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FORTNIGHTLY ISSUE

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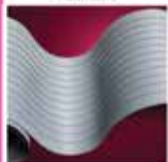


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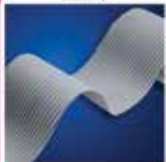
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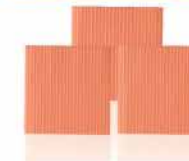
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यह मैनुअल लेड-एसिड बैटरी प्लेट्स के निर्माण का तरीका दिखाता है। सभी फॉर्मूलेशन दिए गए हैं और उन्हें लागू किया जा सकता है। कोई परीक्षण की आवश्यकता नहीं है

- भारत में कई इकाइयों ने फॉर्मूलेशन का सफलतापूर्वक उपयोग किया है और उत्कृष्ट बैटरी बनाई हैं
 - बैटरियां एसएलआई बैटरियों के लिए अच्छी क्रैंकिंग देती हैं और इन्वर्टर बैटरी के लिए लंबा बैकअप समय देती हैं। ई-रिक्शा बैटरी के लिए विशेष फॉर्मूलेशन दिए गए हैं।
 - VRLA और ट्यूबलर-जेल बैटरी एक विशेषता हैं
 - ग्रीड जंग, प्लेट शेडिंग, सल्फेशन और स्तरीकरण [STRATIFICATION] जैसे विफलता मोड को प्रभावी ढंग से नियंत्रित किया जाता है
 - कंसोर्टियम ऑफ बैटरी इनोवेशन (पहले ALABC) के हाल के नवाचारों को शामिल किया गया है
 - बैटरी की विफलता के सभी सामान्य तरीकों के नियंत्रण के साथ लंबे जीवन का आश्वासन दिया जाता है।
 - अच्छी गुणवत्ता वाली प्लेट पाने के लिए फॉर्मूलेशन लागू करें
- लेखक, सी.एस.रामनाथन, बैटरी सलाहकार, वर्तमान में कई विनिर्माण इकाइयों से जुड़े हुए हैं। प्रौद्योगिकी हाल के मूल (ALABC और CBI) की हैं। उनके पास 40 साल का अनुभव है। उन्होंने भारतीय विज्ञान संस्थान में शोध करते हुए प्रकाशित किया है। वह AMCO बैटरी (वर्तमान में TAFE पावर डिवीजन) में R&D के प्रमुख थे। भारत में बैटरी उद्योग में उनके योगदान के लिए उन्हें ILZDA से लाइफ टाइम अचीवमेंट अवार्ड मिला।

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5

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

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- 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

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- High voltages for quick auto cut
- Very fast charging, better during heavy power cut
- Strong deep discharge recovery

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- High retention of charge
- Longest uninterrupted service life cycle
- Slow rate of power falling during life cycle
- Light weight technology & attractive product

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- Leadership of industry
- High status & dignity

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 - c. Plantation of pollution plant
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 - 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:**
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 - b. Documentation for ISO certification
 - c. Charts/boards/indicators etc for best management system

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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
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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
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- d. Format, indicators samples & Trouble shootings

Ravindra S Panwar

Battery Consultant (Technical & TQM)

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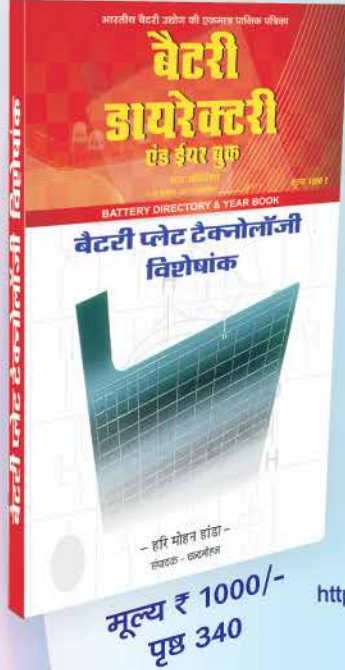
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Benefit Details of Mudra Loan Scheme

The limit of Loan without collateral will increase from Rs. 10 lakh to Rs. 20 lakh

Mudra Loan Scheme launched by the **Modi Government** in the year 2015, under which an entrepreneur can get ₹ 10 lakh without mortgaging his house or shop in favor of the bank, without getting any security from any rich person. The role it has played in providing strength to many entrepreneurs in the country and in starting new entrepreneurs cannot be appreciated enough. Only the sufferers can describe how life-giving this scheme has proven to be for the common man.

This was in the 90s and the current account of Battery Directory was in Corporation Bank. Even if needed, the branch manager gave us an overdraft of two to four thousand rupees two-three times. After a few days, it came to light that the top officials of the bank were very angry at giving us an overdraft and the branch manager was transferred. After this we never had the courage to take an overdraft. After the coming of Modi Government and implementation of **Mudra Yojana** in the year 2015, we got an overdraft of ₹ 9.5 lakh from this bank within just 15-20 days, which is still active till date. After this, we did not have to ask for loan of money from anyone and even two difficult years like the Corona period passed without much problem. Thanks to the Mudra Loan Scheme, crores of people have become entrepreneurs in the last few years. Under this scheme, 46 crore loans worth ₹ 27 lakh crore have been given so far. According to government data, there are more than 63 crore entrepreneurs in the MSME sector in the country.

If BJP wins the upcoming Lok Sabha elections, this limit of Mudra loan will be increased from ₹ 10 lakh to ₹ 20 lakh. That is, without mortgaging any property with the bank or without getting the surety of any rich person, any entrepreneur will be able to take an overdraft of up to ₹ 20 lakh. About 60-70 categories of battery and battery related entrepreneurs are requested to take advantage of the Mudra Loan Scheme and contribute to the economic development of the country.

– Chandra Mohan

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Knowledge without devotion to God produces hatred.

—Bhagwan Sh. Sathya Sai Baba



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Lead Alloys Unraveled:

Understanding the role of Alloy used in Battery Manufacture

– Ramesh Natarajan –

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In the lead acid battery business, the most widely utilized alloys include antimonial lead alloys, lead selenium alloys, and lead-calcium alloys.

The trend has been to use several types of alloys, depending on the battery application and type.

By type, I mean flooded electrolyte or sealed, maintenance-free.

- ♦ High-antimony lead alloys are used in cycling batteries.

- ♦ Lead-selenium alloys are used for low-maintenance flooded electrolyte batteries.

- ♦ Lead-calcium alloys are used for sealed maintenance-free batteries (SMF).

- ♦ Lead calcium/lead antimony hybrid alloys are used for valve-regulated (SMF) lead acid batteries.

Depending on the lead alloy, different key elements must be included. These metals include antimony, arsenic, copper, tin, selenium, sulfur, calcium, and aluminum.

Only in lead-selenium alloys is selenium an addition. Lead-calcium alloys are the only ones that are supposed to contain calcium and aluminum. A few producers request that the alloy be enhanced with silver.



The lead alloy has some impurities, and these are controlled by setting a maximum limit. These components don't help batteries work, and their use should be restricted because going above the allowed limits could be harmful.

