COMPUTERS

WHAT UGRADES ARE AVAILABLE FOR YOUR WATER TREATMENT SYSTEM'S COMPUTERS?

To upgrade, or not to upgrade: that is the question." While that may not be quite the way Hamlet said it, this has to be one of the most perplexing questions associated with operating a computer – both in water treatment and other applications.

Hamlet was a procrastinator, who could not make up his mind. He had time to think and rethink. In this computer age, the questions and answers change much faster. It has often been said that *your computer is out of date once it leaves the store*. How do you make rational decisions about computers used with your water treatment system when you are up against rapid changes that are not always straightforward or rational when you must, at the same time, contend with Murphy's Laws? I hope you can benefit from some of my upgrading experience. You can perform these upgrades yourself and avoid the costs associated with taking your computer somewhere for servicing or having service people come in to do the work.

Back-ups Can Be a ZIP

Some of us heed the warnings and make regular back-ups of computer files for our water treatment systems; others do not. Those who do not will inevitably lose some important files and join the group who do. The cardinal rule of back-ups is to make them to an independent system. Filing them on another partition of your hard drive is useless if you lose the hard drive. Most of us have been making back-ups to floppy disks for years. Today, we have piles of floppies with back-ups upon back-ups and whatever system we had to organize them drifted into chaos as that pile grew and grew.

A few years ago, Iomega brought out their ZIP drives. The ZIP disk is not much larger than a standard 1.4 MB 3.5-inch floppy, but its 100-MB capacity can replace the equivalent of 70 floppies plus the cabinets, drawers or whatever needed to store them. (It should be noted that 250-MB ZIP drives are also on the market now.) Most ZIP drives can be installed without any need to open the case. The first version operated through the parallel port. It came with an extra parallel cable and you simply connected that cable between the ZIP drive and the computer. The existing printer cable then plugged into the ZIP drive. The sex of the cable connectors prevented you from making any mistakes.

A faster version used a SCSI interface. If you had a SCSI card in your machine, you could simply *daisy chain* the ZIP drive with your scanner or whatever. If you did not, Iomega included their proprietary SCSI card, but you had to open the case to install it. For notebooks, the same SCSI version also works through an accessory cable and PCMCIA card. There are newer versions to operate with the new USB as well as larger capacities and competitive products.

I have the SCSI version of the 100-MB ZIP drive. Once I installed the card, Windows 95 knew it was there and asked for the disk with the driver files. Windows 98 already had the drivers in its database. When I moved it from my desktop and connected it to my notebook via the auxiliary cable and PCMCIA slot, Windows knew it was there and what to do with it. It now moves happily back and forth between the two. I just treat the ZIP as a big floppy that can store lots of information. Should you go for the bigger 1 GB drives and store programs as well as data? Forget about backing up programs. If you a crash, you must start over. Most programs MUST go through an installation process that includes registry entries and sending DLL files all over the place. The 100-MB is just fine. I have run mine for almost 3 years without the slightest problem ..and my back-ups are much better organized than they were on floppies. Today, I would choose the USB version for simpler sharing between my desktop and notebook.

An Upgrade Family

MicroSolutions have a full series of products under the name Backpack. These are external devices that connect to the parallel port. The product line covers essentially all the storage devices you might need and do not have. That includes 3.5-inch and 5.25-inch floppy drives, hard drives, CD-ROM drives, and the latest DVD drives. They are more expensive than the built-in equivalents, but you can add them at any time without opening the computer case. Unless you know what to do when you open the case, the cost of the service call is much more than any premium you pay for this convenience ... and do not forget that your power supply must be capable of powering any new peripherals that you add. As each Backpack has its own power supply, they cannot overload your power supply.

I tried the Backpack CD-ROM writer/rewriter. I knew someone had done some thinking as soon as I unpacked it and found the transformer had a short length of wire with the AC plug on it rather than having the prongs built into the transformer. There has been too much of that nonsense with transformers blocking half the capacity of a power bar. The CD-ROM writer was essentially self-installing. I just ran the SETUP.EXE on the CD-ROM and was ready to go in less than 5 minutes. While I had no troubles, I was a bit confused at first. When I started, my old 8X CD-ROM was the I: drive. When the installation was complete, the Backpack was I: drive, and my old I: drive was now J: drive. If I remove the Backpack, J: reverts back to being I: drive. This forces me to use

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the Backpack whenever I run a CD-ROM-based program, which is OK by me as it is the faster drive. If this drive-letter switching bothers you, Windows will let you define the drive letters before you start.

For your printer and the Backpack to both operate properly, you must have a properly configured ECP or EPP parallel port and you must use IEEE 1284 compliant cables. To confirm your configuration, go into *Control Panel* and *System* and check under *Device Manager* and *Ports*. The cables will likely be labeled. After you install the Backpack, its settings in *Control Panel* should say either "ECP" or "EPP" following the "Tx/Rx" in the last line. The settings to the left can be used to resolve any printer conflicts if you have any.

Two sets of Adaptec software packages are provided for writing to blank CD-ROMs. These enable you to copy a file, a collection of files or entire CD-ROMs. You can also treat a re-writeable CD-ROM as just another drive to which you can drag and drop files. The write and rewrite speeds are 4X and 2X, respectively. It took me 15 to 20 minutes to copy 400 to 500 MB of files. CD-ROMs are more stable than magnetic disks and you do not need to worry about X-raying them at the airport, but consider getting a label making kit. Do not use a ballpoint and make sure your labels are properly centered to avoid any imbalance. When you think about it, the outer edge of those new 40X to 50X drives must be coming close to supersonic speeds.

