

Large format
printer buyer's
guide

Nine considerations when buying a large format printer



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9 considerations when buying a large format printer

If you're in the market for a large format printer, you actually have a lot to think about. What seems like a straightforward purchase is more complex than it appears. But, it doesn't have to be complex if you know exactly what to look out for.

The goal of this guide is to help you understand the choices you need to make and what to look for when selecting a new large format printer.

The four main considerations in your selection process are:

1. Color and/or black & white
2. Costs
3. Performance and speed
4. Image quality

These are the more important areas to look at when investigating your options. However should you want to go one level deeper, you might want to look at other areas, such as:

5. Ease of use
6. Security
7. Product options
8. Floor space
9. Environmental concerns



Take the time to read this guide when selecting a large format printer. There is no such thing as a one-size-fits all solution. Your choice depends on the number of people using the printer and the type of print, copy and scan jobs among others.

Each chapter in this guide will highlight the main topics and considerations step-by-step. This guide will help you in making an informed choice based on what you need: the best quality large format printer that your work deserves.

Color and/or black & white

When choosing a large format printer, one of the basic aspects you consider is whether to buy a printer that can print in color or a printer that prints in black & white. It may seem a straightforward choice, but even here there are issues to consider. For example a color large format printer can print in black & white for approximately the same cost as a monochrome printer especially at lower print volumes.

Why is it important?

The choice between black & white or color has consequences for how your users will actually use the printer. Analyzing what you need based on the type of print jobs that you do will help determine which is the most cost effective.



Considerations

The choice between a color and/or black & white large format printer is usually driven by how you expect to use the machine.

- **Output:** if you are printing posters, photos, technical documents, drawings or presentations, you will most likely choose color.
- **Productivity:** speed might force you to prefer black & white. A black & white printer generally performs faster.
- **Print robustness:** if your prints or copies are used outside on a construction site for example, you need these prints to be waterproof. You don't want to see how the rain ruins your technical drawings. Prints made on black & white large format printers will provide this. Some color printers offer a solution as well. Color printers based on color toner, pigment ink or color printers that can print on special (waterproof) media will also suffice.
- **Handling print costs:** consider the following:
 - The cost of printing a black & white print on a color printer is approximately the same as on a black & white printer when your monthly print volume is low.
 - If users start printing potentially expensive color prints because a color printer is at their disposal, managing print costs will be difficult.

Conclusion

Choosing a color and/or a black & white large format printer mostly depends on what you expect your output to be, what print speed and print robustness you need. And last but not least consider, given the above, what is most cost effective for you.

Costs

When you ask about the costs of a printer, you can get a variety of answers. The first and most likely answer will be related to the purchase price. Secondly, the running cost of the system will be addressed.

Although tempting, it is not wise to base your purchase decision on the purchase price alone. A cheap printer with costly toner cartridges is actually an expensive printer in disguise. And even when you have evaluated the running cost, you're not finished. You may think you're getting a bargain on the printer itself but if your machine breaks down frequently or simply can't keep up with your copy demand, then you will be paying too much in the long run. So, hidden costs can completely change the picture.

Why is it important?

Cost is an obvious factor in your purchase decision. However, a printer is an investment in your work processes. To determine the return on this investment, all related costs must be taken into account.

Considerations

- **Initial investment:** make sure that you compare similar configurations and delivery conditions. When investing in a new printer, it is worthwhile to consider costs related to switching to a new printer. Companies may have hundreds of dollars of consumables already in stock, which often cannot be used on the new system. Also installations of new drivers may take time and therefore money.
- **Running cost:** printer running costs are the cost of consumables, media and the service contract. These costs can be determined up front by straightforward calculations. However, to make these calculations, you need to have access to relevant information. Vendors tend to provide averages that may not be representative of your actual day-to-day usage of the printer, i.e. the ink consumption calculations based on a "fast mode" is meaningless if you always use the "normal mode". Most people use "normal mode" for either quality standards or convenience. If a service contract doesn't cover spare parts or software updates, you have to estimate these additional costs for the short term and the long term.





• **Hidden costs:** Costs that are related to the printing process itself but are less obvious to identify include for example:

- Printing on the wrong media type or media size.
- Printing files twice because it is unclear if the printer is “working on it”
- Printing multiple times to get optimal print quality.
- Waiting time and frustration.
- Cost of overtime or courier service for timely delivery.