Now let's discuss the different elements that are added to the alloys that are utilized in battery manufacturing plants for grid casting.

Antimony

To harden the cast grids, antimony is used as a stiffener. It makes mold filling better. Antimony alloys mix better with lead alloys. Antimony also has the benefit of adhering better to lead oxide paste.

Higher antimony levels in the lead alloy have several drawbacks, including shorter shelf life and higher electrical resistance, which lowers discharge voltage. Lead alloys with higher antimony levels have "more gassing" and higher top-up water requirements, which is their main drawback.

Typically, the proportion of antimony in the alloy ranges from 1.6%

to 6.0%. Antimony content in antimonial lead alloys devoid of selenium typically ranges from 3.5% to 6.0%, and occasionally even higher. Antimony is restricted in alloys containing selenium, and it typically ranges from 1.6% to 2.25%.

Arsenic

The arsenic present in lead alloys used to manufacture grids eliminates excessive shrinkage or shrinkage cracks in the final casting. Manufacturers of batteries often advise that arsenic levels should be between 0.10% and 0.15%. Higher levels of arsenic, between 0.20% and 0.60%, have been shown to strengthen resistance to positive plate electrolytic corrosion. Nevertheless, the alloy becomes harder due to the elevated quantities of arsenic, which could lead to brittleness. Occasionally, the fractures in the cast grids become visible a few or even 24 hours after casting, rather than right away. The likelihood of shrinkage cracks is extremely high in situations where the level of arsenic is low or below 0.10% to 0.15%, for example.

Tin

Tin, when combined with the proper amounts of antimony and arsenic, enhances the quality of the casting. Tin improves the alloy's flow characteristics in the grid mold. When tin isn't present, the alloy turns into a mushy oxide or slag that impedes the flow of metal. A skim developed from too much tin can occasionally cause casting issues, particularly when the alloy needs to be poured from the ladle of the casting machine during the casting process.

Copper

Copper enhances antimony

segregation during cooling. It lessens the chance that the thick and heavy sections and lugs that are cast as parts for the battery assembly section may shrink and crack as a result. The alloy will have an excess of wet skins on the pot or furnace surface when the copper content exceeds 0.10%. Excessive copper usage slows down the flow of metal into the mold, which can lead to challenges while casting. Excess copper in the lead-antimony alloy may cause the lead to soften instead of harden. It is advantageous to limit the amount of copper to 0.07%.

Silver

Lead ores contain silver as an impurity. It often does not exceed 0.005%, though. Despite being an impurity, silver is beneficial because it increases resistance to electrolytic corrosion. It is stated that creep resistance is increased by adding modest amounts of silver. Manufacturers are typically reluctant to add silver to alloys as a necessary additive due to its high cost.

Let's now discuss the alloys that aren't traditional lead-antimony alloys. We will talk about lead calcium and lead selenium alloys in brief.

Selenium

Selenium is neither necessary nor present in the antimonial lead alloys that are typically utilized. In low-maintenance alloys, selenium is added wherever the antimony content is decreased. The negative effects of antimony, which caused gassing and necessitated more frequent topping-up, made the development of this lead-selenium alloy necessary. Users maintain the antimony concentration of this selenium-containing alloy at

1.8% and 2.75%. Although it is rare, the antimony can occasionally be lowered to 1.6%. It is advised that the selenium concentration in these alloys be between 0.025% and 0.030%. Antimony concentrations could only be lowered to such low levels with the use of additives for grain refining. These additives include copper and sulfur in addition to selenium, which is the most efficient grain refining ingredient. When the antimony percentage of the selenium alloy drops to 1.8% or below, it becomes critical to have adequate amounts of sulfur and copper. Sulfur and copper function as nucleants.

Calcium

The common antimonial lead alloys and selenium-containing alloys don't need or include calcium. These particular calcium alloys were created to be used in sealed, maintenance-free batteries. Lead-calcium alloy batteries have good cold-cranking characteristics. These alloys provide batteries with a longer shelf life in terms of self-discharge. Their self-discharge characteristics are low and, hence, favorable. Typically, calcium supplementation in these alloys is limited to 0.09%.

Tin is a significant component of this lead-calcium alloy since it addresses the passivation effect problem in lead-

calcium alloys. Lead-calcium alloys that have tin added to them have better mechanical and fluidity qualities. Tensile strength is increased by 50% with tin inclusion. Lead-calcium-tin alloys significantly reduce water loss and positive grid corrosion. Lead calcium alloys with tin added to them are said to have somewhat improved creep resistance.

Aluminum is a significant addition to lead-calcium alloys. On the melt surface, aluminum creates a robust oxide layer that stops calcium from oxidizing. Aluminum improves the mechanical qualities of the lead-calcium alloy.

Let's now talk about the harmful consequences of impurities and the impurity limits.

Above 0.10% bismuth, the lead becomes more corrodible. The maximum permissible level of bismuth, according to battery makers, is 0.05%.

Iron is the cause of excessive drooping. Less than 0.005% of the iron content is what the manufacturers typically specify.

Other impurities in antimonial lead alloys include zinc, cobalt, nickel, cadmium, manganese, and sulphur, which are present in trace amounts or very low percentages. □

Do not trust an employee to complete a battery project. Many times, due to the expectation of good salary, an employee moves from one factory to another and whatever form your project is going on, it stops there.

Learn then Invest in the Battery Industry



Around 90% of the people associated with the battery business in MSME do not have knowledge of the battery industry themselves and start the business by investing lakhs of rupees. The biggest mistake in the work started in this way is that the knowledge that we should have about the industry, we do it by trusting the employee, as a result the product manufactured there is made as per the mentality of the employee. Many times, due to the expectation of good salary, the employee moves from one factory to another and whatever form your project is going on, it stops there. Therefore, I believe that instead of risking your money, you should first learn about the industry. Understand the difficulties faced in it and then start the business. Your money may have been earned with great difficulty or you may have taken a loan, do not put it at risk like this. There are many mediums of acquiring knowledge. Today is the era of social media, there are so many platforms that can give you knowledge about the battery industry. There are many institutes which can give you the knowledge or another better option is that you can learn this work by working yourself in a factory first.



– Gaurav Deep Sharma

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Lead Ingot Applications

– Suresh Kapiti, Battery Consultant
Kapiti Overseas Pvt. Ltd., Hyderabad, Mobile No. 9701029731

There are many different uses of Lead. It may be used as a pure metal, alloyed with other metals, or as chemical compounds.

Battery

The principal consumption of Lead is for the Lead-Acid storage battery in which grid or plate is made of Lead or Lead with other metal more commonly with antimony.

Rolled Extrusions

Lead Sheet is used in the building industry for flashings or weathering to prevent water penetration & for roofing & cladding. By virtue of its resistance to chemical corrosion, Lead Sheet also finds use for the lining of chemical treatment baths, acid plants and storage vessels. The high density of Lead Sheet makes it a very effective material for sound insulation purpose. Lead clad steel has also found use in radiation shielding.

