

4 Major Considerations for Buying a UV Printer



The decision to purchase a UV printing solution is a significant one, and it often comes with a lot of questions.

You may already have experience with other technologies such as pad printing or sublimation — or maybe this is your first step into the printing world. Regardless of your current level of experience in the printing industry, with the right information, you can easily find the perfect printer for your needs. In this ebook, we'll highlight the most critical factors in UV printing, so you can feel confident in making the right decision for your business.

The Power of UV Printing

With its stable and proven technology, UV direct-to-object printing has expanded business capabilities in recent years. Advancements in core printing systems, head technologies, ink chemistry and software have lowered prices while delivering advanced performance and increased integration capabilities.

These printing systems can print directly to a wide array of different objects, form factors and material types, and they deliver many benefits to owners:

- Convenient in-house printing
- Low-cost short-run printing
- Affordable, custom production
- Potential for high profitability

As a business owner, you need to understand the initial investment and total cost of ownership (TCO) in order to generate the maximum return on your invested capital (ROIC). To help you do this, we'll explore the four pillars of UV printing solutions that could affect your buying decision — and ultimately help prepare you for production.



4 Pillars of UV Printing

While the printer itself is central to the product offering, the quality and effectiveness of the overall solution relies on a combination of many factors. These factors include the printer design, software capabilities, ink quality and compatibility, support and maintenance.

1

THE PRINTER

2

THE SOFTWARE

3

THE INK

4

THE PRODUCTION SUPPORT



1

The Printer

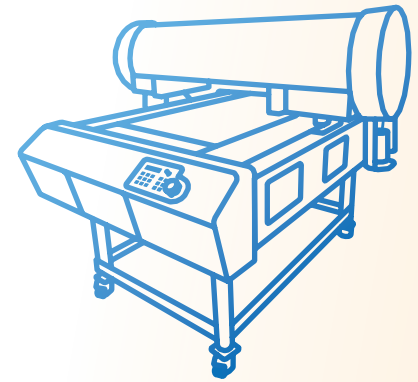
The printer you choose should be capable of creating a high-quality print on most common items. Most UV printer manufacturers will produce printed samples for you, upon request, using your materials. In addition to print quality, there are some distinct aspects of printer construction to consider.

Quality of Build

Most infrastructure components central to printer operation are subject to repetitive stress under continual use. Ensure your selected vendor manufactures a printer with industrial-grade materials, opting for metals and composites instead of plastic parts. Core components include the print rail, chassis, carriage, and also drive belts and motors. Plastic components will wear faster over time and are even more susceptible to corrosion from uncured inks.

Head and Control Technology

Print head capabilities translate directly into the print quality and speed of the printer output. Printer designers consider several factors related to ink throughput and head capabilities when designing the machines. One key factor to consider is variable dot technology. Most printheads support some variable dot options, delivering the ink in a varying combination of drop sizes. Still, you must ensure the system can easily allow the operator to change drop sizes and configurations to maximize the quality of the output for a particular application. Additionally, advanced head control (AHC) capabilities can lend you the ability to use a smaller portion of the full head to produce a print. AHC is especially useful when performing high-precision images, such as a full-wrap on a very small diameter object using a rotary attachment.



Design Architecture

Your selected printer should run efficiently with few problems, but at some point, you may have to replace key components in the printer. Purchasing a printer with an open architecture that allows for simple replacement of standard parts, without the need for a costly technician onsite visit, can provide longer-term cost savings and a faster path to a resolution if problems occur or if customization is needed.

Warranty and Serviceability

The warranty term is a critical factor when assessing TCO, as costly repairs can strain profitability. All major manufacturers will offer at least a one-year warranty on new printers, but longer warranty terms have become common with some of the more aggressive brands in the UV space. In addition to the warranty term, assess what the warranty covers and excludes. Some of the more expensive components in the printers, such as the print heads, are often not covered under warranty, so it is also essential to understand the recommended replacement schedules for these components.

Maintenance Schedules

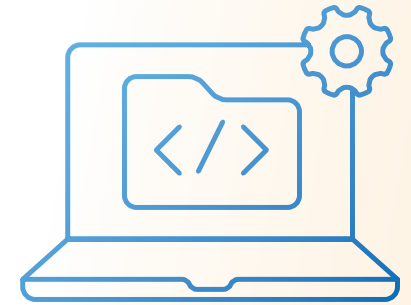
The factor that usually contributes most to increased uptime and printer longevity is adherence to the manufacturer's recommended maintenance schedules. Neglecting proper maintenance can lead to downtime and costly repairs, as failure to follow manufacturer-published maintenance schedules may also void warranties. Maintenance schedules are a mandatory and essential part of printer ownership. Review recommended maintenance schedules, tasks and their associated costs. Maintenance time, as well as consumables costs, can affect productive time and, in turn, your profitability.



