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<http://www.AGPtek.com>

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# [ SOMETHING YOU DON'T KNOW ABOUT LAPTOP BATTERY ]

This article can teach you how to choose a suitable laptop battery. How to take good care of your laptop battery and how to recycle it for protecting our earth.

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## Introduction

There are totally six chapters in this e-book.

Chapter I “How to keep your laptop battery safe and secure”. In this chapter , you can know the 2 most common reasons for laptop battery’s explosion .Then there are detailed tips on how to keep your laptop battery safe and secure . After reading this chapter , you will build up crisis consciousness about your laptop battery and will know what you yourself can do in daily use in order to avoid your laptop battery catching fire or exploding and damaging your laptop .

Chapter II “How to choose a replacement laptop battery” .When you need to purchase a replacement battery , sometimes you may be at a loss on how to choose the right one or need help from others. You will no longer be confused with battery cells , voltage and capacity.

Chapter III “Tips and Care Instructions”. You will no longer be confused by battery cells, voltage and capacity with this e-book on hand.. Tips about the proper use of your battery and ways to maximum their service life are in this chapter. If you learn and apply these tips to your battery, you will avoid much trouble in using the battery, and give it a long life that you never ever met.

Chapter IV “How to Properly Dispose of old Laptop Batteries”. What is the consequence if you just throw your old battery ? How to dispose your old battery in a way that is the most convenience to you ? Go this chapter and you will find the answers.

Chapter V “Laptop Battery FAQ” .Do you have some questions in the use of your laptop battery? In this chapter, it lists FAQ our customers may often meet, like “How long I should charge my new before first use?”. Etc.

We do not hope that this e-book covers everything about laptop battery. But just wish it can contain points which are really useful and helpful for our customer. Of course, we are also expecting that our e-book will come into your mind when you have trouble with your laptop battery.

## Chapter I How to Keep Your Laptop Battery Safe and Secure

Most of us are together with a laptop almost every day. It is one of our most important friends in our life. And battery is part of a laptop. But how many of us know about the batteries? And did you know how to manage it well to protect your laptops batteries? After reading that you will know more enough about a laptop battery and manage it well. From now on, you will not be loss when battery issue comes out.

When choosing a replacement battery from Internet, you may find lots of them are at a low price. However, you should be careful of them, because these batteries may be unable to release excess heat or they may lack the circuitry needed shut down before overheating occurs.

**Event I:** At Christmas eve of 2010. There was a horrible accident happened at one of the office in Empire State Building, a laptop battery was exploded when the laptop was running.



**Event II:** The 30-year-old software engineer known only as Anil was using the laptop on his bed. He left the laptop in the master bedroom of his Choa Chu Kang apartment on July 17. While he was outside his room; he heard something that sounded like an explosion. He rushed back into the room, and just as he was about to shift the laptop, it caught fire.

He said: "The laptop battery also exploded. It

flew apart into five or six pieces."

Buying power cells from your computer vendor also makes it less likely you'll get a counterfeit part. Millions of laptop batteries have been recalled because of the risk of FIRE. Get some tips from AGPtek to learn how to keep your laptop battery safe and secure.

First, make sure your battery hasn't already been recalled. Second, don't leave the laptop constantly charging because it heats it up. One way to save your battery is to remove it completely when you plug in directly.



\* Always keep laptop batteries in an original packaging until new laptop battery is ready to use to prevent damages to laptop battery. For example: swelling and leakage of chemical element from your laptop batteries.

\* Always use compatible and high quality laptop batteries and laptop chargers.

\* Pay attention to Battery voltages and never use different voltage Batteries for your laptop. To avoid laptop damage, never use batteries with different voltages in the laptop.

\* One should purchase manufacturer recommended products and accessories if possible. If you are not sure about whether a replacement laptop Battery is compatible with your laptop battery then it is always good to contact the manufacturer of the laptop battery and confirm with them before buying laptop battery.

\* Do not put a high pressure on laptop battery as high pressure can cause an internal short-circuit leading to overheating of your laptop battery.

\* Do not get laptop battery wet. Even though laptop battery can dry and operate normally afterwards, the interlay laptop battery circuitry could corrode and can pose a hazard.

\* You should properly recycle your old laptop batteries either by contacting your manufacturer or local recycling bodies.

\* Never accumulate used laptop batteries. It's better to dispose your used and unwanted laptop batteries on a regular interval.

\* Always follow laptop battery usage, storage and charging guidelines found in the user's manual.

\* One should remove laptop batteries from laptop if laptop is going to be unused for long term. This would prevent laptop battery leakage damage.

\* Never mix new and old laptop batteries in laptop unit as old batteries would get charged by new batteries, forcing the old laptop batteries into Voltage reversal and may cause venting.

\* Try to Increase the life of laptop battery by strictly following the directions given by your laptop battery manufacturer for using laptop battery.

\* Never force laptop batteries into laptop unit. The laptop batteries can be difficult to remove and can cause injury and/or may damage your laptop and Laptop battery.

## Chapter II How To Choose A Replacement Laptop Battery



Li-Ion cells also have much lower levels of self-discharging. These factors combined with the higher production costs mean that Li-Ion cells are comparatively more expensive. This battery has currently held the major market.

Battery is very like the heart of the laptops/notebooks, and this is just the advantages compared to the desktop PC. Now, most of the laptop battery can keep working for 2 to 4 hours of one charge, and it maybe can't meet some users' needs. Of course, a spare battery for some friends who work as moving office frequently is very necessary. Furthermore, the laptop battery is a kind of consumables. If your laptop battery isn't lasting as long as it used to or you find yourself charging more often, it may be time to replace it. Here are some tips for finding quality, choose a replacement battery for laptop urgently.

### What to Know Before Buying a Laptop Battery



There are many laptop battery manufacturers, and even more retailers to buy your laptop battery from. However, your biggest concern in purchasing a laptop battery will be to choose the battery that fits your computer. For this you will need to know the make and model number of your laptop; if you don't know this offhand or don't have the necessary paperwork, check the inside of your laptop's battery

compartment while the computer is off and unplugged. There you should find the model number, along with some other information. You can also find the part number of your laptop battery on the back of your original battery. So you have to be sure the battery can fit both your laptop model and your original battery part number.

If you need a battery for [Dell Vostro 1700](#), you sure won't choose a Dell Latitude D610 Series battery. After you find a replacement battery that fits Dell Vostro 1700 , please don't forget to check whether it also fits your original battery part number .

And please note that a replacement which has more than 6cells inside is called an extended battery. An Extended battery has more cells and a higher capacity, which can last a longer time, but it is usually larger than the original one of 6cells and may stick out a little bit in the back.



### How to Choose a [Replacement Laptop Battery](#):

Buy a battery that has a long life, the lifespan is specified by the manufacturer. Of course, the longer lasting batteries will cost more than those with a shorter running time. The needs of users will vary depending on the level of use and the locations they use their laptop. Some heavy users using a laptop in mobile location will want a very long lasting battery, but others who only move it around their homes may not need an exceedingly long life battery. We have listed the 4 common aspects you should pay attention to when you purchase a replacement battery.

**Battery materials:** Lithium-ion is a fairly standard material for laptop batteries and other electronics. Lithium-ion has a good power-to-weight ratio and has no memory effect like some other battery materials.

