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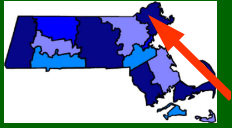
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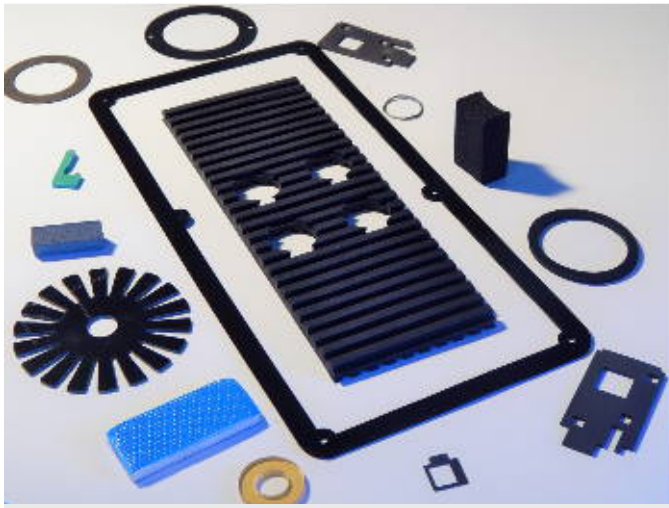


CR TECHNOLOGY, INC.

Lawrence, MA

Story written and submitted by CRT

CR Technology was founded in 1981 after a joint venture with Aavid Engineering (now Aavid Thermalloy) located in Laconia, NH. Through a combined engineering development effort a much sought after new product emerged for mitigating heat in electronics using thermal interface pad technology. Integrating a highly flexible graphite material called Grafoil, CRT became the sole manufacturer of these thermal interface pads for use in T-03 and T-05 transistor production during the 1980s.



CRT assortment of custom fabricated components covering a wide range of applications.

Expansion and Growth

The family business soon grew from a one press operation into a full service fabrication center processing hundreds of different types of materials for electronics, medical, defense, communications, renewable energy and aerospace industries. “In spite of our vast product diversity, CR Technology’s focus remains on supplying solution based cutting edge technical and engineering materials” says second generation owner Gerald Kiley. “We have definitely evolved from our early days but our reputation of having expertise in thermal management materials is still at the core of the business” Kiley adds.

As CR Technology began to expand as a company, much of the growth was attributed to a customer driven focus. “Many companies promise to provide fast turnaround” says Scott Richards VP Sales & Marketing “but CR Technology truly meets this commitment. In fact, we ship 80% of our orders within 3 days after the purchase order is received if the material is in stock and in many cases it is. This also applies to orders where we need to produce tooling. In situations where stock is



CRT’s custom built press allows for seamless two stage cutting and assembly of a product used in the medical industry.

not readily available, we will normally ship one day after receipt of material” adds Richards.

Heat and Noise in Electronic Devices

The natural progression from solving heat related problems in electronic devices transitioned into Electro Magnetic Interference and Radio Frequency Interference, or EMI and RFI materials. “Having the ability to overcome heat related obstacles and the ever growing problem with RF components, there was a natural fit for us to evolve into this area. Engineers who were looking for materials to assist in cooling their devices started experiencing a multitude of challenges with the rapid increase of operating frequencies” says Kiley. Advances in the miniaturization of electronic components has intensified the need for manufacturers to solve multiple problems simultaneously and earlier in the design process. Addressing these issues quickly and early in the design phase of a project will reduce time, expense and help accelerate the product to market.

In sophisticated electronic packages today, it is routine for many consumer devices to accommodate wireless, video, audio, and storage capabilities into tightly confined spaces. However, as more components are packed onto boards to produce the advanced functionality expected by tech savvy users, substantial heat and EMI are being created in these slim confined compartments with little room for a quick fix. Hence,

Continued on page 7



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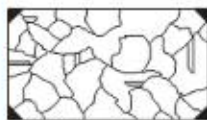
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RF and thermal engineers are challenged to diagnose and resolve the common causes of EMI and heat found in today's newer, smaller, faster, wireless, and highly productive devices. Each application brings with it a different set of challenges.