2

The Software

Printing software works with your selected printer to produce a variety of outputs to meet your needs. The degree of output performance in part depends on the software compatibility of the printer you choose. Here are some software considerations to keep in mind.



Raster Image Processing (RIP) Software

This software will perform several critical functions in the printing process. First, it prepares your artwork for printing on the UV Printer through rasterization. It then allows you to size and place the art relative to the object you are printing. This process of template-based printing uses a template to show you where to place the item on the printer and then places the art relative to the template with extremely high precision.

The Raster Process

Understanding image input capabilities will help you understand how a UV printing system and its accompanying software can fit into existing production environments. It is essential to note the file types that RIP software will accept natively, without the need for exports or third-party conversions. The RIP you choose should take as many standard image types as possible, including those from the most common proprietary imaging and graphic art programs. Additionally, the system should read and process any embedded color data from these common input file types.

Color Gamut

Color gamut refers to the range of colors that your printer can achieve. This is a function of both the ink and the software used to profile the system. Most UV printer systems will include a color profile explicitly designed to match the ink limits and colors to the printer capabilities. More advanced RIP software systems will integrate with common photo spectrometers and allow you to generate your profiles or even run your color management program.

Template Printing

Template printing is usually a three-step process: Placing the object on which you will print on the printer, placing the art in the software relative to the object placement and executing the print. Take the time to review the software interface to ensure it is powerful, flexible and intuitive when it comes to this form of printing. Online or web demonstrations of the software can be a valuable tool for you in your decision-making process.

Color Management

Building a comprehensive color management program is an option for you with the more reputable UV printer and RIP software brands. However, profiling and becoming an expert in advanced color management is unnecessary if your vendor provides high-quality print profiles out of the box. One possible consideration, however, is color matching. If you work with major brands that require color precision, you may have to perform color matching. To do this, you will align your image inputs with the printer output to generate a specific and repeatable color match. The more capable RIP software offerings will make this straightforward and even offer advanced features that can streamline the print operations.

Layering and Texturing

Most reputable UV printing systems provide some level of ink system configuration and layering. Ensure that your chosen RIP provides for changing ink orders and performing advanced layering techniques, such as reversing ink orders and printing multiple layers of ink to generate effects or create textures. Using many layers in a single pass print can generate textures and tactile effects for a variety of applications, from art to signage.

Production Workflow

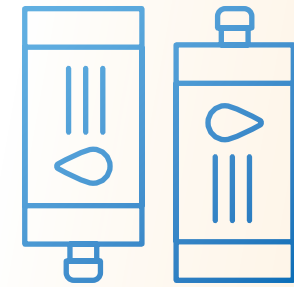
Efficiently integrating a new system into your existing workflow will maximize your immediate returns. Even if you are a startup with minimal current systems, the workflow can be a critical factor in your decision-making process. Ensure the software and hardware that accompanies your printer includes at least some basic workflow capabilities to make the printing process most efficient for your print operator(s). Additionally, the vendor partner you choose should understand how their printer functions and guide you by integrating their printer into your established production processes.



3

The Ink

Ink chemistry is developing rapidly, and these advances lead to increased color gamut, shelf life and durability on a broader array of materials. Additionally, as new ink formulations emerge that are explicitly designed to match emerging head technologies, ink performance improves and extends printer component longevity.



Cost and Delivery Systems

Don't make the mistake of comparing ink cost only on a per-liter basis. Different printers manage ink in different ways. Some manufacturers employ more complex recirculation systems that take manual steps out of the process but require costly components that wear over time. These systems can also waste quite a bit of ink in the process by eliminating a portion of the ink during the recirculation cycles. To accurately compare ink costs between systems, look beyond list price and investigate the actual cost per square inch to produce a quality print over the life of an ink set. This cost should account for the ink wasted in the recirculation and cleaning processes.

