Selecting materials for EV charging stations

**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.

Boyd engineers have the expertise to help guide materials selection to optimize EV charger performance. Contact us to start your next project today.

**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.

**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.

**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.

**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.

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