Lead pipes due to its corrosion resistant properties are used for carriage of corrosive chemicals at chemical plants. Also Lead pipe of appropriate composition is still extruded for cutting into short length sleeves for use in the jointing of Lead sheathed cables.

Pigments

Lead used extensively in paints, although recently the use of Lead in paints has been drastically curtailed to eliminate or reduce health hazards. White Lead, $2PbCO_3 \cdot Pb(OH)_2$, is the most extensively used Lead pigment. Other Lead pigments of importance are basic Lead sulfate and Lead chromates.

Cable Sheathing

Because of its high ductility, good extrusion ability, relatively low temperature & excellent proven corrosion resistance when in contact with a wide range of industrial and marine environments, soils and chemicals, Lead Alloys are used extensively as sheathing materials for high voltage power cables.

Lead Ingots for cast lead bullets

Hand-cast lead bullets go back hundreds of years before the appearance of jacketed bullets. In fact, until well into the 20th century, jacketed bullets were not as accurate as hand cast bullets.

Today, hand cast bullets are more likely to be used in hand gun shooting for reasons of cost and convenience due to the tremendous variety of shapes

and sizes of molds available. While lead can be melted over a kitchen stove, an electric casting furnace is a lot more comfortable!

Other than the correct mold, the only other equipment you'll need is a sizer-lubricator with sizing die(s). This apparatus sizes the bullet to the correct diameter and perfect roundness and fills the bullet's lube grooves with lubricant.

It is a good idea to add Antimony and Tin to the bullets making an alloy with 10 parts lead to 1 part Antimony and Tin. This will produce good hard bullets.

Lead Alloys

Lead forms alloys with many metals. Alloys formed with tin, copper, arsenic, antimony, bismuth, cadmium, and sodium are all of industrial importance. Lead is used to make bearings, solder etc. Soft solders are largely Lead-tin alloys with or without antimony while fusible alloys are various combinations of Lead, tin, bismuth, cadmium and other low melting point metals. Shot Lead is an Alloy of Lead, Antimony, and Arsenic. Lead Foil is made with Lead alloys. Lead is added to brass to reduce machine tool wear. □

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Love lives by giving and forgiving.
Ego lives by getting and forgetting.

Causes & Solutions for Complaints in Lead Batteries

– Suresh Saraswat –

Battery Consultant, Ayush Consultancy Services, Delhi, Mobile No. 9717488512



Why are there complaints about lead acid batteries? What are its causes and solutions?

First reason: Low Confidence

Not having proper knowledge of quality control. Even if you have the knowledge, you may not strictly follow quality control.

Second reason: Over Confidence

Knowledge is there but not used at the right time. For example, we have automatic curing chambers, automatic machines etc. working but we are not sure whether these machines are working as per our quality or not.

Third reason: Difference in quality of raw materials

The quality of raw material is not uniform.

Fourth reason: Not taking care of quality control parameters

To follow or get the quality control parameters as per your requirement.

Fifth reason: Not providing proper charge and discharge

Charging different types of batteries through the same circuit and not allowing a discharge in between.

Prevention

1. Pay attention to process control, battery electrical testing and utilization during battery manufacturing.
2. The quality of the battery depends 70 to 80 percent on the positive and negative plates. The grid is designed according to the utilization of the battery. It contains 30 to 35 percent lead alloy and 60 to 65 percent active material. The active material of the negative plate depends on the active material of the positive plate, this is called balance plate.
3. Regularly strictly following the quality parameters from paste making, balancing paste plate, curing, drying.



Manufacturing of latest Technology e-Vehicles will start in the country

The Central Government has approved a new scheme to boost manufacturing so that e-vehicles with latest technology can be manufactured in the country. This policy has been designed to attract investments in the e-vehicle sector by reputed global EV manufacturers.

It will provide Indian consumers access to the latest technology, promote Make in India initiative, strengthen the EV ecosystem with high volume production by promoting healthy competition among EV manufacturers and reduce the cost of production and thus reduce the cost of crude oil. This will reduce imports, reduce trade deficit, reduce air pollution especially in cities and have a positive impact on health and environment.

In this policy, the minimum required investment has been kept at ₹ 4150 crore (500 million US dollars) and there is no limit on the maximum investment.

Import of more than 8,000 EVs per year will not be allowed under this scheme. The investment commitment made by the company will have to be backed by a bank guarantee for customs duty exemption.

4. While charging the battery, it is necessary to have batteries of the same type or of the same Ah in a circuit and give at least one discharge so that the voltage of the battery reaches 16.5 volts at the time of charging.

5. The battery should be checked from time to time at marketing standard 400 watts approximately 31 amps and Ah calculation should be done at 27 degree Celsius temperature.



Solar waste expected to reach 600 kilo tons by 2030

Solar waste is a problem or Reserves of Critical Minerals

The country is increasing renewable energy capacity to achieve net-zero targets. However, solar waste is raising concerns about a clean environment in the future for years to come. Considering the existing and new solar energy capacity, solar waste from installed capacity between financial years 2023-24 and 2029-30 could reach 600 kilo tons by 2030.

According to a report, this is equivalent to filling 720 Olympic-sized swimming pools. The maximum share of solar waste is expected to come from the states of Rajasthan, Gujarat, Karnataka, Andhra Pradesh and Tamil Nadu. In such a situation, it is very important to make strong arrangements for recycling the increasing solar waste.

The study has revealed that it contains about 10 kilo tons of silicon, 12-18 tonnes of silver and 16 tonnes of cadmium and tellurium, which are important minerals for the country. At the same time, 260 kilo tonnes of solar waste will come from new solar energy capacity to be installed in this decade. □

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.

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Gravita's 90 year old Shri Mahavir Prasad Aggarwal re-appointed Chairman

Ninety year old **Shri Mahavir Prasad Aggarwal** has been re-appointed as Chairman and Director of Gravita India for the next three years. Sh. Mahavir Prasad Aggarwal, father of Gravita MD Rajat Aggarwal, retired as the Director of Medical and Health Department of Rajasthan in 1992 and launched Gravita with his son in the same year. Since then he has been a guiding force and source of inspiration for the entire company.



Gravita said it has increased the group's total lead recycling capacity to approximately 291,000 tonnes per annum - putting the company on track to achieve its overall target of 425,000 tpa by FY2026.

The increase comes after Gravita increased lead battery recycling at its plant in Tanzania from 5,000 tonnes per annum to 12,000 tpa. □



Role of Lead Acid Battery scrap in India's recycling industry

Today's world could not function without lead-acid batteries, which power everything from backup power systems to automobiles. However, what happens to these batteries when their life comes to an end?

environmental impacts, habitat loss and deforestation. Additionally, recycling lead-acid batteries helps conserve energy because recycling lead uses less energy than mining and refining it from raw ores.

Recycling of Lead-Acid Batteries

Lead-acid battery recycling is necessary for several reasons. If lead-acid batteries are not disposed of properly, the hazardous chemicals lead and sulfuric acid they contain can harm the environment. By recycling these batteries, we can prevent these hazardous materials from leaking into landfills and damaging groundwater and soil. This reduces the possibility of harming wildlife and the ecosystem.