A Combined Solution

Soon CR Technology began supplying and fabricating electrically-conductive silicone elastomers and coated foams. These materials provide shielding against electromagnetic interference (EMI) and radio frequency interference (RFI). Many of them particle-filled silicones which conform to the MIL-DTL-83528C specification for military applications. They also supply commercial-grade materials which are used for medical electronics, satellite communications,

automotive, aerospace, and other electronic applications that require EMI and RFI suppression. "EMI shielding simply separates internal electronics from outside sources to keep EMI energy out (susceptibility) or contain EMI noise within (emissions)" explains Richards. "Ideally, enclosures would be a solid metal box, however, once openings or apertures become necessary for cables, connectors, LED, cooling, etc., these devices radiate like antennas" adds Richards. Shielding cans, EMI tape, conductive gaskets and coatings are all very common methods of treating EMI that may not completely solve the problem. "EMI absorbing materials are used in conjunction with shielding to suppress undesired noise. EMI absorbers can also be used to eliminate emissions on lids, enclosures, chips, cables and connectors.



45 ton Tarp press containing a multi position die providing high speed efficiency and low cost. CRT cutting PVC for an electronics packaging application.



High speed kiss cut tape allows for easy product assembly. Cutting tape, adhesives and pads are one of CRT's specialties.

Continued on page 9



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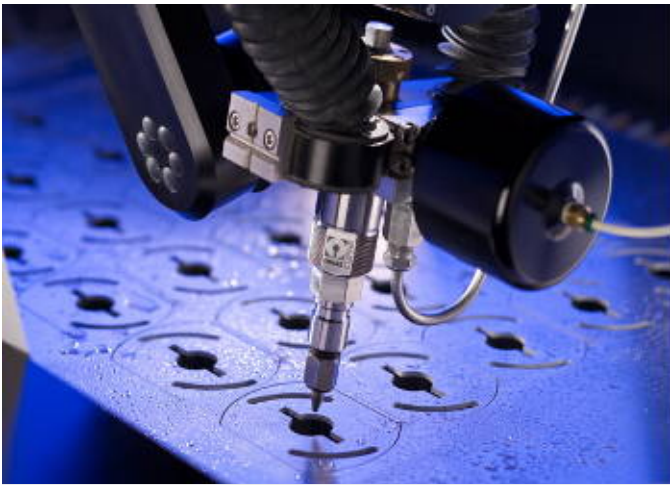
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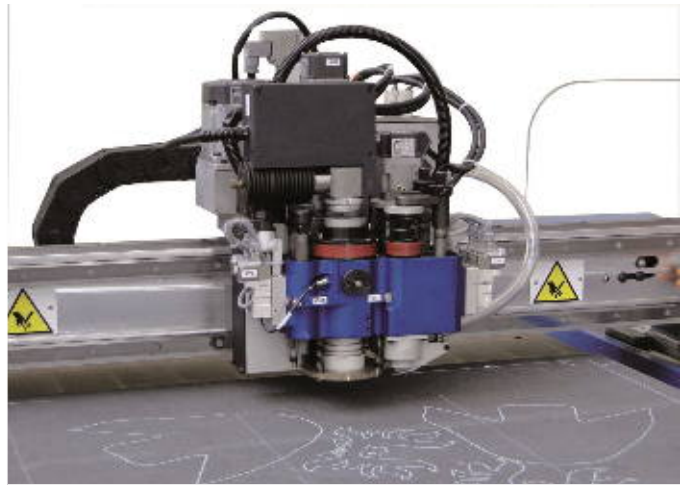
CRT's multi axis waterjet (A Jet) offers cutting for most applications with water only and abrasive capacity. It features a 55" x 55" cutting surface and can hold a tolerance of +/- 0.003".

Instead of re-directing the energy by shielding it, you are actually absorbing it through the use of a non-conductive EMI absorber” says Richards.

