

# **BATTERY BREAKING SYSTEM**

## **1) THE PROCESS OF BATTERY BREAKING SYSTEM: -**

The battery breaking plant is exclusively designed for separation of battery parts and it is available in capacity of processing of **30, 60, 80, 100, 120, 150 Metric Tons** in 8 hour shift.

This is fully automatic plant & Batteries are loaded on battery feed conveyors and it passes through **Acid Extraction/Draining machine** that is mounted on FEED CONVEYORS. Acid is automatically drained out from battery & acid is sent to its storage tank. Acid stored in a tank, the precipitated oxide slurry is taken out with the valve & the acid is sending for Recycling: Neutralization. It can be handled in two ways: First way, the acid is neutralized with an industrial compound similar to household baking soda. Neutralization turns the acid into water. The water is then treated; cleaned, tested in a waste water treatment plant to be sure it meets clean water standards. Second way, the acid is processed and converted to sodium sulfate, an odorless white powder that's used in laundry detergent, glass, and textile manufacturing. These two processes are not included in our scope. Conveyor can be connected to the Lorry which carrying the Scrap Batteries to have lesser manual shifting of batteries. It is an additional requirement which is chargeable at additional costs.

It is integral unloading and feeder to **Lid Shaver Machine**. We shave the battery from under its cell straps. Proper Cooling Arrangements are done for enhancing the life of the Machine so that the cutting equipments get cool at the time of cutting the lid parts from battery. Now, the shaved lid which is separated from under the welded straps is sent through conveyor to **Lid Crusher Machine**. The Lid part is completely crushed and sent to **Lead-Plastic separating Machine: i.e., Metal Classifier**; with this process plastic parts are

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separated from the Lead parts. Such plastic parts are sent to the **Plastic Crusher** & are cut into smaller pieces.

The Rest of the battery is moved on conveyor to the **PART SEPARATOR MACHINE** & all the parts are separated totally and sent to their separate respective storage tanks with the help of Conveyor systems. This separation machine is enclosed & no dust particles come out of the plant this increases plants recovery & reduces wastages of material. For dust collection BAG HOUSE is attached so that the oxide dust is stored in a filter bag. In this machine, on the First stage, the Battery Casings are taken out & sent to their separate section through its connecting conveyor. Later on, these Casings are sent to the same earlier Plastic Crusher, or a separate crusher can be placed as per customer's choice at additional cost which depends upon the Production capacity of the plant.

After this step, the **Plates & Separators** are sent to the second level, in this section using a particular stage of vibration resonance at certain level we have taken out maximum quantity of Lead parts from the Plates & Shredded oxide material on the Third stage for Collection in its particular storage tank. In this stage, we took out the impregnated material from the plates on Grid. The rest material on plates are taken out with Battery Separators are sent to the **Part Separation Machine** on which the Plates are separated on one stage i.e., on one side & Separators are stored on other side. The **Plate Parts & Separator Parts** are separated and here we are collecting the rest of the shredded oxide material. The Grid parts & separators are separated by using the **Grid-Separator Separation Machine**. In this machine, Both Grids parts & separator parts are dropped through conveyor. Heavy air & water pressure is given simultaneously in the machine and by using floatation method we are separating the Separators & Grid Parts. These shredded Plates are sent to the FURNACE FOR SMELTING [Recycling]. And the Separators are sent through conveyors to A **Separator Washing Machine**. This separator washing machine is added to the system as per the customer's on demand or as per the plant production capacity. The machine is completely enclosed and environment friendly.

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Getting back on **Parts Separation Machine**, in the third layer of separation, Broken Separator Parts, Broken Grid Parts & Oxide Dust is taken out & sent to the other Metal Classifier & Flootation Tank is attached on that. In this section, Separator parts floats in water tank. The Lead Parts & the Oxide dust is settled down on the bottom side of the tank due to its weight & taken out with the help of rotary valve. And, the same water can be used again & again.