**Battery capacity:** Laptop batteries will typically list their capacities in milliamp hours (mAh). A higher mAh rating means the battery will take longer to drain, giving your laptop a longer charge. Please don't think that the capacity of a battery decides its power performance. The main parameters are WH of it. This does much with the cell numbers but not the capacity. For example, a 6-cell (2200mAh, 3.6V) battery and an 8-cell (2200mAh, 3.6V) battery both can be 4400mah. But their volts are different, the 6-cell one is 10.8V and the 8-cell one is 14.4. So the performance of them can be expressed as 63.36WH (8-cell) and 47.52WH (6-cell). If your laptops power is 13W in power saving mode, you can know that, the 8-cell one will last longer than an hours than the 6-cell one.

**Battery Voltage:** The voltage of a laptop battery is usually labeled on the back of it . You can read it by yourself. A battery cell is of 3.6V or 3.7V. And each cell is usually of 2200mAh .You can figure out how many cells a battery has from its voltage and its capacity. For example, if your laptop battery is of 10.8V, 4400mAh. Then your battery is of 6cells — series connection of 3 cells each group, parallel connection of 2 groups. If your battery is of 14.4V, 6600mAh. Then your battery is of 12cells — series connection of 4 cells each group, parallel connection of 3 groups . The following chart shows the relations among cells, voltage and capacity.

Cell Quantity	Voltage(V)	Capacity(mAh)
3	10.8 / 11.1	2200
4	14.4 / 14.8	2200
6	10.8 / 11.1	4400 / 4800 / 5200
8	7.2 / 7.4	8800
8	14.4 / 14.8	4400 / 4800 / 5200
9	10.8 / 11.1	6600 / 7200
12	14.4 / 14.8	6600 / 7200
12	10.8 / 11.1	8800

When you purchase a replacement battery , the voltage of it had better to be the same as your original one , or it may damage your laptop . But 10.8V & 11.1V are the same and can be interchanged for use, the same to 14.4V & 14.8V, 7.2V \$ 7.4V. For example, if your originalBattery is of 10.8V, a replacement battery has better to be of 10.8V or 11.1V.

**The Warranty:** If there is perfect warranty, return, money back and change guarantee. When buying a [replacement battery](#), ensure you have a [return policy](#) as not all replacement batteries work well with a particular model of laptop. Of course, if that's the case you have the option of trying out another one until you are satisfied. It might be easy to take the laptop with you when purchasing a battery, but problems with batteries are not always evident straight away. A battery needs to be tested in an environment in which you would normally use it; therefore, you should try it for at least a few days before deciding it's the right one for your laptop.

### Why we choose AGPtek Laptop battery:

#### (1) 360° Protection



**(2) \$3,000,000 iNsurance**



**(3) Warranty : Full 1 year Warranty**

**Pay Attention**

We will repair or replace this unit if its malfunctions or failures are caused by imperfection in material or workmanship.

This warranty does not include and cover malfunctions or failures of your unit which were caused by improper installation, modification or damage to this unit while in your possession or by unreasonable maintenance.

**Address:**  
**AGPtek USA Office**  
**7708 18th ave, Brooklyn**  
**NY 11214**  
**Email:**  
**Call7182343508@gmail.com**

**Warranty Card**

**AGPTEK®**

<p><b>Warranty Information</b></p> <p>We offer a 30-day refund and 1 year manufacturer warranty on all products. Warranty period starts from the date of purchase.</p> <p>Your return <b>MUST</b> include the followings, or it will be rejected by our warehouse and returned to you:</p> <ul style="list-style-type: none"> <li>-&gt; Original packaging</li> <li>-&gt; All accessories</li> <li>-&gt; Manuals, etc.</li> <li>-&gt; You need an Unexpired Return Merchandise Authorization (RMA) number for the correct product. This can be obtained by you either from our website or from our customer service people.</li> <li>-&gt; RMA number should be written on the outside shipping box or on the return label. It could not be written on the manufacturer's product box.</li> </ul>	<p><b>Buyer Information</b></p> <p>Name: _____</p> <p>Date of Purchase: _____</p> <p>Email: _____</p> <p>Telephone: _____</p> <p>Address: _____</p> <p>Nature of Problem: _____</p>
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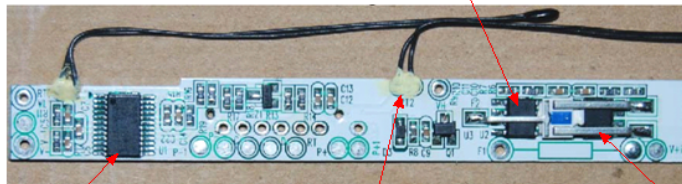


#### (4) What's the difference between AGPtek laptop battery and the others ?

##### 1. PCB

The PCB board in our company adopts OEM standard of big factory, uses 2OZ cooper foil with white oil technology instead of 1OZ cooper foil with green oil technology. The thicker the cooper foil is, the smaller the internal resistance will be, and the greater the current carrying capacity, the smaller the loss.

MOSFET is adopted TPC8126 from TOSHIBA, and the fuse is D6X is NEC which have Over-temperature Protection.



BQ3060 is an electricity management and protection two-in-one chip produced by TI company, which possesses the latest function of safety charging power from JEITA Japan.

The PCB we uses adopts OEM standard of big factory, uses 2OZ cooper foil with white oil technology instead of 1OZ cooper foil with green oil technology. The thicker the cooper foil is, the smaller the internal resistance will be. And the greater the current carrying capacity, the smaller the loss.

For the insurance part, it has both ordinary temperature insurance and second insurance, which fit for demand for high-end as well as general.

##### 2. Craft

Our battery adopts the OEM working standard, and has a nice and neat inside. Compare with most of our opponent, their battery neither have a standard working process, nor be neat, so it may have a potential safety hazard.

iMage® Battery use the high quality battery cell make by LG, Samsung and Sony corporation

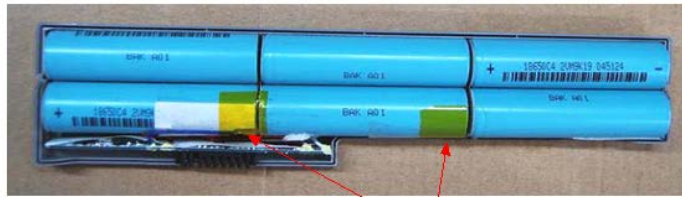


The other opponent use the unknow chinese cheap battery cell. look at the top of the cell. You can figure out the different.

##### 3. Material

###### a- Battery Cell:

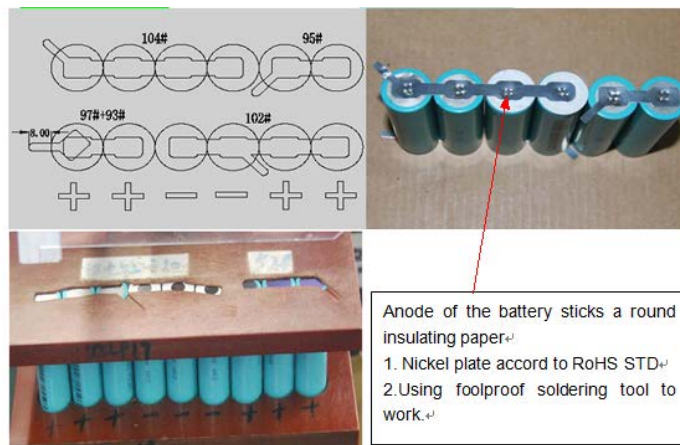
Most of cells use Changjiang A Grade product, which have a great performance on consistency and safety, and the number of cycling times is up to 500 times. However, most of our opponents use Shengong B Grade product, which is poor in consistency and safety, and the cycling times is just about 200 times.



