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FORTNIGHTLY ISSUE

16-31 March 2026

(Vol.41, No.6 Published on 20.03.2026)

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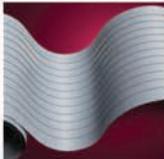
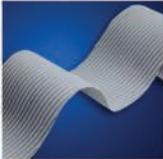
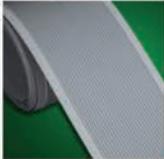
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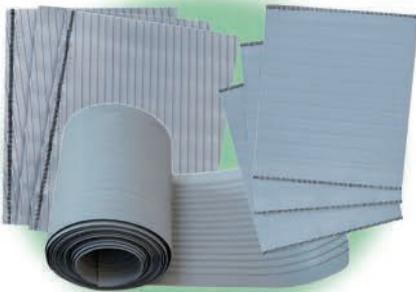


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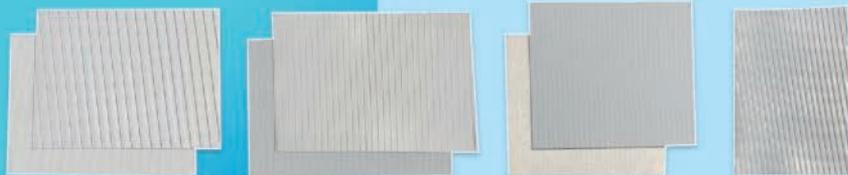
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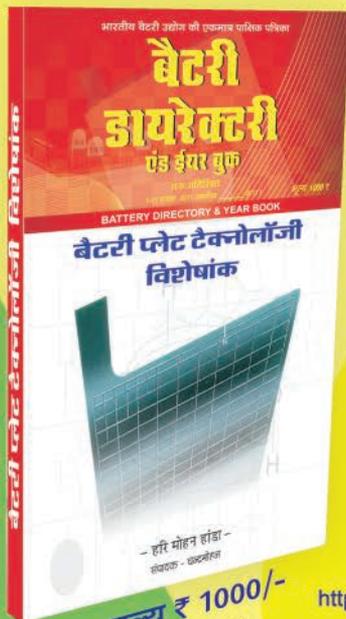
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Knowledge without devotion to God produces hatred.

—Bhagwan Sh. Sathya Sai Baba



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Sh. Hansraj Agarwal of Hi-Tech Insulators Pvt. Ltd., Jaipur, Honored with the India Pride Award-2026

Sh. Hansraj Agarwal of Hi-Tech Insulators Pvt. Ltd., Jaipur, was honored with the India Pride Award-2026 by Dr. Mansukh Mandaviya, the Government of India's Minister for Labour and Employment, and Youth Affairs and Sports. The Award Ceremony took place on March 5, 2026, at the Hyatt Regency Delhi. This award ceremony was organized by Dainik Bhaskar, a renowned Indian newspaper.

Sh. Hansraj Agarwal also serves as the Secretary of the Rajasthan Chamber of Commerce and Industry and as the North Zone President of the Federation of Indian Small Scale Associations. □

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Lead Batteries Made with Cancrie Nanocarbon

Perfect for Micro-Hybrid Automotive Applications

As automotive platforms increasingly adopt micro-hybrid (start–stop) systems, the performance demands on conventional lead-acid batteries have changed dramatically. These batteries are no longer just energy reservoirs—they must handle frequent high-rate charge acceptance, rapid discharge pulses, and long cycling under partial state of charge (PSoC). At the heart of enabling this shift lies an often-overlooked component: Carbons in the Negative Active Material (NAM).

The Challenge with Micro-Hybrid Applications

In start–stop and micro-hybrid vehicles, the battery works much harder than in conventional cars. Every time

the vehicle slows down, it must quickly absorb charge from regenerative braking, and every time it restarts, it must deliver a strong power burst. This happens hundreds of times a day especially in traffic conditions, often without the battery ever reaching full charge. This pushes lead-acid batteries into continuous PSoC (partial state of charge) operation, where traditional batteries suffer from sulfation, poor charge acceptance, and premature capacity fade. The negative plate is especially vulnerable, as lead sulfate crystals grow dense and irreversible, limiting active surface area and ion & charge transport. Over time, this leads to slower charging, reduced fuel-saving benefits, frequent battery replacements, and poor customer experience.

Role of Cancrie Nanocarbons in the NAM

Cancrie nanocarbons are engineered with high surface area, controlled porosity, and optimized conductivity. They act as multifunctional performance enhancers within the NAM. Unlike conventional carbon black, nanocarbons form a conductive, porous network that improves both electrochemical kinetics and mass transport.

Key mechanisms include:

- ◆ **Enhanced DCA:** Nanocarbons provide fast ion & electron pathways and electrolyte access, allowing rapid charge uptake during regenerative braking.

- ◆ **Sulfation Mitigation:** Their porous structure promotes uniform lead sulfate formation and easier reconversion during charging.

- ◆ **PSoC Stability:** Nanocarbons act as a capacitive buffer for local current density spikes, reducing irreversible degradation under start–stop cycling.

- ◆ **Lower Internal Resistance:** Improved electronic percolation directly translates to better power delivery and reduced heat generation.

Why Structure Matters More Than Quantity

In micro-hybrid batteries, performance is not driven by how much carbon is added, but how that carbon is structured. Nanocarbons with interconnected pores outperform high-surface-area carbons that lack accessible pathways. This architecture ensures electrolyte penetration deep into the NAM, enabling consistent electrochemical activity across the plate thickness.

Impact on Battery Performance

When integrated into optimized NAM formulations, advanced Cancrie nanocarbons enable:

- ◆ 60% improvement in charge acceptance

- ◆ 20–30% longer cycle life under PSoC

- ◆ Higher resistance to vibration & shock absorption

- ◆ Improved fuel efficiency and CO₂ reduction at the vehicle level

These gains make Enhanced Flooded Batteries (EFBs) and advanced AGM designs viable, cost-effective solutions for micro-hybrid vehicles—without the need to fully transition to lithium-ion systems.

Sustainability Advantage

Beyond performance, nanocarbons derived from agricultural waste introduce a sustainability edge. Compared to fossil-based carbons, bio-derived nanocarbons significantly reduce embedded carbon emissions while supporting circular material value chains—an increasingly important factor for automotive OEMs.

Conclusion

Advanced nanocarbons have quietly become a cornerstone of modern micro-hybrid lead-acid batteries. By engineering the right carbon structure within the NAM, manufacturers can unlock higher charge acceptance, longer life, and robust performance under demanding start–stop conditions. As vehicle electrification continues to evolve, nanocarbons will remain a critical bridge between legacy battery chemistries and next-generation performance expectations. □



Massive Fire at Battery Factory: Raw Materials and Finished Batteries Worth Crores Reduced to Ashes

A massive fire broke out late on the night of February 26—at approximately 1:30 AM—at the battery manufacturing facility of Agra-based **Bharti Industries Pvt. Ltd.** (the renowned manufacturers of '**DB Decor**' Batteries), located in Kosi. Fortunately, as there was no night shift in operation, no employees were present inside the company premises; only a security guard was stationed outside, thereby averting the risk of a major loss of life. Upon receiving reports of the fire, local administrative officials and fire brigade teams immediately rushed to the scene. Approximately 20 to 25 fire tenders were deployed to bring the blaze under control. After a strenuous effort, the fire was finally brought under complete control around 2:00 PM.

Sh. Harishankar Jha, the **Managing Director of Bharti Industries Pvt. Ltd.**, has been manufacturing '**DB Decor**' Batteries for several decades and has made significant contributions toward meeting the state's demand for battery-based energy solutions. Sh. Jha stated that, from a safety perspective, the factory was equipped with a fire-extinguishing pipeline system; however, due to the absence of personnel during the night and the sheer intensity of the blaze, the fire spread rapidly. According to Mr. Jha, this fire incident has resulted in financial losses estimated at approximately ₹20 to ₹25 crore. Both raw materials and finished batteries were completely destroyed in the fire. Preliminary investigations suggest that a short circuit was the cause of the fire.

The country's small-scale battery entrepreneurs have been deeply distressed by this unfortunate incident; they stand in solidarity with Sh. Harishankar Jha and remain ready to extend every possible assistance. Sh. Harishankar Jha also serves as the President of the Central-East Zone of the Federation of Indian Small Scale Battery Associations. □



Eight charred to death in Indore house Fire, EV Charging short circuit suspected

In the early hours of March 18, a fire broke out in a house near Bengali Square in Indore, claiming the lives of seven people who were burned to death. The blaze was triggered by a short circuit that occurred while an electric vehicle (EV) was being charged. Preliminary investigations have confirmed that the fire was indeed caused by a short circuit. This electrical fault occurred while the electric vehicle was charging overnight. The Pugalia family had parked their electric car outside their home and had plugged it in to charge before retiring for the night. Officials believe that the short circuit at the charging point initially ignited the vehicle, and the flames subsequently spread rapidly, escalating into a massive inferno. The tragedy claimed the lives of eight people, leaving the entire city of Indore in shock.

The flames spread with such speed that the occupants trapped inside the house had no opportunity to escape or flee to safety. Although three individuals somehow managed to escape—one of whom later succumbed to their injuries while undergoing treatment—the remaining seven people remained trapped inside the house and perished in the fire. □





The Indian Battery Manufacturers Association (IBMA) has registered an objection against the exclusive use of lithium-ion batteries in e-rickshaws.