The transferring of Lead Parts & Oxide Dust material can be sent to their respective Refining Pots & Smelting Units through Fork Lifts/ automatically with the help of automated mechanized system that will be on customer's demand at additional cost.

## **2) WATER FLOW CYCLE IN PLANT: -**

The system requires water connection as per the plant production capacity. The Water is filled in a Tank & through pipeline it is sent to Flootation Tank then it is filtered in every cycle, the lead parts are taken out by rotary valve. This filtered water is used for 4 hours & then sent to the Separator Washing Machine. In the machine again the water is used for four hours, again out of this water the lead or oxide dust is taken out through the Rotary Valve then after that the water is sent to the Plastic Washing Machine. After Washing of the Plastic again there should be Lead Particles & they will be filtered & this lead dust is taken out by Rotary Valve, after to this, this filtered water can be send to Water Treatment Plant provided by the Customers as per the production Capacity of Plant [Which is not in our Scope].

**Hence, there is no water wastage, water outflow, or any drainage. After such continuation the water gets evaporates a certain quantity depending upon the ambient temperature, humidity, & other ambient conditions.**

## **3) CONTROL PANELS: -**

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The system is controlled through Control panels [PLC operated unit integrated]. The plant has individual operational control system on feed conveyors also for operators. A master control panel is attached in the Main Control Room as provided by the customer nearby the plant. The Plant has additional feature of Auto Shut Down with the Self Fault Facing Indication displays. These displays can be fixed up as per the customer's defined position within Five meter range. This helps in knowing the actual position of the plant & reduces the lead time period to search for the errors & with faster production.

## 4) CONSTRUCTION & STRUCTURE: -

The Breaking system is built exclusively of SS steel grade 306,310(as per availability), & the Acid Proof Plastic Coating is done on certain parts which indirectly come into the contact of Acid; Stainless steel assures trouble free operation and increased durability. These classification units, are designed as complete system, it provide low initial cost with high efficiency. The system also offers low maintenance, easy installation and start up, low power consumption and water consumption is only for Floatation process in separating Lead & Lid Parts, this water is filtrated and reused with the same up to its fullest and later on, it can be re used in making balls of Oxide dust for feeding in Oxide mills.

## 5) Features:

- Systems are useful for small or large capacity operations.
- SS Steel is used in plant & Special Acid Proof Plastic Coating at some parts is done to keep the cost to minimum & for plant's durability.
- High level of automation with the PLC units is there for auto Controlling & Self Fault Indication display.
- Auto Shut down of Plant for facing any errors increase plants life & ensures safety.
- Low Power Consumption.

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- Machines are completely enclosed for making it environment friendly & reducing Material Wastages.
- Machine is Rugged & Heavy Duty. It is capable of running for 18-21 Hrs. continuously.

## 6) Benefits:

- Higher profits.
- Low labor costs.
- 99%+ Lead yield.
- Low energy costs.
- Environment Friendly.
- Low maintenance costs.
- Saves WAREHOUSING COSTS.
- Reduced processing cost per ton.
- Simplified environmental compliance.
- Reduces the market DEMAND-SUPPLY Gap.
- Helps in maintaining & keeping costs of Raw Material to MINIMUM.

**THE PROCESS LAYOUT IS PROVIDED ON DEMAND WITH WATER FLOW CYCLE & ELECTRICAL CHART DEPENDING ON PLANT CAPACITY & LIST OF MACHINES ARE MENTIONED IN THE QUOTATION. THE SYSTEM DESCRIBED ABOVE IS COMPLETED FROM START TO END, ANY OTHER MACHINE ASKED BY SEEING THE REQUIREMENT OF CUSTOMER WILL BE PROVIDED AT**

