

Enhancement of Lead Acid Battery for Life Cycle Improvement

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ABSTRACT: A battery consists of six numbers of Electrode cell units. If one unit is under fault, 90% of consumer least bother to rectify it, so they dispose it to Scrap and buy new battery.10 % they try to service it, may work it out or not The proposed invention is a design a system for Self maintenance of Battery by replacing faulted electrode cells with back-up new cells by consumer itself. The proposed idea is that the battery can be fault diagnosis and rectified by consumer itself. Protect the environmental issues from battery Disposal and enhanced the life of the Battery. Also the each cell is designed with Guard for protecting from direct damage and enhance capacity of chemical in the plates.

I. INTRODUCTION

A Battery consists of six numbers of electrode cell units. In each cell a 4 anode plates and 5 cathode plates. Anode plate has higher weight than compared to cathode plate. The present battery is rechargeable types of battery. Fiber glass separator are used between cathode and anode to prevent shorting. If any fault occurs mostly the battery will be scrap they could not be able to analyse and repair the problem in it. Usually battery they are been a part of routine in our day to day life because if we take while travelling to office or colleges or any other places obviously we need an vehicle to transport from one place to another in that vehicles there we are using lead acid battery as common thing so in this we need an starting current at some higher rate for it we can able to modify the thing at good rate the efficiency of the battery can be improved. So once the battery has been manufactured if any one of six electrode cells has been damaged they cannot repaired or serviced because their level at top of battery are been welded so they cannot be open there is only one choice by the braking battery so that it cannot be rectified battery is wasted they cannot be used again. So at present battery levels at caps are not flexible because they do have the drawback as once there is no spacing in the their comes the cap to be opened and by which their occurs airbursting as which they cannot control the start short circuiting between the wires and battery gets damaged and not able to ready by shops.

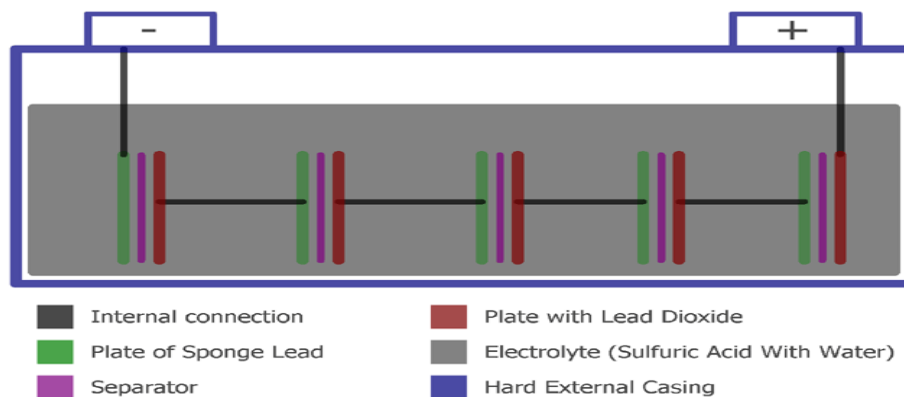


Fig 1. Parts of lead acid battery

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So the level of cap designing can be modified accordingly by their requirements at various constraints and situation around the temperatures. The battery which uses the lead and other components they all formed to be a mixture and the energy conversion from chemical energy to power and these types are known as lead acid battery. The existing battery they are used as one time purpose only because they do not able solve the problem and they do not change any faulted cells or any faulted parts from it so they usually sent it to Scrap process which means the disposal of battery by splitting up the sulphuric acid and other acids at one side and then waste parts that is the body of battery are disposed on another side.

