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# 1

## Introduction

Rapid advancements in electronic technology have expanded the number of battery-powered portable devices in recent years, stimulating consumer demand for higher-energy **rechargeable batteries** capable of delivering longer service between recharges or **battery** replacement.

The trend towards smaller, lighter more portable battery-powered devices is expected to continue well into the future, with the so-called “3C” applications — cellular phones, portable computers and consumer electronics — expanding rapidly beyond the traditional business user and into the consumer marketplace.

As with other battery-powered consumer devices, battery performance and convenience will influence the rate of consumer acceptance for 3C devices. Yet conventional rechargeable batteries often fail to meet the needs of consumers, as well as equipment designers, in terms of their size and weight, operating time, ease-of-use, availability and environmental acceptability. New battery systems are needed to meet their growing list of demands.

The sealed nickel-**metal hydride** (Ni-MH) battery is one rechargeable battery system that is responding to these demands by offering significant improvements over conventional rechargeable batteries in terms of performance and environmental friendliness. First introduced to the commercial market in 1988, nickel-metal hydride battery technology is at a very early stage of maturity and manufacturers such as Duracell have identified many opportunities to improve battery performance. These improvements will make DURACELL nickel-metal hydride batteries an attractive power source for 3C devices for many years to come.

# 2

## General Characteristics

Many of the operating characteristics of the sealed nickel-metal hydride rechargeable battery are similar to those of the sealed nickel-cadmium rechargeable battery. The nickel-metal hydride battery, however, has the advantage of higher **energy density** (or **capacity**) which translates into longer **service life**. In addition, the nickel-metal hydride battery is environmentally friendlier than nickel-cadmium and other battery systems because it contains no added cadmium, mercury or lead.

Features of the sealed nickel-metal hydride battery include:

- **Higher capacity** — Up to 40 percent longer service life than ordinary nickel-cadmium batteries of equivalent size.
- **High rate discharge** — Efficient **discharge** at rates as high as 2C.
- **Fast charge** — Can be charged in approximately one hour.
- **Safe** — Designed to safely withstand abusive conditions in consumer devices.
- **Long cycle life** — Up to 500 charge/discharge cycles.
- **Performs at extreme temperatures** — Capable of operation on discharge from -20°C to 50°C (-4°F to 122°F) and charge from 0°C to 45°C (32°F to 113°F).
- **Environmentally friendlier than nickel-cadmium batteries** — Zero percent cadmium.
- **Similar operating voltage to nickel-cadmium batteries** — Allows user to upgrade easily to longer lasting nickel-metal hydride batteries.