Ink Durability and Treatment

Porous substrates such as wood, stone and many plastics will exhibit very high adhesion with UV inks, lending to print longevity. Some metals and higher-density plastics, glass and other smooth surfaces will typically accept ink but may require pre- or post-treatments for maximum durability. Consult with your prospective vendors to understand suitability for your

particular applications and additional steps that may be necessary to ensure a durable print. Additionally, if your printed products will be exposed to environmental conditions, test your samples appropriately to ensure the ink achieves your desired level of durability and resistance to the elements.

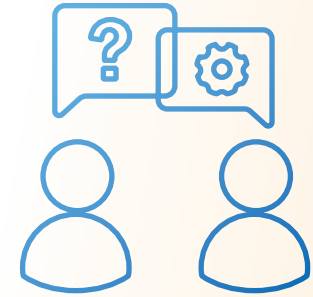
System Ink Capabilities

All current UV inkjet systems employ a CMYK (cyan, magenta, yellow, black) standard for producing color outputs. Unlike some legacy print systems though, UV systems also offer white ink, providing a normalizing under-base to present colors accurately on different colored objects. Primers, glosses and other ink offerings can be added to systems to increase durability, provide protective coatings or enhance print effects. Additionally, different ink chemistries can provide enhanced ink performance for specialty applications, such as prints on flexible materials. Review your prospective vendor's ink offerings and discuss the system compatibility and ink layering capabilities to ensure a robust and extensible solution that's suitable to the breadth of your product line.

4

The Production Support

It's important to assess the overall design of a printing solution and determine how it will fit into your production system. Primarily, ensure your vendor can help you to produce your desired output with both precision and repeatability, and support their solution effectively after implementation to ensure continued uptime.



Support

Most UV printer manufacturers will claim to have top-notch customer support. The best way to verify this is by reading online reviews and speaking to other companies who use the products and vendors you're considering. Most reputable companies will be able to provide references within their current customer base who can speak to the responsiveness and effectiveness of the support mechanism and also to the performance of their overall printing solution.

Consultative Approach

Manual setups and retooling between jobs can substantially affect productivity and profitability. Your prospective vendor should be able to guide you through the most efficient manner of setup and production workflow to match your products and your work environment. As part of the evaluation and installation process, they should be able to provide specific feedback to the overall productivity, ink consumption, tooling time, and other factors that can impact profitability.

Supply Chain and Parts Availability

Ensure that your vendor has direct access to all critical printer components and can provide them to you quickly should a problem occur. In the unlikely event that an industrial motor or circuit board burns out under typical operations, you need to ensure that you can receive replacement parts quickly. Operator mistakes can also lead to machine damage, requiring parts replacement. Sometimes these can even be vital physical components of the machine that, if unavailable, could lead to extended downtimes and loss of production.

Environmental Effects

Your service provider will understand the operating requirements for any prospective printer and ensure you can align your work environment with those requirements. UV printers contain electronic components subject to damage from intense temperatures, liquids or even excessive dust and debris. If your production environment is too dusty, hot or humid, frequent maintenance is more critical than ever. You may even consider an advanced filtration system to reduce airborne debris that could affect printer performance or longevity.

Scalability

The print solution you choose should be capable of scaling as your business expands. As your programs develop, you may add additional printers, like larger printers or those that perform specialized functions. Ensure that your prospective vendors can provide and support a wide array of print capabilities and that your software backbone can integrate multiple systems with relative ease. Additionally, inquire as to the trade-in and trade-up programs available to you. Many companies will scale with additional machines, and some choose to upgrade to larger or different devices. Your partner should be able to help you with either.

Resources and Self-Service Options

Downtime is an unfortunate reality of any physical system, regardless of the quality of build and support. The inevitable often occurs at the most inopportune times, after business hours or on weekends when live support resources are typically unavailable. Your preferred vendor should provide a robust set of self-service tools to help you recover from issues on your own. Additionally, educational and training resources are invaluable when trying new techniques or developing new product offerings or production methods. A solid set of self-service support resources, combined with a printer designed for efficient repair or replacement of parts, will help keep you in production even when a challenge occurs after hours.



Getting Started

As you can see, considerations for UV print solutions extend far beyond the physical printer itself. To make the best selection, you must identify a reliable option capable of delivering consistent performance, capitalizing on investment dollars, and scaling with your business. This can all be achieved by thoroughly planning your implementation and matching the machine and its workflow capabilities to your defined business requirements.

Beyond setup and selection, your vendor should be capable of providing responsive support and assisting you in reducing downtime and increasing productivity. When all of these factors align, you'll have a powerful UV printing solution that will go the distance for your business.



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