Complete Material Fabrication Center

Today, CR Technology is a full service fabrication center, offering a wide range of skills equipment and capabilities and providing unlimited in house capabilities for cutting Rubber, Plastic, Foam, Sponge, Tape and Film, along with many other materials. They offer engineering services and provide rapid prototyping, short run, or high volume production. “We also supply many custom manufactured components like gaskets, seals, insulators, washers, spacers, pads, vibration and custom shapes” says Kiley. CRT supports customers in electronics, defense, medical, communications, contract manufacturing, aerospace, industrial and renewable energy industries. They have the ability to work with manufacturers to provide not just cut components, but parts that can be easily installed through use of tabbing and proper adhesive placement. This ability helps streamline their customers’ production once parts hit the manufacturing floor.

Among the capabilities for fabricating materials CR Technology provides Die Cutting, Waterjet, Laser, Die-Less Knife Cutting, Slitting, Tooling, Assembly, Rapid Prototyping, Engineering Services. Richards notes, “We have many options available to eliminate the need for tooling during the engineering, development and short run phase. This allows our customers to test and evaluate both material and mechanical integrity with a limited up- front investment.”



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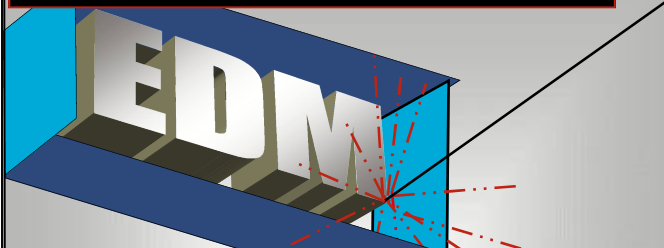


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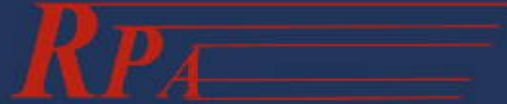
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PRESS RELEASE

New CNC Grinder Gives Customers Top Results

Berlin, CT, January 8, 2016 – A new CNC Surface Grinder was recently installed and is running in Sirois Tool’s custom tooling and gage department. The Amada MS-V3 grinds steel and carbide parts with greater accuracy and efficiency, saving time while eliminating further finishing operations. The top-performing Amada utilizes a wheel library as well as “macro” programming for ease of operation. Amada’s top applications engineer conducted all the employee training and setup for the new grinder, ensuring quick and dependable turnaround time for customer orders.

Sirois Tool manufactures precision tooling, jigs, fixtures, machine parts, and custom gages as well as complex, precision parts and assemblies. State-of-the art equipment is a key component to consistent and high quality results in precision tooling and gages. Their newest equipment technology includes holding closer tolerances, programming for more complex parts, and grinding for small quantity parts and parts with multiple steps. These upgrades and additions continue to enhance their custom tooling and gage capabilities, giving their customers the most advanced operations available. For a complete list of their equipment and capabilities, please go to siroistool.com or give them a call at (860) 828-5327 for a quote on your project.



Other Sirois Tool companies include Dow Gage, manufacturer of a line of Dow-Gages for in-process and post-process inspection of precision-machined parts and North American Spring Tool, a world leader in tooling for the spring and wire industry.

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PRESS RELEASE

iAlert 2 Constant Monitoring

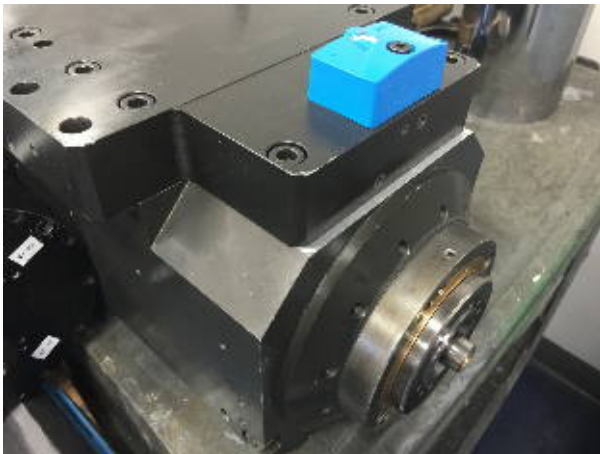
New from GTI is a new add-on to your spindle repair that provides constant monitoring with a simple status update to your iPhone or iPad via Bluetooth.

