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Uniting Small Scale Battery Industry on Firm Footing since 1985

# BATTERY DIRECTORY & YEAR BOOK

Uniting Small Scale Battery Industry 41 years of Publication Since 1985

FORTNIGHTLY ISSUE
16-31 July 2026
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## बैटरी डायरेक्टरी एंड ईयर बुक



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# LEAD-ACID BATTERY HELP LINE...

**Why You Need Only LA-POWER Technologies?**

'LA-POWER' Technologies provides not just only consultancy, it works as a complete project. So it is lengthy & consumes time to formulate effective solution that you have never seen before. It has a high class operational working system. Before it you know consultancy that a consultant visit out your factory & provides some tips & you have to do all arrangement & practical in his absence. So how you can satisfy?

The Lead-Acid Battery profession is totally different from others. Generally, to manufacture a product is a common work & to sale is difficult, but the Lead-acid battery profession is just inverse proportional to others. Here, to manufacture a best battery is really a challenging task & very few peoples are known better.

We are product & market player & play comprehensive role in lead-acid battery solution. So we are able to provide TQM practices.

It is a systematic magic that provides complete & reliable solution without much spending on men, machineries, money & materials. So, the saving in these resources is definitely first step of your profit and to reduce your battery claim up to aprox. nil is another major profit, which will boost your firm's goodwill along with extra income and off course your firm will be converted from a ordinary goodwill to a quality maker firm.

Yes! It is unbelievable, but 100% truth. Lot of business men are already benefited & enjoying battery profession as a complete professional. And off course you may be next one. It is extract of our more than two decades of vast R & D as "Battery & Indian Atmosphere". You may expect any thing & we promise you, we will fulfill your dreams.

**Work Profile: Technical Consultancy in Lead-Acid Battery**

**Area of Consultancy**

- Flooded (Conventional) Battery:
  Antimonial/Selenium-Lead Ultra Low Maintenance 12V/2.5 to 12V/200 AH
- Valve Regulated Lead-Acid Battery (VRLA):
  Calcium-Lead Based 100% Maintenance Free 1 AH to 1000 AH Battery

**Type of Battery:**

- Automobiles Batteries (Flooded & VRLA)
- Inverter/UPS Batteries (Flooded & VRLA)
- Tubular Batteries(Flooded)
- Solar Batteries (VRLA)
- Electrical Vehicle Batteries (Flooded & VRLA)
- Telecom/Railways Batteries (VRLA)
- Defence Batteries (Flooded)
- Industrial Batteries (Flooded & VRLA)

**LA-POWER Differentials:**

- Reduces your battery claim up to approximate Nil
- Saving your resources in men, machineries, material & money
- World class product
- One time solution & not need to continue the consultancy

**Wonderful Features (Flooded Battery):**

- Save lead means save money
- Maintenance free for approximate one year
- High voltages for quick auto cut
- Very fast charging, better during heavy power cut
- Strong deep discharge recovery

- Strong normal & cold cranking power (HRD)
- Very low fuming for safe breathing
- High efficiency, so saving in electric bill
- High retention of charge
- Longest uninterrupted service life cycle
- Slow rate of power falling during life cycle
- Light weight technology & attractive product

**Fast Grow-up Advantages (VRLA Battery)**

VRLA battery means next generation battery & here, we have one & half decades of vast R & D experience. So a golden opportunity knocks to make your firm as a premier organization:

- Unlimited market opportunity as new product
- Secure from customer handling due to 100% maintenance free
- Excellent profitable opportunity
- Leadership of industry
- High status & dignity

**May I Help You?**

If you are facing these following troubles, Yes! We Sure Help You!

- Resources:
  a. High quality raw material/components with compatible price
  b. Automatic, reliable & durable modern plant/machines & equipments
  c. Skilled/semi-skilled man power for any section & level
- Plantation:
  a. Plantation/up-gradation of battery complete manufacturing unit
  b. Physical, Chemical & Electrochem state-of-art Laboratory set-up
  c. Plantation of pollution plant
- Training:
  a. Complete know-how to mangt for qualitative production/controlling
  b. Each section complete training for a lay-man to managers
  c. Chemist training as step-by-step, A to Z section testing
  d. Machineries/equipments handling, calibration & trouble shootings etc
- Documentation:
  a. All types of Quality & Quantity formats for each section
  b. Documentation for ISO certification
  c. Charts/boards/indicators etc for best management system

**ISO Certification**

The concept of ISO certification provides two types of benefit as internal & external:

a. 100% Assistance in ISO certification
b. ISO 9001: 2015, for Quality Management System
c. ISO 14001: 2015, for Environment Management System

**LA-POWER Secrets (In-Written Documents)**

The secrets can change your professional way, it's extract of one & half decades of vast R & D:

a. Project report
b. Process control procedures
c. Laboratory testing & specifications
d. Format, indicators samples & Trouble shootings

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Knowledge without devotion to God produces hatred.
*—Bhagwan Sh. Sathya Sai Baba*


# BATTERY DIRECTORY & YEAR BOOK

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# EPR Price Control Mechanism: Matter in High Court

## CPCB's Counter-Affidavit

The Central Pollution Control Board (CPCB) has filed a counter-affidavit in the Delhi High Court in response to the writ petition filed by the Federation of Indian Small Scale Battery Associations (FISSBA) in April 2026, which challenges the recent amendments made to the Battery Waste Management Rules, 2022, and the E-Waste Management Rules, 2022.

This affidavit provides a paragraph-wise response to FISSBA's petition. It is based on the following four key points:

(a) the petition is based on a misconception and should be dismissed at the threshold;

(b) the EC guidelines were formulated after several rounds of extensive consultations;

(c) the arrangements regarding the portal, registration, and compliance with regulations are adequate; and

(d) the CPCB has always acted within the scope of its legal jurisdiction and with the approval of the MoEFCC.

### The CPCB states:

The affidavit mentions five special consultation meetings held by the Central Pollution Control Board (CPCB):-

✦ 18.04.2024 — Initial discussion held on the cost of EC and EPR certificates

✦ 14.05.2024 — Discussion held on the average cost of recycling

✦ 16.07.2024 — Meeting held regarding draft EC guidelines

✦ 02.08.2024 — Third Implementation Committee meeting held under the chairmanship of the CPCB Chairman

✦ 07.08.2024 — EC guidelines finalized

The CPCB named the organizations consulted before the guidelines were issued. These organizations were IBMA, MAIT, CEAMA, IESA, MRAI, ICEA, and ILZDA.

**2. Approval was obtained from the MoEFCC**

The CPCB states that the EC guidelines were issued with the approval of the MoEF&CC and were published on September 9, 2024, only after receiving that approval. This refutes the argument that the CPCB acted unilaterally and beyond its jurisdiction; it had the explicit consent of the Central Government.

**3. Expert Committee on Copper Content**

Regarding the dispute concerning NABL/copper content, the CPCB states

# Pollution Board Defends Battery Recycling Rules; Legal Battle Continues

**– Sarvendra M. Tripathi, Advocate –**

The Central Pollution Control Board (CPCB) stands firm on its battery recycling guidelines. The Board informed the Delhi High Court this week that these rules were formulated after months of consultation with the industry—and were not imposed without notice.

This statement is part of a formal response filed by the CPCB in an ongoing case—Writ Petition (Civil) No. 5527/2026—challenging these guidelines. At stake in

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that an expert committee was constituted comprising representatives from C-MET, MoEFCC, MRAI, REIAI, MAIT, CEAMA, ICEA, as well as telecom and medical device associations. This was a large expert body involving multiple stakeholders. The conversion factor was presented to the Steering Committee on August 17, 2023, and subsequently published on the CPCB website on September 18, 2023, to invite public comments. This demonstrates that the process was systematic and well-documented, rather than an arbitrary action.

**4. RML — Partial agreement with their position**

The CPCB states that both RML recyclers and refined lead recyclers are now permitted to generate EPR credits via the battery EPR portal. This directly refutes the claim that RML was excluded under Para 18 of FISSBA. If RML is already recognized on the portal, then that specific grievance has effectively been resolved.

**5. Rationale for Prioritizing the Policy**

The CPCB relies on the established legal principle that decisions involving "legislative and policy wisdom" are generally not subject to judicial review unless they are "manifestly arbitrary, unconstitutional, or beyond the scope of the parent legislation." This is a legally sound argument, given the stringent criteria required to challenge subordinate legislation.

