

Smooth Running

BY DAVE KING

What you *need to know* to keep your printers *running smoothly*.



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new and better technologies. In addition to writing for Digital Graphics Magazine, Dave is a frequent speaker at The Sign Business & Digital Graphics Show. He has also produced InkJet Printing, Laminating and Mounting, an educational video for the Video Classroom series. For more information call 1-800-691-8047.

The large-format printer market evolved much the same way as the photocopy market. In the early days of the photocopy market you would purchase a photocopier and it would come with a drum (not disposable), toner, oil, cleaning brushes, and heat wires or rollers. These early machines used a photochemical process to expose the light-sensitive drum and then transfer the image from the drum to paper where the image was developed.

As you used the copier you would have to clean it, replace the brushes, and every couple of thousand copies you would have to replace the very expensive drum unit. Those machines needed a service contract because they would break down so often that you would go broke if you paid for each service call. Large format printers (and most digital printers) have evolved pretty much the same way, but with today's expensive large-format printers, it costs thousands to fix them when they go down.

Here are a few of the more popular printer types and how they need to be maintained. For details about maintenance programs for specific models of printers, please contact your printer manufacturer or equipment supplier.

DISPOSABLE PRINTHEADS

Many common aqueous-based inkjet printers are equipped with disposable thermal inkjet printheads. Encad and Hewlett-Packard manufacture these for their own printers but they are also used in some ColorSpan, Canon and other machines. Disposable printhead systems generally work with a bulk-feed system. With some manufactures, as you replace the bulk ink package, you also replace the printheads.

Others will let you decide when the printheads need to be replaced, so you just keep filling the bulk ink until a printhead goes belly up. Then, all you do is replace the printhead and keep on printing.

Many manufacturers, such as Hewlett-Packard, offer a printhead cleaner cartridge you can use to clean the heads. The only other maintenance these type of printers require is to keep the feed platen and rollers

clean (using a lint-free cloth), and if the printer has filters, you also need to keep them fresh and new. I consider these printers to be the easiest to run and very easy to clean.

PERMANENT AQUEOUS-BASED PRINTHEADS

Piezo printeads for aqueous-based machines, such as those made by Epson (also used in some Mimaki and Roland machines), are not disposable and need to be cleaned or primed for best results. These printers have pads that rest on the heads when they are not being used. The printers typically have a minor and deep-cleaning process to flush the heads with ink.

You can also use a soft-sponge cleaning brush and alcohol to wipe the heads. Machines with Epson-type printheads come with a filter system that must be replaced regularly. The printers also have head cleaners (a small piece of rubber that wipes the heads) that must be kept clean. The sponge head covers in these units must also be kept clean. Very few other parts of these printers need cleaning due to the fact that sensors in the printer prevent the printheads from firing ink anywhere other than onto the media.

Roland DGA provides training classes (called Roland University) where end-users can learn about printer maintenance programs specific to Roland equipment. Go to www.rolanddga.com for more information.

ELECTROSTATIC PRINTERS

Although not as common as they once were, electrostatic printers are still out there in large numbers — mostly units made by Raster Graphics, Xerox and 3M. These printers use toner rather than liquid ink and need a lot of cleaning and maintenance. The e-stat printing technology takes



Solvent ink printers use a flush procedure that allows the operator to switch from ink to a solvent solution that can be run through the printheads for internal cleaning. Special flushing fluid is available for specific printers from some manufacturers.

Aqueous-based piezo printers, such as the Mimaki JV4-160, have pads that rest on the printheads when they are not in use. The printers typically have a minor and deep cleaning process to flush the heads with ink. You can also use a soft-sponge cleaning brush and alcohol to wipe the heads.



toner from a bottle and pumps it up to fountains that run the full width of the media. The head engages the special paper and applies electricity to the surface of the paper, and then the paper is run through the fountains of toner. The unused toner goes back into the bottle and is used again and again. Toner is a mixture of solid particles and a carrier but when the toner sits for a few hours the solids start to separate. Parts of the printer that come in contact with toner get caked and must be cleaned every day. All other parts of the printer tend to get toner on them also, so cleaning is required. Other maintenance is required only when parts wear out or break, but they tend to run for thousands of hours before something goes.

SOLVENT PRINTERS

The bigger solvent-based printers, such as those made by NUR, VUTEk, Scitex, Océ, Mutoh, etc., typically use bigger, more expensive permanent piezo-type printheads made by either Xaar or Spectra. These heads typically cost \$500+ per head and will generally run about a million square feet of output before they need to be replaced.