Lead Batteries are cleaner, safer, and more circular than Lithium over their entire lifecycle

The Indian Battery Manufacturers Association (IBMA)—an Association comprising the country's major battery manufacturers, recyclers, and vendors—has written to the Ministry of Road Transport and Highways, registering its objection to the mandate restricting the use of batteries in e-rickshaws exclusively to lithium-ion technology. **The Association has stated that prohibiting all battery chemistries other than lithium-ion for use in e-rickshaws is neither appropriate nor logical.**

Collectively, the members of the IBMA represent over 80% of the country's total battery manufacturing capacity and include the manufacturers behind the nation's leading automotive and industrial battery brands. The letter sent by the Association reads as follows:

2. Objective:

The objective of this letter is to draw your attention to a specific clause within the notification regarding the draft GSR 499 (E) Rules, which proposes

amendments to the Central Motor Vehicles Rules (CMVR), 1989. We are particularly concerned about the proposed amendments—specifically the insertion of Rule 125-R following Rule 125-Q—wherein Paragraph (2) states: “All e-rickshaws/e-carts manufactured on or after April 1, 2027, shall be fitted with Lithium-ion battery packs, and their performance requirements shall be in accordance with AIS-156 (Part 1) and (Part 2), as amended from time to time.”

We were unaware of this proposed amendment, and no consultation regarding this matter was held with the IBMA. While the Delhi EV Policy represents a commendable step toward promoting e-mobility and addressing the issue of vehicular emissions, we firmly believe that this specific regulation requires modification; mandating a specific battery chemistry for this particular application carries significant implications.

3. Submissions:

The amendment introduced to the CMVR, 1989, through Rule 125-

Limiting battery chemistry solely to Lithium-ion will increase vehicle and operating costs, thereby impacting the economics of this service and jeopardizing the livelihoods of thousands of operators.

R appears to be premised upon a misconception regarding the role played by various battery chemistries in supporting e-mobility—specifically in the context of e-carts and e-rickshaws.

3.1 Economic Viability:

E-rickshaws and e-carts are low-speed vehicles that serve as a vital mode of last-mile connectivity within densely populated metropolitan areas. The operators of these vehicles are micro-entrepreneurs who provide an essential service to urban commuters. The initial capital investment required for the vehicles currently in use is relatively low; this affordability ensures a reasonable return on investment, provides a sustainable livelihood for the operators, and enables the provision of affordable transportation services to the public. These e-rickshaws predominantly utilize lead-acid batteries, a choice that serves to keep the overall cost of the vehicle low; Battery packs are readily available, and replacing them is quite inexpensive. This is particularly true in China, which likely hosts the largest population of these low-speed electric tricycles.

Restricting battery chemistry solely to lithium-ion would drive up both vehicle acquisition costs and operating expenses; this would negatively impact the economic viability of this service and jeopardize the livelihoods of thousands of operators.

Beyond lead-acid, other affordable technologies may exist that could effectively serve this purpose; therefore, limiting battery technology options exclusively to lithium-ion would stifle the development and adoption of such alternative technologies.

3.2 Technological Resilience:

The recommendation to restrict battery chemistry for e-rickshaws solely to lithium-ion would force the industry to rely on the importation of lithium-ion cells (as there are currently no domestic manufacturers), as well as on the importation of battery management systems to accompany the lithium-ion battery packs. This creates excessive dependency and vulnerability within the supply chain for a critical vehicle component—namely, the battery pack.

In contrast, existing lead-acid technology boasts a robust domestic manufacturing base and a highly developed ecosystem, ensuring a cost-effective power source for this essential e-mobility application. Even the development of other competing chemistries—such as sodium-ion or metal-air—which hold some promise, would be far less dependent on imports.

3.3 Operational Safety:

In outdoor environments and during the high temperatures of summer, lithium-ion batteries can enter a state of thermal runaway at temperatures between 150–180°C. This can lead

In outdoor environments and under high summer temperatures, lithium-ion batteries can undergo thermal runaway at 150–180°C, potentially leading to fires, explosions, the release of HF gas, and difficulties in extinguishing the fire.

to fires, explosions, the release of HF gas, and significant difficulties in extinguishing the resulting blaze. Several incidents involving EV fires have already been reported in Delhi.

Lead-acid batteries do not catch fire; they utilize aqueous electrolytes and carry a very low risk of sudden explosion, posing no threat of thermal runaway. This inherently makes them safer to operate in dense urban environments and amidst the high temperatures characteristic of Indian summers.

3.4 Environmental Sustainability:

It is crucial to recognize that lead-acid batteries represent the most circular, most recycled, and most domestically integrated battery chemistry in India. The industry boasts a recycling rate exceeding 98% and is supported by a mature, regulated ecosystem for collection and recycling.

While lithium-ion batteries are essential for high-energy-density applications, they currently suffer from very low recycling rates (less than 30% globally and less than 5% in India); furthermore, they are associated with higher lifecycle emissions and pose significant risks regarding fire and thermal runaway. A cradle-to-grave LCA (Life Cycle Assessment) reveals that lead-acid batteries—owing to very high recycling rates and a reduced need for fresh mining—are significantly cleaner

and more circular throughout their entire lifecycle. Any policy that bans lead-acid batteries while heavily prioritizing lithium-ion technology is misguided.

4. Misconceptions Regarding Lead-Acid Technology:

We suspect that the draft policy—which mandates that e-rickshaws/e-carts manufactured after April 1, 2027, be equipped exclusively with lithium-ion battery packs—may stem from misconceptions regarding these two battery chemistries and their respective impacts on human health and the environment.

4.1. While lead can be hazardous if ingested, it is managed in a completely safe manner within the context of batteries. Inside a battery, both the lead and the acid are effectively contained through spill-proof mechanisms and designs that minimize gas emissions. Lead-acid batteries benefit from a robust ecosystem that facilitates nearly complete closed-loop recycling, supported by established collection systems and adequate authorized recycling capacity. The majority of these batteries are manufactured in highly compliant facilities that adhere to environmentally sound manufacturing practices—certified under standards such as IS 14001 and IS 27001. Furthermore, the organized sector of the industry has demonstrated a strong commitment to complying with

Summary of Lifecycle Emissions (Cradle-to-Grave): Qualitative and Quantitative. Table-1

Parameter	Lead-Acid Battery	Lithium-Ion Battery (LFP/NMC)
Global Recycling Rate	96–99% (highest of any consumer product)	< 20–30% globally; < 5% in India
CO₂e Emissions (Manufacturing)	40–50 kg CO ₂ e / kWh including EOL	50–62+ kg CO ₂ e / kWh
Raw Material Mining Stress	Very Low (most lead is recycled)	Very high (lithium, cobalt, nickel extraction)
Water Consumption	Low	Extremely high (500,000+ L/ton Lithium)
Energy for Processing	1.0–1.5 MJ/Wh	2.0–3.5 MJ/ Wh
Fire / Thermal Runaway Risk	Zero	High (150–180°C onset)
Circularity Index	>95%	<20%
Toxicity Potential	Completely safe in regulated systems	High (HF gas during fires; organic solvents; heavy metals)

the Battery Waste Management Rules, 2022, resulting in a remarkably high rate of regulatory compliance to date.

4.2. Conversely, lithium-ion battery packs contain a complex array of elements that are extremely difficult to separate and recycle. Currently, lithium-ion batteries are not recycled on a large scale within India.

Most end-of-life battery packs from electronics and early EV deployments are sent to landfills, incinerated, or handled informally. Even the global recycling rate stands at approximately 20–30%, while India's effective rate is significantly lower.

5. Request:

Any battery policy pertaining to e-mobility applications should

be chemistry-agnostic/neutral and guided by considerations of economic viability for users, operational safety, technological resilience, environmental sustainability, and circularity. The choice of battery technology utilized should be based on performance and affordability. The current draft amendment runs contrary to these principles.

We respectfully submit that prohibiting all battery chemistries—other than Lithium-ion—for use in e-rickshaws is neither appropriate nor logical. We request the Ministry to kindly amend the rule to permit the use of any battery chemistry, provided it complies with the prescribed BIS quality standards or other recognized national or international industry

standards. Therefore, we request that a suitable amendment be made to Rule 125-R of the CMVR, 1989, to stipulate that any battery chemistry may be utilized for e-rickshaws and e-carts, provided they fulfill the objectives of technological resilience, performance, operational safety, and environmental sustainability.

Life Cycle Assessment (LCA): Lead vs. Lithium-ion

LCA encompasses all six stages of a battery's life cycle:

1. Raw material extraction
2. Material refining and processing
3. Battery manufacturing and assembly
4. Transport and distribution
5. Operational use
6. End-of-life recycling or disposal. Summary of Life Cycle Emissions (Cradle-to-Grave): Refer to Table 1 for qualitative and quantitative details.

Conclusion: The upstream footprint of Lithium-ion (Mining + Refining + Manufacturing + EOL) is significantly higher than that of Lead.

Key Findings from the LCA:

1. Raw Material Extraction

- ◆ Lead: Globally, 80–85% of the demand for lead is met through recycled lead; less than 15–20% requires new mining.
- ◆ Lithium-ion: Relies on the resource-intensive mining of lithium

(from brine and hard rock), cobalt, and nickel—processes that entail higher emissions and water consumption.