**6. Registration Portal Infrastructure**

Regarding the complaint about delays in the portal/registration process (Paragraph 24 of the petition), the CPCB states that it processes applications within the stipulated timeframe, communicates details regarding deficiencies, has uploaded SOPs, manuals, video tutorials, and FAQs, maintains a dedicated helpline, and has also introduced a "Lodge Complaint" option. If this is true, it significantly weakens FISSBA's argument regarding the "impossibility of compliance." ❑

this matter is how India will recycle batteries ranging from those in electric vehicles to home inverters, and who will bear the cost.

## Meetings held for months before the rules came into effect

According to the CPCB, these guidelines were not drafted in isolation. The Board states that it held five separate consultation meetings between April and August 2024, involving key industry groups such as battery manufacturers, electronics associations, and metal recyclers. The final rules were implemented on September 9, 2024, only after receiving approval from the Ministry of Environment, Forest and Climate Change.

A particularly technical issue—how much copper is contained in recycled battery materials and how it should be measured—was referred to an expert committee, which published its data for public comment before finalizing the regulations.

The CPCB also highlighted measures to facilitate operations for recyclers on the ground: both RML recyclers and refined lead recyclers are now formally recognized on the government's Extended Producer Responsibility (EPR) portal. Additionally, the Board has launched manuals, video tutorials, Frequently Asked Questions (FAQs), and a grievance helpline to assist the industry with compliance.

## Issues still under debate

Not everything has been finalized. The CPCB itself acknowledges that certain issues remain open for discussion:

• How to handle off-specification batteries

• What level of recovery loss should be permitted for small-scale recycling operators

• Whether these regulations should apply retrospectively to work already undertaken

## Vehicle Manufacturers Warn: Prices May Rise

The auto industry is not sitting idle either. The Society of Indian Automobile Manufacturers (SIAM) has separately warned that electric vehicle prices could rise by 3 to 5 percent due to current recycling targets. SIAM wants the CPCB to consider battery chemistry and lifespan before finalizing recycling requirements—particularly for long-life LFP batteries, which are increasingly being used in new electric vehicles.

## What lies ahead?

The CPCB's response is now before the court, and the matter is moving toward the next round of hearings. Arguments are expected to focus on key issues: whether recyclers are being charged twice for lead recovery, discrepancies regarding copper data, and the industry's persistent objection to the retrospective application of new regulations.

For now, the CPCB maintains that it is attempting to strike a balance—upholding environmental standards while allowing the industry some room to adjust.

This article is based on public statements and affidavit filings related to the ongoing High Court proceedings.

## Assessment

| Dimension | Assessment |
|---|---|
| Procedural compliance | Proper verification, para-wise format, documentation of MoEFCC approval |
| Factual defense regarding consultations | Mention of five meetings; list of organizations provided |
| Substantive defense against 'ultra vires' (beyond jurisdiction) | No discussion on constitutional grounds |
| Defense regarding off-spec batteries/RML | Acknowledgment that the RML issue was resolved; off-spec batteries considered an ongoing issue |
| Defense regarding portal/ registration delays | Infrastructure details provided, but allegations of portal malfunction were not specifically refuted |

❑

SIAM
Society of Indian Automobile Manufacturers

# The Society of Indian Automobile Manufacturers has raised objections to the Battery Recycling Rules

The Society of Indian Automobile Manufacturers (SIAM) has warned that the battery recycling targets set by the government could increase electric vehicle (EV) prices by 3–5% and impact their sales in the country.

Raising this issue with the Central Pollution Control Board (CPCB), SIAM pointed out that under the current battery recycling framework, EV manufacturers are required to collect 70% of batteries eight years after they are put into use, whereas Lithium Iron Phosphate (LFP) batteries have a longer lifespan. SIAM first raised this matter in a letter to the CPCB last November and reiterated its concerns during a meeting with Union Environment Minister Shri Bhupender Yadav last month. Compliance with current regulations could increase the cost of an average electric car battery (with a capacity of 35–40 kWh) by ₹8,000 to ₹25,000; additionally, costs associated with collection, storage, handling, and traceability systems would also be incurred.

## SIAM's Key Demands

* Battery recycling targets should commence after eight years, while accounting for the longer lifespan of LFP batteries.

* The battery lifecycle should be determined based on its State of Health (SoH).

* Recycling obligations should be calculated based on battery weight rather than the quantity of metals contained within.

* The price of recycling certificates should be linked to actual costs, not to penalties.

* Minimum material recovery targets for recyclers should be reinstated.

SIAM states that current regulations do not adequately distinguish between different types of battery chemistries, and this could create an imbalance between the availability of recoverable materials and the obligations imposed on producers.

Earlier, Panasonic Energy India had also warned that it might have to shut down its only dry-cell zinc-carbon battery manufacturing unit in the country if regulations were not changed, as compliance costs could, in many instances, exceed the value of the raw materials procured.

## What do the current rules state?

Under the Battery Waste Management Rules (BWMR), vehicle manufacturers, battery manufacturers, importers, and brand owners are required to ensure that used batteries are collected and sent for refurbishment or recycling.

For EV batteries, manufacturers will be required to start collecting batteries after eight years and recover up to 70% of the batteries sold in a given year.

This target will gradually increase, and ultimately, manufacturers will have to ensure that 82% of such batteries are collected, refurbished, or recycled through authorized entities. ❑

## Inspirational Thoughts

✶ Wonderful people are met by chance, and such coincidences do not happen in everyone's life.

✶ Goodness and badness lie in a person's "deeds."

One person might craft an arrow from bamboo to wound someone...

...while another fashions a flute from it, filling the bamboo with melody.

✶ To speak your mind, you must have the strength to hear what you might not want to hear!

✶ Not everyone may be good, but there is certainly something good in everyone. Never form a fixed opinion about anyone, because people behave differently with different people at different times.

✶ Criticism is the rule of this world—something you will receive in abundance.

Most people offer praise only out of compulsion or self-interest. No matter how good your nature is, people will speak well of you only when you are of use to them.

✶ Being born with a distinct personality is an unsolicited gift from your parents, but leaving the world with a distinct personality is your own achievement—and a return gift to your parents.

**– Ajay Gupta,**
*AK Auto Agency, Mumbai*
*Forwarded by the President,*
*Indian Battery and Accessories*
*Industries Welfare Association, Mumbai*

# Lean Systems in Lead Metal Recycling Plants: Driving Efficiency, Sustainability, and Profitability

**– Suresh Kapiti,** *Entrepreneur*
*Kapiti Overseas Pvt. Ltd., Hyderabad | Mobile No. 9701029731*

In an industry where margins are tight, compliance is strict, and raw material variability is high, lead metal recycling plants cannot afford inefficiencies. The adoption of Lean Systems ,originating from the Toyota Production System offers a powerful framework to optimize operations, reduce waste, and enhance both environmental and financial performance.

Lean is not just about cost-cutting. In recycling, it becomes a strategic lever for sustainability, compliance, and scalability.

## Understanding Lean in the Context of Lead Recycling

Lean focuses on eliminating non-value-added activities (waste) while improving process flow and consistency.

In a lead recycling plant, value is created when:

✦ Scrap batteries are efficiently converted into refined lead

✦ Energy consumption is optimized

✦ Emissions and hazardous outputs are minimized

✦ Throughput is consistent and predictable

Everything else is waste.

## The 7 Wastes Applied to Lead Recycling

Lean identifies seven key wastes. Here's how they manifest in your industry:

**1. Overproduction**

✦ Smelting beyond refining capacity

✦ Excess intermediate lead bullion inventory

**2. Waiting**

✦ Idle furnaces due to inconsistent scrap supply

✦ Delays in testing, refining, or dispatch

**3. Transportation**

✦ Unnecessary movement of hazardous materials within plant

✦ Poor plant layout increasing handling risk

**4. Overprocessing**

✦ Repeated refining due to poor quality control upstream

✦ Excessive chemical usage

**5. Inventory**

✦ Stockpiling scrap batteries without processing

✦ Excess finished goods due to demand mismatch

**6. Motion**

✦ Manual, repetitive labour due to lack of automation

✦ Inefficient operator movement

**7. Defects**

✦ Impure lead batches

✦ Environmental non-compliance (emissions, slag issues)

## Core Lean Tools for Lead Recycling Plants

**1. Value Stream Mapping (VSM)**

Map the entire lifecycle:

Scrap Collection → Breaking → Smelting → Refining → Casting → Dispatch

Identify:

✦ Bottlenecks (e.g., furnace downtime)

✦ Redundant steps

✦ Quality leakage points

**2. 5S System (Workplace Organization)**

✦ Sort: Remove unused materials (scrap clutter)

✦ Set in Order: Organize tools and hazardous materials safely

✦ Shine: Maintain cleanliness (critical for compliance)

✦ Standardize: SOPs for handling lead and chemicals

✦ Sustain: Regular audits

**3. Just-in-Time (JIT)**

In recycling, JIT must be adapted, not blindly applied:

✦ Align scrap procurement with processing capacity

✦ Reduce excess inventory while ensuring supply continuity

**4. Kaizen (Continuous Improvement)**

✦ Daily small improvements in furnace efficiency

✦ Incremental reduction in fuel consumption

✦ Operator-led suggestions for safety and productivity

**5. Total Productive Maintenance (TPM)**

Critical for:

✦ Furnaces

✦ Pollution control equipment

✦ Battery breaking units

Goal: Zero breakdowns, zero defects, zero accidents

## Digital + Lean Integration (Lean 4.0)

Modern plants combine Lean with Industry 4.0:

✦ IoT sensors for furnace temperature optimization

✦ Real-time emission monitoring

✦ Predictive maintenance systems

✦ Data dashboards for yield and recovery rates

This transforms Lean from reactive to predictive and intelligent.

