

BOYD

CORPORATION

WWW.BOYDCORP.COM

AEROSPACE & DEFENSE

A decorative graphic consisting of several hexagons of varying sizes. The hexagons on the left are orange with a horizontal gradient, while the ones on the right are blue with a horizontal gradient. They are arranged in a cluster, with some overlapping.

One Company, Many Solutions

Precision Converting Solutions

Boyd is an innovative precision converter with extensive experience in the Global Defense and Aerospace Industry ranging from ruggedized communication systems, and defense vehicles to aerostructure and in-flight entertainment system components for commercial aircraft.

We turn concepts into components. From design to manufacturing to packaging and logistics, Boyd provides full-service solutions that transform your innovative ideas into reality.



SOLIMIDE®

Our flagship aerospace product, SOLIMIDE® Foams, is a high-performance polyimide foam exceeding FAR 25.856, open-cell in structure that is widely used in aircraft, spacecraft, railcars, marine vessels and other applications.

Properties:

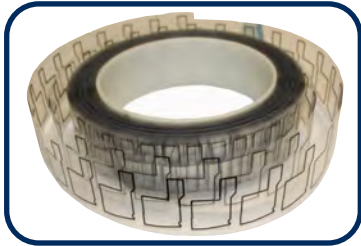
- Lightweight
- Superior fire resistance
- Virtually no smoke or toxic gas production
- Outstanding thermal & acoustic insulation
- Environmentally friendly
- Proven durability & easy installation
- Wide operating temperature range
- Dimensional stability across full temperature range

Advanced Rotary Production

Our advanced rotary die cut converting core competencies have become a form of industrial artwork with ultra-tight tolerances (zero-gap tolerances), superb clean room manufacturing environments and innovative raw material combinations that are critical to the high design and manufacturing demands of advanced product applications.

Applications:

- Fire Resistant Insulation
- Cargo Bay Insulation Panels & Duct System Insulation
- Bonding & Adhesive Systems
- Surface Protection
- O-Rings
- Environmental Gaskets & Sealing
- System Information Labels
- EMI/RFI Shielding & Absorbers
- Display Components
- Electric Conduction/ ESD
- Optically Clear Adhesives
- Acoustic & Vibration Damping
- Venting & Air Filtration
- Window Dust Covering
- Passive Air Cooling Solutions



Aerospace Thermal Solutions

Boyd Corporation provides solutions and services, utilizing both traditional cooling solutions and breakthrough technologies ranging from standard heat sinks to fully custom two phase or liquid systems.

Boyd meets the challenge of thermal control for applications involving increased power, extreme heat loads and tighter space constraints.

Products

- Liquid Cold Plates
- Heat Exchangers
- Liquid Cooling Systems
- Chassis & Enclosures
- Heat Pipe Assemblies
- Heat Sinks
- Heat Spreaders
- Thermal Straps
- Vapor Chambers
- Loop Heat Pipe Assemblies

Applications

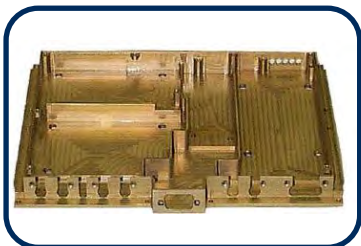
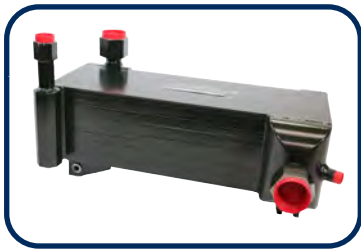
- Antennas & Communications
- Lasers Systems
- Avionics & Guidance systems
- Electronic Enclosures & Vetronics
- Electronic Jamming Equipment
- Embedded Computing
- Hypersonic Leading Edges
- Image Processing
- Satellite Thermal Control

Mission-Critical Thermal Performance

Boyd puts an arsenal of leading edge technologies at your disposal: CTE-matched solutions, nanoscale components and k-Core[®] encapsulated annealed pyrolytic graphite (APG). All of our thermal technology provide reliable, high-efficiency and low-maintenance heat transfer that lets designers overcome a spectrum of challenges and deliver mission-critical performance.

Future Developments

Air-cooled heat sink technology is the most efficient, cost-effective and lightweight thermal management solution, but increasing power and heat generation created by today's advanced microprocessors are threatening to make air-cooled technology obsolete. Boyd's work as Prime Contractor on the Micro-technologies for Air-Cooled Exchangers (MACE) project for Defense Advanced Research Projects Agency (DARPA) promises to extend the useful life of air-cooled military heat sink systems.