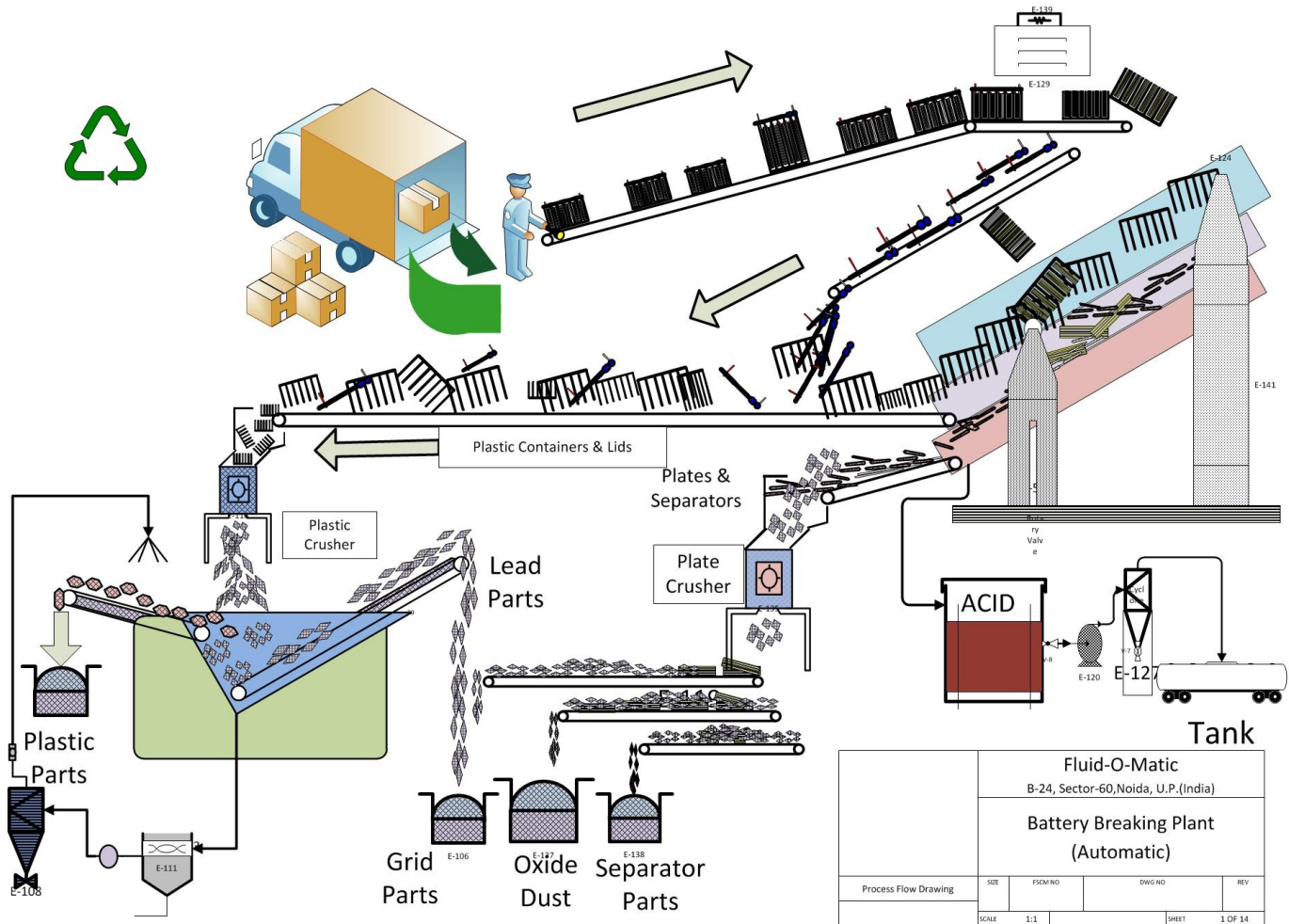
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**ADDITIONAL COST. THE ABOVE SYSTEM IS DESCRIBED ACCORDING TO THE HIGHER CAPACITY PLANT, I.E., OF 120 ~ 200MT PER SHIFT.**



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