## Environmental and Regulatory Benefits

Lean systems directly support:

✦ Lower emissions (optimized combustion)

✦ Reduced hazardous waste

✦ Better compliance with pollution control norms

✦ Safer workplace conditions

In India, this aligns with:

✦ CPCB guidelines

✦ Extended Producer Responsibility (EPR) frameworks

## Business Impact

Plants implementing Lean typically achieve:

✦ 15–30% improvement in operational efficiency

✦ 10–20% reduction in energy costs

✦ Higher metal recovery rates

✦ Improved investor confidence

✦ Stronger ESG positioning

For companies like KAPITI OVERSEAS PRIVATE LIMITED, Lean is not optional .it is a competitive advantage in circular economy leadership.

## Challenges in Implementation

✦ Resistance to change from workforce

✦ Lack of process standardization

✦ Inconsistent scrap quality

✦ Initial investment in training and systems

Solution: Start with pilot lines, demonstrate ROI, then scale.

## Conclusion

Lean Systems in lead metal recycling plants are not just operational tools—they are a philosophy of disciplined execution and continuous improvement.

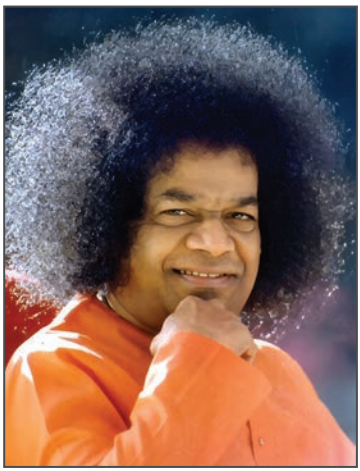
In a sector that sits at the intersection of industry, environment, and regulation, Lean enables companies to:

✦ Produce more with less

✦ Operate cleaner and safer

✦ Scale sustainably

The future of recycling belongs to plants that are not just compliant but intelligently efficient. ❑



The soul is our guru and guide. If we listen to the voice of our soul, we can become good human beings. For this, a strong resolve is essential.

**– Bhagwan Shri Sathya Sai Baba**

MICRO, SMALL & MEDIUM ENTERPRISES

# Guarantee coverage limit for women Entrepreneurs raised to 90%

## MSME Ministry reduces Annual Guarantee Fee

The Ministry of MSME provides credit to Micro and Small Enterprises (MSEs) through CGTMSE. The objective of this scheme is to provide credit guarantees to MSEs for loans extended by Member Lending Institutions (MLIs) without the requirement of collateral security or third-party guarantees.

Currently, this scheme provides a credit guarantee for loan support of up to ₹10 crore extended to MSEs by MLIs. Previously, this guarantee limit was only ₹5 crore.

To alleviate the loan burden on MSEs, the Ministry has also reduced the annual guarantee rate for these loans. This annual rate is provided in Table-1.

| Slab (₹) | Revised Rate, Standard Rate % (AGF) |
|---|---|
| 0 - 10 Lakh | 0.37 |
| Above 10 Lakh - 50 Lakh | 0.55 |
| Above 50 Lakh - 1 Crore | 0.60 |
| Above 1 Crore - 2 Crore | 0.85 |
| Above 2 Crore - 5 Crore | 1.00 |
| Above 5 Crore - 8 Crore | 1.10 |
| Above 8 Crore - 10 Crore | 1.20 |

*Table-1*

Recognizing the active role of women entrepreneurs in the country's economic growth and with the aim of encouraging MLIs to extend more credit to this segment, the guarantee coverage limit for credit facilities provided to women entrepreneurs has been raised to 90%.

The revised scope of guarantee coverage across various categories of borrowers is presented in Table 2 below.

| Category (including trading activity) | Maximum limit of guarantee coverage (where a guaranteed credit facility exists) | | |
|---|---|---|---|
| | Up to ₹5 lakh | Above ₹5 lakh and up to ₹50 lakh | Above ₹50 lakh and up to ₹500 lakh |
| **Micro Enterprises** | 85% | 75% | 75% |
| **MSEs located in the North-East region, and the Union Territories of Jammu & Kashmir and Ladakh** | 80% | 80% | 75% |
| **MSEs started by women entrepreneurs / Agniveers** | 90% | | |
| **SC/ST entrepreneurs / MSEs located in Aspirational Districts / ZED-certified MSEs / Persons with Disabilities (PwD)** | 85% | | |
| **Borrowers of all other categories** | 75% | | |

*Table-2*

For MSEs located in Credit Deficient Districts (ICDDs) identified by the RBI, the guarantee coverage limit is 5% higher than the applicable guarantee coverage (i.e., coverage will be 80% for a 75% guarantee, 85% for 80%, 90% for 85%, and 95% for 90%). ❑

# The Government of India is not yet prepared for disruptions in the Global Lithium supply chain

According to the Society of Indian Automobile Manufacturers (SIAM), India currently relies heavily on imports for critical minerals like lithium. These minerals are essential for the lithium-ion batteries used in electric vehicles (EVs). At present, the entire demand is met through imports, making the sector vulnerable to external shocks. Recent policy decisions by China—specifically the imposition of export controls and licensing requirements on high-performance lithium-ion batteries (≥300 Wh/kg), cathode materials, artificial-graphite anodes, and related manufacturing technologies—could disrupt the global supply situation in the near future. This poses potential supply-chain challenges for Indian EV manufacturers that depend on Chinese midstream processing.

## Impact of China's export controls on the costs of Indian EV companies

Lithium and other raw materials used in battery production are traded globally, with their prices determined by international supply and demand dynamics. Global policy shifts or supply disruptions can lead to price fluctuations in lithium, cobalt, and nickel. China's export controls could soon drive up component prices worldwide, directly impacting the costs incurred by Indian EV companies. However, the overall impact on battery prices is also influenced by technological advancements, economies of scale, and the localization of manufacturing.

## Measures to Reduce Import Dependence

The government has taken several steps to reduce import dependence for critical minerals. On January 29, 2025, the Union Cabinet approved the 'National Critical Minerals Mission' (NCMM). Its objective is to ensure a long-term, sustainable supply of critical minerals (including lithium) and to strengthen India's critical mineral value chain. This value chain encompasses all stages, ranging from mineral exploration and mining to beneficiation, processing, and mineral recovery from end-of-life products. In addition to other initiatives aimed at strengthening the country's critical mineral sector, the following measures have also been taken:

i. The Union Cabinet approved the 'National Critical Mineral Mission' (NCMM) on January 29, 2025. Its objective is to secure India's critical mineral supply chain and strengthen the critical mineral value chain.

ii. Since the amendment to the MMDR Act in 2023, the Central Government has successfully auctioned 46 blocks of critical and strategic minerals. Additionally, 7 blocks have been auctioned under the 'Exploration License'

# Smartphone Apps Acting as 'Kill Switches' for E-Rickshaws


Viral videos surfacing this week have highlighted an incident where individuals approach e-rickshaws and use smartphone apps to shut them down while they are in motion, leaving drivers stranded in traffic. These videos have garnered millions of views across platforms like Instagram, YouTube, Reddit, and X.

The issue stems from the battery management systems installed in these e-rickshaws, which connect via Bluetooth without any password protection. This allows anyone with a nearby smartphone—using specific apps like BAT-BMS and Lossigy—to switch off the vehicles, effectively turning the app into a 'kill switch.'