Collection is the first step in the lead-acid battery recycling process. We collect used batteries from a variety of locations, such as vehicle repair shops, recycling facilities and household waste collection. After being collected, batteries are sent to recycling centers and go through a series of processes to remove valuable elements.

Lead is also a limited resource, and recycling lead-acid batteries enables us to recover and reuse this valuable element. By doing this, we reduce the need to extract lead from the ground, thereby reducing harmful

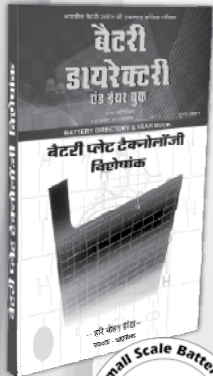
First, the batteries are disassembled into their component pieces. Batteries are usually crushed or shredded to separate the lead plates, electrolyte, and plastic case. Whereas lead plates are melted in a smelter to remove impurities and cast into ingots for reuse. The plastic covers are melted and recycled into new plastic items.

The electrolyte containing sulfuric acid is neutralized to make it safe for

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disposal or reuse in other industrial operations. The remaining components, such as terminal connections and separators, are recycled or disposed of appropriately.

Increasing need for lead-acid batteries

Rapid industrial and urban development in India has resulted in a significant increase in the need for lead-acid batteries. Uninterruptible power supplies (UPS), renewable energy systems and automobiles are some of the many uses of batteries. This has increased the amount of lead-acid battery scrap produced in the country.

This increase in scrap production has resulted in both potential and problems in the recycling sector in India. The increasing volume of scrap highlights how important it is to have proper recycling processes in place to manage this scrap efficiently. However, it also generates revenue for companies engaged in battery recycling, from recycling to processing and refining.

Economic Benefits of Recycling Battery Scrap

For India, recycling of lead-acid battery scrap has many financial benefits. By recovering elements like lead, which can be sold and re-used in different areas, it helps save vital resources. This reduces the country's need for imported raw resources and contributes to market price stability.

Recycling of lead-acid batteries also helps in employment generation and income generation. Thousands of individuals across the country can find work in the recycling sector in positions including technicians, engineers, waste collectors and sorters, among others.

Recycling businesses also make money from the sale of recycled materials, which they can use to expand their business and upgrade their facilities.

Environmental Challenges in Recycling

Recycling lead-acid batteries has benefits for the environment, but there are still major obstacles to be solved. Ensuring that lead-acid batteries are properly disposed of at the end of their life cycle is one of the main issues. Many batteries end up in informal recycling facilities or landfills, where they can seriously harm the environment and public health.

Improper disposal of lead-acid batteries can contaminate soil and water, which can have serious impacts on ecosystems and society. Lead is a strong neurotoxic, even a small amount of exposure can harm one's health, especially in young children and pregnant mothers. Additionally, groundwater may be contaminated with sulfuric acid from battery electrolytes, endangering aquatic life and potable water sources.

Tackling these problems requires continued investment in infrastructure and recycling technology. Thankfully, improvements in recycling technologies have increased the effectiveness and economy of recovering useful elements from scrap batteries. For example, state-of-the-art smelting methods can remove lead from batteries with very low energy and emission outputs, reducing the environmental impact of the recycling process.

Lead-acid battery recycling may also benefit in the future from advances in battery-to-battery recycling technology. These processes make

it possible to directly reuse recycled materials in the manufacturing of new batteries, eliminating the need for virgin materials altogether.

Rules & regulations from the Government

Government regulations are necessary to encourage ethical recycling methods and guarantee adherence to environmental restrictions. Lead-acid battery management and disposal are governed by several regulations and recommendations that have been implemented by the Ministry of Environment, Forest and Climate Change (MoEFCC) in India.

These laws set standards for environmental reporting and monitoring, as well as guidelines for lead-acid battery collection, transportation, storage, and recycling. Government organizations collaborate closely with industry entrepreneurs to promote infrastructure development and capacity

building, as well as educate the public about the value of battery recycling.

Education & Public Awareness

Public awareness and education in addition to legislative measures are important to encourage sustainable practices in lead-acid battery recycling. Since many individuals are unaware of the risks posed to their health and the environment by improper battery disposal, outreach and education initiatives are necessary to influence people's opinions and behavior.

We can encourage people and companies to participate in recycling programs by educating them about the benefits of recycling batteries and providing guidance about the proper disposal of spent batteries. A number of platforms such as media campaigns, school outreach projects and community engagement programs can be used to accomplish this. □



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

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Technology Development Board signs

MoU with Remine India to set up facility for recycling of Lithium-ion Batteries & E-waste

Technology Development Board (TDB) has entered into an agreement with Remine India Private Limited, Uttarakhand to set up a commercial plant for recycling of Lithium Battery and E-waste using indigenous technology on 27th March 2024. Through this agreement, TDB has assured financial assistance of ₹ 7.5 crore out of the total project cost of ₹ 15 crore, which is an important step towards sustainable development and environmental management.

This funded project involves setting up of a commercial plant for recycling of Lithium-ion batteries and e-waste, leveraging indigenous technology developed by the Center for Materials for Electronics Technology (CMET), Hyderabad. Recognized as a matter of national importance, efficient recycling of Lithium Ion batteries serves as an important source of intermediate raw materials for cell manufacturing within the country.

Disposal of unfit lithium-ion batteries (LIBs) through landfilling and incineration raises environmental and safety concerns and highlights the need for recycling initiatives. The potential for value creation through recovery of metals from discarded LIBs has also increased interest in recycling e-waste generated by these batteries. The lithium-ion battery recycling market size is projected to reach US\$14.89 billion by 2030, with a compound annual growth rate (CAGR) of 21.6 percent. □

For the mansion of life, Self-confidence is the foundation, Self-satisfaction the wall, Self-sacrifice the roof, Self-Realisation is the life.



Late Smt. Urmila Gupta

Maternal Grief to Shri Anup Gupta

Smt. Urmila Gupta, mother of **Shri Anup Gupta** of **Gupta Metal Works, Ghaziabad**, passed away on April 12. She was 82 years old. Her last journey left for Nigambodh Ghat on 13th April at 10:00 am from B-139, Kripal Apartment, Plot No. 44, IP Extension, Patparganj, Delhi 92.

Shri Harashpal Singh Sawhney, President, Federation of Indian Small Scale Battery Associations, condoled her demise and prayed to God for peace of her soul and for the bereaved family to bear this loss.

Many officials of the Federation paid tribute to him, prominent among them are - Former President of the Federation, **Sh. Moolji Bhai Pansara**, Hapa, South Zone President, **Sh. Madanlal Chhabra**, Hyderabad, North Zone President, **Sh. Hansraj Aggarwal**, Jaipur, Senior Vice President, **Sh. Ravi Govindan**, Bangalore, Vice President, **Sh. Ajay Gupta**, Mumbai, Joint Secretary **Sh. Mohan Sundar**, Bangalore, West Zone Secretary, **Dr. Dhanyesh Namdeo Lohokare**, Pune. On his demise many battery entrepreneurs – **Sh. K.L. Bhagat**, Mumbai, **Sh. Debanjan Jana**, Kolkata, **Sh. Rajendra Kumar Saini**, Jaipur sent condolence messages.