2. Processing and Manufacturing

- ◆ Lead Manufacturing Energy Intensity (including EOL): ~40–50 kg CO₂e per kWh of battery capacity.
- ◆ Lithium-ion Manufacturing Energy Intensity: 50–60+ kg CO₂e per kWh, driven by high-temperature processing, solvent-based coating, and extended supply chains.

3. In-Use Phase

- ◆ Lead: Inherently safe with no risk of thermal runaway; offers reliable and stable performance, making it suitable for low-speed EVs and stationary storage applications.

- ◆ Lithium-ion: Offers higher specific energy but carries a greater risk of fire hazards; experiences accelerated aging at elevated temperatures and involves non-recoverable carbon.

4. End-of-Life (EOL)

- ◆ Lead: Boasts a recycling rate of 96–99%; lead is infinitely recyclable; plastics and electrolytes are recovered; and landfill waste generation is minimal.

- ◆ Lithium-ion: Effective recycling rate in India is <5%; lacks a national collection framework. Most packs run the risk of ending up in landfills or informal scrap channels.

LCA Results: In the current Indian context, lead-acid batteries are significantly cleaner, safer, and more circular throughout their entire lifecycle. □



Eastman Commissions 800 MW (0.80 GW) Solar PV Panel and Module Manufacturing Plant

An innovator in the energy transition space, **Eastman Auto & Power Limited (Eastman)** has commissioned an 800 MW (0.80 GW) solar PV panel and module manufacturing plant in Sonipat, Haryana. The company operates across three distinct verticals—Last-Mile E-Mobility, Solar Solutions, and Integrated Energy Solutions—fostering innovation to accelerate the transition toward clean and renewable energy.

Currently, Eastman Green Technologies is one of the companies listed under the ALMM (Approved List of Models and Manufacturers), with a capacity of 374 MW. These are Indian manufacturers approved by the Ministry of New and Renewable Energy (MNRE) for government solar projects. Its new facility marks a pivotal milestone in Eastman's solar manufacturing journey, positioning the company as a backward-integrated solar solutions provider offering end-to-end capabilities in solar PV panels and modules, grid-tied, off-grid, and hybrid inverters, as well as advanced energy storage batteries.

About the Product

With a specific focus on "Solar with Storage," Eastman aims to enable reliable and clean energy access by delivering integrated systems that combine solar generation with efficient energy storage solutions. These offerings empower the company to provide seamless turnkey solutions for residential, commercial, and industrial customers. □



New Labour Codes: A Game Changer for India's Lead Recycling Industry

– Suresh Kapiti, Battery Consultant

Kapiti Overseas Pvt. Ltd., Hyderabad | Mobile No. 9701029731

India's lead metal recycling industry stands at a critical inflection point. Traditionally labour-intensive, safety-sensitive, and dominated by semi-formal employment structures, the sector is now being fundamentally reshaped by the implementation of the New Labour Codes, with the Industrial Relations Code (IRC) playing a pivotal role. Far from being a mere regulatory update, these reforms signal a structural shift—one that pushes the industry from informal practices toward globally aligned, sustainable, and responsible operations.

At the heart of this transformation lies the formalisation of labour. Under the new framework, every worker—whether permanent, fixed-term, or contractual—must be supported by documented employment terms, minimum wage compliance, and social security coverage. For lead recycling units, where daily-wage and contract labour have historically been prevalent, this marks a decisive move away from ambiguity. While this transition increases short-term administrative and payroll costs, it significantly enhances workforce stability, reduces legal risk, and improves long-term operational resilience.

The Industrial Relations Code introduces a more balanced approach to flexibility and protection. By raising the threshold for prior government

approval for layoffs, retrenchment, or closure from 100 to 300 workers, mid-sized recycling plants gain greater agility in managing cyclical demand, raw material availability, and price volatility in the lead market. At the same time, clearer rules on trade union recognition, dispute resolution, and notice periods for strikes bring predictability to industrial relations—an essential factor for capital-intensive recycling operations where production disruptions are costly.

Perhaps the most profound impact on the lead recycling sector comes from the Occupational Safety, Health and Working Conditions (OSHC) Code. Lead recycling is inherently hazardous due to toxic exposure risks, high-temperature processes, and emissions management. The new code mandates stricter safety protocols, compulsory use of personal protective equipment (PPE), periodic health surveillance, and improved working conditions. Annual medical check-ups and enhanced safety committees are no longer optional—they are core compliance requirements. While this necessitates investment in safety infrastructure and monitoring systems, it also aligns Indian recyclers with international ESG and occupational health standards, strengthening their credibility with global customers, financiers, and regulators. □

Under the new framework, every worker—whether permanent, fixed-term, or contractual—should receive the support of documented employment terms, minimum wage compliance, and social security coverage.

The Code on Social Security further expands the sector's responsibilities by extending provident fund, insurance, and welfare benefits to contract and unorganised workers. For an industry that relies heavily on such labour, this reform significantly improves worker dignity and retention. From a strategic standpoint, companies that proactively integrate social security compliance into their cost structures will be better positioned to attract skilled manpower and institutional capital.

Taken together, these reforms redefine competitiveness in the lead metal recycling industry. Compliance is no longer just about avoiding penalties—it is about building a future-ready enterprise. Companies that treat the new labour codes as a strategic lever rather than a regulatory burden will gain advantages in productivity, workforce loyalty, ESG ratings, and investor confidence.

New Labour Codes: Impact on Financials

The New Labour Codes have a direct and measurable impact on business financials, affecting costs, cash flows, provisioning, and long-term valuation.

1. Increase in Employee Cost (OPEX)

- ◆ Expanded wage definition increases PF, ESI, gratuity, and

bonus payouts.

- ◆ Universal minimum wages raise baseline salaries.
- ◆ **Impact:** 8–15% increase in employee-related operating expenses (sector-dependent).

2. Higher Statutory Contributions & Provisions

- ◆ Provident Fund & ESI applicability expands to more workers (including contract/fixed-term).
- ◆ Gratuity payable after 1 year for fixed-term employees.
- ◆ **Impact:**
- ◆ Higher monthly outflows
- ◆ Increased balance sheet provisioning (gratuity, leave encashment)

3. Cash Flow Pressure (Short Term)

- ◆ Regular and time-bound wage payments mandated.
- ◆ Overtime payable at double rate.
- ◆ **Impact:**
- ◆ Working capital cycles tighten
- ◆ Greater need for payroll liquidity planning

4. Compliance & Safety Capex

- ◆ Mandatory health check-ups, PPE, safety systems, training, especially

in hazardous industries.

◆ **Impact:**

- ◆ One-time capital expenditure (CAPEX)
- ◆ Ongoing compliance and audit costs

5. Reduced Litigation & Contingent Liabilities

- ◆ Clearer industrial relations framework lowers disputes, penalties, and shutdown risks.

◆ **Impact:**

- ◆ Reduction in legal costs
- ◆ Lower contingent liabilities over time

6. Productivity & Cost Efficiency (Medium–Long Term)

- ◆ Formalisation improves employee retention and productivity.
- ◆ Predictable labour relations reduce downtime.

◆ **Impact:**

- ◆ Better cost-per-unit economics
- ◆ Improved EBITDA margins over time

7. Valuation & Investor Perception

- ◆ Strong labour compliance improves ESG scores.
- ◆ Cleaner balance sheets and governance attract institutional capital.

◆ **Impact:**

- ◆ Higher valuation multiples
- ◆ Easier access to debt and equity funding

Financial Summary Table

Financial Area Impact

Employee Cost ↑ Increase

Statutory Outflows ↑ Increase

Working Capital ↓ Short-term pressure

Compliance CAPEX ↑ One-time

Legal & Dispute Costs ↓ Long-term

Productivity ↑ Medium–long term

Valuation & ESG ↑ Positive

Bottom Line

The New Labour Codes raise short-term costs and provisioning requirements, but strengthen financial sustainability, predictability, and enterprise value in the long run. Businesses that proactively restructure payroll, pricing, and cost models will convert compliance into a financial advantage.

Summary

India’s New Labour Codes, effective from 21 Nov 2025, significantly affect the lead metal recycling industry by formalising employment, raising safety and social security obligations, and standardising wages and working conditions. While they enhance worker protection and align labour practices with global standards, they require meaningful changes in workforce management, HR policies, payroll accounting, and workplace safety systems—all crucial for sustainable and compliant recycling operations.

In conclusion, India’s New Labour Codes and the Industrial Relations Code are accelerating the evolution of the lead metal recycling industry—from fragmented, compliance-driven operations to structured, transparent, and globally benchmarked businesses. For industry leaders, the message is clear: those who adapt early will not just comply—they will lead. □



Lead Alloys in India, Manufacturing Process and Industrial Demand in 2026

– Gravita India Ltd., Jaipur –

Lead plays a critical role in India’s industrial and energy ecosystem. From automotive batteries and inverter systems to telecom infrastructure and renewable energy storage, the demand for lead remains strong. At the same time, lead is a hazardous material, and improper disposal of lead bearing waste poses serious environmental and public health risks.

This makes lead recycling plants an essential part of India’s waste management and resource strategy. Instead of relying heavily on primary lead mining, which is resource intensive and environmentally damaging, recycling plants recover lead from used lead acid batteries and scrap, reintroducing it into manufacturing cycles. This approach reduces pressure on natural resources, lowers carbon emissions, and supports India’s transition toward a circular economy.