Why Use iAlert 2?

Technicians can at a glance see on the three color LEDs if a spindle is in need of repair or log into the app in order to re-certify after a crash and detect unbalanced/bad tooling. This allows for scheduled repair, rather than unexpected downtime. The iAlert 2 paired with GTI's iPad Vibration Analyzer will ensure your facility runs at maximum efficiency with as little unexpected downtime as possible.

Features:

- Built-In Battery: Lasts 4 to 5 Years
 - Smart Auto-Configuring Sensor: No Setup Required
 - Built-in LED for Instant Machine Health Indication
 - Vibration and Temperature Data Captured
- Automated Reports from iPad or iPhone



Learn more about this groundbreaking sensor by **downloading** this full spec sheet.

Note: iAlert 2 not suitable for spindles running higher than 10,000 RPM, see GTIDiagnostics product line to monitor these spindles.

iAlert 2s can be added to any spindle repair for only \$350. You can visit us on the web at www.gtispindle.com and contact us with any questions you have at info@gtispindle.com!



HISTORY OF METALLURGY

Bodycote Looks Back At The History Of Metallurgy

Interactive Infographic Charts 10,000 Years of History **Bodycote, the world's largest thermal processing services provider**, announces the launch of their Interactive History of Metallurgy after taking a look back at the long history of metal processing and heat treatment.



Containing over 200 high quality images and numerous videos, Bodycote pays homage to the artisans from thousands of years ago along with the scientists and inventors of more modern metallurgy and engineering by charting important and fascinating discoveries.

Starting in 8700BC with the world's oldest known copper artifacts, all the way through to the modern processes that Bodycote undertakes daily, the resource charts the development of metal working from the mystical and utilitarian requirements of early mankind through to the scientific and technical breakthroughs of the 20th century. Bodycote, the leader in an industry that dates back thousands of years, developed the interactive resource to explore the evolution of metallurgy and heat treating and to acknowledge the collective work of scientists and engineers whose hard work and discoveries have enhanced the properties of metals and alloys making them better suited to deliver safer, more durable results in an expanding field of applications.

You can visit the Interactive History of Metallurgy at:
<http://www.bodycote.com/history-of-metal>

About Bodycote

With more than 180 accredited facilities in 24 countries, Bodycote is the world's largest provider of thermal processing services. Through heat treatment, metal joining, surface technology and Hot Isostatic Pressing (HIP), Bodycote improves the properties of metals and alloys, extending the life of vital components for a wide range of industries, including aerospace, defense, automotive, power generation, oil & gas, construction, medical and transportation. Customers in all of these industries have entrusted their products to Bodycote's care for more than 30 years. For more information, visit www.bodycote.com

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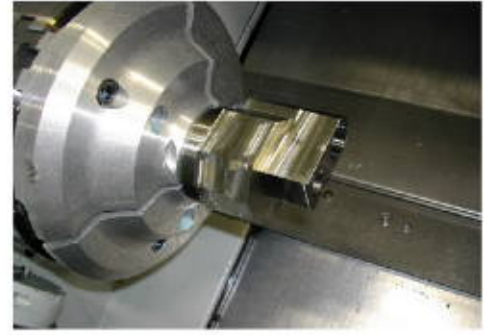
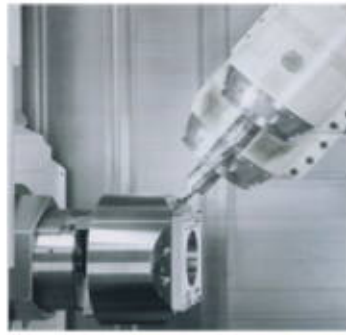


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Burma Shave

And walk to town

You'd better park

And bounce around

If these signs blur

This road sign posted in 1945