Her family consists of a son – **Shri Anup Gupta** and two married daughters – **Smt. Meenakshi and Smt. Shalini**.

Shri Anup Gupta has written towards those who expressed condolences - I express my heartfelt gratitude to all who are involved in my and my family's grief.

Battery Directory family prays to God for the peace of her soul.

Keeping in view the atmosphere in the world, it is important to teach students about morality and ethics while equipping them with worldly knowledge.



Exide signs agreement with Hyundai Motor and Kia for EV battery production

Hundai Motor and Kia have entered into an agreement with India's Exide Energy Solutions with an aim to expand their presence in the global electric vehicle (EV) market. The MoU signed with Exide Energy Solutions underlines Hyundai and Kia's strategic move to source batteries for electric vehicles, targeting India's growing automotive sector, the third largest in the world. The partnership is set to focus on manufacturing Lithium-Iron-Phosphate (LFP) cells within the country.

Eyeing India as one of its top revenue generating markets, Hyundai has revealed plans to invest 3.25 trillion won (\$2.40 billion) over the next decade starting in 2023. This investment is aimed at strengthening its foothold in the Indian market, which includes launching six EV models by 2028 apart from setting up charging stations.

Kia has outlined its intention to launch locally customized small-sized EVs starting from the year 2025.

Reflecting India's growing importance in the global EV landscape, Exide Energy is preparing to commence EV battery cell production by the end of the current year.

Battery Directory-2024

Products Manufacturers Index

The list of manufacturers of 66 battery related products is published in Battery Directory-2024. The names of these products and the page numbers of their list of manufacturers are given below. All readers are requested that if your name is not there in the list of any product and you are the manufacturer of that product, then inform us on 9810268067 and get your name included in this list.

<u>PRODUCT</u>	<u>PAGE NO.</u>
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Go from Ordinary to Branded & Iconic with Celebrity Endorsement

Shri Vinod Raghuvanshi, Founder and CEO, Reserve My Star highlights the important role of celebrity endorsement in branding and marketing for battery companies

Celebrity endorsement can provide many benefits to the product and is of vital importance for battery manufacturing companies. Celebrity endorsement helps battery manufacturing companies to transform their products from local or generic to branded and prestigious. When a famous celebrity lends his or her name and image to endorse a battery brand, it adds an aura of prestige and sophistication. Moves the product away from the local tag and positions it as a premium offering worth noting.

Psychology of Recognizing a Product by face

Human Connections: People naturally like to form relationships and connections with other special individuals, including celebrities. When a celebrity endorses a battery brand, consumers are more likely to develop a personal connection with the product, connecting it to the celebrity's values, lifestyle, and personality. This human element creates an emotional bond between the consumer and the brand, fostering loyalty and long-term engagement.

Quality Assurance: Celebrity endorsements act as quality assurance to consumers. When a trusted celebrity publicly associates themselves with a battery brand, it signals to consumers that the product meets certain standards of quality and reliability. People feel reassured knowing that a product endorsed by a celebrity has been tested and deemed worthy of endorsement, reducing the risk associated with purchasing the product.

Enhanced Brand Image and Reputation: Association with reputed celebrities can significantly enhance the brand image and reputation of battery manufacturing companies. Consumers view a brand more positively when it is endorsed by a celebrity they admire or respect, which increases trust and credibility. This enhanced brand image can translate into greater customer loyalty, favorable word-of-mouth, and ultimately increased sales and market share.

Increased Visibility and Awareness: Celebrity endorsements can put battery brands in the spotlight, generate buzz among consumers and increase awareness. Association with a celebrity attracts media attention and increases the brand's visibility across multiple channels, including traditional media, social media and

digital platforms. This increased visibility helps battery manufacturers reach new audiences and expand their market presence.

Differentiation and competitive advantage: Celebrity endorsements can help battery manufacturers differentiate their products from competitors. By leveraging a celebrity's star power and influence, brands can stand out and create a unique selling proposition. This gives battery companies a competitive edge, helping them gain market share and maintain growth in the long term.

In short, celebrity endorsements provide a variety of benefits to battery manufacturing companies, including removal of local product tags, establishing mental connections with consumers, assurance of quality, enhancement of brand image and reputation, increased visibility and awareness, and others. By strategically harnessing the power of celebrity influence, you can strengthen your position and achieve success in the battery brand market.

To know more about the topic please email: vinod@ReserveMyStar.com.

– **Vinod Raghuvanshi**

Founder and Chief Executive Officer,
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Used Lithium Battery Recycling and Strategies

How much lithium battery waste is generated in India every year and what are the chances of recovery of lithium and other critical materials?

In India, approximately 70,000 metric tons of lithium battery waste is generated annually, creating several environmental challenges. With proper recycling infrastructure and technology, a significant portion of these batteries can be recycled, reducing the demand for raw materials thereby reducing environmental impact.

Battery recycling typically begins with the collection of lithium-ion batteries used in electric vehicles (EVs). Next, the batteries undergo pre-processing and disassembly, resulting in discharged lithium-ion batteries. The subsequent stage involves the production of 'black mass' through a mechanical or thermal process, after which it is sent to suitable recycling companies.

The black mass is rich in lithium, manganese, cobalt and nickel content. These components can be reintegrated

into battery production or reused for alternative applications.

ATTERO is the only company in India and one of the leading global companies offering end-to-end processing and refining of black mass, producing more than 98% pure battery-grade cobalt, lithium carbonate, graphite, nickel and Extracts with extraction rate. This exceptional performance far exceeds global competitors, who typically achieve recovery efficiencies of less than 75%.

Through its formal recycling processes, ATTERO demonstrates how recyclers can sustainably extract valuable materials such as lithium, cobalt and nickel for reuse in new battery production.

Which recycling technologies are promising & why?

Li-ion battery recycling is primarily done after two primary processes: pyrometallurgy and hydrometallurgy. Hydrometallurgy uses a process known as mechanical pre-treatment to remove

the black mass. Subsequently, leaching is carried out by employing reagents and solvents. Subsequently, mineral recovery is achieved through chemical or electro-extraction, with recovery rates reaching 95%.

In contrast, pyrometallurgy involves heating ores at high temperatures to extract the minerals. While about 50–60% of minerals such as nickel and cadmium are extracted, this method leaves lithium and aluminum behind, resulting in lower recovery rates for these elements.

That said, hydrometallurgy promises sustainable resource recovery from the battery grid, contributing to both environmental protection and the circular economy. Further progress and research are important to increase efficiency and expand the scope of recovered materials.

ATTERO uses a comprehensive mechanical and hydrometallurgy process to recover most metals with a recovery efficiency rate of over 98% while prioritizing sustainability. ATTERO's NASA-approved technology, backed by 45+ granted global patents and with multiple applications, delivers remarkable efficiency with high extraction rates.