With battery consumption rising and regulatory oversight increasing, compliant and technologically advanced lead recycling plants are no longer optional. They are a necessity for sustainable industrial growth.

Overview of Lead Recycling in India

Lead recycling in India is predominantly driven by used lead acid batteries generated from vehicles, industrial backup systems, and power storage applications. Unlike primary lead production, secondary lead recycling recovers metal from existing products, making it significantly more energy efficient and environmentally responsible.

India has developed a strong secondary lead ecosystem over the years, supported by formal recycling plants and an extensive collection

network. However, the sector has also faced challenges from informal operations that often lack environmental controls. To address this, regulatory authorities have tightened compliance requirements, encouraging a shift toward organized, registered recycling facilities.

Today, compliant lead recycling plants play a dual role. They ensure safe disposal of hazardous waste while supplying high quality recycled lead and alloys to battery manufacturers and other industries. This reduces import dependence and stabilizes raw material availability within the domestic market.

What Is a Lead Recycling Plant

A lead recycling plant is an industrial facility designed to safely process lead bearing waste, primarily used lead acid batteries and lead scrap, and convert it into reusable materials. The primary objective of such a plant is to recover lead efficiently while managing environmental and safety risks associated with handling hazardous substances.

Typical outputs from a lead recycling plant include

Refined lead.

Lead alloys used in battery manufacturing.

Recycled plastic from battery casings.

Treated residues and neutralized by products.

Modern plants operate using controlled mechanical, thermal, and chemical processes supported by

pollution control systems. These facilities are required to follow strict guidelines related to emissions, waste handling, worker safety, and reporting.

In India, only authorized lead recycling plants registered with pollution control authorities are permitted to carry out these operations. Their role is central to maintaining compliance across the battery supply chain and enabling responsible material recovery.

Processing Capacity of Lead Recycling Plants in India

The capacity of a lead recycling plant refers to the volume of lead bearing material it can process within a defined period, usually measured in tonnes per annum. Capacity planning is a critical factor because it directly affects operational efficiency, regulatory compliance, and commercial viability.

In India, lead recycling plants typically operate across three broad capacity categories. Small scale facilities handle limited volumes and often serve localized collection networks. Medium scale plants process higher quantities and usually supply regional battery manufacturers. Large scale plants operate with integrated systems, advanced automation, and national level procurement networks.

Several factors influence a plant's processing capacity. Availability and consistency of feedstock such as used lead acid batteries is the most important. Technology selection, furnace efficiency, energy availability, and downtime for maintenance also play a major role. Regulatory approvals, including consent limits set by pollution control authorities, can further cap operational throughput.

Plants with higher capacity are generally better positioned to achieve economies of scale, maintain stable output quality, and meet long term supply commitments.

Lead Recycling Process Step by Step

Lead recycling follows a structured process designed to maximize material recovery while minimizing environmental and safety risks.

The process begins with the collection and safe storage of used lead acid batteries and lead scrap. Materials are stored on impervious surfaces to prevent soil or water contamination.

Next, batteries undergo controlled mechanical breaking where different components are separated. Lead bearing parts, plastic casings, and acidic electrolyte are isolated for further treatment.

Recovered lead is then subjected to smelting and refining processes to remove impurities and achieve the desired purity levels. This refined lead is cast into ingots or converted into specific alloys depending on end use requirements.

Plastic casings are cleaned, processed, and converted into reusable granules. Acidic components are neutralized and treated through approved effluent management systems before disposal or reuse.

Each stage of this process is closely monitored to ensure environmental compliance and worker safety.

Technology Used in Modern Lead Recycling Plants

Technology plays a decisive role in determining the efficiency, safety, and compliance level of a lead recycling plant. Traditional plants relied on manual handling and basic smelting systems, which often resulted in lower recovery rates and higher emissions.

Modern lead recycling plants in India increasingly use mechanized battery breaking systems that improve separation efficiency and reduce worker exposure. Advanced furnaces with improved thermal control enable better lead recovery while lowering fuel consumption.

Pollution control equipment is now integral to plant design. This includes high efficiency bag filters, scrubbers, and emission monitoring systems that help meet strict air quality standards. Effluent treatment units manage wastewater and ensure safe discharge or reuse.

Automation and digital monitoring systems further enhance process consistency, traceability, and regulatory reporting. Plants adopting advanced technologies are better equipped to meet evolving environmental norms and attract long term business partnerships.

Environmental Compliance Requirements for Lead Recycling Plants

Lead recycling is classified as a high risk industrial activity due to the hazardous nature of lead and associated waste streams. As a result, lead recycling plants in India are subject to strict environmental compliance requirements throughout their lifecycle.

Before operations begin, plant

operators must obtain Consent to Establish and Consent to Operate from the relevant State Pollution Control Board. These approvals define permissible capacity, emission limits, waste handling practices, and monitoring obligations. Compliance is not a one time requirement and must be maintained through regular inspections and reporting.

Environmental compliance also extends to worker health and safety, storage infrastructure, and emergency response planning. Plants are expected to implement systems that prevent soil, air, and water contamination while ensuring safe working conditions for personnel.

Failure to comply with these requirements can result in penalties, suspension of operations, or permanent closure, making compliance a core operational priority rather than a procedural formality.

Key Regulations Governing Lead Recycling Plants in India

Multiple regulatory frameworks govern the operation of lead recycling plants in India. These regulations are designed to control pollution, ensure safe waste management, and promote responsible recycling practices.

The Battery Waste Management Rules define the responsibilities of producers, recyclers, and collectors in managing used lead acid batteries. Recycling plants must be registered under these rules and report material flow through designated portals.

The Hazardous and Other Wastes Management Rules regulate the handling, storage, transport, and disposal of hazardous residues generated during recycling operations. These rules mandate proper labeling,

containment, and documentation.

Air and water pollution control laws specify emission standards for smelting operations and discharge norms for effluents. Compliance with these standards is monitored by pollution control authorities through periodic inspections and audits.

Together, these regulations form a comprehensive compliance framework that governs every stage of lead recycling plant operations.

Emission Control and Waste Management Practices

Effective emission control and waste management are central to environmentally responsible lead recycling. Modern plants incorporate multiple layers of control to manage pollutants generated during processing.

Air emissions from smelting furnaces are controlled using bag filters, scrubbers, and chimney monitoring systems designed to capture particulate matter and lead fumes. Continuous monitoring helps ensure emissions remain within permitted limits.

Wastewater generated during cleaning and neutralization processes is treated in effluent treatment plants before reuse or discharge. Solid residues such as slag are handled as per hazardous waste guidelines and disposed of through authorized channels.

Regular environmental monitoring, internal audits, and third party testing help plants identify risks early and maintain compliance. Plants that invest in robust emission control and waste management systems not only reduce environmental impact but also build

credibility with regulators and business partners.

Importance of Compliance for Plant Operators and Buyers

Environmental compliance is not only a regulatory requirement but also a critical business factor for lead recycling plants and their partners. For plant operators, adherence to regulations ensures uninterrupted operations, protects against legal penalties, and safeguards workforce health.

From a buyer's perspective, sourcing material from compliant recycling plants reduces supply chain risk. Battery manufacturers and industrial customers increasingly prefer recycled lead from authorized facilities to meet internal sustainability goals and regulatory expectations. Non-compliant sourcing can expose buyers to reputational damage and legal scrutiny.

Compliance also influences long term viability. Plants that consistently meet environmental standards are more likely to receive regulatory renewals, attract investment, and secure stable supply agreements. In contrast, facilities with compliance gaps face operational uncertainty and higher costs over time.

Role of Lead Recycling Plants in India's Circular Economy

Lead recycling plants play a foundational role in India's circular economy by keeping valuable materials in continuous use. Lead is one of the most recyclable metals, and secondary lead production significantly reduces the need for mining and primary smelting.

By recovering lead from used batteries and scrap, recycling plants close the material loop between consumption and manufacturing. Recycled lead reenters the battery supply chain with substantially lower energy consumption and carbon emissions compared to primary production.

This closed loop approach supports resource efficiency, reduces import dependency, and contributes to environmental protection. As India advances its circular economy goals, lead recycling plants remain a critical link connecting waste management with sustainable industrial growth.

Challenges Facing Lead Recycling Plants in India

Despite progress, lead recycling plants in India face several challenges. The presence of informal recycling operations remains a significant concern, as these facilities often operate without environmental controls and undercut compliant plants on cost.

Compliance costs associated with advanced pollution control systems and regulatory reporting can also be substantial, particularly for smaller operators. Access to skilled technical personnel and consistent quality feedstock further affects operational stability.

Additionally, evolving regulations and stricter enforcement require continuous investment in technology and process improvements. Addressing these challenges is essential to strengthening India's formal recycling ecosystem and ensuring long term sustainability of the sector. □



Draft Policy: Only Electric Two-Wheelers to be Registered in Delhi from 2028 Onwards

The Delhi Government's Draft Electric Vehicle Policy 2024-2030 proposes a phased-out ban on the sale of all Internal Combustion Engine (ICE)-powered three-wheelers starting in 2027, followed by two-wheelers in 2028. This policy focuses on accelerating EV adoption and expanding charging infrastructure within the capital.