Government Intervention: Following the viral videos and the resulting traffic disruptions for drivers, the Ministry of Electronics and Information Technology (MeitY) intervened. The government ordered Google and Apple to remove at least seven such battery-management apps from the Google Play Store and Apple App Store, citing potential risks to public safety and the likelihood of future complications. ❑

regime, three of which are critical mineral blocks.

iii. The Union Cabinet has approved an incentive scheme worth ₹1,500 crore to promote critical mineral recycling. Guidelines for the scheme were issued, and the scheme was launched on October 2, 2025.

iv. Guidelines for funding pilot projects to extract critical minerals from overburden, tailings, fly ash, red mud, etc., were issued on November 14, 2025.

v. The government has recognized nine key institutions as 'Centres of Excellence' (CoE) under the NCMM. These institutions will undertake Research and Development (R&D) to strengthen domestic capabilities across the critical mineral value chain.

vi. Khanij Bidesh India Limited (KABIL), under the Ministry of Mines, has signed an 'Exploration and Development Agreement' with CAMYEN, a state-owned company in Argentina's Catamarca province. This agreement covers the exploration and mining of five lithium brine blocks spanning an area of 15,703 hectares in Argentina. ❑

# श्री सत्य सेवा संस्थान (रजि.)

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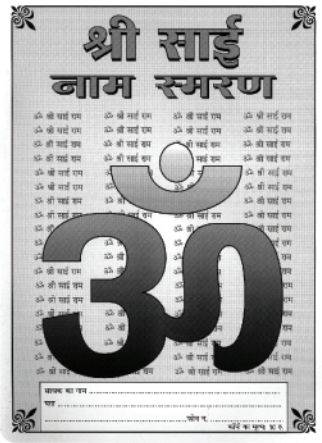


❋ **लिखित एवं मौखिक नाम जप हेतु कॉपियाँ**
अपनी रुचि के अनुसार ईश्वर का कोई भी नाम लिखें अथवा मौखिक रूप से जप करें। भरी कॉपी के बदले नई कॉपी नि:शुल्क।
*अब तक 19,02,09,396 लिखित नाम जप और 3 करोड़ 33 लाख मौखिक जप की कॉपियाँ भगवान श्री सत्य साई बाबा के चरणों में समर्पित।*

❋ **नि:शुल्क एक्यूप्रेशर सेवा**
सेवा स्थान: साई दीप, 510, जनता फ्लैट्स, सोमवार, बुधवार और शुक्रवार सायं: 3 से 4
सेवा: श्री मोहन द्वारा

❋ **नि:शुल्क होम्योपैथिक मेडिकल सेवा**
सेवा स्थान: साई दीप, 510, जनता फ्लैट्स, प्रत्येक बुधवार प्रात: 8.30 से 10
सेवा: डॉ. आर. के. राठी (BHMS)

❋ **साई जागृति बालविकास केन्द्र** *(कोरोना के कारण फिलहाल सेवा स्थगित)*
बी-10, लेप्रोसी होम, ताहिरपुर कुष्ठ कॉलोनी, समय प्रात: 9.30 से 12.00 तक
कुष्ट रोगियों के बच्चों को मानवीय मूल्यों की नि:शुल्क शिक्षा व सिलाई कक्षा

❋ **नि:शुल्क लाइब्रेरी** - हिन्दी व अंग्रेजी में साई साहित्य पर लगभग 250 टाइटिल, साई फोटो, लॉकेट और विभूति उपलब्ध।

❋ **समय-समय पर नारायण सेवा**

❋ **बालविकास कक्षाएँ**

❋ **शीतल जल सेवा**

# EV Battery Explodes During Charging

## Two-Wheeler Manufacturer Fined ₹2.6 Lakh

**A** consumer commission in Karnataka has found an electric two-wheeler manufacturer guilty of deficiency in service and ordered it to pay ₹2.6 lakh in compensation. This order follows an incident where a customer's vehicle battery exploded while charging, injuring his father.

The order was passed by the commission's President, Eshappa K. Bhute, along with members Vishalakshi A. Bolashetti and P.C. Hiremath. They acknowledged that the complainant and his family suffered significant loss and damage to their property.

The order, dated June 18, stated, "It is evident that the sudden explosion caused a fire, resulting in severe injuries to the complainant's father and the burning of the mentioned machinery and household items."

The commission ordered the manufacturer to pay ₹1 lakh to the complainant for property damage and another ₹1 lakh to cover his father's medical expenses. Additionally, the commission ordered a payment of ₹50,000 for mental agony and inconvenience, along with ₹10,000 for litigation costs.

### Explosion in EV

According to the complainant, he had purchased the electric two-wheeler for ₹1.02 lakh.

He alleged that issues with the battery began shortly after the purchase, and despite repeated complaints, neither the manufacturer nor the dealer rectified the defect.

On February 21, 2024, the battery exploded while charging at his home. The resulting fire left his father critically injured and destroyed a sewing machine, an overlock machine, customers' clothes, and other household belongings. ❑

There is only one caste, the caste of humanity. There is only one religion, the religion of love. There is only one language, the language of the heart.

**– Bhagwan Shri Sathya Sai Baba**

# Secondary Lead Smelters in China Face Dire Straits

**According** to an analysis published on June 30, some refined lead and alloy smelters in China have curtailed or halted production as domestic secondary lead smelters grapple with rising costs.

Data from the Shanghai Metals Market (SMM) indicates that lead-acid battery consumption remains sluggish, and demand for lead ingots and lead alloys is weak.

SMM reported that while secondary refined lead production rose slightly by 2.2% month-on-month, it has plummeted by over 31% from the peak level of 282,000 tonnes recorded in January.

Industry production levels declined steadily throughout the second quarter; SMM noted that the weekly operating rate for secondary lead across four provinces hovered between 28.4% and 29.7% for the month—levels significantly below the long-term normal range.

SMM warned that secondary lead smelters in China were facing extremely difficult conditions following a decline in raw material stocks and operating activities.

This situation has emerged despite the commissioning of new secondary smelting capacity in the country in 2025, as reported earlier this year by the Lisbon-based International Lead and Zinc Study Group (ILZSG).

The ILZSG also noted that China's net imports of lead contained in lead concentrate rose by just over 14% to 1,243 kt in 2025, while net imports of refined lead metal stood at 52 kt, down from 126 kt in 2024. ❑

# China's Battery Sector adopts a 60-Day Payment Rule

**China** is implementing stricter payment regulations within its EV and energy storage battery sectors to curb excessive competition and build a robust supply chain.

Launched on June 29 by the China Automotive Battery Innovation Alliance (CABIA) and the China Energy Storage Alliance (CNESA), this initiative is backed by 11 battery manufacturers—including CATL, BYD's FinDreams Battery, CALB, EVE Energy, and Sunwoda—and has received support from China's Ministry of Industry and Information Technology (MIIT).

Under this proposal, participating companies have pledged to make payments to suppliers within 60 days of goods delivery or product acceptance. The guidelines also recommend completing inspection and acceptance procedures within seven working days and encouraging cash payments to small and medium-sized suppliers wherever possible.

This move is part of a broader campaign by Beijing to curb harmful competition within the manufacturing industry. Officials are targeting practices such as prolonged payment delays and aggressive price-cutting, arguing that these undermine investment, innovation, and the long-term resilience of the industrial supply chain.

The initiative comes at a time when China's battery industry is expanding rapidly, yet companies are facing increasing pressure on margins. According to CABIA, China produced 1,756 GWh of EV and energy storage batteries—a 60% increase year-on-year—while total battery sales reached 1,701 GWh. Sales of energy storage batteries more than doubled to reach 500 GWh (a 101% increase), highlighting the sector's rapid expansion despite challenging commercial conditions.

Christopher Chico, an industry analyst and founder of 'The Battery Chronicle,' noted that this initiative reflects a growing realization among battery manufacturers: after years of fierce price competition, they cannot afford to see financially viable suppliers fail. Writing on LinkedIn, he observed that the prolonged price war has pushed many cathode and battery material suppliers into a loss-making position, thereby limiting their ability to invest in new materials and process improvements. ❑

Life is a challenge, meet it! Life is a dream, realize it! Life is a game, play it! Life is love, enjoy it!"

# Impact of PM Modi's Appeal on EV Sales

## Market share in the passenger car segment rose to 7.7% in June

**Last** June witnessed a significant surge in electric vehicle (EV) sales, with approximately 32,000 units purchased—marking a 19% month-on-month and over 107% year-on-year increase. The EV market share within the passenger car segment also climbed to 7.7%. This indicates that Prime Minister Narendra Modi's appeal to adopt EVs is beginning to yield results.

Rapid changes are unfolding in the Indian passenger car market, with consumer preference increasingly shifting towards electric vehicles. Sales data for last June shows that a total of 31,823 electric cars were sold; this represents a year-on-year growth of nearly 108% compared to the 15,318 units sold in June 2025, and a month-on-month rise of 19% compared to the 26,682 units sold in May 2026. Most notably, the market share of electric cars within the overall passenger car segment rose from 6.6% in May 2026 to 7.7%. In contrast, the EV market share stood at just 4.8% in June 2025, meaning the market share has grown by approximately 40% over the course of a year. ❑

When we "skill" our knowledge, life is well-balanced. When we "kill" our knowledge, the balance is upset.