Adopting the OEM processing standard, it uses heat-resistance gummed paper to fix the wires.

### b- MOSFET

The MOSFET we use for our battery is TPC8126 from Japan Toshiba Corporation, which is adopted by most of big factories. Its internal resistance is very low, and is less than 0.01 ohm. Our opponents use MOSFET from NIKOS, (model# PI5033VG-), which has bad performance in consistency and safety, and the internal resistance is about 0.02 ohm.



Anode of the battery sticks a round insulating paper.  
 1. Nickel plate accord to RoHS STD  
 2. Using foolproof soldering tool to work.

### c- Fuse

The design of insurance is a combination of temperature insurance and second time insurance, which suit for the demand for ordinary use as well as high end use. All OEM have adopted second time fuse. Heat-conducting silica gel enable the temperature insurance fully connect with the MOSFET, which allow the temperature insurance to monitor the temperature of the MOSFET so that it can take prompt action when it needs to blew fuse to protect the battery.

### d- Wire

The wires we use are Teflon wire which have UL certificate. They have properties of fireproofing and heat-resistance up to 300 °C

### e- Solution Option.

We all use TI solution. The two solutions are almost the same in consumption, test of temperature, voltage and current, and protection function.

## Chapter III Tips and Care Instructions



As we all know, battery cells suffer ineluctable and gradual capacity loss with the pass of time. However, saving your laptop battery life is not rocket science. There are many actions you could take to make your battery last longer during each charge cycle and live longer over many cycles. We recommend following the instructions for charging and storage that came with the battery or notebook.

### Battery Handling Instructions

\* A new battery comes in a discharged condition and must be charged before use. Upon initial use (or after prolonged storage period) the battery may require two to three charge/discharge cycles before achieving maximum capacity, We generally recommend an overnight charge for each time (approximately twelve hours).

Rechargeable batteries should be cycled-fully charged and then fully discharged-two to four times initially to allow them to reach their full capacity.(Note: it is normal for a battery to become warm to the touch during charging and discharging).

New batteries are hard for the device to charge they have never been fully charged and are therefore “unformed”. Sometimes the device’s charge will stop charging a new battery before it is fully charged. If this happens, remove the battery from the device and then reinsert it. The charge cycle should begin again. This may happen several times during the first battery charge. Don’t worry; it’s perfectly normal

\* If the battery is not going to be used for more than a month, it is recommended that it be removed from the device and stored in a cool, dry, clean place.

\* A battery will eventually lose its charge if unused. It may therefore be necessary to recharge the battery after a storage period.

\* Keep the battery healthy by fully charging and then fully discharging it at least once every two to three weeks. Exceptions to the rule are Li-Ion batteries which do not suffer from the memory effect.

\* It’s a good idea to clean dirty battery contacts with a cotton swab and alcohol. This helps maintain a good connection between the battery and the portable device.

\* Do not leave the battery dormant for long periods of time. We recommend using the battery at least once every two to three weeks. If a battery has not been used for a long period of time, perform the new battery break-in procedure described above.

## **Battery Care Instructions:**

\* Your new battery comes in a discharged condition and must be charged before use (refer to your computer manual for charging instructions). Upon initial use (or after a prolonged storage period) the battery may require three to four charge/discharge cycles before achieving maximum capacity.

\* When charging the battery for the first time your computer may indicate that charging is complete after just 10 or 15 minutes. This is a normal phenomenon with rechargeable batteries. Simply remove the battery from the computer and repeat the charging procedure.

\* It is important to condition (fully discharge and then fully charge) the battery every two to three weeks. Failure to do so may significantly shorten the battery's life (this does not apply to Li-Ion batteries, which do not require conditioning). To discharge, simply run your device under the battery's power until it shuts down or until you get a low battery warning. Then recharge the battery as instructed in your user's manual.

\* If the battery will not be in use for a month or longer, it is recommended that it be removed from the device and stored in a cool, dry, clean place.

\* It is normal for a battery to become warm during charging and discharging.

\* A charged battery will eventually lose its charge if unused. It may therefore be necessary to recharge the battery after a storage period.

\* The milliamp-hour (mAh) rating of the AGPtek.com battery will often be higher than the one on your original battery. A higher mAh rating is indicative of a longer lasting (higher capacity) battery and will not cause any incompatibilities. An AGPtek.com battery will, in most cases, outperform the original by 30% to 50%.

\* Actual battery run-time depends upon the power demands made by the equipment. In the case of notebook computers, the use of the monitor, the hard drive and other peripherals results in an additional drain upon the battery, effectively reduces the battery's run-time. The total run-time of the battery is also heavily dependent upon the design of the equipment. To ensure maximum performance of the battery, optimize your computer's power management features. Refer to your computer manual for further instructions.

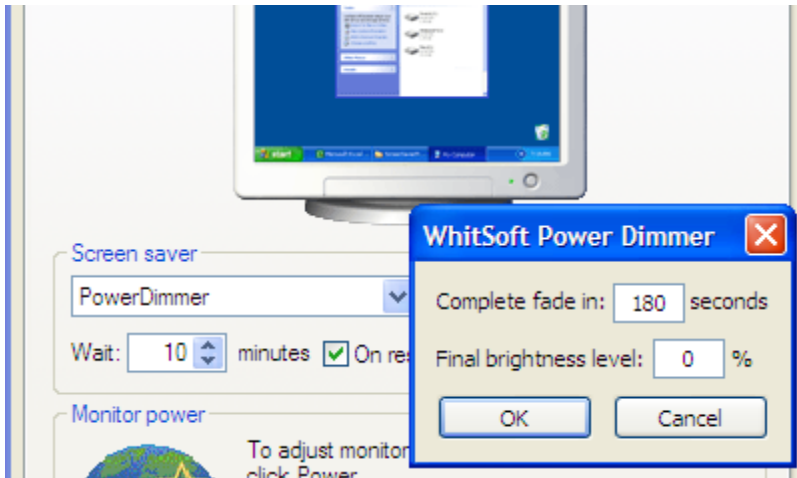
## **Extend Your Laptop's Battery Life:**

Laptops tend to lose their charm quickly when you're constantly looking for the nearest power outlet to charge up. How do you keep your battery going for as long as possible? Here are 15 easy ways to do so.

