Navy Environmental Quality Fact Sheet

Do you want to extend the life of your lead-acid batteries?

Would you like to improve this process in the following areas?

- ***Meet environmental compliance regulations***. Reduce the volume of lead-acid batteries disposed of as hazardous waste. Media area is hazardous waste.
- ***Improve workers' safety and health***. Reduce personnel exposure to hazardous chemicals through reduced battery handling.
- ***Increase productivity***. Reduce equipment down-time while increasing the functional reliability of the battery and starting system.
- ***Save money***. Reduce battery procurement costs, battery replacement labor hours, and the costs associated with battery disposal.

Battery Maintenance Systems

Battery maintenance/charger systems can be used to extend the life of lead-acid batteries. The primary cause of battery failure is sulfation buildup. This buildup occurs as lead sulfates form on the battery's plates during normal charge and recharge cycles. This buildup reduces efficiency to the point where the battery can no longer hold a charge and dies. Battery maintenance systems are connected to the battery and emit a pulsating DC current into the battery. These pulses remove sulfate deposits from the lead plates and return them to the battery acid as active electrolyte. This process cleans and restores batteries to a condition where they will operate at peak efficiency, reduce battery-related downtime, and extend the service life of the battery. Battery maintenance systems can be powered by solar energy, any readily available 110V electrical source, or by the battery itself. Additional models are available for indoor/outdoor use and in shop areas. ***Battery maintenance/charger systems are available as off-the-shelf items from a variety of suppliers.***

How can you achieve these improvements?

Use a Battery Maintenance/Charger System.

How does this system work?

Battery maintenance systems eliminate sulfation buildup on battery plates which is the principal cause of battery failure.

How will this system save you money?

Battery maintenance systems can extend the service life to 8 to10 years, thus reducing procurement and disposal costs, and maintenance labor. Equipment costs for a typical 12V system are $90. The payback period is 3.2 years over a 10-year economic life.

Typical Process Flow Diagram

MATERIALS
Lead-Acid Batteries
Sulfuric Acid/Electrolyte

→

PROCESS NAMES
Vehicle and Equipment Operation

→

WASTE PRODUCTS
Spent Lead-Acid Batteries
Hazardous Waste

How can this technology eliminate or reduce pollution?

This P2 technology can extend battery life and reduce hazardous waste generation. Implementation will result in the following pollution reductions:

- Reduces the use of hazardous chemicals in battery maintenance through improved battery efficiency.
- Reduces the generated number of spent lead-acid batteries.

Which shops can benefit most from this technology?

This technology can be used by Navy shops and organizations that use lead-acid batteries in their equipment and vehicles. Typical shops and applications include:

- Public Works Department
- Motor Pool
- Construction Equipment Department
- Aircraft Intermediate Maintenance Depot
- Crash-Fire-Rescue Unit
- Shore Intermediate Maintenance Activity
- Fire and Safety Department
- Morale, Welfare and Recreation
- Security Department
- Supply Department

How can this technology reduce regulatory compliance concerns?

This P2 technology can reduce worker exposure to hazardous chemicals. Implementation will result in the following regulatory compliance benefits:

- Reduction in waste batteries helps facilities meet the requirement of waste minimization under RCRA, 40 CFR 262.41 (a)(6).
- Helps facilities reduce the quantity of waste batteries and the associated waste that must be managed to comply under RCRA, 40 CFR 262 (i.e., recordkeeping, reporting, inspections, transportation, accumulation time, and emergency response measures).

Achieving Environmental Compliance Through Pollution Prevention

Every day the Navy faces the challenge of operating and maintaining the fleet while complying with environmental regulations. This burden can be reduced by using pollution prevention technologies and methods to reduce compliance requirements. This fact sheet is one in a series designed to encourage activities to use pollution prevention technologies and methods. The overall goal of this series is to promote sustained environmental compliance at the lowest life-cycle cost.

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