

Determining ROI and Profit Opportunities in Wide-Format Printing

With sustained year-over-year growth in the sign and display graphics business, wide-format digital inkjet printing remains a strong and attractive profit opportunity for printing companies. Many print providers are bolstering their product offering with wide-format inkjet to expand their existing customers' marketing mix into signage and large graphic applications, while others seek opportunities to capture new customers with the capability and capacity to produce high-quality, high-margin graphics on demand.

Acquiring a new digital inkjet printer, however, is a significant investment that must be closely examined. It is important to analyze the real costs of a wide-format printing device, how it will impact your return on investment and, ultimately, drive profitability.

Factors That Will Impact Your ROI and Bottom Line

The first step involves evaluating the current state of your business and your existing production platform(s). If you're like many print providers, you likely have some form of digital inkjet, or perhaps you already are an all-digital shop. But all digital output devices are not created equal. There are a number of considerations when selecting

wide-format equipment or determining whether to upgrade your existing fleet. Several high-level factors will affect your investment decision, including:

- Hard costs
- Ink factors
- Capacity/Volume
- Environmental considerations

Hard Costs are Just the Beginning Acquisition Cost

For many businesses considering a major investment, the natural inclination is to look for the best deal. But just like a vehicle purchase, the least costly option is not always the best investment. Your return on investment (and ongoing profitability) is based on more than just initial cost. When looking at wide-format inkjet printing, consider the types of jobs you will produce, how many square feet per hour you'll need to print, the quality of the output, how many colors are available and what types of inks are used. All will factor into the decision about which printer(s) to purchase.

The most important overriding factor in a decision of this nature, however, should not be how many square feet per hour you could produce, but *how much profit you can make selling each square foot.*

While printer throughput is an important factor to consider, production capacity you won't use or will have to heavily discount will erode the value of your purchase. This calculation leads to a discussion about how many hours of production per day or per week are required to achieve a reasonable return on investment (ROI). Ensure that the equipment pays for itself quickly based on a level of work you can reasonably expect to win.

Let's take a look at a conservative example of an ROI calculation that you can use as a basis for building your own analysis.

ROI Example

An entry-level (to production printing) UV hybrid (roll-to-roll and flatbed) printer with low operating costs, CMYK plus standard white ink, and variable drop grayscale capability can produce up to 455 square feet per hour on flexible and rigid substrates up to 65 inches wide and 1.8 inches thick. With this as a backdrop, take a look at Table 1 for a realistic ROI analysis with this type of printer as a basis.

Profit for printed output ranges from one to three dollars per



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It's important to develop this as an expanded matrix and attach a financial benefit or deduction for each feature/function as it pertains to your business needs. This method will ultimately tell you which device will drive profitability and the growth you've built into your business plan.

square foot for a mix of rigid and roll media, according to insight we have gained from customers using the device. As you can see from the calculations in Table 1, break-even for covering the 36-month lease payment is as low as 58 square feet per day (172 square feet per day if the average profit is one dollar per square foot). This is calculated based on a single shift, 20 days per month. It means that the break-even point can be achieved with less than one hour of production per day; any production over that volume goes directly to the profit line. In this example, profit equals sellable price less the cost of substrate and ink.

As you examine a potential purchase, you can create a similar model, comparing various options on an apples-to-apples basis. It's important to develop this as an expanded matrix and attach a financial benefit or deduction for each feature/function as it pertains to your business needs. This method will ultimately tell you which device will drive profitability and the growth you've built into your business plan.

Ink Costs

Ink cost should be measured per square foot rather than per liter since the actual cost of ink used is a critical factor in the profitability of the operation. The price you pay per bottle, liter or ounce won't tell you the whole story on your profitability per print.

	36 Months	60 Months
Interest Rate	7.99%	8.1%
MSRP	\$115,000	\$115,000
Payment/month	\$3,609.85	\$2,349.45
Payment/day	\$174.90	\$111.88
*Sellable feet ² /day	58 - 172 ft ²	38 - 112 ft ²
**Hours/day	.6 - 1.7 hrs.	.4 - 1.1 hrs.

