

9.3.2 Laptop Power Facts

This lesson covers the following topics:

- Laptop power
- Laptop batteries

Laptop Power

Laptop systems are designed to use as little power as possible. Common ways laptops save power are:

- Turning off any drives that aren't currently being used.
- Stepping down the bus speed in the CPU.
- Turning off the monitor after a period of inactivity.
- Putting the computer to sleep or turning it off automatically.

When your laptop is plugged into the wall, it receives power through an adapter that converts the AC power from the outlet to DC power usable by the computer. Most adapters can be used on both 110 and 220 AC volt power sources. The energy received through the adapter is divided between running the laptop system and charging the battery.

Remember that most adapters are not interchangeable between laptops because laptops require varying amounts of voltage and amperage and also have different plugs. Before connecting a laptop to an adapter, look at the information listed on the adapter to make sure that it supplies the correct amount of voltage and amperage necessary for your specific laptop and has a plug that will fit properly. Failing to use the correct adapter can cause a laptop to:

- Receive insufficient power to turn on.
- Receive insufficient power to charge the battery.
- Receive an excess of power that will fry the system.

Laptop Batteries

When a laptop is not plugged into the wall, it receives its power from the battery. Batteries wear out over time, so you should expect to replace your battery every few years. It is best to never let a battery run extremely low because the life of a battery significantly decreases if it loses all of its charge. The following table lists the battery types that might be used in portable devices:

Battery	Characteristics
Nickel Cadmium (NiCad)	<ul style="list-style-type: none"> ▪ Develops a memory and begins to store less power as it is repeatedly recharged. To avoid battery memory problems, completely drain the battery before recharging it. ▪ Takes up more physical space than lithium ion batteries. ▪ Very heat sensitive. ▪ No longer used on new laptops.
Nickel Metal Hydride (NiMH)	<ul style="list-style-type: none"> ▪ Does not develop a memory. ▪ 40% longer lifetime than nickel cadmium. ▪ Greater charge capacity than nickel cadmium. ▪ Less toxic than nickel cadmium. ▪ Slightly more expensive than nickel cadmium.
Lithium Ion (Li-Ion)	<ul style="list-style-type: none"> ▪ Does not develop a memory ▪ A rechargeable battery with twice the capacity of a nickel cadmium battery with significantly increased stability and safety. ▪ Takes up less physical space and weighs less than nickel cadmium or nickel metal hydride batteries for comparable power output. ▪ Has a shorter lifespan than nickel metal hydride. ▪ Not heat sensitive like nickel cadmium. ▪ Cannot be overcharged. ▪ More expensive than nickel cadmium or nickel metal hydride.
Fuel Cell	<ul style="list-style-type: none"> ▪ A growing technology that is still developing and is being implemented into the small electronic device market. ▪ Not truly a battery. ▪ Offers instant power and uses replaceable cartridges. ▪ Rather than being recharged (taking hours), when its charge becomes low, the fuel is merely replaced (taking seconds).

Batteries contain dangerous and regulated chemicals. Always dispose of batteries according to the manufacturer's directions. Disposing of batteries improperly might also be illegal.

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