Some printers are fully engineered to avoid or minimize these hidden costs; others have no tools/features to deal with those issues.

Lease or buy: if your preferred large format printer has a high initial price and you lack available cash, consider leasing as a powerful alternative.

Conclusion

When selecting a large format printer, don't forget that there's actually more to it than what is on the price tag. Start by taking a look at the cost of all consumables: ink, toner, media and service. Remember not to overlook your hidden costs – there can actually be a hefty price behind wasted resources and lost time. And, keep this simple tip in mind: automation will help lower these hidden costs. In the end, a system that is more automated may help prevent printing problems before they occur.

Performance and speed

When judging the performance of a large format printer you tend to look at the printer speed listed in the technical specifications. However, the time needed from sending a print job to the printer and actually holding the print in your hand is something totally different. Compare it to the maximum speed your car can do and the time it takes you to drive to your local store downtown.

Why is it important?

Optimizing the performance of your large format printer is obviously important. To continue with the car analogy: don't spend money on a formula 1 car when all you need is a car to get your groceries downtown. Optimization does not automatically mean a faster printer.

Considerations

When looking at speed and performance of a large format printer look further than the initial specifications. There are several factors to consider in order to gain a complete picture of a printer's performance. If you have a continuous flow of documents, throughput speed is most important. If the machine is used intermittently, then the first print out time must be short.



Conclusion

When evaluating speed and performance of your new large format printer, look at how you use your current system. For a true evaluation, take your own print files to the demo floor and measure the performance of the printer. Remember a Formula 1 car will not get you to a downtown store any faster than a family car, assuming that this is what you need your car to do!

Short first print out time

- **Processing time:** before the printer can start printing, it must process the files to be able to print them. There are huge differences in processing capabilities in large format printers in the market today. Although the size of the internal memory is an indication, the proof is in the details, so run test prints with your large files.
- **Warm-up time:** any machine, when not used for a while will return to sleep-mode. When you push a print button however, you expect the printer to start printing right away. In some cases it takes large format printers several minutes to be ready to print.
- **Speed vs. print quality mode:** when using a black and white large format printer, print speed is constant. This is not the case for color inkjet printers. The print speed varies depending on whether you are using a draft mode or a higher quality presentation mode. This time difference can be more than 10 minutes.
- **Throughput**
 - If you have a continuous flow of prints, make sure that the printer can process new files while printing previous ones (concurrent processing).
 - Consider interpage time as a factor for print speed: This is influenced by drying time (only ink jet), roll changes, maintenance during print jobs, such as calibration, print head cleansing during print jobs.

Image quality

When you think about large format printers and image quality the first thing that springs to mind is resolution, expressed in dpi (dots per inch). High resolution however does not necessarily offer the best quality. Compare it to digital cameras. Nowadays high dpi is no guarantee for high quality photos. When printing, the way the large format printer interprets the data is as important as the print technology itself.

Why is it important?

When printing technical drawings, it is essential that dotted, fine lines are printed clearly. You don't want to lose information. Losing a dotted line that represents electrical wiring at a construction site can have catastrophic consequences. Also when you are presenting concepts, images say more than words. Insufficient print quality may lead to losing a bid, order etc. Obviously in this case as well, sufficient image quality is essential to your bottom line.

Considerations

When looking at image quality, consider the following:

- **Resolution versus image processing:** instead of looking at the resolution of a large format printer, take into account the way the printer interprets the data. The quality of this "interpreter" is especially important when you work with fine or dotted lines and detailed prints.
- **Quality and media dependency:** for black and white large format printers, no matter what media you use, the print quality is more or less the same. When using an inkjet printer however, quality can vary tremendously. When printing on glossy or photo paper versus normal paper, differences can occur in color output and quality of thin and fine lines.

- **Scan technologies:** when making copies the original is first scanned. The challenge manufacturers face is to suppress wrinkles and folds of the original drawing while at the same time enhancing and maintaining weak information such as pencil lines. There are definite differences in quality for scan technologies by the different printer manufacturers.



Conclusion

The best possible way to judge image quality is to see it for yourself. Take a typical file to a demo and print it out. However, make sure when comparing image quality of large format printers, that the prints are made on the same material. Judge the quality on the aspects that are important to you.