**– Bhagwan Shri Sathya Sai Baba**

# Gazette notification regarding the timeline for SPV inverters

रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

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EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित
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No. 3544] NEW DELHI, WEDNESDAY, JULY 8, 2026/ASHADHA 17, 1948

## नवीन और नवीकरणीय ऊर्जा मंत्रालय

## अधिसूचना

नई दिल्ली, 3 जुलाई, 2026

**का.आ. 3706(अ).—** जबकि भारतीय मानक ब्यूरो अधिनियम, 2016 (2016 का 11) की धारा 17 और धारा 25 की उप-धारा (3) के साथ पठित धारा 16 की उप-धारा (1) और (2) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए और "सौर प्रकाशवोल्टीय, प्रणालियां, उपकरण और संघटक माल (अनिवार्य पंजीकरण की आवश्यकता) आदेश, 2017" के अधिक्रमण में, ऐसे अधिक्रमण से पूर्व किए गए या लोपित विषयों को छोड़कर, केन्द्र सरकार ने आधिकारिक राजपत्र में इसके प्रकाशन की तिथी से एक सौ अस्सी दिनों की समाप्ति पर लागू होने की तिथी के साथ तालिका में शामिल पांच उत्पादों के लिए दिनांक 27.01.2025 को का.आ. 492 (अ) के माध्यम से "सौर प्रणालियों, उपकरणों और संघटक माल आदेश, 2025" जारी किया था। और जबकि, 200 किलोवाट (>200 किलोवाट) से अधिक की क्षमता के एसपीवी इनवर्टरों (मद 4-5) के लिए स्व-प्रमाणन की समय-सीमा को दिनांक 30.06.2026 तक या अगले आदेश तक, जो भी पहले हो, दिनांक 05.08.2025 को प्रकाशित का.आ. 3597 (E) के माध्यम से बढ़ाया गया था|

2. और जबकि, सीमित परीक्षण सुविधाओं की उपलब्धता को देखते हुए और अनुपालना के लिए अधिक समय प्रदान करते हुए, 200 किलोवाट (अर्थात, >200 किलोवाट) से अधिक क्षमता के एसपीवी इनवर्टरों (मद 4-5) के लिए "सौर प्रणालियां, उपकरण और संघटक माल आदेश, 2025" के कार्यान्वयन की समय-सीमा को दिनांक



Contents

31.12.2026 या अगले आदेश तक (जो भी पहले हो), स्व-प्रमाणन के आधार पर, इस शर्त के अधीन बढ़ाया जाता है कि ऐसे निर्माताओं के पास मद संख्या 4 के लिए IS 16221 (Part 2): 2015/ IEC 62109-2: 2011 एवं IS/IEC 61683: 1999 तथा मद संख्या 5 के लिए IS 16221 (Part 2): 2015/ IEC 62109-2: 2011, IS 16169: 2019/ IEC 62116: 2014 एवं IS 17980: 2022/IEC 62891:2020) भारतीय मानकों के अनुरुप वैध आईईसी प्रमाणपत्र हों, जो आदेश के सुचारू कार्यान्वयन के लिए इन मदों और मान्यता प्राप्त परीक्षण प्रयोगशालाओं से परीक्षण रिपोर्टों के लिए उक्त आदेश में विनिर्दिष्ट हों।

[फा. सं. 223/140/2017-R और D COORD]
राजेश कुलहरि, संयुक्त सचिव

**MINISTRY OF NEW AND RENEWABLE ENERGY**

**NOTIFICATION**

New Delhi, the 3rd July, 2026

**S.O. 3706(E).—** whereas in exercise of the powers conferred by sub-sections (1) and (2) of section 16 read with section 17 and sub-section (3) of section 25 of the Bureau of Indian Standards Act, 2016 (11 of 2016) and in supersession of the Solar Photovoltaics, Systems, Devices and Components Goods (Requirements for Compulsory Registration) Order, 2017, except as respects things done or omitted to be done before such supersession, the Central Government had issued "Solar Systems, Devices and Components Goods Order, 2025" vide S.O. 492 (E) dated 27.01.2025 for five products included in the table with the date of coming into force on the expiry of one hundred and eighty days from the date of its publication in the Official Gazette. And whereas, self- certification for SPV inverters (items 4-5) of the capacity of more than 200 kW (>200 kW) was extended up to 30.06.2026 or till further orders, whichever is earlier vide S.O. 3597 (E) published in Gazette of India dated 05.08.2025.

2. And whereas, in view of the availability of limited test facilities and providing more time for compliance, the implementation of "Solar Systems, Devices and Components Goods Order, 2025" for SPV inverters (items 4-5) of the capacity more than 200 kW (i.e., >200kW) stands **extended till 31.12.2026 or till further orders, whichever is earlier,** based on self-certification, subject to the condition that such manufacturers have valid IEC certificates corresponding to Indian standards (IS 16221 (Part 2): 2015/ IEC 62109-2: 2011 &IS/IEC 61683: 1999 for item No 4 and IS 16221 (Part 2): 2015/ IEC 62109-2: 2011, IS 16169: 2019/ IEC 62116: 2014 & IS 17980: 2022/IEC 62891:2020 for item No. 5), specified in the said order for these items and test reports from accredited test labs, for smooth implementation of the order.

[F. No. 223/140/2017-R and D COORD]
RAJESH KULHARI, Jt. Secy.

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# Lead Recycling Plant vs Battery Recycling Plant: Which Turnkey Project Should You Invest in for India in 2026?

## In which turnkey project should you invest in 2026?

**– Gravita India Ltd., Jaipur –**

If you are evaluating a greenfield investment in India's recycling sector, two project types come up consistently as high-potential opportunities: a lead recycling plant and a battery recycling plant. Both operate in the same broad ecosystem - secondary lead and hazardous waste processing - but they are meaningfully different in scope, capital requirement, raw material access, regulatory complexity, and return profile.

The confusion between the two is understandable. At a surface level they look similar: both involve processing used lead-acid batteries, both produce refined lead as a primary output, and both require environmental clearances and CPCB authorisation. But the overlap ends there. A battery recycling plant is a complete processing operation that handles the entire battery - breaking it down into lead, acid, polypropylene, and other recoverable materials. A lead recycling plant typically starts downstream of that process, working with lead paste, lead bullion, or partially processed lead scrap as its raw material input.

Which one is the right investment for you in 2026 depends on your available capital, the raw material access you can realistically secure, your regulatory appetite, your target margin structure, and whether you want to operate as an upstream processor or a downstream refiner. This guide works

through each of those dimensions in detail so you can make an informed decision - or understand why combining both into an integrated operation is often the answer serious investors land on.

## The Indian Market Context: Why Both Projects Are Compelling Right Now

Before comparing the two models, it is worth understanding why 2026 is a particularly strong time to be evaluating either investment.

India is one of the world's largest consumers of lead-acid batteries. Every passenger vehicle, commercial truck, two-wheeler with electric start, inverter system, UPS, and industrial equipment unit uses one. The country's total lead-acid battery market is estimated to be growing at 7–9% annually, driven by the expanding vehicle fleet, rising power backup penetration in tier 2 and tier 3 cities, and grid storage requirements for renewable energy integration. Every one of those batteries eventually becomes scrap - typically within 2–5 years of manufacture.

Recycled lead now accounts for 70–85% of India's total lead consumption. The country imports virtually no primary lead ore in meaningful quantities; the domestic supply chain is built almost entirely on secondary lead from recycled batteries. This creates a structurally captive raw material supply and a structurally captive output market simultaneously - a combination that is genuinely rare in Indian manufacturing.

The Battery Waste Management Rules, 2022 have added a regulatory tailwind that did not exist in prior years. Under the EPR framework, battery producers and importers are legally required to demonstrate that a defined percentage of the batteries they sell are collected and recycled through CPCB-authorised facilities. Those recovery targets are rising annually. This means formal, registered recyclers are not just competing on economics - they are increasingly a compliance necessity for the battery industry's own upstream producers. Scrap flows to authorised recyclers with EPR agreements are becoming more predictable and more contractually secured than they were under the informal sector-dominated model of five years ago.

The result is that both lead recycling plants and battery recycling plants are operating in a favourable demand environment. The question is which model suits your specific position.

## What Is a Battery Recycling Plant? What Does It Actually Do?

A battery recycling plant - specifically a lead-acid battery recycling plant in the Indian context - is an upstream processing operation. Its job is to take whole used lead-acid batteries as input and separate them into their component recoverable materials: lead compounds (primarily lead paste and lead grids), sulphuric acid, and polypropylene plastic casing.