A stand-alone system offers certain advantages over internal peripherals. Because they are independent and connected through the parallel port, they are *portable*. It makes little difference whether it is installed on one or several computers and Windows knows how to cope with it being removed. If your water treatment location has several independent computers and nobody can decide where to put a CD-ROM writer, they can share a Backpack. If it is allowed, you might even borrow it for the weekend for use at home. A friend and his wife have a computer each. After he saw my Backpack, he went out and bought one. Now; they have no conflicts as both can use it.

The most obvious use for a CD-ROM writer is to make back-up files from your hard drive. The blank CD-R disks are now quite inexpensive and they hold 650 MB. To copy files, you set up a template and write everything to the CD-ROM at once. You can pick and choose which files go over and add a volume label to identify the CD-ROM. If it is a regular back up, you can save that template for the next time. It is all very simple to do, but I found an interesting surprise when I transferred some files to my notebook. All files on a CD-ROM are *Read Only* and they carry this attribute with them. This is easy to spot with Windows 98 as you can make the attributes visible within Windows Explorer. Windows 95 is not that clever. If you find things acting strangely (e.g., you make changes to a file and they keep disappearing), go to Windows Explorer and check. Highlight the file, right click and select *Properties*. If *Read Only* is ticked, cancel it and switch it to *Archive*.

In addition to making backups, you can also copy audio CDs. I thought the ideal way would be to use my old CD-ROM to read the original and the Backpack to write the copy. It turned out to be a lot faster to copy from Backpack to Backpack and to use some hard disk space as a buffer. It is wise to use the fastest procedure you can to avoid *buffer under-run errors* that can corrupt the writing process. When the copies were played in a stereo system, they were indistinguishable from the original. If you do copy audio CDs, please recognize that there are copyright rules that may apply and some material must not be copied.

The rewrite capability lets you treat a CD-RW disk as just another drive to which you can add files whenever you want. I could not get very excited about this feature. Unless you have access to the newer *MultiRead* CD-ROM drives, you can only read them with this Backpack unit. My notebook's drive is not *MultiRead* and the cost of a CD-RW disk is about five times that of a CD-R disk. I already had my ZIP drive and prefer to use it for daily backups. I make a permanent CD-ROM backup once a month or if I plan to be away with my notebook.

Boosting the Speed

The computer that does these reviews is 3 years old. That makes it an antique that might be more appropriate in a museum. It has functioned well and has had no problems, but it was becoming slow by today's standards.

I have made two attempts to speed it up. The first was a beta test for Evergreen's new plug-in board that converts antiques such as my pre-MMX P100 into a 400 MHz Celeron. You simply take off the cover and plug the card into one of your slots. When you start up again, Windows recognizes that something had changed and asks you to insert the disk with the new drives. That is it and you are in business with a faster and better system.

My test was a disaster. The card appeared to be very unreliable. One time it would work and the next it would come up with an error message and possibly boot up into the Windows safe mode. Appearances can be deceiving. In reality, it was a success spoiled by some existing software that could not cope with the faster speed. When I could get the Evergreen system up and running, it was fast and did everything much faster. Had I been able to diagnose the problem, that board would still be running in my system today.

Recently Revenue Canada offered a special 1999 tax incentive to assist small companies upgrading to Y2K compliant components. As my P100 and its BIOS were not Y2K compliant, this gave me an incentive to try again. My experience with the Evergreen card suggested that the only route was to put in a new motherboard. Just to confuse the effort, I reformatted my C: drive and loaded Windows 98 at the same time. My reinstallation of software went reasonably well until I installed my scanner. I got that same behavior that I had with the Evergreen card. This time, Microsoft's Knowledge Base was a bit more up to date and when I entered the error message, it told me which file was acting up and where to get an upgrade that would overcome the problem. That new motherboard is up and running. It is a 333 Celeron, a bit slower than the Evergreen board. It cost less, but it took a lot more work to get it operating. Guess what happens when *cash and carry and ready in 20 minutes* meets Murphy's Laws. I wanted a board with a few more slots and the dealer had to download new BIOS software through a slow connection to Hong Kong. I then had to tune up the CMOS settings. It took forever to get the Advanced Power management system working with my Sony monitor. It seams that Sony, Windows 98 and the CMOS have different definitions for standby or suspend.

I can see advantages to both routes to boost the speed. Obviously, the new motherboard gives a simpler system.

On the other hand, if it was not for that scanner software (you might find other software that does the same), that Evergreen card could have been fully operational in less than ten minutes instead of the day or so taken to change the motherboard and sort out the CMOS. If I could do it again, knowing what I know today, I would choose the Evergreen card and keep the system running for a few more years. When the time comes for the next upgrade, I expect that several components will be out of date and replacing the entire computer will likely be the best thing to do.

Important Details

Various models of the equipment described above are available at most computer stores under a wide range of price structures. Further details are available at stores selling computer equipment, or you can check the following Web Sites:
Iomega, http://www.iomega.com; MicroSolutions, http://www.microsolutions.com; Evergreen Technologies, http://www.evertech.com.■

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