Ease of use

When you think of large format printers and ease of use, you may associate this with flashy touch screens and the many possibilities that go with this. But there is more to ease of use than the user interface of a large format printer. Other factors to consider are the ease of adding ink or toner, loading paper rolls, etc.

Why is it important?

If it is not easy to load paper rolls or run complex print jobs for example, too much time will be spent on performing these seemingly easy tasks. Not only will your employees get frustrated, irritated and engage in “printer bashing,” even worse, as a result of multiple misprints, they may also start showing printer avoidance behavior. Not exactly what you had in mind when investing a considerable amount of money in your new large format printer.

Considerations

When looking at and evaluating the user interface of a large format printer, start with considering how you currently use or plan to use your printer. Deciding which type of user interface to go with (touch screen or hard buttons) needs to be evaluated.

- **Types of print jobs:** is the bulk standardized or do the print jobs require individual settings?
 - **Standardized bulk:** look for possibilities of automation by using templates.
 - **Specialized print jobs:** look for possibilities to maintain full control with easy ways to adjust and set parameters. User interfaces using touch screens and hard buttons can both work well.





- **Number of users:** will the printer be used by multiple users or a few specialized users?

- **Multiple users:** look for ways to automate print jobs. Besides templates, make sure the user interface is self-explanatory.

- **Specialized users:** these operators are used to a high degree of automation but still need full control to run complex jobs.

- **Consumable loading:** how convenient is it to load or exchange ink, toner and media?

- Look for possibilities to exchange ink cartridges or refill toner during large runs.

- Look for the number of media rolls in the printer and check if they can be exchanged on the fly.

- **Ergonomics:** what is the physical burden on the operator when operating the printer?

- Replacing empty paper rolls with new rolls can be heavy work; does the printer design help the operator?

- Are prints easily accessible to the operator or do you need to bend and stretch to get access?

- Is the operator panel at the right angle?

Conclusion

When looking to purchase a large format printer, all manufacturers talk about ease of use. A cursory look at printer user interface with screens, previews and wizards will not tell you the full story. Base your investigation on how you need the printer to work by taking into account the expected type of print jobs, number of users, consumable loading and ergonomic considerations.

IT infrastructure security

When thinking of security, most people associate this with up-to-date virus scanners on their computers. However, consider that large format printers are an integral part of your IT infrastructure. This is especially true for printers with a USB port. Protecting your large format printer is a start. But equally important is to protect your own intellectual property. Intellectual property, such as inventions, literary and artistic works, names, images, and designs used in business can be extremely vulnerable to theft or damage.

Physical property can easily be hidden from view or locked up for security. However, data is very fluid in nature and can multiply quite quickly. When in digital format, data is stored on a network or hard disk; so protecting the network and hard disks is crucial.

Why is it important?

Hopefully you have never experienced a breakdown of your IT infrastructure caused by a virus, but you can imagine the consequences. Loss of information or productivity may occur and theft of intellectual property is possible.

- **Safety applications:** network providers can also assist you with a variety of safety applications and features. This can include, but is not limited to, integrity, authentication, and certification processes.

Considerations

When selecting a large format printer, security issues should therefore be taken into account.

- **Reliable service packs:** it's important to look for a system that is compatible, for example, with Microsoft® Service Packs. This offers updates for system reliability, program compatibility, virus protection and more.
- **Unauthorized use:** locking out systems for unauthorized use as well as usage logging make it possible to track and trace misuse.
- **Removing options:** you want to be able to remove digital data from the hard disk using e-shredding or even removing the hard disks when needed.



Conclusion

Make sure that you look at the security of the large format printer. When you consider it, realize that it is more than just virus protection.

Product options

Most people try to define the large format printer that they will need for the coming three years. However, as it is difficult to predict the future, consider how the large format printer can be adapted to changing needs if and when these needs occur.

Why is it important?

Ideally you invest in a product that will offer you a long-term solution. However requirements evolve over time and when your business enters a new phase your requirements can change. If you buy a feature now because you think you might need it next year, you might be throwing money away. On the other hand if your needs change other than in ways you had expected, you might need to buy a new printer.

Considerations

- **Field upgradability**

When looking at the field upgradability of your large format printer consider the following:

- **Hardware:** can you add hardware such as a scanner, a folder, additional paper rolls, and additional working memory to the print engine in the future? Also consider if these upgrades can be done on site at your company.
- **Software:** does the manufacturer offer firmware updates to stay compatible with new IT developments?
- **Service:** can you change your service contract to, for example, shorter response time if needed?

