

# Powering the Future of EV Batteries

## Advanced Static Control & Contamination Solutions for Battery Manufacturing & Energy Storage Systems

As global EV adoption accelerates, battery manufacturers face mounting pressure to optimize efficiency, uphold safety, and ensure longevity across production lines. In high-speed, particle-sensitive environments like roll-to-roll coating, electrode slitting, and cell assembly, static charge and contamination are critical threats to yield, performance, and operator safety. Simco-Ion, Technology Group delivers the industry's most comprehensive suite of static control and surface cleanliness solutions—trusted by leading clean energy, semiconductor, and electronics manufacturers to drive production quality and reduce risk.

### Key Challenges in EV Battery Manufacturing

As EV battery production scales, manufacturers must navigate an increasingly complex environment where static charges and microscopic contaminants jeopardize product quality, safety, and operational efficiency. From material handling disruptions to safety-critical ESD events, uncontrolled static and particle contamination can undermine yield, damage components, and shorten battery life, making proactive control essential across every production stage.

- **Efficiency:** Static-induced particle attraction slows throughput and increases defects.
- **Safety:** ESD events and internal shorts from charged particles can lead to shocks and trigger thermal runaway.
- **Longevity:** Particle-driven defects degrade cycle life and compromise reliability.



### Ensuring Clean, Reliable, and Scalable Battery Production

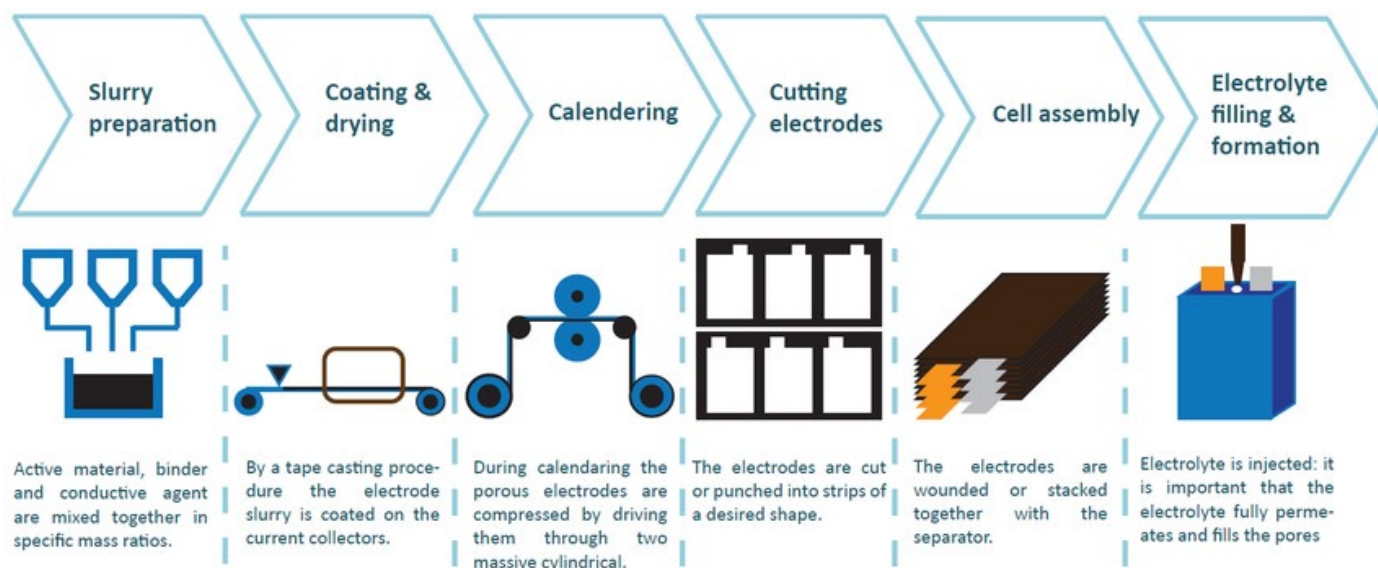
As hundreds of new battery plants come online, advanced static neutralization and surface cleaning solutions are essential—not only to meet stringent performance targets but also to maintain process stability and maximize yield at every stage of manufacturing.

- **Ionizing Bars or Blowers** help eliminate electrostatic charges that attract particles to electrode surfaces, preserving material purity and enhancing charge transfer efficiency.
- **Contact Cleaning Systems** integrated with ionizing bars remove metallic and submicron particles from electrode films, reducing the risk of separator damage and short circuits, without slowing production.
- **Contamination Control Measures During Coating** ensure dry, stable conditions that prevent ionic intrusion and dewetting, which are critical for consistent electrode quality and optimal energy density.

### From Concept to Cell: Why Process-Specific Static Control Matters

Maintaining charge integrity and particle-free surfaces is critical across all phases of lithium-ion battery production. Simco-Ion, Technology Group's solutions do more than neutralize static—they solve process variability, prevent latent defects, and scale with high-throughput environments.

### Manufacturing Steps of Li-ion Batteries



Source: Huajun Feng et al., *Frontiers of Chemical Science and Engineering* (2015), licensed under CC BY 4.0. <https://creativecommons.org/licenses/by/4.0/>

The following table details how Simco-Ion, Technology Group's portfolio aligns to each production stage—from slurry mixing and calendaring to final cell testing—to protect energy density, extend battery life, and ensure operational safety at scale.

Stage	Static Risk & Control Focus	Simco-Ion Technology Group Product Solutions
<b>Coating &amp; Drying</b>	Electrostatic charges can lead to uneven slurry distribution, dust attraction, and coating defects.	5710 bars or FPD blower
<b>Calendaring</b>	High-speed rolling generates triboelectric charges that can damage equipment or degrade film uniformity.	5710 bars or FPD blower
<b>Cutting Electrodes</b>	Static from cutting draws contaminants that compromise edges and lamination quality.	Low End: 5710 bars or FPD blower; High End: 5645 LP bar or 5842 blower
<b>Cell Assembly</b>	Static attracts particles between layers or to separator films, increasing short-circuit risk and reducing yield.	5645 LP bar or 5842 blower
<b>Electrolyte Filling &amp; Formation</b>	Surface charge can disrupt electrolyte flow and formation stability.	5645 LP bar (no air operation)
<b>Module Assembly</b>	Static can damage sensitive components, degrade cells, or even spark fires if not properly controlled.	5645 LP bar or 5842 blower

From submicron particle removal to predictive electrostatic monitoring, Simco-Ion, Technology Group is redefining the quality, safety, and reliability standards in next-gen battery manufacturing.

## Let's Power the Future of EV Batteries – Together!

📞 Contact us at [saleservices@simco-ion.com](mailto:saleservices@simco-ion.com) or visit [www.simco-ion.com/technology](http://www.simco-ion.com/technology) to learn more.