Table 1: **Hours per day calculation is based on printing in high quality mode at 80 percent utilization.

The type of ink used — aqueous, solvent or UV-curable — also plays into the overall picture in terms of ink consumption, production time, durability, application range and environmental considerations. For example, UV-curable inks quickly cure, or set, and are immediately dry and ready to move to the next step in the production process. This makes them durable and ideal for printing on the

widest range of flexible materials, as well as direct-to-rigid substrates. UV-curable inks offer many environmental advantages, too. However, UV inks are not the only or best answer for every application, so do your homework and understand how ink type impacts your application's scope.

Substrates

The mix of substrates for your new printer also is an important consideration. Do you want to print on flexible, direct-to-rigid or both? Your answer will narrow your search for the right printer platform.

As you examine specific printer technologies, factor in the sell versus buy price of your desired substrates. You can leverage more margins by reducing your substrate cost based on the technology you select. For example, UV allows you to use non-coated substrates, which generally cost less and will allow you widen your profit opportunity.

Also, consider if weight is an issue. This is often the case if materials are being shipped and you or the client wish to reduce overall freight costs. Some printers offer LED curing that allows for the use of lighter-weight or heat-sensitive materials that can save you cost and your customer shipping fees. Sometimes, the advantage to your customer will not just be financial; he or she may be interested in reducing the carbon footprint associated with shipping.

The ability to print on heat-sensitive materials also opens the door to different applications with films and inexpensive boards that would otherwise warp or buckle during printing. Compared to other curing and drying methods, LED tends to require less energy, which adds up to real, and sometimes substantial, savings in operating costs.

Take waste into account as well. Consider the amount of material waste you might normally expect to produce, and the relative cost of substrates you can use.

Finishing

A print is not a product until it is finished! There are many finishing options for signs and display graphics, including various types of cutting, laminating and mounting devices. For instance, with a hybrid or flatbed printer, you can print directly on rigid substrates, taking time, cost and potential waste out of the finishing process. If you are upgrading or adding equipment — e.g., moving from primarily solvent roll-to-roll to a UV-curable hybrid or flatbed printer — there are different finishing implications that must be considered.

Consider your complete workflow carefully. You can often improve ROI and delivery time to customers by making finishing purchases in parallel with the printing device. The combination will often free up additional production time, reduce overtime, and allow more just-in-time (JIT) output, further driving profits. One of the increasingly important factors to end-users/print consumers is speed of delivery (not speed of print). Proper workflow planning can help make turn round time a for-profit sellable feature to the customer.

Also keep floor space needs in mind, and how you can maximize your available square footage. Is it a better decision to acquire a flatbed device printing full sheets of material or a hybrid device with a cutter or router? Again, don't make the printer decision in a vacuum. When working with finished goods, you must carefully consider your workflow, labor factors and time to market.

How Ink Factors Into Profitability

Ink Usage

From a quality and ink consumption perspective, you must consider the type of inkjet printhead technology. With piezo drop-on-demand inkjet printing, there are three primary types of heads (Figure 1):

- Binary: A single drop size is ejected from the printhead. These heads can simulate grayscale with multiple passes, but consume more ink in doing so
- Variable Drop: Some piezo heads produce different size drops, but only one size per image. These printheads are not capable of dynamic drop volume changes.
- Variable Drop Grayscale: These printheads are capable of ejecting different size drops dynamically within the same image.

The use of variable dot sizes within the same print (variable drop grayscale printing) results in near photographic image quality that exceeds that printed with a binary drop or using light colors.

The use of dynamic variable drop grayscale also uses dramatically less ink when compared to binary or variable binary heads. In the RIP, you can manage the ink laydown, and, therefore, better manage your ink volumes on a job-to-job basis.

Also consider the ability of the RIP platform to control image color, contrast and ink laydown. These factors will help you optimize the quality your customers require with your profit targets.

Ink Types

The type of ink used in your wide-format device drives job turnaround times to your customer. As mentioned earlier, graphics printed with UV-curable inks are immediately dry and ready for the next step in the production process, while aqueous, latex and solvent printing often require heating or more drying time for a proper cure. Aqueous inks are not waterproof and require an overcoat or lamination in the process if the finished graphic will be installed outdoors.