- **Financing of field upgradability**

Financing of new upgrades can be cumbersome because of investment approvals needed. Keep in mind that leasing contracts are an option that may help you with these administrative consequences.

Conclusion

Instead of trying to predict the future, make sure that your new large format printer can adapt to future needs. In other words make sure your large format printer is adaptable if and when needed.



Floor space

When thinking about floor space, you tend to think of the 2- or 3-dimensional size of a large format printer. For sure these physical dimensions of the printer should be part of your considerations. Exact measurements can be found in the technical specifications of the product.

It is, however, even more important to take the operational floor space into account. This is the space required to make prints, copies and scans in the most efficient way possible and includes, loading media, collecting the original, collecting/collating prints, loading originals for scanning and more. There should be sufficient room for the handling and finishing of prints such as folding, enveloping and distributing. Media, toner and ink cartridges also need to be stored in close proximity to the printer for easy access.

Why is it important?

It is important to balance the cost of floor space (\$/sq. ft.) versus efficiency cost. The latter may be difficult to quantify. But, in the end there are significant consequences to not having enough space such as:

- Damaged prints because they fall on the floor.
- Damaged originals because there is no space to handle sets of E-size originals for scanning.
- Cost of incomplete sets — i.e. how do you measure the cost of a construction site having to slow or even shut down while waiting for additional prints to be made?

Considerations

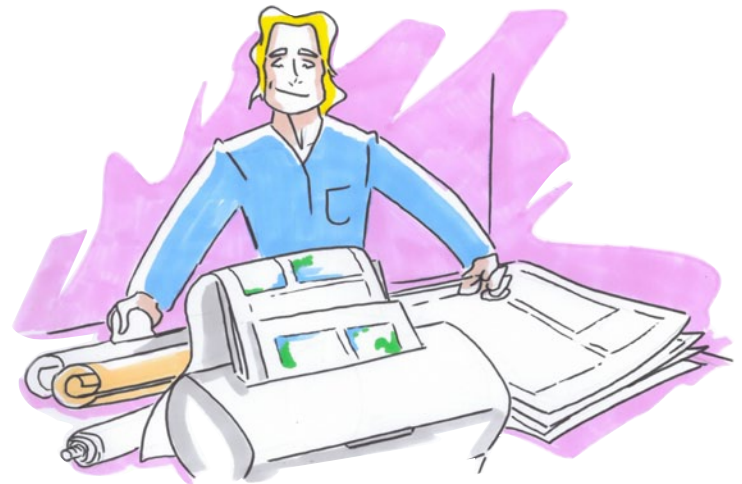
A lot of printers are presented or promoted as a single footprint multifunctional solution. When you are considering this keep in mind the additional operational floor space the large format printer requires to fully operate. Sometimes a better solution can be to place a separate scanner, maybe even in a separate space.

Conclusion

When evaluating your floor space needs, looking at the physical dimensions is just the first step. It is difficult to judge the space that you actually need. To make your choice easier check out your current printer and perform a print, copy, and scan job while evaluating the actual space you need to comfortably perform your tasks. To complete this picture, follow up on your prints and perform whatever finishing tasks you usually need. This way you find out what actual space you need when folding, enveloping and distributing your prints. To conclude, don't just look at the footprint listed specifications. A real run-through like this will give you a better insight in your needs.

For making the best use of your floor space, consider a single or dual footprint set-up:

- **A single footprint:** with multi-functionality allowing you to copy, print and scan.
- **Dual footprint:** with a separate scanner next to your large format printer (depending on your needs and workflow situation).



Environmental considerations: sustainability

Businesses today should take a look at how their office equipment impacts the environment. This relates to waste, recyclability, energy consumption and printer emissions and it takes into account the hardware (or machine itself) as well as all consumable products.

Why is it important?

Ignoring environmental implications of using office equipment may lead to unnecessary waste and high energy consumption.

I. Waste

The first thing that springs to mind when thinking of waste is the ink cartridges or residual toner disposal. This is usually your prime consideration. But, what about prints that cannot be used due to poor quality, printed at the wrong location, or simply because the prints are not correct? Waste can also occur as a result of trimming when the wrong media size was loaded.

