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RECONDITIONING PROCESS FOR A NICKEL-IRON
BATTERY

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TRANSLATION

ENGLISH TITLE: RECONDITIONING PROCESS FOR A NICKEL-IRON BATTERY

FOREIGN TITLE: Not indicated

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ABSTRACT:

The patent describes a method of restoration of battery capacity.

KEY WORDS:

Servicing Technique	Storage Battery
Battery	Nickel
Battery Component	Iron
Battery Electrolyte	

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There is a known restoration method of battery capacity consisting of the pouring of the electrolyte from the container, filling it with distilled water and passing a direct current through it. However, this method of capacity restoration is applied only to lead-acid batteries since it is based on decomposition of lead sulfate crystals by a weak current.

In the proposed method of restoring the capacity of a nickel-iron battery, 25-35% of the nominal battery current capacity is passed through distilled water. As a result, the products of the electrolysis of distilled water react with the carbonates precipitated in the pores of the reactive media.

The method consists of the following:

Batteries without body damage and without short circuits are chosen for capacity restoration. The electrolyte is poured off. Next the batteries are assembled in groups, connected in series, and filled with distilled water or condensate. The group positive terminal is connected to the positive pole of direct current source and the negative terminal to the negative pole. The direct current passing through the batteries should be 25-35% of rated capacity for a given battery type. The passage of current is accompanied by water electrolysis with vigorous evolution of oxygen bubbles on the positive, and hydrogen bubbles on the negative electrode, and also the water temperature increase to 70-80°C.

The gas bubbles produced in the pores of the reactive medium loosen it and help to remove the deposited carbonate crystals collected there. The air bubbles vigorously stir the water which, being at a high temperature, makes it possible to remove the carbonate crystals from the pores of the reactive medium and to dissolve the crystals in water. This operation goes on for 18-20 hours, while the water density increases from 1 to 1.19-1.21 g/cm³ due to the dissolved carbonates.

After 18-20 hours of continuous electrolysis, the batteries are disconnected from the power source, dismantled, and the carbonate solution is removed. Whenever batteries are in use more than 3 years without restoration, the whole cycle using the water is repeated. After that, batteries are ready for further use.

Patent Claims

The method of exploitation of the nickel-iron batteries by removing the electrolyte from the container, filling the container with distilled water, and subsequently passing direct current through it. The method differs from those previously used in that in order to restore the battery capacity, a directcurrent of 25-35% of rated nominal battery capacity is passed through the distilled water to initiate the reaction between the products of electrolysis and the carbonates precipitated in the pores of the reactive media.