The core process stages in a lead-acid battery recycling plant are:

**Battery breaking and separation:** Whole batteries are mechanically broken - either by a semi-automatic or fully automatic battery breaker - and the contents are separated into lead-bearing fractions (paste, grids, connectors), acid, and polypropylene. This is the most technically demanding

stage in terms of health, safety, and environmental management, because it involves handling sulphuric acid and lead dust in close proximity.

**Acid neutralisation and treatment:** The battery acid - dilute sulphuric acid - must be neutralised using lime or sodium hydroxide before it can be safely disposed of or further processed. Some operations convert it into sodium sulphate for sale to detergent manufacturers, which adds a small additional revenue stream.

**Smelting:** The lead-bearing fractions (paste and grids) are smelted in a rotary or blast furnace to produce crude lead bullion. This is a high-temperature pyrometallurgical process requiring a gas or diesel-fired furnace with a pollution control system - at minimum a baghouse filter and fume extraction, and ideally a secondary combustion chamber with wet scrubber.

**Refining:** Crude lead bullion from smelting is refined in a refining kettle to remove impurities - antimony, arsenic, tin, copper - to achieve the required purity level (typically 99.97% for battery-grade refined lead).

**Alloying and casting:** Refined lead is alloyed to specification if required (antimonial lead, calcium lead, etc.) and cast into ingots for sale.

**Polypropylene recycling:** The plastic casing fraction is washed, granulated, and sold as recycled PP granules - a separate revenue stream that meaningfully improves overall plant economics.

A battery recycling plant is therefore a multi-output, multi-process facility. Its complexity is higher than a lead-only refining plant, its capital cost is higher, its regulatory obligations are more extensive, and its staffing and operational management requirements are greater. In return, it processes the cheapest available form of lead-bearing raw material - whole used batteries - and captures value across multiple output streams.

For a detailed breakdown of battery recycling plant setup requirements in India including licensing, costs, and timelines, Gravita's existing guide on setting up a battery recycling plant in India covers those specifics in full.

## What Is a Lead Recycling Plant? How Is It Different?

A lead recycling plant - in the narrower sense - is a downstream refining and processing operation. Rather than starting with whole batteries, it starts with lead-bearing secondary raw materials that have already been partially or fully processed: lead bullion from other smelters, lead paste from battery breakers, lead scrap from industrial sources, or dross from other lead processing operations.

The process stages in a lead recycling plant are a subset of the full battery recycling chain:

**Raw material receipt and assessment:** Incoming lead bullion, paste, or scrap is sampled and assayed to determine its lead content and impurity profile before processing.

**Smelting or remelting:** Depending on the input form, material is either smelted from a lead compound (paste or oxide) or simply remelted if already in bullion form.

**Refining:** The core value-add process. Lead is refined in a refining kettle through a sequential process of drossing, decopperising, softening,

dezincing, and final refining to achieve target purity.

**Alloying:** Refined lead is alloyed to order - antimonial, calcium, selenium, and other speciality alloys for grid casting, cable sheathing, radiation shielding, and industrial applications.

**Casting:** Finished alloy or pure lead is cast into ingots, pigs, or other forms per customer specification.

**Downstream products:** Some lead recycling plants add oxide production - red lead, litharge, grey oxide - which commands significantly higher margins than refined lead metal.

A lead recycling plant is simpler in process terms, has lower capital requirements for equivalent output capacity, generates fewer regulatory obligations (no acid handling, no battery breaking, less fume complexity), and is faster to commission. Its weakness is raw material dependency: it needs a reliable supply of processed lead inputs - bullion, paste, or clean scrap - which means it is partially dependent on either battery recycling plants upstream or on imported lead scrap, which is subject to import restrictions and price volatility.

## Side-by-Side Comparison: 8 Dimensions That Matter to Investors

### 1. Capital Investment Required

A standalone lead recycling plant at a capacity of 3,000–5,000 MTPA of refined lead output can be established for approximately ₹3–8 crore at the smaller end, scaling to ₹15–25 crore for a mid-sized operation with oxide production capability. The cost range is wide because it depends heavily on whether the refining kettle capacity, furnace type, pollution control specification, and oxide production lines are included.

A battery recycling plant at a comparable lead output capacity costs significantly more, typically ₹8–20 crore for a small-to-mid-sized plant including the battery breaking system, acid neutralisation unit, smelting furnace with full pollution control, refining kettles, and PP granulation line. The battery breaking and acid handling systems add both capital cost and complexity that a lead-only refining plant avoids.

For investors with more limited initial capital, a lead recycling plant is the lower-entry-cost route. For investors who can fund the higher upfront investment, a battery recycling plant captures more of the value chain and is less dependent on purchasing processed inputs at market prices.

### 2. Raw Material Access and Security

This is arguably the most important dimension and the one that most determines long-term plant viability.

A battery recycling plant sources whole used lead-acid batteries - the most abundant form of lead-bearing secondary material in India. Battery scrap is available from vehicle dismantlers, battery retailers, auto workshops, inverter dealers, industrial users, and organised collection networks. The supply is geographically distributed, and EPR agreements with battery producers under the Battery Waste Management Rules are increasingly channelling formal scrap flows to registered recyclers. If you can secure battery scrap supply - either through your own collection network or through EPR agreements - your raw material position is relatively strong.

A standalone lead recycling plant

depends on purchasing processed lead inputs: bullion, paste, or clean scrap. These materials are available but are priced closer to the refined lead output price than whole batteries are, which compresses the refining margin. Import of lead scrap from international markets is an option but involves import duty, shipping costs, quality variability, and regulatory clearances. Plants that are purely downstream refiners without their own battery breaking capability are exposed to raw material margin squeeze that integrated operators do not face.

The practical implication: for long-term margin security, backward integration into battery breaking - even at small scale - significantly strengthens the raw material position of any lead recycling operation.

**3. Regulatory and Licensing Requirements**

Both plant types fall under India's hazardous waste regulatory framework and require broadly similar categories of clearance, but the battery recycling plant faces a more complex compliance stack.

For either plant, you will need: Consent to Establish (CTE) and Consent to Operate (CTO) from the State Pollution Control Board, registration under the Hazardous Waste Management Rules, CPCB registration as an authorised recycler under the Battery Waste Management Rules (for battery recycling plants this is mandatory; for lead recycling plants that process battery-derived inputs it is strongly advisable), and GST registration with the appropriate HSN codes for lead and lead products.

Battery recycling plants additionally require: authorisation for handling and processing sulphuric acid under relevant state chemical safety regulations, more extensive pollution control infrastructure (acid neutralisation system, higher-specification fume extraction, effluent treatment), and in most states an Environmental Impact Assessment for larger capacity installations. The compliance cost and timeline for a battery recycling plant is therefore higher, and the ongoing regulatory management is more demanding.

Lead recycling plants without battery breaking avoid the acid-handling regulatory layer, which simplifies both the initial clearance process and ongoing compliance management considerably.

**4. Product Output and Revenue Streams**

A battery recycling plant generates multiple revenue streams from a single input: refined lead or lead alloy ingots (primary output), polypropylene granules (from battery casings), sodium sulphate or neutralised effluent (from acid), and potentially lead oxide if a downstream oxide production line is added. This product diversification reduces dependence on refined lead price alone and provides meaningful margin support when lead prices are under pressure.

A lead recycling plant's revenue is more concentrated: primarily refined lead and lead alloys, with the option to add red lead, litharge, or other oxide products downstream. The margin per tonne of output is potentially higher than a battery recycling plant because the refining step adds more value per tonne of lead processed - but the total revenue base is narrower.

Adding oxide production - red lead or litharge - to either plant type

materially improves the economics. Lead oxide products sell at a significant premium over refined lead metal and serve different customer segments (paint, glass, ceramics, battery paste manufacturers), which also diversifies the customer base.

**5. Operating Margins and Return Profile**

Generalising margins in secondary lead processing is difficult because they depend heavily on the spread between scrap input costs and refined lead output prices, which moves with the LME lead price. However, some structural observations hold across market cycles.

Battery recycling plants operating at scale with good raw material supply typically achieve decent processing margins, before overheads - driven by the gap between whole battery scrap costs and refined lead value, plus the additional PP and acid revenue. At 5,000 MTPA output, this translates to a good processing margin annually before fixed costs, which at reasonable capex levels gives a payback period of 4–7 years for a well-run operation.

Lead recycling plants refining purchased bullion or clean scrap operate on narrower spreads because the input material is already partially refined and priced accordingly. However, capital costs are lower, which can produce comparable return on investment percentages even at lower absolute margins. Adding oxide production shifts the economics considerably upward.