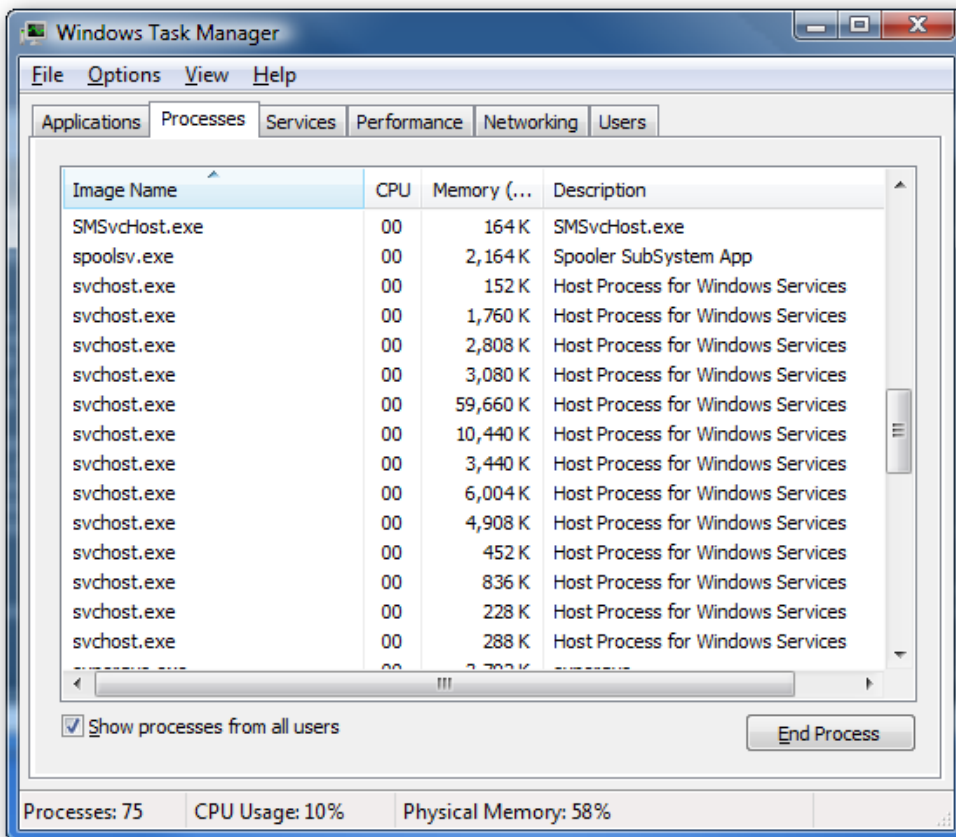
1. Defrag regularly - The faster your hard drive does its work – less demand you are going to put on the hard drive and your battery. Make your hard drive as efficient as possible by defragging it regularly. (but not while it's on battery of course!) Mac OSX is better built to handle fragmentation so it may not be very applicable for Apple systems.



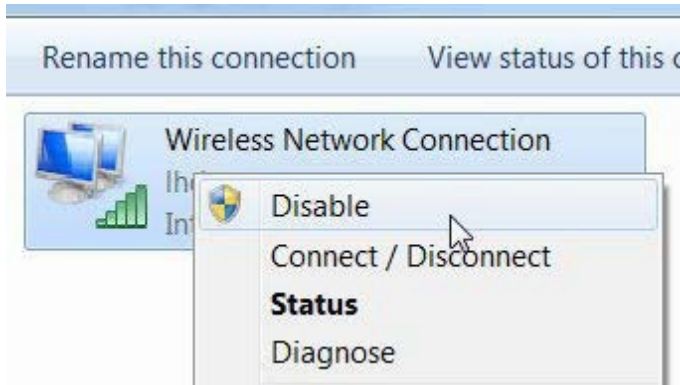
2. Dim your screen – Most laptops come with the ability to dim your laptop screen. Some even come with ways to modify CPU and cooling performance. Cut them down to the lowest level you can tolerate to squeeze out some extra battery juice.



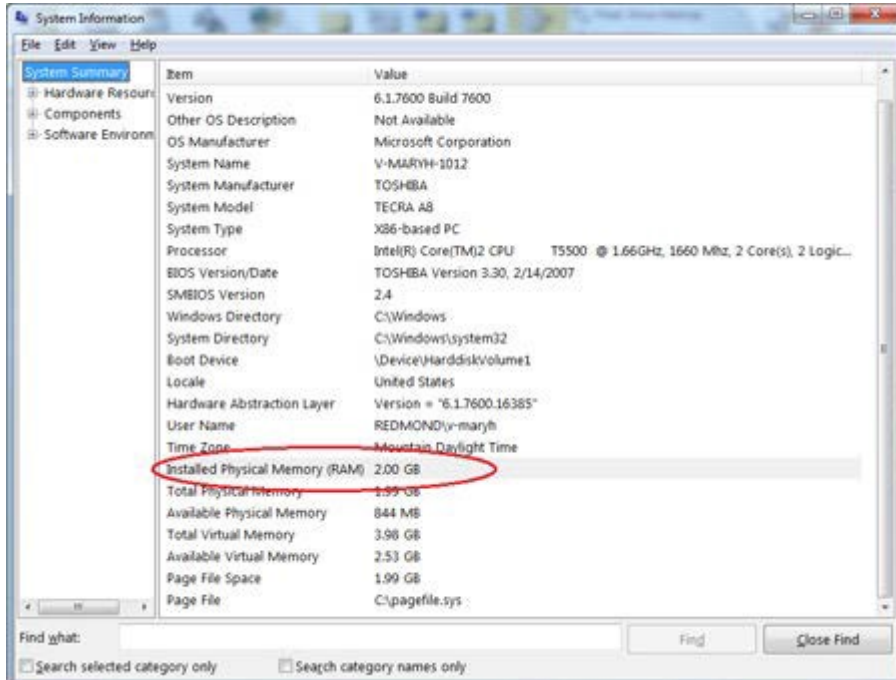
3. Cut down on programs running in the background. All these add to the CPU load and cut down battery life. Shut down everything that isn't crucial when you're on battery.



4. Cut down external devices – USB devices (including your mouse) & Wi-Fi drain down your laptop battery. Remove or shut them down when not in use. It goes without saying that charging other devices (like your iPod) with your laptop when on battery is a surefire way of quickly wiping out the charge on your laptop battery.



5. Add more RAM - This will allow you to process more with the memory your laptop has, rather than relying on virtual memory. Virtual memory results in hard drive use, and is much less power efficient. Note that adding more RAM will consume more energy, so this is most applicable if you do need to run memory intensive programs which actually require heavy usage of virtual memory.



6. Run off a hard drive rather than CD/DVD - As power consuming as hard drives are, CD and DVD drives are worse. Even having one in the drive can be power consuming. They spin, taking power, even when they're not actively being used. Wherever possible, try to run on virtual drives using programs like Alcohol 120% rather than optical ones.