It also proposes granting exemptions on road tax and registration fees for electric cars priced up to ₹30 lakh for the next four years. This proposal targets the electrification of vehicle segments identified as "high-polluting," specifically two-wheelers, three-wheelers, commercial vehicles, and goods carriers. According to the VAHAN portal, two-wheelers currently account for approximately two-thirds of the nearly 7.5 million vehicles plying Delhi's roads.

The policy proposes a phased subsidy scheme for electric two-wheelers, aimed at bringing their upfront cost closer to that of their ICE counterparts. The incentive structure is designed to encourage early adoption, with support gradually tapering off as the market matures.

The objective is to ensure that electric vehicles become economically viable for a broad cross-section of consumers, while simultaneously building the necessary ecosystem to sustain their continued adoption.

The policy further proposes an exemption on road tax and registration fees for electric cars priced up to ₹30 lakh until March 31, 2030. Currently, there is no such price cap in place. In contrast, ICE vehicles are subject to a road tax ranging from 4% to 13% of the vehicle's price—depending on its category—while the registration fee stands at approximately 1% of its ex-showroom price. In addition to the second category, the draft policy proposes sustained incentives and support for electric three-wheelers and commercial vehicles—particularly those operating extensively within city limits. Electric trucks are also expected to receive targeted subsidies to reduce emissions associated with freight transport.



India's EV Sector Receives ₹ 2 Lakh Crore in Investment Over the Last 5 Years

According to a report by the Institute for Energy Economics and Financial Analysis (IEEFA), India's electric transport sector has witnessed a massive influx of capital over the past five years; however, the industry requires a robust investment framework to achieve its 2030 targets. By 2030, India aims to achieve specific sales targets for electric vehicles (EVs), comprising 30 percent of all private cars, 70 percent of commercial vehicles, 40 percent of buses, and 80 percent of two- and three-wheelers.

The IEEFA report, titled 'Capital Flows in India's Electric Transport Sector,' provides the first consolidated overview of investments made between 2020 and 2025, identifies investment gaps, and outlines pathways for mobilizing capital for the next phase of the country's electric transport transition.

According to Shubham Srivastava, Climate Finance Analyst and co-author at IEEFA, while the mobilization of a substantial ₹2.23 lakh crore in capital over just five years is significant, it represents only 18 percent of the ₹12,50,000 crore required by 2030. Mobilizing the remaining ₹10.2 lakh crore by 2030 will necessitate systematic financing reforms.

Sh. Anil Parmar of Anil Auto Batteries, Bhiwani, Passes Away



Shri Anil Parmar, the proprietor of **Anil Auto Batteries**—Bhiwani's oldest battery shop—passed away on March 11, 2026, due to heart failure. In 1978, his father, **Shri Ranvir Singh**, and his brother, **Shri Jitendra Parmar**, established the very first battery shop in Bhiwani. Subsequently, Shri Anil Parmar took over the responsibility of managing the business. He dealt in nearly all major branded battery lines.

Anil Auto Batteries will now be managed by **Shri Jayant Parmar**, the son of the late Shri Anil Parmar.

The Battery Directory family prays to God to grant peace to the departed soul and to bestow upon the bereaved family the strength to bear this profound loss.

Mahindra Secures ₹ 1,025 Crore in Financing for 300 MW Rajasthan Renewable Project

Hazel Hybrain Private Limited (Hazel), a subsidiary of **Mahindra Susten**, entered into a binding agreement with **HDFC Bank** on February 27, 2026; **HDFC Bank** has acted as the solar lender and provided structured financing amounting to ₹1,025 crore for the project.



This partnership will assist Mahindra Susten in its objective of expanding India's renewable energy capacity. With NHPCL serving as the off-taker, this project will make a significant contribution to India's clean energy targets and reinforce the nation's transition toward a low-carbon future.

The structured financing secured through HDFC Bank demonstrates strong institutional confidence in Mahindra Susten's project execution capabilities and its proven track record of delivering large-scale renewable energy infrastructure. It also facilitates the project's progression to its next phase with full capital commitment in place.

Mahindra Susten has secured financing for a 300 MW solar project, which it was awarded by NTPC Limited in 2024. This project was part of a 1,500 MW solar tender auctioned by NTPC. Having submitted the lowest bid in the tender, Mahindra Susten was awarded the 300 MW solar project by NTPC on March 18—following the conclusion of the bidding auction—securing the bid at the lowest tariff of ₹2.59/kWh.

Mahindra Susten continues to expand its renewable energy portfolio across the solar, wind, and hybrid segments, with a primary focus on delivering high-quality, bankable projects that contribute significantly to India's energy transition.

The company is also established to undertake rooftop solar installations for the commercial, industrial, institutional, and residential sectors. □



बैटरी डायरेक्टरी एंड ईयर बुक-2026

की सदस्यता लेने पर

बैटरी, बैटरी पार्ट्स, इन्वर्टर, यू पी एस, आर.ओ. निर्माताओं को आपके बारे में जानकारी मिलेगी, वे आपसे संपर्क कर सकेंगे और आपको भी उनके बारे में विस्तार से जानकारी मिलेगी व आप उनसे जुड़ सकेंगे।

पत्रिका में देश की अनेक बैटरी एसोसिएशनों और बैटरी फेडरेशन की गतिविधियों के समाचार प्रकाशित होते हैं। आप भी बैटरी जगत से जुड़ पाएंगे।

पत्रिका में बैटरी, लैड, इन्वर्टर, यू पी एस आदि पर लेख छपते हैं। उनसे आपके ज्ञान में वृद्धि होगी।

सदस्यता शुल्क केवल 650 रूपए
समय पर सदस्यता रिन्यू कराएं, सदैव अपडेट रहें

NEFT / IMPS या ऑनलाइन ट्रांसफर करके बैटरी डायरेक्टरी व एक वर्ष तक पाक्षिक अंक प्राप्त कीजिए।
शुल्क निम्नलिखित में से किसी भी एकाउंट में जमा करा कर सूचित करें :-

BANK ACCOUNT of BATTERY DIRECTORY AND YEAR BOOK			
BANK NAME	ACCOUNT NO	IFSC CODE	BRANCH ADDRESS
UNION BANK OF INDIA	565101000013133	UBIN0920711	GTB Enclave, NVM, Delhi-110 093
PhonePe / Google Pay / Paytm A/c	CHANDRA MOHAN - Mobile No. 9810268067		



बैटरी डायरेक्टरी एंड ईयर बुक

510, जनता फ्लेट्स, जी.टी.बी. एन्क्लेव, दिल्ली-110093

मोबाइल: 9810268067, 9971150801, 9910699538

Email: battdir@gmail.com

www.batterydirectory.co.in | onlinebatterydirectory.com



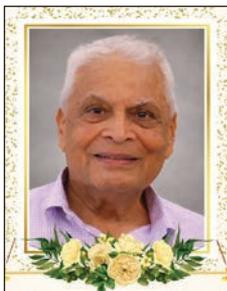
MiniMines Cleantech Solutions to Also Undertake Lithium-Ion Battery Recycling

In alignment with the Government of India's vision to promote sustainable technologies and strengthen domestic capabilities in critical minerals, the Technology Development Board (TDB)—under the Department of Science and Technology (DST), Ministry of Science and Technology—is providing financial assistance to Minimines Cleantech Solutions Private Limited for a project titled "Sustainable Recycling of Waste Lithium-ion Batteries."

The objective of this project is to commercialize an indigenous, zero-discharge, sustainable battery recycling and critical mineral refining process, enabling the extraction of battery-grade salts of lithium, cobalt, nickel, and manganese from end-of-life lithium-ion batteries. This initiative is expected to bolster India's capacity to recover valuable critical minerals through advanced recycling technologies, thereby reducing dependence on imports and facilitating the country's clean energy transition.

Minimines is the first R4 category recycler to offer an end-to-end solution for end-of-life lithium-ion batteries, including Extended Producer Responsibility (EPR) services. The company has developed a proprietary process called "Hybrid Hydrometallurgy," designed to be adaptable to various lithium-ion battery chemistries and form factors. The company's black mass recovery and post-processing technologies ensure low energy consumption, minimal emissions, and high separation efficiency, yielding recovery rates of up to 99 percent. The entire process—ranging from pre-assessment, collection, and segregation to mechanical processing and advanced post-processing stages such as extraction and selective separation—has been developed and patented domestically. This methodology significantly reduces dependence on imported recycling technologies, equipment, and essential raw materials, while simultaneously promoting the concept of 'urban mining' within the country. □

Dr. Mahavir Prasad Agarwal Passes Away



Dr. Mahavir Prasad Agarwal, father of **Sh. Rajat Agarwal—Chairman and Managing Director of Gravita India Ltd., Jaipur**—passed away on March 9.

A condolence meeting was held on March 11 at Bhattarak Ji Ki Jain Nasiyan, Narayan Singh Circle, Jaipur. Upon the demise of Dr. Mahavir Prasad Agarwal, numerous dignitaries from the battery industry expressed their grief and paid their tributes.

