

BOYD

CORPORATION

WWW.BOYDCORP.COM

5G INFRASTRUCTURE SOLUTIONS



One Company, Many Solutions

5G Converting Solutions

Boyd is an innovative precision converter with extensive experience in network convergence and cloud computing solutions ranging from advanced thermal management technologies to environmental sealing. Technologies include modified aluminum die cast enclosures, vapor chamber and heat sink assemblies, UL94 approved electrical insulation, IP Seals, and EMI/RFI shielding and absorption.

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



Environmental Sealing for Signal Integrity

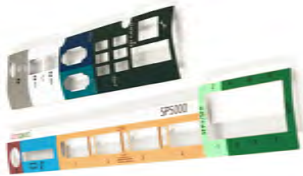
Maintaining a reliable seal is critical to 5G network components like RRU's and outdoor base stations that consistently operate in harsh environments. Boyd's protection and sealing solutions guard against dust, water, EMI and other contaminants, offering cost effective high performance products such as custom molded gaskets, cabinet door seals and O-rings for long term reliability in the harshest environments.

EMI & RFI Shielding

To minimize internal electrical interference and crosstalk, EMI shielding or EMI/RFI absorbers protect signal clarity from electromagnetic waves. EMI & RFI alter existing currents and disrupt the operation of 5G transmitters and receivers. Boyd's LectroShield fabric-over-foam, conductive foam, elastomers, adhesives, and metal foils are designed to manage interference, and improve reliability and efficiency for infrastructure performance. Boyd also produces graphic overlays on electrically isolated materials that combine both electrical protection, branding, and service instructions

Sealing & Protection Solutions

- Back Panel Overlays
- Cabinet Door Seals
- Cabinet Door Shielding
- Cable Management
- Dust Filtration
- EMI Shielding – Fabric Over Foam
- Enclosures & Chassis
- Grilles & Finger Guards
- HDD Arm Dampers
- HDD Labels
- Air Intake Filtration Frames
- LED Crosstalk Management
- Liquid Cold Plate O-Rings
- Liquid System Hoses
- Noise Dampers
- UL94 Approved Electrical Insulation
- Vibration Control & Absorption
- Water Ingress Seals



5G Thermal Solutions

Boyd Corporation designs and manufactures thermal solutions to support higher power loads in fully integrated systems. Extend the efficiency and lifetime of sensitive and difficult to install units in the field with comprehensive solutions.

Boyd meets challenging environmental requirements utilizing advanced technologies including vapor chambers, heat pipes, thermosiphons, and custom sheet metal and enclosures.



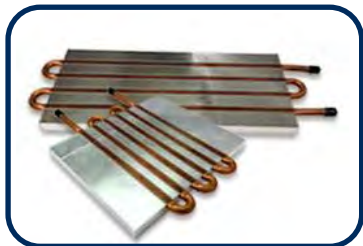
Applications

- Base Stations
- Data Center & High Performance Computing
- Edge Routing & Computing Systems
- Network Convergence
- Optical Module Cooling (QSFP's)
- RRU's
- Transmit Receive Units



Technologies

- Advanced Heat Sink Assemblies
- Air Cooled Systems
- Aluminum Die Casting
- BGA Assemblies
- Fans & Blowers
- Heat Pipes
- Liquid Cold Plates
- Liquid Cooling Systems
- Thermal Interface Material
- Thermosiphons
- Ultra-Thin Vapor Chambers
- Vapor Chambers

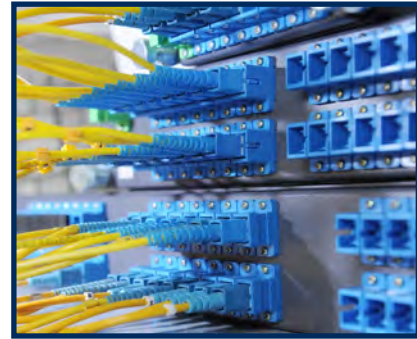


Embedded Heat Pipes & Vapor Chambers

Heat pipe assemblies and vapor chambers offer design flexibility and provide uniform heat spreading throughout the base of a heat sink. Ultra-thin vapor chambers provide a high level of planar thermal conductivity in ultra-low profile volumes. Boyd's integrated two phase solutions increase performance while reducing overall solution size.

Thermosiphons

Boyd's innovative and highly engineered thermosiphon systems enable optimized cooling that is leak-free and highly reliable for high density heat loads. Boyd thermosiphons are manufactured for compact heat transfer and are available in a wide variety of fabrications.



5G Materials & Cooling You Can Count On

Boyd's fully integrated precision converting and thermal management capabilities are from multi-faceted facilities in the US, Europe, and Asia providing competitive solutions for virtually any 5G infrastructure component. **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, 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 reliable, consistent production execution at the highest quality.

Cost Savings Solutions

Boyd's standard thermal product line and custom designed solutions are built for sustainability and longevity to drastically reduce cooling costs over the product's life cycle. Consolidate with Boyd's sealing and protection solutions, your 5G Infrastructure components are designed to withstand the harshest environments with a simplified supply chain at an overall lower total landed cost.

Designing for Next Generation Networks

Boyd Research & Development teams consistently develop new and optimized technologies for improved performance through a technology road map intended to anticipate your future design needs. Our dynamic and nimble supply channels provide access to the world's broadest raw material portfolio. Together, this uniquely positions Boyd to bring better solutions to market faster.

System Upgrades and Retrofits

Boyd's design flexibility and breadth of solutions allow our engineering teams to develop cost efficient system upgrades and retrofits to contemporize and optimize cooling performance. These upgrades and retrofits can help you adapt to the needs of 5G systems without incurring excessive full redesign costs or requiring additional volumes.

Global Presence



Corporate Headquarters

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Boyd Corporation's facilities customize, build and ship products specified to the 5G Industry, this includes Shenzhen and Shanghai, China, Chonuri, Thailand, and New Hampshire, USA. These locations serve Asia-Pacific customers as well as Global OEMs with quick-turn prototyping, design assistance, mass production & customer services for precision converted & thermal management solutions.

Shenzhen • Shanghai • New Hampshire • Thailand

Boyd America

Boyd Corporation's North American facilities include dedicated centers for design and quick-turn prototyping as well as volume manufacturing. These facilities support key industries such as Medical, Consumer Electronics, Aerospace & Defense, Enterprise, Telecommunications, and Transportation through precision converting and the manufacture of thermal solutions.

Arkansas • California • Connecticut • Georgia • Indiana • Michigan • New Hampshire
New York • Oregon • Pennsylvania • Santa Barbara • South Carolina Tennessee • Wisconsin

Boyd Europe

Our engineers have acquired decades of research and develop to provide our European customer base with the higher quality custom technologies. Boyd excels in rapid prototyping and regional design services deployed for global mass production. We offer sophisticated order management that caters to your custom EDI or supply portal needs with just-in-time stocking and delivery support. Boyd delivers high touch customer service in a global environment, optimized for your complex value chains.

Italy • Germany • United Kingdom

Boyd Asia

Boyd operations spread across Asia offering each corner of the world with our sealing, thermal, and protection solutions. Our facilities provide Asia-Pacific customer as well as Global OEMs', R&D and production facilities quick-turn prototyping, design assistance, precision converting & customer service. In this region we serve industries including Mobile Electronics, Enterprise, Consumer and Industrial.

Bangalore • Vadodara • Shanghai • Wuxi • Shenzhen • BacNinh • Chonburi • Gumi • Taipei