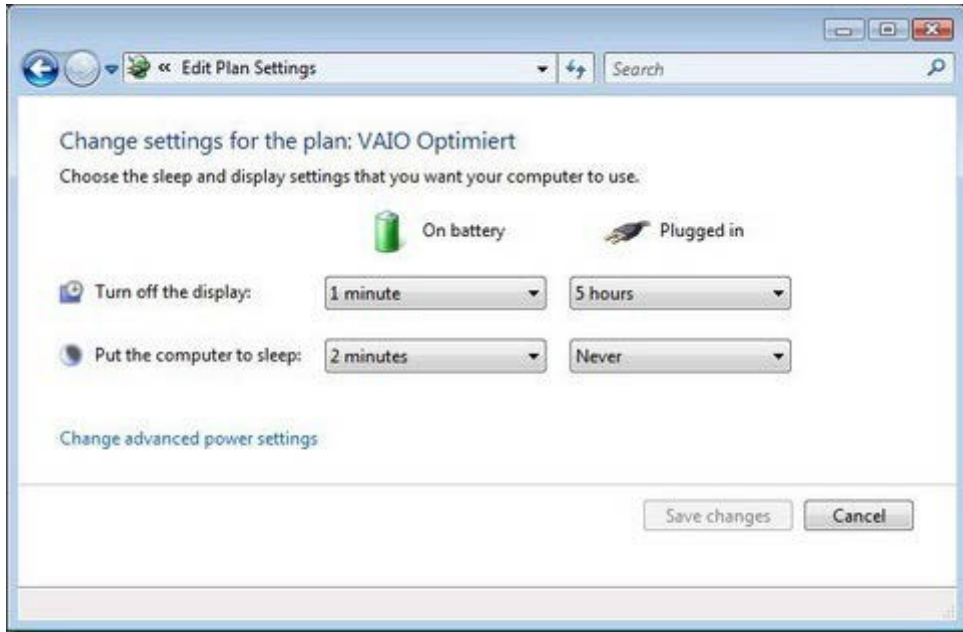
7. Keep the battery contacts clean: Clean your battery's metal contacts every couple of months with a cloth moistened with rubbing alcohol. This keeps the transfer of power from your battery more efficient.



8. Take care of your battery – Exercise the Battery. Do not leave a charged battery dormant for long periods of time. Once charged, you should at least use the battery at least once every two to three weeks. Also, do not let a Li-On battery completely discharge. (Discharging is only for older batteries with memory effects)



9. Hibernate not standby – Although placing a laptop in standby mode saves some power and you can instantly resume where you left off, it doesn't save anywhere as much power as the hibernate function does. Hibernating a PC will actually save your PC's state as it is, and completely shut itself down.

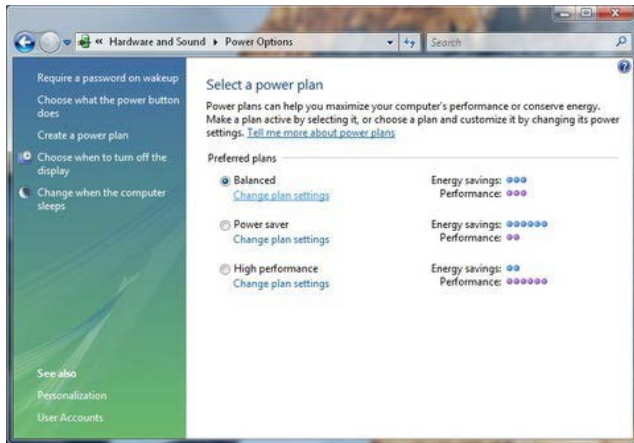


10. Keep operating temperature down - Your laptop operates more efficiently when it's cooler. Clean out your air vents with a cloth or keyboard cleaner, or refer to some extra tips by [AGPtek.com](http://AGPtek.com).

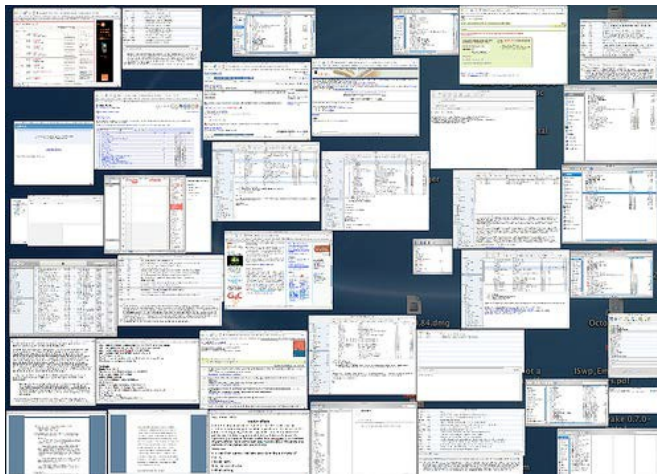




11. Set up and optimize your power options – Go to ‘Power Options’ in your windows control panel and set it up so that power usage is optimized (Select the ‘max battery’ for maximum effect).



12. Don't multitask – Do one thing at a time when you're on battery. Rather than working on a spreadsheet, letting your email client run in the background and listening to your latest set of MP3s, set your mind to one thing only. If you don't you'll only drain out your batteries before anything gets completed!



13. Go easy on the PC demands – The more you demand from your PC. Passive activities like email and word processing consume much less power than gaming or playing a DVD. If you've got a single battery charge – pick your priorities wisely.

14. Get yourself a more efficient laptop - Laptops are getting more and more efficient in nature to the point where some manufacturers are talking about all day long batteries. Picking up a newer more efficient laptop to replace an aging one is usually a quick fix.

15. Prevent the Memory Effect - If you're using a very old laptop, you'll want to prevent the memory effect' – Keep the battery healthy by fully charging and then fully discharging it at least once every two to three weeks. Exceptions to the rule are Li-Ion batteries (which most laptops have) which do not suffer from the memory effect.

## Battery Don'ts

1. Do not throw the battery pack into the fire, as this could cause the explosion of the battery.
2. Do not setting your battery pack in the high humidity, high temperature, strong vibrative and dusty place.
3. Do not dispose of battery used with other solid waste because they contain toxic substances.
4. Do not heat the battery, as this could cause leakage of alkaline solution or other electronic substance.
5. Do not disassemble battery, as this could cause leakage of alkaline solution or other electrolytic substance.
6. Do not left the battery unused for a long time or place battery in device for a long period of time if device is not being used.
7. Do not expose the battery to direct sunlight or shock the battery pack by dropping or throwing it.
8. Do not store or use the battery in a locked and unventilated vehicle, where excessive internal temperatures may occur.
9. Do not short-circuit the battery, either inadvertently or intentionally bringing the terminals into contact with another metal object such as necklaces or hairpins, this could cause a fire and damage the battery.
10. If the liquid inside the battery leaks, use large quantities of water immediately to wash any liquid with a synthetic detergent. Keep the battery away from heat or fire, if you detect the issuance of an extraordinary odor or leakage of alkaline solution or other electrolytic substance; please dispose used batteries in accordance with the regulations that apply to the disposal of batteries.



## Chapter IV How to Properly Dispose of old Laptop Batteries?



If you've replaced the battery in your laptop and do not know what to do with the old one, do not just throw these batteries in the garbage, it is extremely horrible for the environment, highly **ILLEGAL**, and they can be easily recycled. **DO** not attempt to disassemble any battery packs. One laptop battery contains the energy equivalent of a hand grenade. It is **NOT** something to play with.

Not only is recycling your laptop battery the right thing to do, it could be the only legal option. Computer Hope notes that the United States has more than 500 recycling laws; depending on where you live, you may be mandated to recycle that old battery. With a few phone calls, you can determine the best recycling option for you and take advantage of local drop-off programs or nationwide mail-in programs to recycle your laptop battery.

1. There are various places that will properly dispose of your laptop battery for you. Some of them are places like best buy, office depot, or any computer retailer. There are also dedicated computer recyclers. Check locally to see if there is a computer recycler in your area. If you are near a college or university, there is a very high possibility that there is an electronics recycling bin somewhere on the campus. You could call the school's student center to find out since they are usually the ones that organize things like that...