Battery Directory family prays to the Almighty to grant the departed soul a place at His lotus feet and to bestow upon the family the strength to bear this sorrow. □

Shri Bhimsen Tuli of Murphy Battery Corporation, Nashik, Passes Away



Shri Bhimsen Balbirsain Tuli of **Murphy Battery Corporation**, Nashik, passed away on March 9th at the age of 72. **He was one of the son of the late Shri Balbir Singh Tuli, the founder of Sparco Battery Corporation, Delhi.**

In the 80s, he moved from Delhi to Mumbai for business purposes; subsequently, in 1987, he left Mumbai to establish **Murphy Battery Corporation** in Nashik. Initially, he manufactured his own brand of batteries under the name "**Murphy**", but later shifted his focus to the trading of batteries and battery components—a venture that has been successfully serving the people of Nashik for the past 40 years. In 1990, he launched a second battery firm, **Singer Battery & Auto Electric. Singer Battery & Auto Electric is overseen by his wife, Smt. Sunita Bhimsen Tuli and Murphy Battery Corporation** is currently managed by his younger son, **Shri Rajesh Bhimsen Tuli**. His elder son, **Shri Rajiv Bhimsen Tuli**, holds a senior position at a major bank in the U.K.

By nature, Shri Bhimsen Tuli was a man who was always ready to assist others in their times of sorrow and distress. He consistently prioritized alleviating the suffering of others before attending to his own needs. He introduced numerous individuals to the battery industry and provided them with support. He was an exceptionally hardworking individual; indeed, it would be no exaggeration to describe him as a truly "100 percent self-made man."

Upon the passing of Shri Bhimsen Balbirsain Tuli, many prominent figures within the battery industry expressed their condolences and paid tribute to his memory. We pray to God to grant peace to the departed soul and to bestow upon the bereaved family the strength to bear this profound loss. □



First National Workshop on MSME Online Dispute Resolution Portal Held

The Ministry of Micro, Small and Medium Enterprises (MSME), Government of India, organized the first national workshop on the MSME Online Dispute Resolution (ODR) Portal in New Delhi on March 16, 2026. This workshop was organized with the objective of promoting fast, cost-effective, and technology-based methods for resolving commercial disputes involving Micro and Small Enterprises. The workshop brought together MSME industry associations, MSE Facilitation Councils, ADR institutions, policymakers, and legal experts on a single platform to deliberate on strengthening dispute resolution mechanisms and to familiarize stakeholders with the functioning of the MSME ODR portal.

Senior officials from the Ministry emphasized the government's commitment to creating a supportive ecosystem for MSMEs by ensuring the speedy resolution of commercial disputes. They stated that efficient dispute resolution mechanisms are crucial for improving the 'Ease of Doing Business' and for instilling confidence among entrepreneurs and investors. MSME Secretary, Sh. S.C.L. Das, urged all stakeholders to assume collective responsibility and encouraged Center-State partnerships for the effective resolution of disputes through the MSME ODR mechanism. Representatives from various State Councils and industry associations highlighted the significance of the ODR portal in resolving disputes related to delayed payments.

They explained how ODR can significantly reduce the time and costs associated with traditional dispute resolution processes, while simultaneously enhancing transparency and accessibility for small businesses across the country. Participants also shared best practices and successful case studies demonstrating how the MSME ODR portal has facilitated the efficient resolution of commercial disputes. The workshop concluded with a consensus to strengthen institutional frameworks, enhance awareness among entrepreneurs, and encourage the adoption of ODR portals to ensure the timely and effective resolution of disputes faced by MSEs (Micro and Small Enterprises). □

Battery Directory-2026

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बैटरी डायरेक्टरी एंड इयर बुक

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Mobile: 9810268067, 9910699538, 9971150801, E-mail: battdir@gmail.com,
Website: www.batterydirectory.co.in, www.onlinebatterydirectory.com

विषय: बैटरी डायरेक्टरी के पाक्षिक व वार्षिक अंकों में विज्ञापन।

दिनांक- 21 जनवरी 2026

प्रिय महोदय,

बैटरी डायरेक्टरी के पाक्षिक अंकों (हिंदी व अंग्रेजी संस्करणों) में विज्ञापन देकर आप बहुत कम राशि में देश-विदेश के समस्त बैटरी, बैटरी पार्ट्स निर्माताओं, बैटरी रिबिल्डरों, बैटरी स्मोल्डर्स आदि तक अपना बिक्री संदेश पहुँचा सकते हैं। बैटरी डायरेक्टरी के पाक्षिक अंक प्रत्येक मास की पहली तारीख को हिंदी संस्करण और 15 तारीख को अंग्रेजी संस्करण 2100 की संख्या में प्रकाशित होते हैं। बैटरी डायरेक्टरी का डिजिटल संस्करण इंटरनेट पर भी उपलब्ध है। बैटरी डायरेक्टरी-2026, पाक्षिक अंक और बैटरी उद्योग के नवीनतम समाचार अब वैबसाइट www.batterydirectory.co.in, www.onlinebatterydirectory.com पर उपलब्ध हैं।

विज्ञापन दरें प्रति बार इस प्रकार हैं:

	कुल
1. फ्रंट कवर (आकार 12.5 से.मी. X 14 से.मी.)	₹ 18,900 + 5% GST
2. इनसाइड फ्रंट कवर (आकार 19 से.मी. X 11 से.मी.)	₹ 13,650 + 5% GST
3. पृष्ठ न. 3 (आकार 19 से.मी. X 11 से.मी.)	₹ 12,600 + 5% GST
4. बैक कवर (आकार 18.5 से.मी. X 12 से.मी.)	₹ 15,750 + 5% GST
5. इनसाइड बैक कवर (आकार 19 से.मी. X 12 से.मी.)	₹ 11,550 + 5% GST
6. राज्य के मैप के सामने व पते की शुरुआत में	₹ 10,500 + 5% GST
7. पूरा पृष्ठ मल्टी कलर (आकार 19 से.मी. X 11 से.मी.)	₹ 9,450 + 5% GST
8. आधा पृष्ठ मल्टी कलर (आकार 9.5 से.मी. X 11 से.मी.)	₹ 5,250 + 5% GST
9. एक चौथाई पृष्ठ मल्टी कलर (आकार 4.5 से.मी. X 11 से.मी.)	₹ 2,835 + 5% GST
10. पूरा पृष्ठ ब्लैक एण्ड व्हाइट (आकार 19 से.मी. X 11 से.मी.)	₹ 5,250 + 5% GST
11. आधा पृष्ठ ब्लैक एण्ड व्हाइट (आकार 9.5 से.मी. X 11 से.मी.)	₹ 2,730 + 5% GST



बैटरी डायरेक्टरी-2026

की कुछ विशेषताएँ:-

- ✓ दो भागों में 1528 पृष्ठ।
- ✓ बैटरी उद्योग/व्यापार से जुड़ी 6,246 फर्मों का विवरण।
- ✓ 2363 फर्म के वेरिफाईड GST नंबर।
- ✓ बैटरी से जुड़े 64 प्रकार के उद्योगों का संग्रह व सूची।

12. एक चौथाई पृष्ठ ब्लैक एण्ड व्हाइट (आकार 4.5 से.मी. x 11 से.मी.) ₹ 1,500 +5% GST ₹ 1,575
13. बैटरी डायरेक्टरी की वेबसाइट के फ्रंट पेज पर (आकार 100px x 700px) ₹ 1,752
(कम से कम 30 दिन की बुकिंग अनिवार्य) ₹ 99 प्रतिदिन (+18% GST)

वर्ष में कम से कम 6 अंकों के लिए एडवांस पेमेंट सहित विज्ञापन देने पर 10 प्रतिशत छूट दी जाती है व बैटरी डायरेक्टरी-2027 में प्रमुख स्थान दिया जा सकेगा।

ऑनलाइन बैटरी डायरेक्टरी (www.onlinebatterydirectory.com पर उपलब्ध) व बैटरी डायरेक्टरी (हार्ड कॉपी) दोनों का वार्षिक शुल्क मात्र ₹ 1,650/- है। बैटरी डायरेक्टरी (हार्ड कॉपी) का वार्षिक शुल्क मात्र ₹ 650/- है। सदस्यों को वार्षिक बैटरी डायरेक्टरी के साथ दिसंबर तक पाक्षिक अंक रजिस्टर्ड पोस्ट द्वारा भेजे जाएंगे। ऑनलाइन बैटरी डायरेक्टरी एक्सेस करने के लिए यूजर आईडी व पासवर्ड भेजा जाएगा जिससे आप व आपका पूरा स्टाफ पूरे वर्ष हमारी वेबसाइट पर उपलब्ध ऑनलाइन डायरेक्टरी का लाभ उठा सकेंगे। अपना सदस्यता शुल्क अथवा विज्ञापन शुल्क निम्नलिखित बैंकों में से किसी भी एक बैंक में ट्रांसफर द्वारा अपने शहर में ही जमा करा कर उसकी रसीद प्राप्त करने के लिए हमें एसएमएस या फोन द्वारा सूचित करें:

OD BANK ACCOUNT of BATTERY DIRECTORY AND YEAR BOOK			
BANK NAME	ACCOUNT NO	IFSC CODE	BRANCH ADDRESS
UNION BANK OF INDIA	565101000013133	UBIN0920711	GTB Enclave, NVM, Delhi-93
SAVING BANK ACCOUNT of CHANDRA MOHAN			
ICICI Bank	113301000225	ICIC0001133	Dilshad Garden, Delhi-95
UNION BANK OF INDIA	520101018250706	UBIN0920711	GTB Enclave, NVM, Delhi-93
PhonePe / Google Pay / Paytm Account	CHANDRA MOHAN - Mobile No. 9810268067 in A/c: 113301000225		