Providing Solutions To Complex Problems

Boyd's fully integrated precision converting and thermal management capabilities are from multi-faceted facilities in the US, Asia, and Europe, providing competitive solutions for a wide range of Aerospace applications. Boyd offers total solutions with deep material selection expertise, innovative manufacturing technologies and easy-to-integrate production parts with tight tolerances. Converting and fabrication capabilities include rotary and flatbed precision converting, laser and water jet for quick turn prototyping, laminating, slitting, 3D modeling, CNC machining, brazing, welding and other fabrication techniques. Boyd can assist in selecting the most cost-effective material solutions while supporting the design of your solutions within the most comprehensive manufacturing and assembly operations in the industry. The result is a reliable, consistent production execution at the highest quality.

Quality & Processing

Boyd Corporation helps you exceed industry standards, regulations and environmental protection goals while maximizing long-term performance and reliability. We put quality first. Our design & production facilities have extensive knowledge of OEM, regulatory, third party and MRO specifications. Multiple facilities are FAA registered and certified to AS9100 quality and ISO14001 environmental specifications for safety and contingency planning.

Cleanroom Manufacturing

Boyd converts a wide range of electronic and sensitive components that require little to no contamination, dust or foreign particulates. To exceed application cleanliness requirements and functionality, Boyd maintains dedicated prototyping and production technologies in a clean room environment. At Boyd, we have the expertise, technology and environmental processes to meet these needs with clean room environments certified from Class 100 to Class 100K.

Global Capacity

With production facilities strategically located around the world, Boyd is uniquely positioned to support your needs. No matter where you are designing or building products around the world, we are there to support with design assistance, converting and metal fabrication, immediate customer service, local warehousing, and just-in-time delivery and logistics services efficiently and in close proximity to your R&D and production locations.

Boyd Aerospace & Defense Facilities

With over 90 years of customer-focused performance, Boyd has evolved as a market leader in environmental sealing and thermal management solutions critical to products that keep the world running.

Boyd in North America

With strategically located facilities throughout North America certified to AS9100D, Boyd Corporation provides design assistance, quick-turn prototyping, customer service, processing, manufacturing and just-in-time delivery. **Boyd California** specializes in precision converting materials under AS9100 quality management systems for aerospace and defense applications. For over three decades, **Boyd Oregon** has served the aerospace and defense industry with specialization in converting SOLIMIDE® Foams for thermal management solutions and offers a variety of value-added custom designs. **Boyd Pennsylvania** specializes in the custom



design, development, and manufacturing of highly engineered thermal management systems and components such as heat pipe/vapor chamber assemblies, loop heat pipe assemblies, K-Core APG based advanced solid conduction assemblies and active pumped liquid thermal management systems for a variety of OEM applications. **Boyd New Hampshire** designs and manufactures custom thermal management solutions for the aerospace and defense markets. This facility has in-house anodizing, Type 1 and Type 2 chromate compliant to Mil-specs to meet most of your surface finish needs.

Boyd New York has extensive experience in custom heat transfer product engineering and manufacturing. This facility specializes in heat transfer products including bar-and-plate heat exchangers, vacuum brazed liquid cold plates, heat transfer fins, as well as being an industry leader in vacuum brazing with a vast capacity to braze various materials including aluminum, stainless steel and Inconel. **Boyd Arkansas** is home to the highly differentiated SOLIMIDE® Foam.

Boyd in Asia

Boyd Corporation has multiple facilities operating throughout the Asia-Pacific region. These facilities provide customers as well as global original equipment manufacturers' research & development and production facilities, quick-turn prototyping, design assistance, precision converting and customer service.



Boyd in Europe



Boyd UK develops and manufactures thermal solutions for electronics, specializing in custom designed assemblies. Leveraging liquid cooling, graphite technology and heat pipe technology. Boyd UK has been supplying the likes of: successful Formula One teams, electric and hybrid vehicle cooling, Airborne RADAR developers, mass spectrometry applications and satellite systems for over 20 years.

Boyd Italy provides thermal solutions to a variety of industries including aerospace and defense, commercial aerospace, automotive, rail and power generation. Using state of the art CNC equipment, brazing Technology, and various other metal fabrication processes, Boyd Italy provides standard or custom extrusions and heat sinks, liquid cold plates, heat pipe assemblies, thermal clips including Max Clips, and liquid cooling systems. Additionally, we offer bespoke assembly services including thermal interface materials, fans, etc.