**6. Land, Utilities, and Infrastructure Requirements**

A battery recycling plant requires more land than a comparable-output lead refining plant, because battery storage, acid handling systems, and PP granulation lines all require additional footprint. Minimum practical land requirement for a small battery recycling plant is typically 1–2 acres; for a mid-sized plant with full pollution control and storage, 3–5 acres is more realistic.

A lead recycling plant without battery breaking can operate on a smaller footprint - 0.5–1 acre for small-scale operations - though pollution control infrastructure (baghouse, scrubbers) still requires meaningful space allocation.

Both plant types require reliable power (lead processing is energy-intensive), water supply for cooling and acid neutralisation, road access for heavy vehicle movement, and ideally proximity to scrap supply corridors. Industrial zone location is strongly preferred for regulatory clearance and community relations reasons.

**7. Setup Timeline**

A lead recycling plant at small to mid scale can typically be commissioned within 12–18 months from project initiation, assuming land is available and regulatory clearances proceed normally. The equipment set is simpler, the civil construction requirements are lower, and the commissioning process is less complex.

A battery recycling plant requires 18–36 months from project initiation to commercial operations in most cases, because of the additional regulatory approval stages, more complex civil and mechanical engineering, and extended commissioning of the battery breaking, acid neutralisation, and pollution control systems.

*To be Continued in Next Issue*

Uniting Small Scale Battery Industry
41 years of Publication
1985 - 2026

# BATTERY DIRECTORY & YEAR BOOK

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UDYAM Numbers

✓ List of 64 types of industries related to batteries

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**The addresses of 6246 Battery Entrepreneurs/businessmen from India and abroad have been published in the Annual Battery Directory-2026 (page 1528, two parts). The Annual and Fortnightly Battery Directory is the best medium to reach all the major battery/battery parts entrepreneurs from India and abroad. To advertise in the fortnightly issues and in the Annual Battery Directory-2027, please contact Anuradha: 9971150801, Chandra Mohan: 9810268067, Shekhar Verma: 9910699538.**

Looking forward to serve you.

Yours faithfully,

for **Battery Directory & Year Book**

(CHANDRA MOHAN)

# Battery Directory-2026
# Products Manufacturers Index

❑

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✔ Your company name will appear under your state and city in the online battery directory portal www.onlinebatterydirectory.com.

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**Chandra Mohan: 9810268067**

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✔ Battery, Inverter, Battery Charger, UPS, and RO manufacturers will find information about you, and you will also be able to contact them.

✔ The magazine publishes news about the activities of various Battery Associations and Battery Federations in the country. You will also be able to connect with the battery world.

✔ Articles on Batteries, Battery Machinery, Battery Chargers, etc. are published in the fortnightly issues of Battery Directory. You will benefit from studying them.

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The subscription fee for the Battery Directory (hard copy) is only ₹650.

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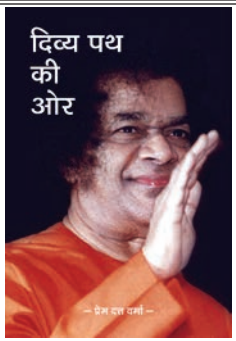
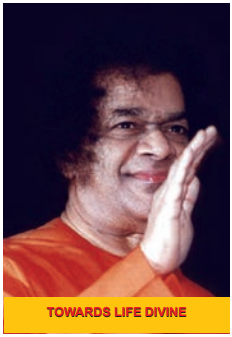
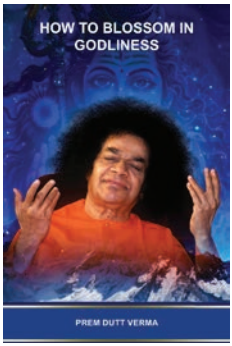
**Chandra Mohan: 9810268067**

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# From 'Éeta' to 'Gita'

## The key to crossing the ocean of worldly existence

**– Dr. Shashank Shah –**

Once, during a summer course, Swami narrated the story of a *Pandit* (scholar) and a boatman. The *Pandit* was crossing the river in the boatman's vessel, on his way to the other bank to perform worship. The story revolves around the conversation that took place between the *Pandit* and the boatman. Swami observes that a *Pandit* often harbors a strong desire to display his scholarship—an urge to constantly demonstrate, "I am a *Pandit*, I am a man of knowledge; let me show off my learning."

He asked the boatman, "Did you read the newspaper this morning? Tell me something." The boatman replied, "I never went to school, so how could I read the newspaper? I don't even know how to read." Then the Pandit said, "You don't know how to read the newspaper! Twenty-five percent of your life has been wasted."

Then, the boat moves forward. The Pandit asks the boatman, "Come now, sing something for me. The weather is so pleasant and a cool breeze is blowing; if you sing a song, a *bhajan*, or anything at all, the time will pass agreeably." The boatman replies, "Pandit-ji, I told you that I never went to school, so I never learned to sing. How am I supposed to sing?" The Pandit remarks, "You don't even know how to sing? Then fifty percent of your life has gone to waste."

The boat moved a little further, and the Pandit asked, "Well, shall we discuss matters of religious wisdom or engage in a scriptural debate?" The boatman replied, "Pandit-ji, I never went to school; I never received an education. So, how could I possibly acquire knowledge of the scriptures? I know nothing about them." The Pandit remarked, "Oh, so you lack knowledge of the scriptures too! In that case, seventy-five percent of your life has gone to waste."

Just then, a strong wind began to blow, clouds gathered in the sky, and the boat started spinning and rocking violently. The boatman asked the Pandit, "Pandit-ji, do you know how to swim?" The Pandit replied, "No, why?" The boatman said, "Oh, Pandit-ji! Then your life has been a hundred percent wasted." Saying this, he jumped into the river and swam to the other bank. The boat spun around and sank; the poor Pandit went down into the water along with it.

At the conclusion of the discourse, Swami said that just as 'Eeta' (the Telugu word for swimming) is essential for saving one's life, the 'Gita' is vital for crossing the ocean of this world. 'Gita' signifies the message of God.

We are always eager to hear about and understand Swami's miracles and experiences. What are these miracles and experiences? They constitute the *Bhagavatam*. The glory of the Divine and the magnificence of His *Leelas* (divine plays) represent the next level of understanding. The message of the Divine itself is the *Bhagavad Gita*. Thus, the narration of miracles and divine plays corresponds to the *Bhagavatam*, which is akin to the primary level of our spiritual school. Since children in primary school are young, the *Bal Vikas* Group-1 curriculum uses stories and tales that delight them; however, as they progress to Groups 2 and 3, they are taught the *Bhagavad Gita*, *Shlokas*, and texts like *Bhaja Govindam*. Similarly, in the spiritual school, our ultimate goal is to learn the message of the *Bhagavad Gita*.

Then, it is essential to come to the spiritual college and acquire the knowledge of the 'Upanishads,' which declare that this entire universe is a manifestation of God Himself (*Ishavasyamidam Sarvam*).

Ultimately, when we seek to attain a 'Ph.D.' on the spiritual path, we must—through the knowledge of the 'Brahma Sutra'—realize that the thread binding this entire universe together is *Brahman*. We are all individual beads of a beautiful garland, and the string that connects them is the principle of

*Brahman*. This is the true essence of the Brahma Sutra.

Only when we grasp this do we attain the 'PhD' of spirituality. It was only after Adi Shankaracharya wrote his commentary on the *Brahma Sutras* that his guru, Govinda Bhagavatpada, told him he was fully prepared to begin his mission. Subsequently, he expounded and propagated the philosophy of *Advaita* across the length and breadth of India, and at the age of just thirty-two, having concluded his earthly mission, he returned to his eternal abode (*Paramdham*).

I am sharing all this with you because, if we wish to have the privilege of becoming Swami's messengers, it is absolutely essential for us to know and understand Swami's message and to embody it in our lives. Learning about Swami's experiences and miracles is merely the beginning—akin to primary school—in our spiritual education. However, understanding His message, experiencing it, and translating it into our conduct is the supreme responsibility of every member, office-bearer, coordinator, and president of the Sri Sathya Sai Seva Organisation. Only by comprehending this responsibility and fulfilling it successfully can we truly carry Swami's mission forward.

## 'Sanatan Sarathi' brings us the message of God

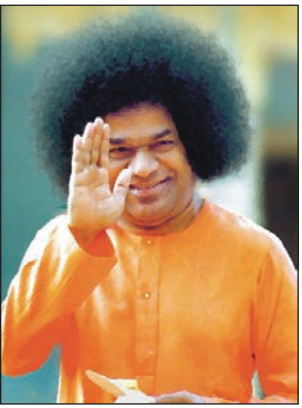
If there is anything that truly supports us on this path, it is 'Sanatan Sarathi'. This is because 'Sanatan Sarathi' conveys God's message to us; it visits our homes every month to remind us of that message and inspire us.