Considerations

- **Amount of waste generated:** how much waste are empty ink cartridges or toner bottles generating? Check to see what the capacity of an ink cartridge or toner bottle is to estimate how often these need to be replaced.
- **Poor-quality prints:** how much waste is being generated as a result of misprints. How often do you need to throw away prints due to insufficient quality or simply because the outcome is not what you wanted the printer to do?
- **Waste as a result of trimming:** how much paper do you throw away as a result of trimming? Check to see if the printer can hold different media sizes to avoid unnecessary trimming.



II. Recyclability

When selecting a large format printer recycling plays an obvious role in the area of ink cartridges collection and residual toner disposal. However, the printer itself can also be recycled.

Considerations

- **Printer recyclability:** does the manufacturer maintain a cradle-to-cradle philosophy so that old printers can be refurbished, reused or remanufactured? Consider if the printer manufacturer has a remanufacturing program in place.

III. Energy consumption

In the technical specifications you can find the energy consumption of large format printers when actually printing. However to get a complete picture of the energy that a printer consumes, it is good to consider how the machine is used on a typical day.

Considerations

- **Energy consumption:** what is the actual energy that a printer consumes? To get a better idea of the energy consumption of your large format printer, estimate how long the printer will likely go into sleep mode, how often will it be used per day and what type of printing it is doing.
- **Cooling:** Does the room in which the large format printer is placed need to be cooled? In many cases the heat dispersed by the printer needs to be compensated by energy guzzling air conditioning, meaning your energy bill is higher.



Conclusion

When shopping for a large format printer, consider the printer's waste, recyclability and energy consumption, so you know ahead of time what to expect and what you can do to better serve the environment.

Glossary

Ink cartridge

An ink cartridge or inkjet cartridge is a replaceable component of an inkjet printer that contains the ink (and sometimes the print head itself) that is spread on paper during printing.

CCD (Charge Coupled Device)

A charge-coupled device (CCD) is a light-sensitive integrated circuit that stores and displays the data for an image in such a way that each pixel in the image is converted into an electrical charge, the intensity of which is related to a color in the color spectrum.

CIS (Construction Industry Scheme)

The Construction Industry Scheme sets out the rules for how payments to subcontractors for construction work must be handled by contractors in the construction industry.

Concurrent processing

Concurrent processing is a model in which multiple processors execute instructions simultaneously (rather than consecutively) for better performance.

Consumables

Extra items required in the day-to-day running of a large format printer, for example paper, ink, toner.

Controller: brain of the printer

Controller translates a computer or software's print commands into the signals that a large format print engine can use to print.

Cradle-to-cradle philosophy

Cradle-to-cradle philosophy is based on the principle that there is no waste. Using cradle-to-cradle techniques, manufacturers ensure that little to nothing is wasted.

DPI (dots per inch)

Dots per inch (DPI) is the number of individual dots that can be placed in a line within the span of 1 inch (2.54 cm). The DPI value tends to correlate with image resolution, but is related only indirectly.

Driver

A printer driver is software that converts data to be printed to the form specific to a printer. The purpose of printer drivers is to allow applications to print without being aware of the technical details of each individual printer.

Dual footprint

The scanner and print engine of the large format printer are not integrated. They are two separate entities.

E-shredding

Ensuring that permanent removal of digital files; involves more than deleting and emptying the recycle bin.

Inkjet printer

An inkjet printer is a type of printer that creates an image by propelling variable-sized droplets of ink on to paper.

Inter page time

Inter page time is the time that a large format printer defines between consecutive prints.

Laser technology

Laser printers print using a xerographic printing process. They differ from analog photocopiers in that the image is produced by the direct scanning of a laser beam across the printer's photoreceptor. Another toner-based printer is the LED printer which uses an array of LEDs instead of a laser to cause toner adhesion to the print drum.

LFP (large format printer)

Large format printer is a printer with a print width between 17" and 100". Large format printers are used to print technical drawings, posters.

Media

Anything and everything that a large format printer can print on.

Printer recyclability

Printer recycling involves processing old large format printers (waste) into new products to prevent waste.

Single footprint

The scanner and print engine of the large format printer are integrated. This is also referred to as a multifunctional large format printer.

Toner

Toner is a powder used in laser printers to form the printed text and images on the paper.

Printer upgradability

The ability to expand your large format printer by adding for example a scanner, a folder, additional paper rolls, and working memory.

Beyond the Ordinary



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