The electricity to run these heaters or special drying equipment will drive your power consumption costs up, and may require you to run your HVAC system year-round if you have heaters running constantly.

Finally, consider your substrate/application use. If you want to produce vehicle wraps, for example, you may be looking at solvent technology and need to factor in the cost of the required ventilation system.

Another consideration is whether the printer offers white ink. Having the capability to print white ink means you are able to use a broader array of substrates, including transparent and dark material, and increases the type of work you can add to your service offering.

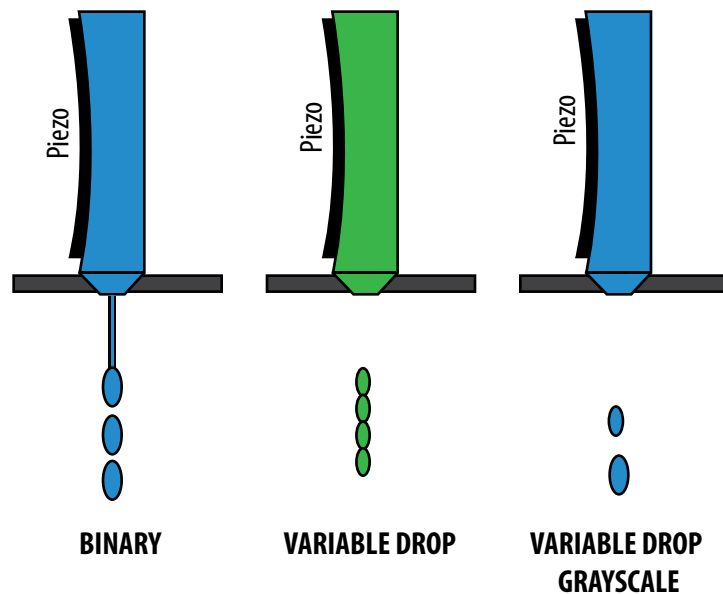


Figure 1

White Ink

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The Rest of the Story

Once you establish an ROI calculation, take a closer look at the actual production workflow in your location. What does an average day of production look like? Is it eight hours of printing and four hours of finishing? Examine the actual capacity of the printer: How much can you reasonably print in a shift, and how does that capacity level meet the growth objectives for the business?

Consider burst capacity needs as well — how often do you anticipate getting large jobs? If it is often, it may mean your purchase decision should lean toward a higher-volume printer. If you have yet to establish a track record in large-format digital printing sales and large orders are not an immediate concern, your best bet may be adding a lower-volume device while striking up a partnership with another SGIA member that can take on overflow work as needed.

In thinking about volumes and throughput, think through the end-to-end process, not just the raw speed of the machine. Finishing time, as mentioned above, is important to consider, as is drying time depending on the type of print technology you choose. Beyond that, consider file processing: How long does it take to RIP a file and begin printing?

Environmental Considerations

Today's UV-curable wide-format printers are quickly replacing solvent printers for many applications. Part of the reason for this is the reduction in the amount of noxious chemicals required. A UV-curable printer offers a safer, healthier workplace. You may also find that there is less material waste with UV-curable printing, especially for rigid materials produced using a flatbed that might otherwise need to be mounted. These environmental considerations are becoming increasingly important, and should be taken into account when making your purchasing decision.

As stated above, UV-curable printers that use LED curing also use less energy and can reduce the amount of substrate required by using thinner heat-sensitive materials. This reduces your overall environmental footprint when considering the weight of materials, the carbon footprint for transportation and the amount of energy consumed by the printer.

More Profit, More Opportunity

The latest generation of wide-format inkjet printers offers many advantages to producers of signs and display graphics.

New capabilities open the door for new applications and increase the opportunity for more profitable margins.

G. Scott Wood is the EFI Wide Format product manager. For information on EFI Wide Format printers and EFI VUTEk superwide-format printers visit www.efi.com/wideformat or www.efi.com/vutek.

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