We all speak the name 'Sanatan Sarathi' with great eagerness and reverence. I, too, used to look forward to the arrival of *Sanatan Sarathi* during my school and college days. When the magazine arrived, I would open the envelope with immense love and devotion; sitting near the place of worship, I would read it, regarding it as *Swami's* *Prasad* (divine offering). I would read it with the same respect, joy, love, and eagerness with which one turns the pages of a holy scripture. I know very well just how divine the experience of *Sanatan Sarathi* arriving at one's home truly is.

But what is the true meaning of this 'Sanatan Sarathi'? Today, I will speak more about its meaning than about experience itself. For when we are young, we are eager to gain experience; as we grow a little older, we are eager to act; but as we mature further, we need to understand things through knowledge and wisdom. Today, our organization is over fifty years old; therefore, it is crucial for us to grasp the profound meaning hidden behind every experience.

So, what is the meaning of

'Sanatana Sarathi'? How many of you have visited the Bhajan Hall at Prasanthi Nilayam? Please raise your hands... Good, many have gone—almost everyone (100%) has been there. There is a beautiful statue located at the rear of the Prasanthi Nilayam temple. Whose statue is it? It is the statue depicting 'Geetopadesha' (the teaching of the Gita). This scene and image of Geetopadesha also appears on the cover of every edition of the Bhagavad Gita, doesn't it? What is its true significance?



We are all often ready to quarrel and fight in the name of God, yet those who truly wish to know God will first strive to understand His purpose and His message. So, what is the fundamental and spiritual significance of this imagery from the Bhagavad Gita? It is beautifully described in the *Katha Upanishad* through the metaphor of the chariot, which offers a profound interpretation. Today, I am going to explain this very meaning to you.

According to the teachings of the Bhagavad Gita and the Upanishads, this 'chariot' symbolizes the human body. The wheels of the chariot represent the four fundamental objectives of human life—the four *Purusharthas*: *Dharma* (righteousness), *Artha* (prosperity), *Kama* (desire), and *Moksha* (liberation). The horses harnessed to the chariot symbolize our senses, while the reins used to control them represent the 'mind'.

The person seated in that chariot—namely Arjuna—is also known by the name 'Partha'. What does 'Partha' mean? One who is a son of the Earth is called Partha. Who in this world is not a son of the Earth? We are all children of the Earth. This implies that in the metaphor presented in the Bhagavad Gita, it is actually we ourselves who are seated there in the form of Arjuna. And who is seated there, holding the reins of the chariot's horses? Lord Shri Krishna Himself. The Kathopanishad states that the charioteer represents our intellect and our inner self; he symbolizes the Divine residing within us. The spiritual significance of placing Lord Krishna as the charioteer is that if we surrender our intellect and inner self into God's hands, then this body—along with its four goals of human life (*Purusharthas*), the individual soul dwelling within, the senses that guide the path, and the mind acting as the reins—will all come under Divine control. Only then will this chariot of our life reach its destination with absolute safety.

When this magazine was about to be launched at Prasanthi Nilayam, Swami summoned Professor Kasturi and said, "I am going to start a magazine. The time has come for you to move to Puttaparthi, for you are to be its editor." Swami conveyed this to Professor Kasturi while in Bengaluru. Professor Kasturi had been a professor at the University of Mysore; after retiring from there, he worked at All India Radio. In fact, it was Professor Kasturi who gave the name 'Akashvani' to the service.

## Naming 'Sanathana Sarathi'

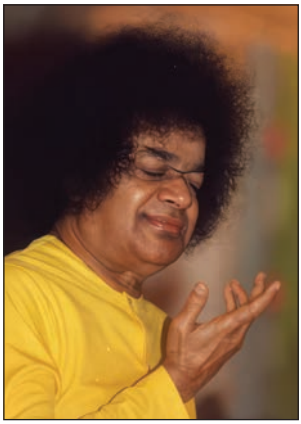
Then Swami asked him, "Do you know the name of this magazine?" Professor Kasturi replied, "No, Swami; how would I know?" Swami said, "Well, make a guess—what do you think its name is?" Professor Kasturi first suggested, "Prema Yoga." Swami said, "No, 'Prema Yoga' is not the name." Then Professor Kasturi said, "Dharma Karma." Swami said, "No, 'Dharma Karma' is not its name either." Then Professor Kasturi said, "Swami, please tell me yourself—what is its name?" Swami said, "I have named it—'Sanathana Sarathi'."

I was recounting this episode from the Bhagavad Gita because, in the Dwapara Yuga, Sri Krishna assumed the title of 'Parthasarathi' (Arjuna's charioteer). However, in the Kali Yuga, Swami has taken upon Himself the responsibility for the chariots of our lives by adopting the name 'Sanatan Sarathi' (the Eternal Charioteer). Swami stands ready to act as the charioteer of our lives and guide us toward our ultimate goal. Yet, are we prepared to place the reins of our lives in His hands? If we are willing to entrust the reins to Him, then, as the Sanatan Sarathi, He will not only provide us with guidance and inspiration but also fully shoulder the responsibility of steering the chariot of our lives to its final destination. Thus, 'Sanatan Sarathi' is not merely a monthly magazine; it is a tangible embodiment of the living message of the Divine.

After discussing such serious matters, I now conclude by sharing a humorous anecdote and a divine experience involving Swami. Professor Kasturi, the editor of *Sanathana Sarathi*, was also a renowned Kannada writer. In the literary world, he was known as 'Kasturi Kannada'—a personality likened to the highly fragrant musk (*kasturi*) of the Kannada language.

Swami once called Professor Kasturi and said, "Kasturi, you are doing such an excellent job as the editor of *Sanathana Sarathi*. Some press representatives are coming; they want to write about you and need a really nice photograph of yours. Come dressed smartly, and I will take the photograph myself. I have set up the camera in my room; get ready and come over in half an hour."

Professor Kasturi went to his room. Even at the age of 65 or 70, a natural sense of excitement bubbled up within him—the thought that "I am the editor of *Sanathana Sarathi*, my photograph will appear in the newspaper, and Swami Himself is taking the picture!" Half an hour later, Professor Kasturi returned, impeccably dressed in a fine coat and jacket. Swami seated him right in front of Himself. In those days, cameras were large, requiring the photographer to drape a black cloth over their head and peer inside from the back. If you have ever seen images of cameras from that era on the internet, you will recall what they looked like.



## A Divinely Rare Opportunity

Swami went behind the camera and, peering through it, said, "No, no, Kasturi—turn a little this way, a little that way; look here, look there; smile a bit..." This went on for about five to ten minutes. Then Swami said, "Yes! Stay exactly like that; keep your face just so." Saying this, He stepped behind the camera, and suddenly, a toy mouse sprang out from within it and landed right in Professor Kasturi's lap! Professor Kasturi recoiled in alarm. Upon closer inspection, however, he saw it wasn't a real mouse. "It was one of those toy mice—soft and plush. Swami emerged from behind the camera, laughing heartily and saying, 'Kasturi, how I fooled you!' He laughed loudly and then added, 'Kasturi, do you still harbor a desire to see your photograph in the newspaper at this age? Is it truly important that something about you appears in the press? Or is it far more significant that you have been granted the divinely rare opportunity to carry the *Avatar-Vani*—the Avatar's message—to every household, and that you are fulfilling this role so admirably? What greater blessing could there be at this stage of life!'"

It was to convey this very point to you that I enacted this somewhat amusing little scene today. Swami was never one to remain serious; he would constantly impart his core spiritual message—that there is no greater opportunity in human life than doing God's work—through such small, lighthearted, or even tearful experiences.

Once, in the interview room, Swami asked, "What is the most difficult thing?" People offered various answers. Finally, everyone agreed, "Swami, attaining self-realization and liberation is the most difficult." Swami replied, "No, attaining liberation is not difficult. Even an ant will attain self-realization one day, for it is moving towards God. After traversing countless life forms, undergoing various karmas, and engaging in spiritual practice, the soul of the ant will eventually attain the Supreme Soul. So, what is the rarest thing?"

The rarest thing is this: when an *Avatar* (divine incarnation) descends once in an era, how many people are actually able to recognize Him? To recognize the *Avatar*, to gain the opportunity to approach and behold Him, to hear His message, to draw inspiration from that message to engage in His mission, and to dedicate one's entire life—in thought, word, and deed—to the divine work—this is the rarest opportunity a human being can receive. Such an opportunity arises only once in an age. ❑

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