How energy and cost intensive is lithium battery recycling?

Lithium-ion battery recycling, when supported by efficient technology, does not need to be inherently energy-intensive. While traditional methods may involve complex separation processes and specialized equipment, advances in sorting technologies and automation have opened up energy savings.


Innovative approaches such as hydrometallurgical processes bypass energy-intensive melting processes, thus reducing both energy requirements and costs. At Atero, the lithium recycling process exemplifies this change, claiming 99% lower greenhouse gas emissions (GHG) than extraction of pure metals. Internal studies indicate substantial savings in terms of GHG emissions for key materials extracted compared to baseline emissions; 63% lower emissions in the case of graphite, cobalt (57%), copper (67%), and lithium carbonate (98%).

Converting recycling facilities to renewable energy sources reduces the environmental impact even further. A circular economy mindset can be promoted by optimizing resource use, implementing strong collection systems and encouraging consumer participation. □

Inspiring Thoughts

- ★ A smart person knows what to say. An intelligent person knows whether to say it or not.
- ★ People are lonely.... because, they build walls, instead of Bridges.
- ★ A strong, positive self-image is the best possible preparation for success.

Forwarded by
– Sh. Ajay Gupta
A K Auto Agency, Mumbai
Vice President,
FISSBA, Delhi
President, IBAAIWA,
Mumbai



Log 9 EV Battery

Batteries account for about 50% of the cost in electric vehicles. These batteries make them expensive compared to traditional ICE vehicles.

Indigenization reduces high EV prices

One of the major issues in EV adoption is its high price. For example, the base model of Tata Punch EV is priced at around Rs 11 lakh while the base model of Tata Punch ICE is priced at Rs 6.5 lakh.

However, the price of the EV is expected to come down due to indigenization of its components. In recent times, many OEMs have announced price cuts for their EVs. This decision to reduce the price is largely due to market dynamics and the low cost of battery cells. One of the key elements in batteries is lithium carbonate, the prices of which have dropped significantly in the last six months.

Experts are of the opinion that government schemes like Production Linked Incentive Scheme (PLI) and subsidies on manufactured EV components will further boost indigenization of EV batteries in India.

According to Pankaj Sharma, co-founder of Log9 Materials, three important factors that can help reduce battery costs are scalability, supply chain and long-term contracts. Log9



Materials is India's first commercial lithium-ion cell manufacturer. With a planned capacity of 1,000 vehicles per year initially, it plans to commercialize them by the end of 2024.

One factor associated with the high prices of EV batteries is the import cost of lithium-ion cells and batteries in India. Proactive steps by the government to produce EV batteries in India have helped in reducing imports of key battery components, thereby reducing import duty costs, shipment expenses, etc., while increasing employment in India.

However, this will not help the country at higher levels as manufacturing scalability is not fully achieved. It will take some time for India to achieve efficiency in terms of scale and supply chain.

Long-term contracts with battery cell producers can provide stability by setting a fixed price for lithium-ion cells. This will help manufacturers plan production efficiently, creating a harmonious environment for both cell manufacturers and battery companies.

The demands and requirements of batteries in vehicles vary from OEM to

OEM and vehicle to vehicle. Optimizing batteries can make them more effective and cost-efficient.

EV fire

Batteries, which are the key component of an EV, and account for a major portion of the price of an electric vehicle, also bring another fear for its customers. Recent incidents of EV fires can be said to be another possible reason for the slow adoption of EVs.

Fires in EVs sometimes occur due to improper chemistry of battery cells that does not match the climatic conditions. Fire in an EV can occur due to many reasons. To reduce the incidents of EV fires, the Indian government has introduced AIS 156

certification for battery manufacturing companies. It sets certain standards for battery manufacturers to follow. Only then can a battery be installed in a vehicle.

Log9 battery cells provide the solution to this as they have been tested in extreme temperature conditions up to 180 degrees to make them suitable for high temperature and Indian conditions.

Log9 has received AIS 156 certification for its batteries, making them safe for use in vehicles. Keeping in mind the safety of the driver and his passengers, the battery of the Log 9 has an automatic shut-off system that shuts down the system if it detects any imbalance in the battery pack. □

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Dt. 5th January 2024

Subject: Advertisement in the BATTERY DIRECTORY Fortnightly Issues.

Dear Sirs,

In order to give advantages of digital technology to the smallest battery shop and smallest manufacturer of batteries, battery parts, we have accepted to publish half page color and one fourth page color advertisements in the **fortnightly Battery Directory** magazines **Hindi & English editions**, along with this, it has been also decided to provide them access to **Online Digital Battery Directory**. Advertisement rates are as follows:

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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 एक्स्प्रेसर 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, साई फोटो, लॉकेट और विभूति उपलब्ध।

- * समय-समय पर नारायण सेवा

- * बालविकास कक्षाएँ

- * शीतल जल सेवा

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1-15 April 2024 (Published on 19.04.2024)



Bhajans & Bliss

– Bhagwan Shri Sathya Sai Baba –

SATHYA-ANUSAARINI Lakshmi (As long as people adhere to Truth, prosperity will attend on them). Truth is that which is valid for all the three categories of Time Past, present, and the future. Truth is Divine. The one who ad-hems to Truth will lack nothing in the world. "Thyaaganusaarini Keerthi" (Fame will follow the man who has the spirit of sacrifice). In the world today both truth and sacrifice are rare. These two are the proper goals for human existence. "Abhyaasanusaarini Vidhya" (Knowledge is gained by the extent to which it is diligently pursued). Diligent study is essential for the acquisition of knowledge. The Geetha has declared that earnest practice leads to success in meditation. Meditation helps to promote the spirit of sacrifice. Peace is secured from sacrifice. Hence, diligence

is essential for achieving anything. All actions in one's life are performed well through Abhyaasa (constant practice).

Bad actions pollute the intellect

"Buddhih Karmaanusaarini" (Actions determine the course of the intellect). In the actions performed by the person, there are two types: the proper and the improper. Man's intellectual tendencies depend on the nature of his actions, good or bad. Bad actions pollute the intellect. Good deeds purify the intellect. Hence the condition of the intellect is determined by one's actions.

To ensure that one's actions are good, one has to cultivate good company. Association with the good influences the intellect in the right

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direction. Your company shows what you are. It is, therefore, necessary to cultivate the company of good people and foster good qualities.

In this world, who is a true preceptor? One's heart is the true preceptor. Time is a true teacher. The world is the best guide-book. God is the ideal friend. Hence, there is no need to search for a preceptor. The heart is your conscience. When you consult your heart or conscience, it tells you what is right. It is the right preceptor. It will not let you go astray.

Then you have Time. It is going in the right direction. In any circumstance you cannot go against Time. Teachers are of two kinds: the painful and the illuminating.

Time belongs to the type of

teacher who illumines. Time is the devourer of all things in due course. But the Lord, Eeshvara, is master over Time itself. Therefore, one should act according to the needs of the Time, with full faith in the Lord. This is the proper way to act.

