# Laptop battery handbook

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There are currently four battery manufacturing technologies in use, but soon there will be a new technology introduced to produce batteries capable of meeting different use needs.

These batteries are different in manufacturing technology but are capable of converting chemical energy into electric current, to run electronic devices - from tiny music players to big laptops. Just like a car battery, the chemical reaction inside a laptop battery releases electrons, and at the same time pushes these electrons away from the positive electrode to the negative electrode, creating an electric current large enough to help the machine work. dynamic.

In the early days, batteries for mobile devices used energy cells made from nickel-cat-mi (NiCd) compounds. This battery has been used primarily for laptops. But NiCd cells only have the capacity to store energy so that the system runs smoothly for an hour, and is very toxic in the decomposition process when it is no longer used.

Ni-nickel batteries - Cat-mi has a "life expectancy" of 1,000 recharges, soon "aging" with a rapidly declining power storage capacity. Therefore, a new lighter and "stronger" new battery has been built. Today, nickel batteries - Cat-mi are only used primarily in children's toys and cheap mobile phones. About 10 years ago, most

laptop manufacturers switched to nickel-metal-hydride batteries (NiMH) Hy-drua Ni-ken-Hy-drua batteries. NiMH batteries are capable of storing 40% more energy than NiCd batteries, which have a slower and more eco-friendly "aging" process. However, the disadvantage is that the "life cycle" is short with 200 load times. Even new improved NiMH battery models can only be charged for 400 times.

**Chemical compound Maximum power / Number of charges Disadvantages Use with** Nickel-cadmium (NiCd) 80 / 1,000 - Large weight
- "Aging" fast
- Toxic - Toys
- Nickel-metal-hydride (NiMH) 120/200 cheap mobile phone - Short "life cycle" - Laptop and old-generation Lithium-ion mobile phone
(Li-ion) 160/400 - Difficult to make
- Expensive - Laptop
- The handheld device
- Camera, Lithium-ion polymer camcorder
(Li-poly) 130/400 - Difficult to make
- Expensive - Mobile phones
- Fuel cell battery storage
(fuel cell) N / A - Testing
- Expensive - Spaceship
- Electric Factory
- Research studies on automation.

Today, lithium-ion (Li-on) battery cells are twice as likely to charge as nickel-cat batteries, and are widely used in most laptops and electronic devices. Hand held, mobile phone. Lithium-ion batteries can store a large amount of electricity, but the materials and chemicals used for making batteries are quite expensive. The success of lithium-ion batteries is also thanks to the attached control chips capable of controlling the "discharge" process and avoiding overloading.

Meanwhile, Lithium-polymer batteries (Li-poly) are used for mobile phones, handheld devices and high-end laptops. This type is not only light but also laminated, with approximately the same capacity as lithium-ion batteries.

NEC is researching to develop fuel cell types used for mobile devices.
The storage capacity of batteries is limited, but with the introduction of advanced fuel cell technology, laptops can operate for only a few days with a full charge. The next generation battery uses chemicals like methanol contained in small compartments, which are different from conventional power supplies. Like a small chemical plant, many different types of fuel cells are being used in spacecraft, testing environmentally friendly types and small power plants. NEC is researching to develop a fuel cell used for mobile devices with a battery life of up to 40 hours.

Fuel cells work on the reverse principle of electrolyte solution . fuel cells stimulate the reaction between hydrogen and oxygen to generate electricity, said Yoshimi Kubo, who directly manages and supervises the project. NEC's laptop fuel cell manufacturing said.

Methanol or methyl alcohol is the fuel chosen by NEC. Kubo and his team created a laptop model using fuel cells that can operate for 5 hours with about 0.5 liters of fuel (concentration 10%). When it is over, users will have to add fuel to the storage compartment and the cell is ready to "produce" electricity. So instead of storing battery packs, users will carry a bottle of methanol on long trips, but be very careful because methanol is very toxic.

Currently, the most difficult problem is the "packing" of fuel cells. The location of normal batteries on laptops is not suitable for these cells. Further improvements will be needed to make the laptop usable for fuel cells, and size will also be a major obstacle. According to Kubo, NEC is addressing this issue in three ways: increasing the concentration of methanol, using more energy-efficient microprocessors and larger storage compartments.

Hitachi directed the use of fuel cells to smaller devices.

Another Japanese name in the electronics industry, Hitachi directed the use of fuel cells to smaller devices. Cooperating with cigarette filter maker to produce portable fuel cell devices. About the same size as traditional AA batteries, this fuel cell contains 57 grams of 20% methanol solution for laptops, which can operate from 6 to 8 hours. A few models were introduced to the public, one of which was the MTI Micro GPS navigation device that worked for 60 hours. Lilliputian's fuel cell chargers are being researched and produced soon and will be available in the market by 2010.

This promises to be a strong industry in the next decade, market analyst Daniel Benjamin of Allied Business Intelligence is based in Oyster Bay, New York (USA). According to him, fuel cells are a clean source of energy, but need to address the cost and technical barriers. Daniel Benjamin also predicts that, by 2011, there will be 200 million fuel cells of different sizes and capacities sold, used for MP3 and laptop computers.

At that time, we can say "break up" with current batteries. But the problem is compatibility with electronic devices, and the type of fuel used.


Battery life can be estimated with every laptop you buy.

Battery life can be estimated with each laptop you choose to buy. Microprocessors often "consume" up to 50% of power consumption. Recent money reforms in terms of chip manufacturing technology have improved relatively this limitation. Microprocessor platforms such as Intel Core 2 Duo and Centrino 2 help extend the life of the system.

Here are the power saving processor models to choose from.

Intel Core 2 Duo maximizes power savings. With dual cores and thread processing capabilities, the Intel Core 2 Duo balances power consumption and application performance, maximizing battery life. Laptops using the Core 2 Duo processor clocked at 2.53 GHz can boost battery life to 4 hours.

Intel Core Solo is like Intel Core 2 Duo, but is a single core processor. Therefore, the work performance is more limited but consumes less energy, 5.5-27 Watt compared to the Core Duo's 15 - 31 Watt. 1.83 GHz Core Solo processor with a maximum clock speed of 1.83 GHz.

Intel Atom with a maximum clock speed of 1.66 GHz and "L2" L2 cache. Intel Atom has "exchanged" performance capabilities that are smaller and more energy-efficient, consuming 2.5 to 8 Watt, used primarily for netbooks. Asus Eee PC 1000He is a good example. With an impressive battery life of up to 11 hours of operation with just one full charge.

AMD Turion 64 X2 Ultra is the main competitor of Intel Core 2 Duo. AMD Turion 64 X2 Ultra dual-core increases the ability to handle multitasking. Equipped with PowerNow energy-saving technology that AMD "advertises" can "extend" the usage time of the system by 65%, up to 2.4 GHz clock. with competitor Core 2 Duo, about 32 - 35 Watt.

AMD Turion 64 is a shortened version of the Turion 64 X2 with full functionality, but like Intel Core Solo,

AMD Turion 64 is a single-core processor that consumes 25 - 35 Watt and clocked up to 2, 4 GHz.