

A service to rejuvenate, restore, and reanimate your batteries increasing their life span.

# Battery Recycling Service

## Features

- Achieves zero emissions of industrial waste from batteries. Recycles batteries with zero emissions of toxic substances as environmental loads (e.g., lead, cadmium, dilute sulfuric acid, alkaline electrolytes) from the batteries.
- Reproduces batteries with only 1/375 of CO<sub>2</sub> emitted from the production of the same amount of new batteries. The production of an MSE-500 battery involves 375 kg of CO<sub>2</sub> emissions, i.e., 750 g of CO<sub>2</sub> is emitted per AH. On the other hand, the recycling of the same battery emits only 2 g per AH.
- A recycled battery costs less than 50% of a new battery. Furthermore, a maintenance plan is available, on which customers can rely.

## Overview

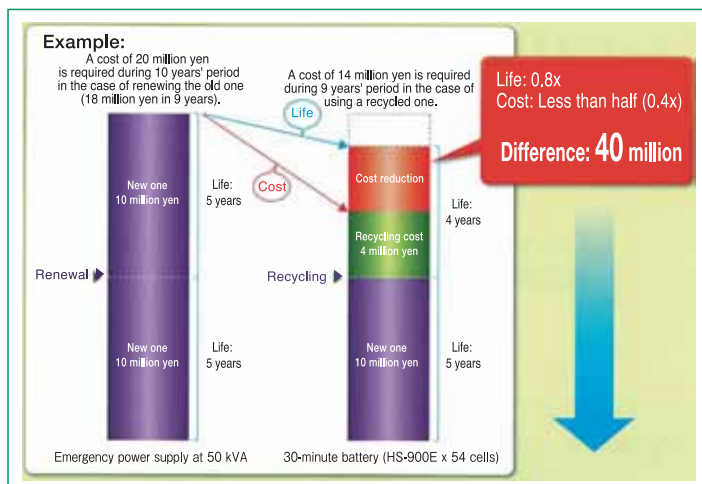
(Technical principles, actions, etc.)

Lead-acid batteries are widely used in the industry. When a lead-acid battery discharges, lead sulfate (PbSO<sub>4</sub>) will be created on the electrode plates. During the charging period, the lead sulfate will return to the previous state of sulfate ions and lead. When PbSO<sub>4</sub> (lead sulfate) is left on the electrode plates for a long period of time, however, it will crystallize and become a hard sulfate that will coat the electrode plates. The electrode plates will not return to the previous condition, and the lead sulfate will reduce the battery's active materials needed to maintain a high capacity.



Battery

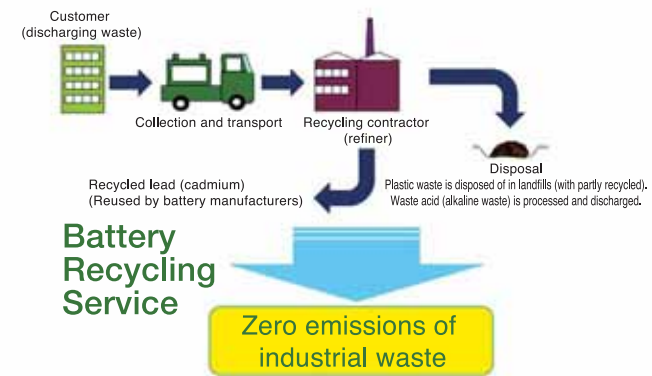
Kyowa Technologies' proprietary battery (patent pending under application number 2009-148985) generates an electrode-friendly special current, which dissolves and breaks down the lead sulfate into lead and sulfate ions, thus recovering the performance of the battery to a near-mint state. Customers are provided with restored batteries at a recovery rate of 90% or over (in accordance with Kyowa Technologies' own standards). Besides, we offer an annual inspection plan to ensure the reliability of customers' batteries.



Battery Recycling Effect

## Effect of Environmental Load Reduction

Battery recycling contributes to society's industrial waste reduction.



Introduction of Battery Recycling Service

## Introductory Track Record

- Telecommunications business specifications
  - Railroad business specifications
  - Data center business specifications
- Other customers in a wide variety, such as universities, hospitals, newspaper companies, TV stations, and transport vehicles.

## Effects

- ◎ The recycling and reuse of customers' batteries will achieve zero emissions of industrial waste from the batteries and greatly suppresses the amount of CO<sub>2</sub> emissions, thus providing solutions to environmental problems caused by the industrial waste and earth-friendly service. Furthermore, Kyowa Technologies' proprietary battery recycling technology reduces the cost of battery replacement. Since the revision of the Energy Saving Act, which came into effect on April 1, 2010, each company's effort to reduce CO<sub>2</sub> emissions has been a pressing need. We are sure that this service will be helpful as one of your executing plans. We are hoping to that this service will be used by a large number of customers for the further solution of global environmental problems.

Applicable field  
 CVF equipment for data centers  
 Emergency power supplies for universities and hospitals

Water

Energy saving/Energy recovery

Energy storage/Energy creation

New energy

Waste disposal/  
 Recycling/  
 Resource saving

Air

Soil

Other