SJ Industrial Ovens

Precision Plate Curing & Drying Systems for Lead-Acid Batteries

30+ Years in Battery Ovens

Dedicated curing, drying & formation chambers for automotive and industrial batteries.

THERMAL SOLUTIONS FOR LEAD-ACID BATTERY MANUFACTURING

Consistent paste curing, controlled hydrosetting and reliable formation are at the heart of a long-life lead-acid battery. SJ Industrial Ovens designs plate curing chambers, flash dryers, formation support ovens and finishing dryers engineered specifically for automotive, tubular, VRLA / AGM and industrial lead-acid battery plants.

APPLICATIONS IN A LEAD-ACID PLANT

Typical process areas where SJ ovens and chambers are installed:

- Pasted Plate Drying
- Plate Curing & Hydrosetting
- Tubular Plate Gel Curing
- Separator & Component Drying
- VRLA / AGM Post-Drying
- Container / Lid Pre-heating

PROCESS & OVEN MAPPING

1. Pasted Plate Flash Drying

Recommended: Hot-air belt or rack dryer

Removes surface moisture from freshly pasted plates while keeping the internal moisture profile ideal for subsequent curing. Air velocity and temperature are tuned to avoid cracking or paste shedding.

2. Plate Curing & Hydrosetting

Recommended: Humidity-controlled curing chamber

Multi-stage temperature and humidity profiles develop the correct basic lead sulphate crystal structure. This results in improved active material utilization, higher capacity and better cycle life for both flat and tubular plates.

3. Post-Formation Drying

Recommended: Batch or conveyor drying oven

After tank formation and washing, plates or assembled batteries require controlled drying to reach the correct residual moisture level before final assembly, sealing and charging. Uniform airflow prevents warpage and ensures even drying in all trays.

KEY ENGINEERING HIGHLIGHTS

Designed Around Lead-Acid Chemistry

- Optimised for lead oxide pasted plates, both flat and tubular.
- Uniform air distribution across racks and trolleys.
- Robust construction to handle corrosive environments.

Process Control & Reproducibility

- PID-based temperature control with ramp / soak profiles.
- Optional RH sensors & humidification / dehumidification control.
- PLC + HMI with recipes for different plate designs and capacities.

TYPICAL TECHNICAL RANGE

Parameter	Capability
Operating Temperature	Ambient +10 °C to 110 °C for curing / drying stages
Temperature Uniformity	Typically within ±3 °C in the loaded working volume
Humidity Control (optional)	40–98% RH with programmable profiles for hydrosetting
Heating Media	Electric, diesel, gas or steam / thermic fluid, depending on plant utility
Construction	MS with anti-corrosion coating, or SS304 for critical

	sections

4. VRLA / AGM Conditioning

Recommended: Clean, temperature-stable drying room

For sealed VRLA and AGM batteries, precise temperature control during post-processing protects separator integrity, prevents plate sulphation and supports lower self-discharge during storage.

CUSTOMISATION OPTIONS

- Custom sizing for large industrial/traction plate formats.
- Single-door, double-door (pass-through), or conveyorized designs.
- Integration with automated transfer lines and cooling zones.

ADVANCED ENGINEERING & SAFETY COMPLIANCE

MATERIAL HANDLING & DURABILITY

Our heavy-duty construction is designed to endure the challenging environment of lead-acid production, prioritizing longevity and ease of maintenance.

- **Acid Resistance:** Inner chamber surfaces coated with specialized acid-resistant paint or constructed from Stainless Steel (SS316) for extreme corrosion protection.
- **High Load Capacity:** Reinforced flooring and track systems engineered to support the substantial weight of fully loaded plate curing trolleys.
- **Sealing:** High-temperature silicone gasketing ensures minimal heat loss and stable humidity control.

CONTROL SYSTEM FEATURES

We provide full control flexibility, moving beyond simple ON/OFF controls to sophisticated recipe management:

- **Ramp-Soak Profiles:** Allows the operator to define complex, time-sensitive curing profiles for different product lines, ensuring optimal crystal formation every time.
- **Data Logging & Traceability:** Continuous recording of temperature, humidity, and cycle time for complete QA documentation and compliance records.
- **Remote Access:** Optional SCADA/Ethernet integration for remote monitoring and process adjustment.

FUME MANAGEMENT & SAFETY

Safety is paramount in lead-acid environments. Our systems incorporate essential features to manage corrosive fumes and ensure operator safety.

- **Dedicated Exhaust:** High-capacity exhaust blowers with controlled damper systems for safe removal of steam and acidic vapors.
- **Emergency Stop:** Multi-point E-Stop circuit access ensures immediate shutdown capability across the facility floor.
- **Over-Temperature Cutoff:** Independent safety thermostat provides guaranteed protection against thermal runaway.

Why Choose SJ Industrial Ovens?

We are not just oven suppliers; we are thermal engineering partners. Our 30+ years of expertise in battery manufacturing translates into equipment that delivers lower energy consumption, superior process control, and maximum plate quality, reducing scrap rates and maximizing battery life.

IDEAL FOR

- Automotive battery manufacturers (SLI, E-rickshaw, two-wheeler, four-wheeler).
- Industrial traction, forklift and locomotive battery plants.
- Solar, tubular and stationary backup battery producers.
- Existing plants modernising old brick curing rooms to controlled ovens.

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