2. Purchase an iRecycle kit from Battery Recycling (see Resources), then place your laptop battery inside and send it back to them. In addition to laptop batteries, they recycle every type of battery and many other electronic items. They sell kits from 12 to 50 lb. and include shipping, materials and recycling fees in their price. In 2010 a 12 lb. kit cost \$34.95; this can fit the laptop battery and much more.

3. Contact your laptop manufacturer directly to inquire about battery recycling. Many companies offer laptop-recycling programs for their products that allow you to mail in items. Recycle the used laptop battery through your computer manufacturer if it offers such a program.

4. Call your town's recycling office to determine whether they offer a laptop battery-recycling program or an electronics waste recycling program that will allow you to recycle the battery in your community. Follow their recommended procedures for local recycling, if it's an option.

As part of our commitment to the preservation of the environment, we help fund the nonprofit Rechargeable Battery Recycling Corporation (RBRC) and its Call2Recycle® program. To find a rechargeable battery recycling location near you, visit [www.call2recycle.org](http://www.call2recycle.org).

## Chapter V Laptop Battery FAQ

### 1. How long I should charge my new before first use?

Upon New Lithium-Ion laptop batteries are typically in a 20-70% discharged state and require you to fully charge the battery before your first use.

There are the steps to do this

- (1) Please remove the battery from the device and then reinsert it. The charge cycle should begin again.
- (2) Please drain all its capacity firstly, make sure it is 0%, this is very important. (PS: When you drain the capacity of the battery, please lower the screen brightness, and don't operate any program)
- (3) After draining all its capacity, please make a full charge, about 12 hours. During the charge, please do not turn on the laptop.

Please try this "complete drain ----full charge" process 3 times, that is OK.

### 2. Why my laptop battery does not charge at all?

Are you having problems with charging your battery? This can not only be frustrating but it is likely an indication that something is wrong. Your laptop battery may not be charging at all, or not charging fully for several reasons. The top reasons are listed below with remedies for each.

1. Battery's issue, 2. AC Adapter's issue, 3. Laptop motherboard's issue.

First, Have two same AC Adapter or laptop, we suggest you to change a AC Adapter or Laptop to charge your new battery, especially your old battery can not charge too. Yes, I know your laptop works ok with the ac adapter but I need to tell you that maybe AC Adapter can offer enough power to run your laptop, but not enough to charge battery.

Second, Do not have same AC Adapter or laptop, then please read below. This is a tutorial for confirm the issue from battery or AC adapter even laptop.

We need to run a software to test it. This is [http://www.agptek.com/software/agptek\\_batterytest.rar](http://www.agptek.com/software/agptek_batterytest.rar), next, run "agptek battery.exe" - click "start" - "info" - "battery information".

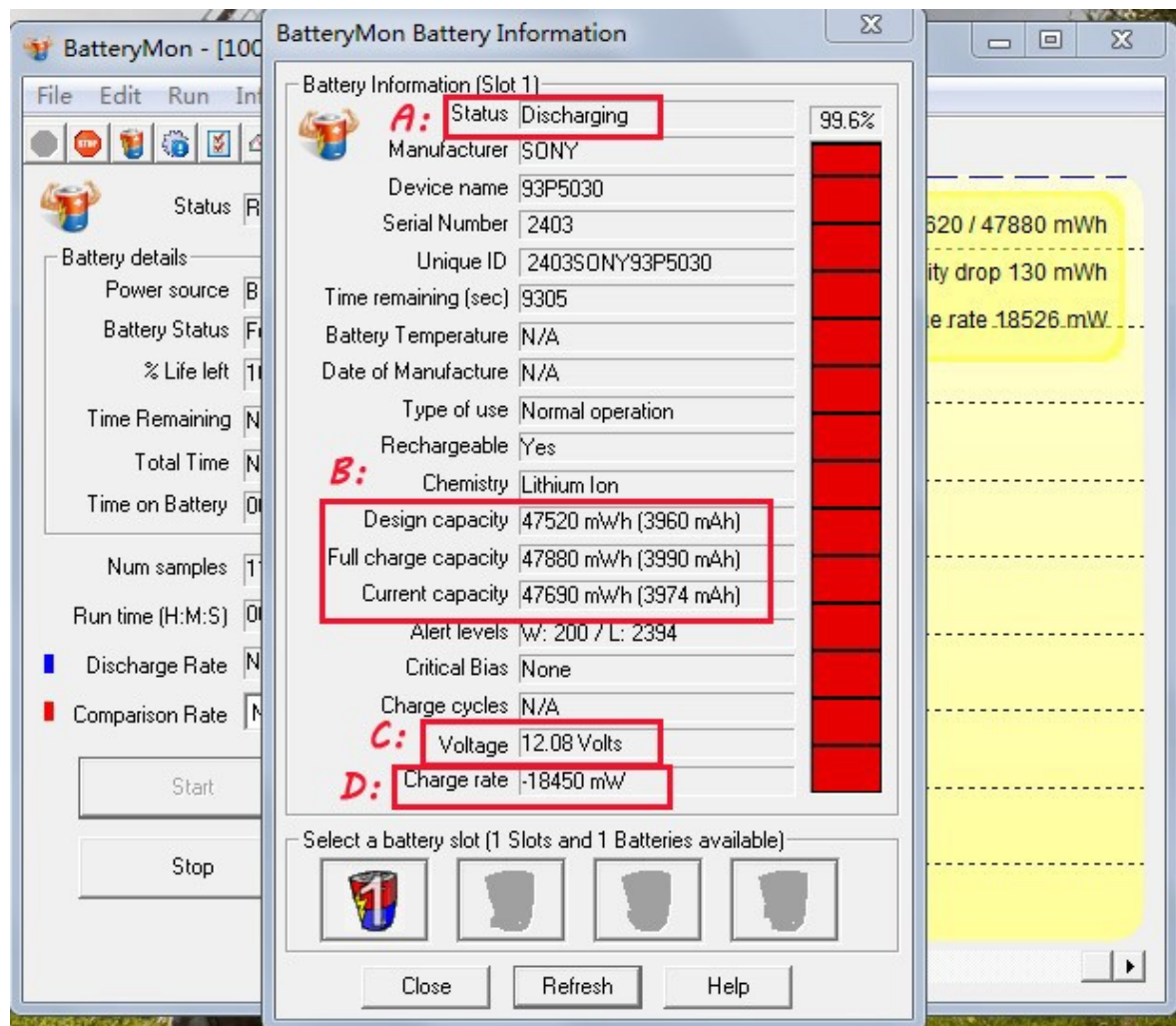
Ok, now you can see a picture like the below.

look at "A", it shows the battery is charging.

"B" shows the battery's capacity, and we can know the battery is recognized by laptop. "C" shows the battery's Voltage,.

"D" shows the Charge rate,

We can easy to know this battery works very good.