II. LITERATURE SURVEY

Lead-acid battery chemistry is known to be very complex compared with other commercially available battery technologies. This, on the one hand, makes it difficult to achieve significant improvements with limited resources, but on the other hand it means that even after more than 100 years of research and commercial use there is still room for enhancements. This is especially the case for 12-V SLI battery systems, which are endangered and which are more crucial for lead-acid than for example the utilization of 48-V lead-carbon batteries. The vehicle's battery has to support ever-increasing electrical feature content when the engine is off, for example, power seats, power-operated tailgate, power sliding doors, and fuel-operated parking heaters. In addition, the battery needs to be able to withstand throughput caused by regenerative braking and stop-start functionalities, which are needed to improve fuel economy and CO₂ emissions. Lead-acid batteries, the major source of secondary lead, are composed of several materials as indicated above. An important step in their recycling is therefore to process the batteries first by separating the distinct material fractions. Upon reception at the recycling plant, a first step common to all Western recycling approaches is the removal of the sulfuric acid. Various simple but sufficient strategies are in place in order to crack the battery casings and drain the acid from them. Dropping the batteries from a height of a few meters or driving over them with a front loader are the most common. The acid is collected into a basin for settling. Breaking or dismantling batteries further, after drainage, separates the lead-bearing materials from the plastics or other fractions. Automated breakers are used in the most advanced plants, but manual or semi automated dismantling lines are also in use. Large stationary batteries with a metal casing cannot be treated in automated breakers. They have to be dismantled in less automated ways, often with custom-built auxiliary equipment. The lead-rich fractions, a mixed heavy plastic fraction is also formed that contains combined plastic-metal particles and plastics other than polypropylene. This fraction contains the polyethylene, as well as decreasing amounts of PVC, from separators, with other materials such as ebonite or glass. It can be added to a lead smelting furnace or used for energy recovery in a hazardous waste incinerator. The fractions used for lead recycling are the metallic fraction and the battery paste. The metallic fraction, containing the grids and connectors, is generally sent to rotary furnaces in the same plant, without the need of an extensive smelting cycle as the amount of oxides/ sulphates is minimal. The paste is mainly also locally smelted, possibly after desulfurization, but can also be shipped to a primary smelter.

III. PROPOSED CONTROL SCHEME

The present idea generally relates to battery life. More specifically, the invention describes a self-maintenance of Lead-acid battery for life enhancement. The present idea is a design a system for Self maintenance of Battery by replacing faulted electrode cells with back-up new cells by consumer itself. Consumer can able fault diagnosis and rectified the problem itself. Thus protect the environmental issues from battery Disposal and enhanced the life of the Battery. Also the each cell is designed with Guard for protecting from direct damage and enhances capacity of chemical in the plates. The battery consist number of individual cells containing layers of lead alloy plates immersed in an electrolyte Solution, consumer least bother to service and it is not flexible too. The proposed idea is that the battery can be fault diagnosis and rectified by consumer itself, thus Protect the environmental issues from battery Disposal and enhanced the life of the Battery. Battery pack may malfunction and when changing, depending on the overall battery status display control box, direct replacement of a single faulty cell, without the need to have the entire battery replaced. It explains a cell fixing bracket. When the batteries inside the battery fails, without affecting other cell of the original

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fixed, quick-change base where the fault batteries, a good solution to the overall poor performance of battery failure. The Removing of battery unit fault of decoupling is proposed. The advantages of the variant of the method according to the present invention provide the advantage that often can be arbitrarily replacing the battery unit failure without having to increase the battery capacity. To provide a highly redundant network of cells that allows a large array of cells to be organized on a monolithically fabricated unit, with at least moderate yields of defect-free arrays in spite of significant numbers of defective cells, where spare cells replacing defective cells are physically neighbours of the defective cells they replace, allowing the spare cells to act as direct replacements with little displacement in situations where physical location is important, such as video displays and direct input image processing arrays. Protect the environmental issues from battery Disposal and enhanced the life of the Battery. Also the each cell is designed with Guard for protecting from direct damage and enhance capacity of chemical in the plates. Existing Battery with permanent Seal which is difficult to open for service and maintenance. Proposed battery with Open Lid type is easy for service and maintenance Proposed Flexible Vent Plug caps for controlling the diluted water and acid level, also for replacing the faulted electrode cell. Proposed design with Novel vent caps system for easy removal of electrode cells for maintenance and replacement. Removed Cell for maintenance with Guard for protecting from direct damage and enhance capacity of chemical in the plates.If fault is identified, the consumer throws the battery and purchase new battery. Since the battery consist number of individual cells containing layers of lead alloy plates immersed in an electrolyte solution, consumer least bother to service and it is not flexible too.The proposed idea is that the battery can be fault diagnosis and rectified by consumer itself, thus Protect the environmental issues from battery Disposal and enhanced the life of the Battery.

Advantage:

1. Flexible Vent cap : Easy replacement
2. More life – 2 year after replacement
3. Portable- Anyone can replace
4. Foot Guard
5. More life to each cell
6. Bottom cell is protected

IV. CONCLUSION

Once the product has been launched there are many advantages when compare to battery the main purpose of which they can be re-cycled and re-used so their life cycle has been improved a lot and some techniques inside which we have done has a lot advantage by preventing from Air Locking and the Bursting problem.Since the battery consist number of individual cells containing layers of lead alloy plates immersed in an electrolyte Solution, consumer least bother to service and it is not flexible too. The proposed idea is that the battery can be fault diagnosis and rectified by consumer itself, thus Protect the environmental issues from battery Disposal and enhanced the life of the Battery.

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