The cosmos is the best text

People read all kinds of sacred books- the Geetha, the Bible, the Quran, the Granth Saheb and others. All these books confine their reachings

to specific subjects. They do not cover other subjects related to the physical, the social etc. But the cosmos itself constitutes the most comprehensive text-book, covering all subjects, the physical, the mundane, the ethical and the spiritual. The cosmos is therefore the best text. There is nothing you cannot learn from the universe.

However intelligent a man may be, he learns all that he knows from the world around him. Without the world knowledge cannot exist. In the distant past, the world was enveloped in darkness. For millions of years the world was covered by a heavy mass of clouds. Then started a downpour which lasted for thousands of years. This was followed by the formation of oceans, mountains, rivers and forests on the earth. The dissolution of the clouds gradually dispelled the darkness enveloping the world. Then, the sun and the stars became visible from the earth. Man has to learn many things from the phenomena taking place in the universe. Next, there is the question: "Who is one's best friend in the world?" There are any number of fair-weather friends. Who is a lasting friend, who will stand by you in weal and woe, who is pure and unselfish? God alone is such a friend. When you make God your friend, you will be free from all troubles. Your worldly friends may desert you any moment. But God will always be with you, above you, around you. Your dearest and unfailing friend is God alone. All of you were engaged in the bhajans whole of last night. They appeared to be largely Vyaavahaarika (kind of ritual). What is the origin of this worldly ritual? It has come from Paaramaarthika (the spiritual). This shows that there is an

clement of spirituality even in worldly actions--whether it be the practice of a profession, or a business or the pursuit of knowledge. Worldly activities get sanctified by association with spirituality.

Equanimity is characteristic of the ocean

Form the worldly activities arise what are called Praathibhaasika activities (reflections of the worldly activities). What

is the relationship between these three types of activities? The Paaramaarthika (spiritual) is like the ocean. From this arise the waves of vyaavahaarika (worldly activities). The main characteristics of the ocean are to be found in the waves also like chillness,

saltishness, etc. Praathibhaasika is represented by the foam arising from the waves. The foam has all the qualities of the ocean. The relationship between these three types has to be properly understood. Without the ocean, there can be no waves. Without the waves, there can be no foam. It is clear that without the Paaramaarthika (the spiritual) there can be no Vyaavahaarika (worldly) phenomenon. Without the Vyaavahaarika waves, there can be no Praathibhaasika foam. Their interrelationship is comparable to a grandfather (the ocean), father (waves) and son (the foam). The ocean is not

diminished by evaporation or swollen by the flow of river waters. This equanimity is characteristic of the ocean. It is free from egoism and possessiveness. People, however, consider the three states. Paaramaarthika, Vyaavahaarika and Praathibhaasika----as different from each other. This is totally wrong. The Vyaavahaarika (worldly activities) should not in any way be divorced from the Paaramaarthika (spiritual). Only then can peace be got from worldly activities. What is the cause of sorrow in this world? It is the result of separating the worldly activities from the spiritual and considering them as distinct from the other. The transient nature of worldly activities should be understood. It is associating them with the spiritual that they acquire sanctity. The spiritual basis of all activity should never be forgotten.

Spiritualize the Bhajans with heart felt devotion

The bhajans this time were done in a ritualistic fashion. Greater attention was paid to raaga, thaala, laya and shruti (the melody, the beat, the rhythm and the tone). All these are vyaavahaarika (conventional qualities). To elevate the bhajans to a spiritual level what are required are true feeling and ecstasy of devotion. The songs should flow not from the lips but from the heart. When the songs come out of the heart they will be blissful for the ears. That heart is comparable to the ocean. Hence, the Lord is described as Hridhayavaasi (the Dweller in the heart). The heart is the seat of compassion in man. Only when men are kind, you can call humanity "mankind". Do not think that God dwells in some temple, shrine or place of pilgrimage. He is omnipresent

and His abode in man is-the human heart. When Naaradha sought to know from Vishnu what was His permanent abode, the Lord replied: "Wherever my devotees chant my glories, I am present there." When God dwells in the heart,

why should devotees

seek Him elsewhere?

Conduct your bhajans with a pure unsullied heart, oblivious to all worldly desires. When you chant the Lord's name with a pure heart, you will experience the Divine. "If a man, devotes one moment

of the time devoted to thoughts of family, friends, business and wealth, to thoughts on the Lotus Feet of the Lord, he will have no need to fear the messengers of death." Men's thoughts today are wholly concerned with acquisition of material possessions, power and pelf. How much happier would they be if they devoted a fraction of their time to contemplate the glories of God. Hours, days, years are wasted in the pursuit of things of the world. One moment devoted to the thought of God will make all the difference. What meaning is there in acquiring millions? A contented man is happier than a millionaire. The poorest man in the world is the one who has insatiable desires. Be content with what you

get and carry on your duties. This is Thyaaga, a life of sacrifice.

Adhere to Truth and Sacrifice

Today the world needs Truth and Sacrifice. What does sacrifice mean? Today there are millions of people who consider themselves Sai devotees. There is no need to go outside the Sai fold. If the Sai devotees alone adhered to Truth and Sacrifice, the entire world will be transformed. If you wish to change the world, these two principles are the recipe. Sathya (Truth) purifies the heart. Thyaaga (sacrifice) transforms the physical environment. By this double transformation the entire world is divinised. How long will men continue to wallow in the mundane world, forgetting the Divine? You must yearn for God and redeem your life. Men desire to become millionaires. But how many of the millionaires have peace of mind? Money can give many things that are conducive to Comfort. But it cannot give peace of mind. It should be realised that the body and all the appurtenances of the mind have been given to man to enable him to achieve Aathma-shaanthi (spiritual peace). If spiritual bliss is not attained, all other physical attachments are worthless. Man has been endowed with a body to practise righteousness. Man has to rise above the level of birds and beasts. Dedicate your lives to the service of your fellowmen. Do not lead an idle life. Bhaarath has any amount of land and water. Why should people suffer from want? Because they are not engaged in the right type of activities. Many are wasting their time. Time is God. Time wasted, is life wasted.