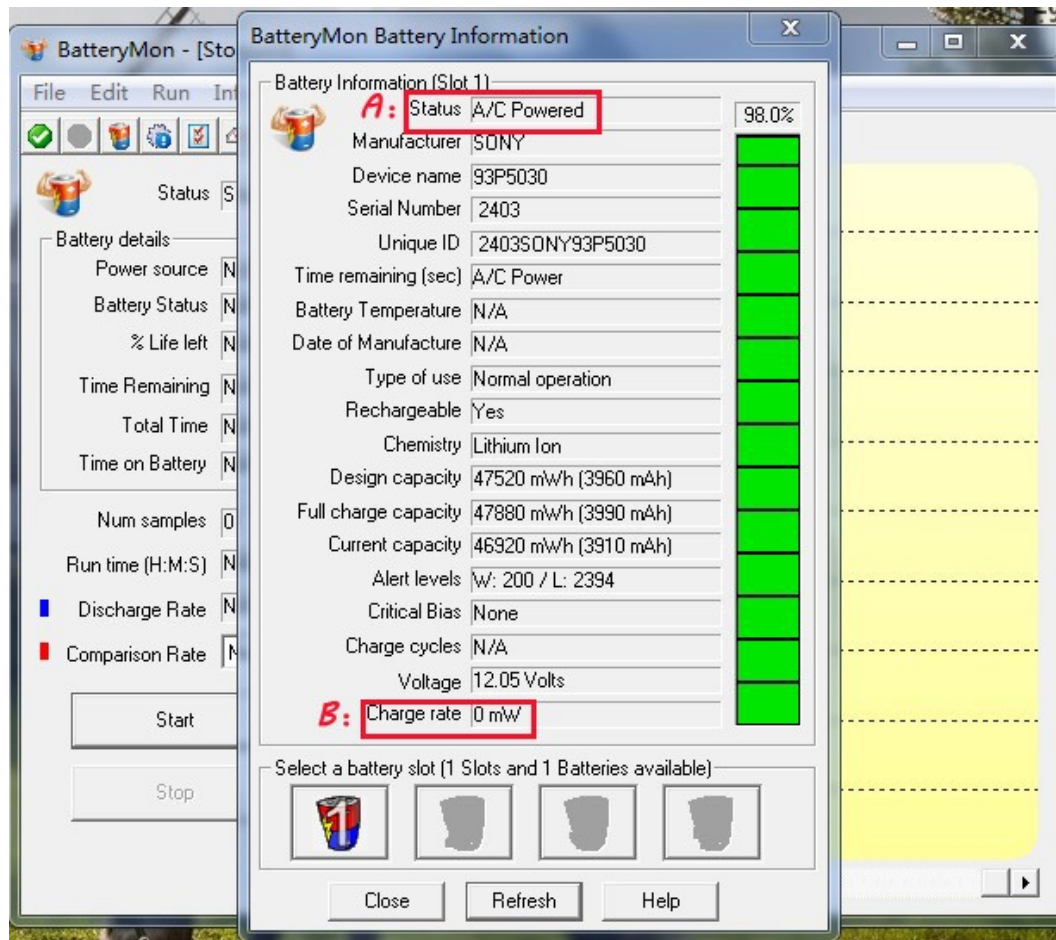


look at "A", it shows the battery is Discharging.

"B" shows the battery's capacity, and we can know the battery is recognized by laptop. "C" shows the battery's Voltage.

"D" shows the Discharge rate(negative value).

We can easily know this battery works very well.



Look at "A", it shows the battery is not charging or Discharging.

"B" shows the charge rate is 0, so you know the ac adapter can not offer enough power to charge battery, please change a new one to charge.

### **3. Why my laptop charges but does not charge to 100%?**

If your new battery charges but does not charge to 100% or stops charging each time your charge indicator reaches 85-99%, you may need to recalibrate your laptop for the new battery. This occurs often when replacing an old battery with a new battery. The laptop has to adjust itself to get used to the new battery. In order to recalibrate properly, you will need to set the Windows power management so the laptop does not go into standby or hibernation when the battery gets low.

Instructions:

1. With Windows XP, navigate to Control Panel > Performance and Maintenance > Power Options.
2. Set "Power Schemes" to "Always On".
3. Under "Alarms", uncheck "Low battery alarm" and "Critical battery alarm".
4. Under "Hibernate", uncheck "Enable hibernation", then click on Apply.

Another system:

1. With Windows Vista, navigate to Control Panel > Performance and Maintenance > Power Options
2. Click "Change Plan Settings".
3. Set all tabs to "Never" underneath "On Battery" column.
4. Click "Change advanced power settings". Set Sleep > Hibernate after to 0 or Never. Set Battery > Critical Battery Level to 0.
5. Click on "OK", then "Save Changes".

This is the only time that we recommend taking the battery all the way down to zero percent.

Unplug the ac adapter, and let the battery drain all the way down until the laptop shuts off. Then plug the AC adapter back in and let it recharge to 100%. You may need to repeat the cycle 2-3 times before it actually reaches 100%.

### **4. How can I maximize laptop battery performance?**

There are several steps you can take to insure that you get the maximum performance from your battery:

Breaking In New Batteries - new batteries come in a discharged condition and must be fully charged before use. It is recommended that you fully charge and discharge your new battery two to four times to allow it to reach its maximum rated capacity.

Preventing the Memory Effect - Keep your battery healthy by fully charging and then fully discharging it at least once every two to three weeks. Exceptions to the rule are Li-Ion batteries which do not suffer from the battery memory effect.

Keep Your Batteries Clean - It's a good idea to clean any dirty battery contacts with a cotton swab and alcohol. This helps maintain a good connection between the battery and your portable device.

Exercise Your Battery - Do not leave your battery dormant for long periods of time. We recommend using the battery at least once every two to three weeks. If a battery has not been used for a long period of time, then perform the new battery break in procedure described above.

Battery Storage - If you don't plan on using the battery for a month or more, we recommend storing it in a clean, dry, cool place away from heat and metal objects. NiCad, NiMH and Li-Ion batteries will self-discharge during storage and remember to break them in before use.

For Laptop Users - To get maximum performance from your battery, fully optimize you laptop's power management features prior to use. Power management is a trade off: better power Conservation in exchange for lesser computer performance. The power management system conserves battery power by setting the processor to run at a slower speed, dimming the screen, spinning down the hard drive when it's not in use and causing the machine to go into it's sleep mode when inactive. Your laptop computer user's guide will provide information relating to specific power management features.

## **5. Need long time to be fully-charged.**

1. Unplug the power cord from the computer;
2. Leave the machine "on" until the battery remaining power is around 10%;
3. Turn off the laptop and keep the battery removed from the computer for 5 minutes;
4. Reinstall the battery, plug the power cord into the computer and turn the computer ON;
5. Keep the computer powered ON and the charger connected till the battery fully charged (99% or 100%);
6. Repeat operation "2" and try the charging (charge to 100%) and discharging (discharge to 10%) cycles for 3-4 times to calibrate the battery for its best performance.

## **6. How Long Will the New Main Battery Power the Laptop?**

Battery run-time on a laptop is difficult to determine. Actual battery running time depends upon the power demands made by the equipment. The use of the screen, the hard drive and other accessories results in an additional drain upon the battery, effectively reducing its running time. The total run-time of the battery is also dependent upon the design of the equipment. Generally, a new Hi-Capacity battery will run 30% to 50% longer than the old battery did when it was new.

