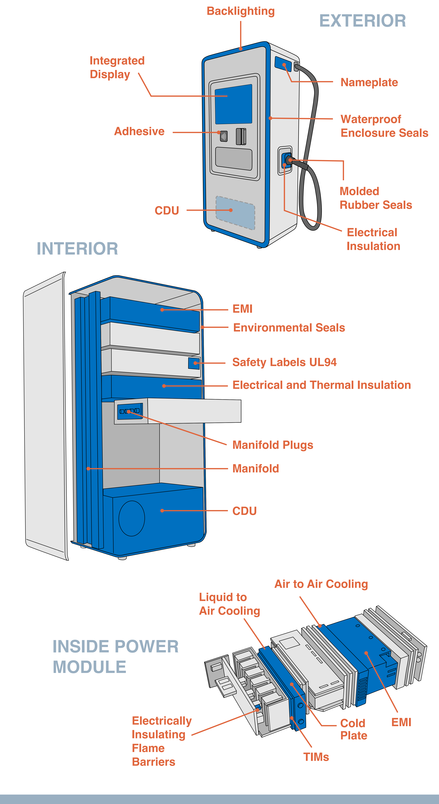
Selecting materials for **EV charging stations**

Boyd helps the world's largest EV manufacturers improve the performance, quality, safety, and durability of their charging systems. Achieving optimal results starts with using optimal materials. Using our material science expertise, Boyd helps guide materials selection for manufacturers creating the next generation of EV charging systems.

EV Charging Station



Insulation and Shielding

Protecting EV chargers from electromagnetic interference (EMI), radio frequency interference (RFI), and harsh environmental conditions like temperature extremes, weather, and ultraviolet (UV) damage is important to achieve optimal performance. Common EMI shielding materials we work with include foil tapes, fabric over foam, and conductive tapes, foams, and elastomers. Thermal and electrical insulators like SOLIMIDE®, polyimide, polycarbonate, and polypropylene UL 94 rated insulating films, mica, and other materials help maintain ideal thermal operating range in temperature extremes and provide flame and spark voltage protection.

Solutions we offer:

- EMI/RFI shielding foams
- Electrical insulators and isolators
- Thermal insulators
- Thermal interface materials
- SOLIMIDE® insulating foam
- NVH dampers

Bonding, Sealing, and Protection

Durable gaskets and environmental seals are critical for ingress protection, particularly for outdoor charging stations. Boyd has developed sealing and gasketing solutions using silicone foams, closed cell silicone sponge, polyurethane foam, EVA, vinyl, neoprene, and thermoplastics. We work with flexible adhesives such as 3M VHB tape, double-coated tapes, transfer tapes, and other materials to efficiently and durably assemble ingress seals into charging stations.

Solutions we offer:

- Extruded rubber seals and gaskets
- Port seals
- Custom molded O-rings
- Custom bonding tapes and adhesives
- Airflow management
- Dust and fluid ingress protection
- Injection molded bezel and housing

Display and HMIs

Enhance displays with optically clear adhesives, polarizers, anti-glare films, and 3M specialty materials like light control films, brightness enhancing films, reflective films, and light diffusing films designed, optimized, and fabricated by Boyd for your charging station. We use carbon, silver, or light transmissive inks to make capacitive switches, and offer durable nameplates and branding solutions in a range of plastics and metals including aluminum, stainless steel, acrylic, polyester, and polycarbonate.

Solutions we offer:

- Display bonding and integration
- Display enhancement films
- Switch technologies
- User-safety labels
- Nameplates and branding solutions

Air and Conduction Cooling

Our in-depth knowledge of air cooling technologies and air flow management combined with design and manufacturing expertise allow us to enhance heat sink technologies from basic aluminum extrusions to complicated zipper fin or die cast geometries. Heat sinks are typically made of copper, aluminum, or a combination of materials, depending on project requirements.

Solutions we offer:

- Heat sinks
- Graphite heat spreaders

Two-Phase and Liquid Cooling

Advanced cooling technologies dissipate heat and prevent thermal runaway without adding significant weight or size. We use a range of thermal interface materials and advanced two-phase cooling technologies to enhance liquid cooling systems for increased power density and improved performance. Liquid cold plates often feature copper or stainless-steel tubing, aluminum plates, and we use thermal epoxies at the joints to create a gap-free thermal interface.

Solutions we offer:

- Thermosiphons
- Liquid cold plates
- Liquid cooled chassis
- Heat exchangers
- Coolant Distribution Unit (CDU)
- Chillers

3M Preferred Converter Preferred

BOYD

Boyd engineers have the expertise to help guide materials selection to optimize EV charger performance.

Contact us to start your next project today.

www.boydcorp.com