Pray to God and transform work into worship

In the worship of the Divine, there are two schools of thoughts----those who worship the formless and those who worship the Divine in different forms. The differences over this issue are fruitless. Water that is formless acquire a form when it becomes ice. The formless water molecule and the ice block with the form are one and the same. Vedhaantha has clearly pointed out the futility of this controversy. People get confused by the way some scholars deal with spiritual subjects on the radio and TV. The teachings are often based only on bookish knowledge without any practical experience. Knowledge should be based on experience. For instance, the saltish water from the ocean that is turned into vapour by the rays of the sun becomes pure and sweet. It has no trace of salt in it. It has been transformed. The same process takes place when the grace of the Lord's rays falls on the polluted mind of man and transforms his thoughts into pure and sweet feelings. The importance of the mind in the process of transformation should be properly understood because the mind is the cause of bondage or liberation. Your actions are the cause of your happiness or sorrow. Do not blame others for your condition. Every thought, every word and every action has its reflection, resound and reaction. It is a sign of weakness to blame others for your troubles. You have to bear with the consequences of your actions. If they are unbearable, pray to God for relief. God alone can give relief in such cases. He is all-powerful and therefore rake refuge in Him. Pray to God and

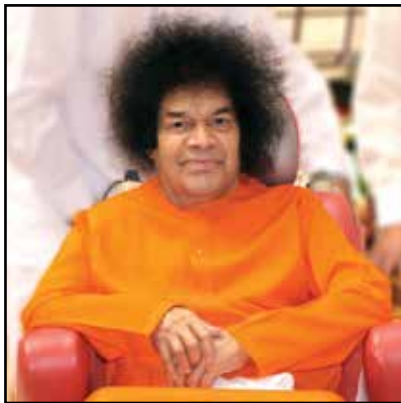
draw from Him the magnet of His grace and offer to the world the power of His electrical energy. This is the energy which man can mobilise for the good of all. It is all-powerful, because it is Divine. It is within you. What a pity that people should be unaware of this and feel themselves powerless! All energy and all bliss are within us. Because of ignorance people are resorting to all kinds of useless exercises. They are unnecessary. Have full faith in your Aathma-shakthi (spiritual power). Adhere to the truth of your faith, without criticising others. Whatever you do, have the name of the Lord on your lips and faith in God in your heart. Thereby work will be transformed into worship.

Enjoy bliss in silence

Today, you have to open your hearts and close your mouths. But people are doing exactly the opposite. This is treason to God. Practise silence as far as possible. The ancient sages practised mounam (absolute silence) as a spiritual discipline. Today people indulge in excessive talk over the trivial and the unimportant. When silence is practised, bliss will manifest itself. The one who talks much will do little. One who acts will talk little. I have been observing how the bhajans are sung. When the girls sing, the boys do not follow in chorus. When the boys sing,

the girls do not respond. When both are singing the Divine name, why should not they sing in unison? What is the reason for this narrow separatism? This should be given up. Once Emperor Akbar asked his court musician how would he account for the fact that a wayside beggar's music moved him more profoundly than the music of the state musician. The latter replied that while the beggar sang from his heart to please God, his music was constrained by the desire to please the Emperor. You should sing whole-heartedly with the desire to please God. God makes no distinction between a proficient musician and a beggar in the street. It is the devotion and sincerity that matter. Merge your soul in the bhajans you sing. Spiritualise your bhajan-singing. Then you will experience real bliss.

In following Swami's teachings people tend to follow them according to their convenience. For instance, when Swami said that there is only one caste, the caste of humanity, this statement is used as authority for uninhibited marriages between any two persons. This is a travesty of Swami's teaching. Caste differences are to be eliminated. But cultural differences should be respected. Swami has emphasised that every cultural group should adhere to its culture. Swami's teachings should be adhered to in their entirety and not selectively according to one's convenience. I fervently appeal to all devotees to participate in the bhajans with their heart and soul and make community singing a blissful spiritual experience for one and all. □



One who respected his/her parents became worthy of everyone's respect. The one who did not respect his/her parents was compelled to bow down to all. This inevitable law can never be changed by anyone.

– Bhagwan Shri Sathya Sai Baba



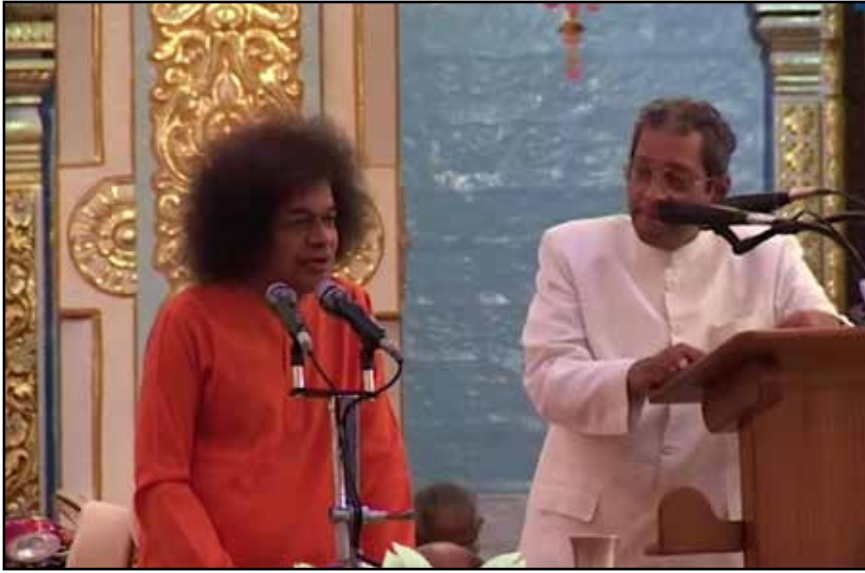
Late Professor Anil Kumar

Translator of Lord Baba and former State President, Sri Sathya Sai Seva Organisation, Andhra Pradesh
Professor Anil Kumar, merged into Swami

Translator of Lord Sri Sathya Sai Baba **Prof. Anil Kumar** merged with Swami at 10:10 am on 3 April. Due to unwell, he was taken to Sri Sathya Sai Super Specialty Hospital on April 1. During his last moments the sound system of Sri Sathya Sai Super Specialty Hospital was playing Hanuman Chalisa, a divine Sai-event and a tribute to Sai's Hanuman.

The life and activities of Professor Anil Kumar are beyond human capabilities and understanding. During more than 50 years of association with Swami, he selflessly and tirelessly spread the love and unity of Sai, in his native state of Andhra Pradesh and later gradually throughout the world, during his foreign visits to many countries. He was also a central person in the SAI Institute of Higher Learning. First served as Principal of Whitefield College in the early 80s and later as Professor of Botany at the Sri Sathya Sai Institute of Higher Learning in the Prasanthi Nilayam campus. He inspired thousands of Sai students.

By the grace of Lord Baba, when the Sai devotees of Shri Satya Seva Sansthan, Delhi went to present more than 500 Namjap copies at the feet of Lord Baba in October 2001, we had the privilege of hearing Prof. Anil Kumar's inspirational and energetic address on the subject of chanting. The guidelines



given by Prof. Anil Kumar are certainly valuable for all of us followers of written Namjap. He had said-

- It is only by the immense grace of Lord Baba that we have been able to engage in the written Namjap campaign that purifies mind, words and deeds.

- Written Namjap has the power to change the law written on the forehead. Whoever started this holy work, his problems started getting solved in a surprising manner.

- Time and place must be fixed for written Namjap. At the appointed time, one should sit in front of the picture of God and recite the written Namjap while speaking with full devotion.

- Writing copy while watching TV, talking or doing other worldly tasks is not written Namjap, that is merely writing.

- Do not compete among yourselves in writing fast in written Namjap.

- Do written Namjap regularly. Don't leave in the middle.

- Do not leave the Namjap copy here and there carelessly, keep it with devotion in a holy place.

Heartfelt tribute to Prof. Anil Kumar from Shri Sathya Seva Sansthan and Battery Directory.



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