

Nickel cadmium rechargeable battery and nickelmetal hydride battery

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The paper " Nickel Cadmium Rechargeable Battery And Nickel-metal Hydride Battery" is a perfect example of a technology essay.

The need to stop over-reliance on oil as an energy source has led to the need for alternative energy sources, something that enabled development of rechargeable batteries. Furthermore, climatic concerns have necessitated the need to cut down on the greenhouse gas emissions. Nickel Cadmium (NiCd) and Nickel-metal Hydride batteries are some of the rechargeable batteries presently used in the market. However, their performances are different and it is best to find out the best out of the two. The way out is to look at distinct components in terms of materials used when manufacturing them, while at the same time looking at the available data (Linden and Reddy 12).

Nickel Cadmium (NiCd) Battery

NiCd uses nickel oxide hydroxide as a cathode and metallic cadmium as the anode rolled up in a metal casing (Sullivan and Gaines 10). Potassium hydroxide (KOH) is used as the electrolyte. Other materials include water, steel, copper, and plastics (Sullivan and Gaines 12). A standard Nickel Cadmium rechargeable battery has a nominal cell voltage of 1. 2V, the specific energy of 40-60 Watt-hour per Kilogram (W. h/kg), energy density of 50-150 W. h/L, the specific power of 150 W/kg, and a self-discharge rate of 10% every month when at a temperature of 20o.

Nickel-Metal Hydride (NiMH) Battery

NiMH is a rechargeable battery that made just like NiCd because it used nickel oxyhydroxide (NiOOH) as the positive electrode (Sullivan and Gaines 13). However, the negative electrode is made of hydrogen-absorbing alloy

instead of Cadmium used in NiCd. First developed in Germany by Volkswagen AG, the modern NiMH battery can achieve a specific energy of 60-120 W. h/kg, the energy density of 140-300 W. h/L, and specific power of 250-1000 W/kg. According to Sanyo, it has a self-discharge rate of 10% per month and has a nominal cell voltage of 1. 2V.

The above information points to the fact that NiMH battery is more power than NiCd battery in terms of the energy they produce (Sullivan and Gaines 13). Other than the output, research indicates that Cadmium is a toxic heavy metal that that is dangerous to the environment when disposed of (Linden and Reddy 54). This explains the wide adoption of NiMH battery since it uses hydrogen alloy that produces better energy density. It is also evident that the recharge rate of the discharge rate of NiCd batteries is higher and may increase with temperature. Therefore, is proper to conclude that Nickel-metal hydride rechargeable batteries are better than Nickel Cadmium batteries.