These printers use a bulk-ink feed system that typically runs through a few sets of filters before the ink gets to the printheads. Take good care of these printheads because, as I am sure you can appreciate, the cost of a set of printheads for one of these machines can be more than \$20,000.

Solvent ink printers use a flush procedure that allows the operator to switch from ink to a solvent solution that can be run through the printheads for cleaning. Most of these printers can over-print the media, so cleaning the areas that are affected by the solvent ink is a must.

PHOTO WRITERS

Laser photo writers, such as the Durst Lambda, the Océ LightJet and ZBE's Chromira require very little maintenance. The photo writer is a printer that fires laser light at photographic film or paper, so the only thing that typically can go wrong is that the lasers may go out of focus or something breaks. The lasers are good for about 20,000 hours of imaging. The part of the photo writer process that needs maintenance is the processor. This is the device that takes the imaged photographic film/paper and develops it — the processor uses developer, bleach, and water to process the film/paper. These devices need to be kept at exact pH levels so the color is correct. The machines need to have anti-algae additive in the water tanks to keep them clean. Also, the tanks must be taken apart on a regular basis and cleaned, and the parts in this machine do wear out and must be replaced on occasion.

UV-CURABLE SYSTEMS

UV-curable printers, such as those made by VUTEk, NUR, Scitex, Durst, Inca Digital and Zünd, are new to the inkjet world. UV-curable systems are generally flatbed types that use special inks that are instantly cured using high-intensity UV lights that in most cases are mounted to the printhead. The ink is cured as soon as it is laid down on the printing substrate.

UV-curing ink is very thick, and in most cases (with flatbed versions) the images are over printed onto the rigid boards thereby causing some ink to fall onto the feed belt or printing table.

Since this ink is heavy and thick, if you do not remove the over printed ink you could eventually have problems. The heads are, in most cases, self-cleaning and do not require

much maintenance, and since the ink does not dry without UV light, you can leave the heads full of ink most of the time. Some of the printers have a flushing system that can be engaged when the printer is to be shut down for an extended length of time (more than two days).

OTHER CONSIDERATIONS

For the last 10 years or so I have owned many different printing devices. In the old days the daily cleaning ritual required more than 30 minutes. Today we have more than six different printing devices and we spend less than 15 minutes per day cleaning and maintaining them. This makes me very happy.

Another part of printer maintenance that you should consider is the service contract. Typically, service contracts are available as phone support, phone and parts support, or full on-site support. The cost for on-site is generally around 10 percent of the system's price, so a \$350,000 printer might come with a \$35,000 annual service contract per year.

Personally, I have never had a service contract on any printer or finishing device, and I don't know that I would ever have one. Here's my reasoning.

When I'm about to purchase a new device, one of the questions I ask the sales person is "does this device break down?" Generally, I get the same answer. "No, this machine is designed to produce hundreds of thousands of square feet of output before it will require service." So, I look at the most expensive parts of the machine and find out how long they are designed to last, and determine the cost of replacing those parts. I have never found a machine whose parts are worth more than the cost of the service contract. Here is my situation: if I were to pay for a service contract on all my printers, I would be shelling out about \$96,000 per year. Over

Printer Maintenance



Many common aqueous-based inkjet printers are equipped with disposable thermal inkjet printheads, and manufacturers, such as Hewlett-Packard, often provide a printhead cleaning cartridge along with their bulk ink system. When the bulk ink cartridge is empty, you dispose of everything — the head, the cleaning cartridge and bulk containers and start fresh.



Methyl Ethyl Keytone (MEK) is a great universal solvent that can be used to efficiently clean ink from internal areas of the printer. Be careful to work with good ventilation, however, because this stuff puts off some harmful vapors. Note: do not use MEK on rubber or plastic components as the solvent tends to dissolve things.

the last three years I have paid about \$40,000 in parts and service on all my machines combined. So, over three years I have saved more than \$240,000 in service contracts.

However, if you are new to the industry, purchasing a \$20,000 printer for the first time, your peace of mind might be worth more than the annual \$2,000 service contract investment. There are some really excellent programs available. Océ, makers of the popular Arizona solvent-based printers, offers an award-winning service program that was recognized by the Association for Services Management International (AFSMI). In the event that a printer actually breaks down, it's comforting to know you will be taken care of in a professional manner. In the end, the decision needs to make sense to you and your shop's needs. It's sort of like insurance. You

need to weigh the risks and act accordingly. For many shops, the service contract is a life-saving safety net.

In any case, it *really* pays to keep your equipment running smoothly, so don't skimp on the maintenance. Your repair bills will be fewer, you will experience less material waste and it will be smooth running all the way. **DG**

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