वार्षिक व पाक्षिक बैटरी डायरेक्टरी देश-विदेश के सभी प्रमुख बैटरी/बैटरी पार्ट्स उद्यमियों तक पहुँचने का सर्वोत्तम माध्यम है। बैटरी डायरेक्टरी के पाक्षिक अंकों व बैटरी डायरेक्टरी-2027 में विज्ञापन देने के लिए कृपया अनुरोध: 9971150801, चंद्रमोहन: 9810268067 या शेखर वर्मा: 9910699538 को संपर्क करें। आशा है कि सेवा का अवसर प्राप्त होगा।

बैटरी डायरेक्टरी एंड ईयर बुक
चंद्रमोहन

- ✓ WhatsApp से जुड़ी 2964 फर्म।
- ✓ 3228 फर्म ईमेल पर और 1566 फर्म वेबसाइट पर उपलब्ध।
- ✓ गत वर्ष की डायरेक्टरी में 1231 बदलाव/संशोधन।
- ✓ विज्ञापनदाताओं के पते उनके लोगो सहित।
- ✓ बैटरी डायरेक्टरी की वेबसाइट www.battery-directory.co.in पर प्रतिदिन लगभग 300 से अधिक विजिट्स।



यूनिऑन बैंक
Union Bank
of India



CHANDRA MOHAN
chandra-mohan@unionbank

BATTERY DIRECTORY & YEAR BOOK

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Mobile: +91 9810268067, +91 9910699538, +91 9971150801, E-mail: battdir@gmail.com,
Website: www.onlinebatterydirectory.com, www.batterydirectory.co.in

Dt. 21st January 2026

Subject: Advertisement in the Fortnightly Issues of BATTERY DIRECTORY.

Dear Sirs,

By advertising in the fortnightly issues of Battery Directory (Hindi and English editions), you can reach all battery and battery parts manufacturers, battery rebuilders, battery smelters, etc., both domestically and internationally, with your sales message at a very low cost. The fortnightly issues of Battery Directory are published in a print run of 2100 copies each month, with the Hindi edition released on the 1st and the English edition on the 15th. The digital edition of Battery Directory is also available online. Battery Directory-2026, the fortnightly issues, and the latest news from the battery industry are now available on the websites www.batterydirectory.co.in and www.onlinebatterydirectory.com

The advertising rates per insertion are as follows:

	Total
1. Front cover (Size 12.5 cm x 14cm)	₹ 18,000 + 5% GST
2. Inside front cover (Size 19 cm x 11cm)	₹ 13,650
3. Page no. 3 (Size 19 cm x 11cm)	₹ 12,600
4. Back cover (Size 19 cm x 11cm)	₹ 15,750
5. Inside back cover (Size 19 cm x 11cm)	₹ 11,550
6. Opp. State Map or opp. beginning of the Address	₹ 10,500
7. Full page in multi colours (Size 19 cm x 11 cm)	₹ 9,450
8. Half page in multi colours (Size 9.5 cm x 11 cm)	₹ 5,250
9. One fourth page in multi colours (Size 4.5 cm x 11 cm)	₹ 2,835
10. Full ordinary page in Black & White (Size 19 cm x 11 cm)	₹ 5,250
11. Half ordinary page in Black & White (Size 9.5 cm x 11 cm)	₹ 2,730
12. One fourth page in Black & White (Size 4.5 cm x 11cm)	₹ 1,575



Special features of
Battery Directory-2026

- ✓ 1528 pages in two parts
- ✓ Details of 6246 firms involved in Battery Industry/Trade
- ✓ 2363 Firm's Verified GST Numbers
- ✓ 254 Firm's Verified

UDYAM Numbers

- ✓ List of 64 types of industries related to batteries
- ✓ WhatsApp nos. of 2964 firms
- ✓ E-mails of 3228 firms
- ✓ Websites of 1566 firms
- ✓ 1231 changes/amendments in last year's Directory
- ✓ Names of firm owners in bold letters



CHANDRA MOHAN
chandra-mohan@unionbank

13. **Front Page of Battery Directory Website** (Size 100 px x 700 px)

(At least 30 days booking mandatory)

₹ 99 per day (+18% GST)

₹ 1,752

Discount of 10% is available for the advertisers releasing at least 6 insertions in a year with advance payment.

Annual Subscription of Online Battery Directory (website www.onlinebatterydirectory.com) & Battery Directory (Hard Copy) is just ₹ 1,650/- . The annual subscription of Battery Directory (Hard Copy) is ₹ 650/- (Including Postage Charges) only. Subscriber of Annual Battery Directory shall also get the fortnightly issues upto December month. To access Online Battery Directory, user name and password will be provided by us. You may deposit the Subscription/Advertisement charges by Transfer in any of the following Banks at your City under intimation by SMS to us:

OD BANK ACCOUNT of BATTERY DIRECTORY AND YEAR BOOK		
BANK NAME	ACCOUNT NO	IFSC CODE
UNION BANK OF INDIA	565101000013133	UBIN0920711
SAVING BANK ACCOUNT of CHANDRA MOHAN		
ICICI Bank	113301000225	ICIC0001133
UNION BANK OF INDIA	520101018250706	UBIN0920711
PhonePe / Google Pay / Paytm Account	CHANDRA MOHAN - Mobile No. 9810268067 in A/c: 113301000225	

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)

Benefits of Advertising in Battery Directory

If you advertise in the Battery Directory, you will receive the following benefits:-

✓ **Your product will be promoted among battery entrepreneurs from India and abroad.**

✓ You will receive a free set of the Battery Directory-2026 (priced at Rs. 650).

✓ **The Online Battery Directory-2026 subscription fee is Rs. 1000, and this subscription will be provided free of charge. Not only you but also your staff will be able to view and benefit from the directory on their mobile phones, laptops, or computers.**

✓ Your name will be highlighted in the Product Manufacturing Index.

✓ **Your mobile number will be added to the Battery Directory WhatsApp group, allowing you to connect directly with battery entrepreneurs across the country and meet your needs within the group.**

✓ You will receive free access to the Battery Directory's fortnightly issues throughout the year.

✓ **You can submit articles and news for publication in the magazine.**

✓ Your photo may be published in the Battery Directory under the "Batterymen at a Glance" column.

✓ **Your address will be printed in the Battery Directory with your brand name logo, which will draw attention to your address.**

✓ In the Online Battery Directory, you can easily access the details and advertisements of the people you want to find in a few moments using the search tool. This way, other people can also reach you. This easy access increases business.

✓ **Your advertisement will appear under your city in the Online Battery Directory portal www.onlinebatterydirectory.com.**

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

The fee for a one-page color advertisement (including 5% GST) is ₹9,450.

The fee for a half-page color advertisement (including 5% GST) is ₹5,250.

The fee for a one-page color advertisement (including 5% GST) is ₹5,250.

Chandra Mohan: 9810268067

Benefits of Becoming a Member of the Battery Directory

If you subscribe to the Battery Directory, you will receive the following benefits:-

✓ **You will receive a free set of the Battery Directory-2026 (priced at Rs. 650).**

✓ The fortnightly issues of Battery Directory (two magazines per month, Hindi and English), which were previously sent by ordinary post, will now be sent by registered post (magazine post) by December 2026. You will receive them within five days of publication.

✓ **Your firm's name and address will be published free of charge in the Online Battery Directory and in the Battery Directory-2027, which will be published in January 2027.** Entrepreneurs will be able to easily contact you through the search tool.

✓ **You will be added to the Battery Directory's WhatsApp group, allowing you to connect directly with battery entrepreneurs across the country and fulfill your needs within the group.**

✓ 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.

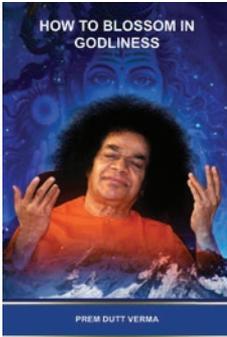
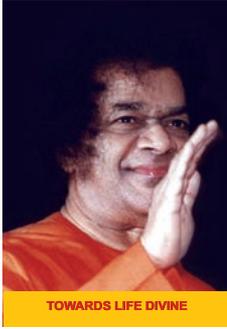
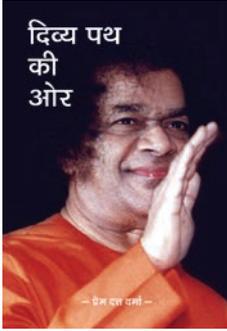
✓ Articles on Batteries, Battery Machinery, Battery Chargers, etc. are published in the fortnightly issues of Battery Directory. You will benefit from studying them.

✓ You can also submit your news for publication in the Battery Directory.

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

The subscription fee for the Online Battery Directory is only ₹1000.

