon carbide (AlSiC).

When LASOS entered the market more than 20 years ago, it turned to Materion to supply the structural beryllia it needed for its lasers.



Like LASOS, Büchner said Materion quality could not be matched. "Materials from (Materion's) competitors couldn't, and don't, meet our requirements," Büchner said. "Everything else we tested in the past failed."



BeO Ceramic Laser Bores

Because LASOS is now known for its high quality lasers, Büchner said it's well positioned to thrive while its competitors are consolidating. In fact, Büchner said, LASOS is expecting continual, steady sales increases over the next decade or more, all while further consolidation roils the industry. Additionally for BeO ceramics, Materion offers automated molybdenum metallizing and nickel-plating processes and to minimize variation, we use state-of-the-art thickness measuring instruments. We will recycle BeO ceramics and laser bores returned to us at no cost.

To learn how Materion can help your company focus on quality and stand out among its competitors, work with our ceramics engineers at www.materion.com/Businesses/Ceramics/About/Contact-Us.