## **7. Need long time to be fully-charged?**

1. Unplug the power cord from the computer;
2. Leave the machine "on" until the battery remaining power is around 10%;
3. Turn off the laptop and keep the battery removed from the computer for 5 minutes;
4. Reinstall the battery, plug the power cord into the computer and turn the computer ON;
5. Keep the computer powered ON and the charger connected till the battery fully charged (99% or 100%);



6. Repeat operation "2" and try the charging (charge to 100%) and discharging (discharge to 10%) cycles for 3-4 times to calibrate the battery for its best performance.

### **8. Cannot be fully charged and it appears warmer than usual?**

If the battery life appears shorter than normal, the battery stops taking charge before it is 99%-100% full and the battery appears warmer than usual, it is most likely that the battery has reached its designed "no charge" safety state. The battery may not be charged or provide power to the notebook until the temperature condition has improved. Below are tips for cooling down the battery:

1. When charging the battery, do not use applications that require large amounts of system resources such as graphic or memory intensive applications and heavy and extended hard drive usage;
2. Turn off your notebook and remove the battery to help it cool down;
3. Make sure the notebook PC sits on a hard surface, because things like sofa may block the vents and cause the notebook PC to heat up and shut down.

By taking these steps, the temperature will go back to its normal operating range and continue to charge and discharge as normal.

### **9. What is the reason the run-time of my battery becomes shorter and shorter?**

The batteries may be at their end of useful life. Batteries are consumable products. After exceeding the battery life range, the batteries' charging and discharging efficiency will decline dramatically; therefore, it's time to get a new battery.

### **10. How can I specifically calculate my battery run time?**

You can determine your laptops run time when you know how many watts your laptop computer uses and the total power capacity your notebook battery has. Here is how you can calculate this for yourself.

Battery capacity can also be measured in Watt-Hours. Watt-Hours are calculated by multiplying Volts x Mill amperes. Here is an example:

14.8 Volts X 4060mAh (4000mAh is equal to 4.06 Amperes).

Is also equivalent to:

$14.8 \times 4.06 = 60.09$  Watt-Hours

Watt-Hours measure the energy which powers one watt for one hour. Therefore if your laptop runs at 20 watts, your run time will be: 3.004 hours ( $60.09$  Watt-Hours /  $20.0$  watts Laptop pc power use).

Will a higher milliamp (mAh) rating on my battery damage my laptop?

No. Higher mAh ratings indicate that your battery will have a longer running time. Although the milliamps may be higher, the voltage will always remain the same. If you have received a laptop battery that has a completely different voltage than your original laptop battery, please contact us immediately. The typical runtime for most laptop batteries is from 2 to 5 hours.

## Chapter VI Battery Glossary

**AC:** AC is the acronym for Alternating Current. Used to supply electricity commercially as electric power. Alternating Current is the most efficient method of energy transmission.

**AC Adapter:** Device used to convert AC (Alternating Current) to DC (Direct Current).

**Amps:** Amps short for Amperes (A) is the unit of measurement of current.

**Battery:** A vessel made up of a number of battery cells which produce and store an electric charge. It can also be used to refer to an individual battery cell.

**Battery Cell:** A vessel containing various chemicals which produce electricity as a result of the reactions taking place between these chemicals.

**Battery Cycle:** A complete discharge followed by a complete charge of a battery.

**Capacity:** this is amount of energy a battery cell or battery pack actually provides. The higher the capacity the longer the equipment will run on battery power. Usually measured in Amp hours (Ah) or Milliamp hours (mAh).

**Cell:** An electrochemical system that converts chemical energy into electrical energy.

**CD ROM Drive:** Optical storage device. Hardware that allows the user to play and view data held on a CD(compact Disc).

**Charger:** Device used to energies a rechargeable battery.

**Compatible:** An alternative to the original supplied. Compatible batteries have similar capacity and ratings to the original but are cheaper in price.

**DC:** DC is the acronym for Direct Current. This is used for low voltage applications.

**Ions:** An atom or a group of atoms with an electric charge.

**Laptop:** A portable personal computer.

**Li-ion:** Lithium Ion. This is one the newest battery types available. It can offer the same power as a Ni-MH battery in a smaller & lighter package. This type does not suffer from 'Memory Effect' but it is expensive to manufacture.

**Memory effect:** An effect caused by continually recharging a battery before it is fully discharged. As a result it only remembers the amount of capacity charged and the full capacity of

the battery is not reached.

mAh: It stands for milli-Amp hours (1mAh=0.001Ah), High amp-hour rating means a longer run-time and will not cause incompatibilities.

OEM: OEM stands for Original Equipment Manufacturer. A third party manufacturer producing goods under licence from companies like Sony, Toshiba etc.

Overcharging: Energizing a battery above the prescribed time or even after it has reached full capacity.

Power: It is measured in Watts (W). It is the product of potential difference or voltage (V) and Current (A).  $\text{Power (W)} = \text{Voltage (V)} \times \text{Current (A)}$

Power Management: Software, usually supplied with laptop computers. It helps manage power consumption by controlling various processes taking place within the laptop computer.

Processor: The Processor is also known as CPU or Central Processing Unit. This does all or most of the data processing. The two most popular brands are AMD and Intel

Processor Heat Sink: The heat sink sits on top of the processor and conducts heat away from the processor. Heat sinks are made of metals with very good heat conducting properties, e.g. Copper and Aluminum. There is usually a fan on top of the heat sink which circulates the air, increasing the heat dissipation. The processor gets really hot whilst the computer is working. If no form of cooling is provided the processor overheats and it can literally get cooked. Cooler Master is one of the leading manufacturers of processor coolers and heat sinks.

RAM: Random Access Memory. A device used to store data temporarily. Increasing the RAM on a laptop computer results in an increased performance

Rechargeable: The ability to reverse the electrolytic reaction within a battery. The electrodes return to their previous state prior to discharge and are ready to discharge again.

Run Time: The time taken for a battery to power a laptop computer from a fully charged state to a discharged state.

Short-Circuit: A Short-circuit occurs when a metallic wire or a metallic object is placed between the contacts of a battery. This causes electricity to flow without any resistance. Due to the reduced resistance a large amount of electricity flows producing a lot of heat. This can lead to a fire hazard.

V(volts): The voltage of the new battery should always match the voltage of the original.

When interconnecting batteries (cells), they must be identical in voltage and amp rating!

\* Batteries may be connected in series. The positive terminal of the first battery is connected to the negative terminal of the second battery; the positive terminal of the second is connected to the negative of the third, and so on. The voltage of the assembled battery is the sum of the individual batteries. The batteries are connected: + to - to + to - to + to -, etc. The capacity of the battery is unchanged.

\* Batteries may also be connected in parallel. The positive terminal of the first battery is connected to the positive terminal of the second battery, the positive terminal of the second is connected to the positive of the third; the negative terminal of the first battery is connected to the negative terminal of the second battery, the negative terminal of the second is connected to the negative of the third and so on. The batteries are connected: + to + to + and - to - to -. In this configuration, the capacity is the sum of the individual batteries and voltage is unchanged.

For example, (5) 6V 10AH batteries connected in series produces a battery array that is 30 Volts and 10AH. Connecting the batteries in parallel produces a battery array that is 6 Volts and 50AH. Ordinary auto batteries are designed in the same fashion. Six 2-volt cells are arranged in series to produce a 12v battery.

Thank you for your reading.