

Supply Chain Integration Brief: Tier-1 to Tier-3 Traceability Matrix

Purpose & Architecture

This document provides field service staff, warranty auditors, and technical support engineers with visibility into the multi-tiered supplier ecosystem powering Gigavolt energy platforms. Tracing failure root causes frequently requires cross-referencing component part batches against upstream raw material suppliers.

Component Supply Chain Mapping

Megapack X-7000 Primary Energy Storage Loop

- **Finished Module Subsystem:** MOD-LFP-X7
- **Tier-1 Battery Integrator: Voltaic Core Technologies** (SUP-VCT-01)
 - Supplies: Finished 48V sub-modules, internal cell interconnects, and slave BMS boards (BMS-CAS-LFP).
- **Tier-2 Cell Manufacturer: SinoPower Cell Foundry** (SUP-SPC-11)
 - Supplies: Prismatic 280Ah raw cells (CEL-LFP-280).
- **Tier-3 Cathode Precursor Supplier: Lithium Resources Global (LRG)** (SUP-LRG-88)
 - Supplies: Battery-grade lithium iron phosphate powder (\$LiFePO_4\$) and precursor lithium carbonate.
- **Tier-3 Aluminum Casing Supplier: Apex Extrusions Corp.** (SUP-AEX-19)
 - Supplies: Prismatic aluminum can housings and bursting vent membranes.

PowerStation G-3500 High-Capacity Inverter and Cells

- **Finished Pack Subsystem:** MOD-NMC-24V
- **Tier-1 Pack Supplier: Aura Energy Storage Ltd.** (SUP-AUR-04)
 - Supplies: 24V NMC Pouch modules, thermal gap filler pads.
- **Tier-2 Pouch Cell Fabricator: Apex Cell Tech Corp** (SUP-ACT-07)
 - Supplies: CobaltMax 65Ah pouch cells (CEL-NMC-065).
- **Tier-3 Active Material Supplier: Katanga Cobalt & Mineral Refining** (SUP-KMR-03)

- Supplies: Cobalt sulfate and nickel sulfate hexahydrate crystals.
- **Tier-1 Inverter & Gate Driver Assemblies: Semicon Dynamics Inc. (SUP-SDI-09)**
 - Supplies: Gate drive cards (PCB-DRV-3500), SCR thyristor packs (INV-SCR-9901).

Quality Escapes & Component Containment Protocols

When an **ERR_BMS_701** (High Delta Cell Voltage) or **ERR_ISO_109** (Low Isolation Resistance) trend exceeds 3.5% across a batch serial window:

1. Identify the module lot code via the Gigavolt Parts Inventory database.
2. Query the graph database to pinpoint the Tier-2 cell lot or Tier-3 material batch.
3. Place an immediate operational hold on all inventory stock sharing that supplier batch key.