Chandra Mohan: 9810268067



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(रजिस्टर्ड पोस्ट से मंगाने के लिए 100 रु. अतिरिक्त भेजें)

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शुरू करें

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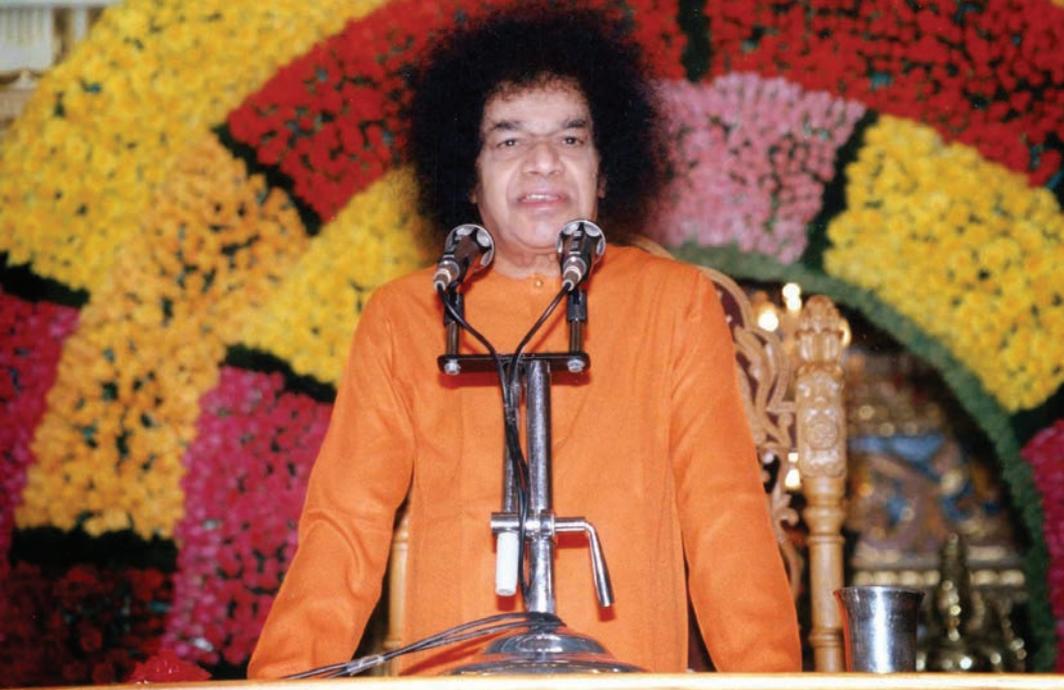
नामजप कॉपी प्राप्त करने के लिए-

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DIVYANUBHAV

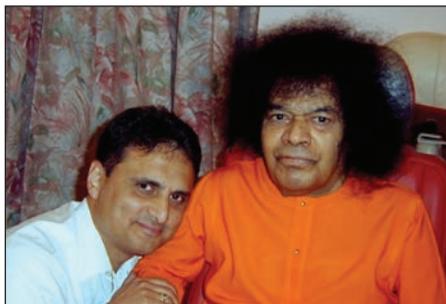
This article is an excerpt from an interview given by Sh. Abhimanyu Kaul regarding his childhood experiences with Bhagavan Sri Sathya Sai Baba, as well as his educational and spiritual journey in Puttaparthi.

Sh. Abhimanyu Kaul considers himself fortunate to have been born into a family where, from the very moment of his birth, he became a devotee of God. From his childhood onwards, he accepted God without question. However, at that time, he did not grasp the profound meaning of the word 'God'—much as God Himself once remarked that no one truly knows what God is.

The Decision to Study in Puttaparthi:

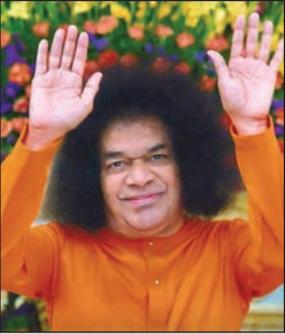
After completing the tenth grade, a desire arose in the speaker's mind

to pursue his studies in Puttaparthi—a place where he had previously observed boys gathered around God. He found the very form and presence of God to be deeply captivating. He expressed his wish to study in Puttaparthi to his father, who readily gave his consent.



The Entrance Exam Experience:

On their way to Puttapparthi, his father harbored doubts regarding his ability to pass the entrance examination—particularly since he



had not studied Commerce as a subject. The speaker, however, reasoned that he could not possibly be asked questions on a subject he had never studied.

He arrived half an hour late for the English entrance examination.

There were no invigilators inside the examination hall; only a single teacher stood guard at the doorway. Instead of reprimanding him for his tardiness, the teacher affectionately invited him to have some water and take a moment to compose himself—an unexpected gesture that left him pleasantly surprised. He completed the examination quickly, despite lacking confidence in his proficiency in English.

Subsequently, God sent Sh. Chakravarthy to help him improve his English—a mentor who played a pivotal role in assisting children from North India in mastering the language.

Hostel Life and Atmosphere:

****The First Day:**** A senior student helped him carry his luggage to his room and acquainted him with the hostel regulations—all without expecting a single word of thanks in return.

****Simple Living:**** Each student was allotted a cupboard containing three compartments: the top two served as enclosed shelves for storage, while the third transformed into a functional desk. They slept on the floor.

A Supportive Environment:

Everyone in the hostel wore a smile, attended to their own duties, and refrained from bothering one another; instead, they all extended a helping hand to one another. The Significance of Darshan: Their entire day revolved around the evening *Darshan* (divine audience). That very year, the Lord had shifted His abode from Bangalore to Puttapparthi. The evening *Darshan* was, for them, an occasion filled with an atmosphere of pure joy. Upon attending the *Darshan*, they would completely forget all the hardships they faced—whether it was subsisting on *Sambar-Vada*, sleeping on the bare ground, or enduring the lack of electric fans. The mere sight of the Lord filled them with immense bliss.

Experiencing Swami's Presence: The mere act of beholding Swami bestowed upon them a profound sense of inner joy and peace. In His presence, they experienced a deep sense of security and absolute tranquility.

"Golden Days" and Swami's Persona:

The days spent at the open-air temple—surrounded by sand—came to be known as the "Golden Days." It was there that Swami would emerge with His signature curly locks, presenting a truly captivating sight. Such was His

beauty and charisma that it was simply impossible not to fall in love with Him. Swami would laugh, play, and share lighthearted jokes with them. Even within the precincts of the temple, He would often burst into loud, hearty laughter.

A Lengthy Discussion on Idlis:

On one occasion, Swami spent 45 days discussing idlis—specifically their texture, softness, and shape. He summoned the chef and reprimanded him for failing to prepare the idlis properly.

Among the devotees standing outside—who were expecting to hear Swami's "discourse"—one gentleman asked what the Lord had spoken about for those 40 minutes. The person asked felt hesitant to reveal that the discussion had centered on idlis, fearing that no one would believe the Creator of the Universe was talking about such a mundane thing.

Playing with Toy Cars: A foreign devotee once sent a collection of small toy cars for Swami. Swami handed them over to the college students who were on duty at the time.

One day, after lunch, these boys were playing with the cars at the dining table. Swami walked up and stood behind them.

Swami himself joined the boys

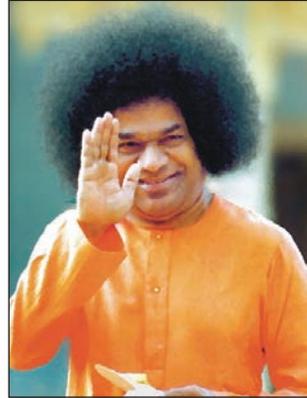
in playing with the toy cars for 10–15 minutes, even while thousands of devotees were waiting outside for his *darshan* (divine audience). This incident highlights his childlike and spontaneous nature.

The Sweet Treat Prank: Once, Swami handed a box of sweets to a new volunteer and instructed him to distribute them among the "children" sitting outside.

The volunteer kept returning repeatedly to fetch more sweets. On his third return, Swami stopped him and pointed out that there were only 50 children outside, yet the volunteer had already distributed sweets to more than 70.

Sh. Kaul personally admitted that he would always take at least two sweets, considering it his "birthright."

His experience was that Swami would "become a child among children," showering them with love and playing with them. This experience stood in stark contrast to the traditional, solemn portrayal of God, making Him appear as a truly real and endearing Divine Being.



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.

श्री सत्य सेवा संस्थान (रजि.)

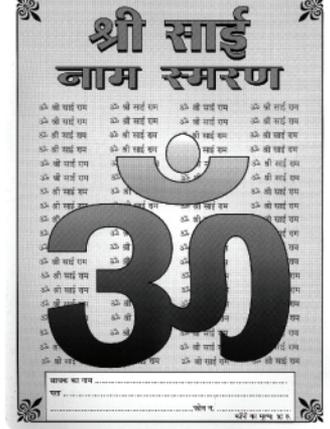
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फोन : 9810268067

प्रमुख सेवा कार्य

- * 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 निःशुल्क।
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।



- * निःशुल्क एक्स्प्रेस सेवा
सेवा स्थान: साई दीप, 510, जनता फ्लैट्स, सोमवार, बुधवार और शुक्रवार सायं: 3 से 4
सेवा: श्री मोहन द्वारा
- * निःशुल्क होम्योपैथिक मेडिकल सेवा
सेवा स्थान: साई दीप, 510, जनता फ्लैट्स, प्रत्येक बुधवार प्रातः 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 प्रातः 9.30 से 12.00 तक
कुष्ठ रोगियों के बच्चों को मानवीय मूल्यों की निःशुल्क शिक्षा व सिलाई कक्षा
- * निःशुल्क लाइब्रेरी - हिन्दी व अंग्रेजी में साई साहित्य पर लगभग 250 टाइटिल,
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- * समय-समय पर नारायण सेवा
- * बालविकास कक्षाएँ
- * शीतल जल सेवा

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