SGIA | New to Wide-Format Series

Going Wide: 4 Steps to New Im-

4 Steps to New Imaging Opportunities



Step 1:Understanding Inkjet Systems



Step 2: Pricing & Profitability



Step 3: Exploring Top Products for Wide-Format Imaging



Step 4: Allocating Your Workforce

SGIA New to Wide-Format Series

SGIA's New to Wide-Format Series presents the wide-format graphics industry in four informative white papers, each designed to help your company adopt and prosper with wide-format inkjet technology. The series includes:

Step 1: Understanding Inkjet Systems

Because of the many ink options offered, it's important to consider all the factors when selecting an inkjet printing system.

Step 2: Pricing & Profitability

The margins on specialty production are considerably higher than the margins on conventional printing.

Step 3: Exploring Top Products for Wide-Format Imaging

Wide-Format Imaging is more than just banners and posters.

Step 4: Allocating Your Workforce

A look at some of the roles you'll need filled in your Wide Format business.

Step 1: Understanding Inkjet Systems

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Digital inkjet technology, like any other technology, is continuously evolving. To someone starting out in the digital wide format industry, this can be exciting intimidating at the same time.

Baseline

To start, consider these factors:

- 1. It's important not to underestimate the print head and its capabilities. The quality of the print produced, and the speed at which it is printed, will be only as good as the capabilities of the print head.
- 2. Ink options are dependent on many factors, including:
- The manufacturer
- · The model of printer
- · The type of inkjet head used in the printer

Let's Lay it Out

There are five major ink systems available for roll-to-roll and flatbed inkjet printers on the market today. These include:

- Aqueous (water-based)
- Eco-solvent
- Solvent
- UV curable
- Latex

The following ink system descriptions and unique characteristics should help guide your purchasing decision.

Aqueous (Water-Based Inks)

- Primarily derived from 70-90 percent water, aqueous inks have a small amount of a milder solvent so that the ink will adhere to the media.
- This ink can be dye-based or pigment-based. Dyes are generally more vibrant than pigments, but the color will fade faster than pigments.
- Mostly used for retail point-of-purchase, short-term outdoor prints, and indoor prints and backlit materials.
- Have a relatively clean handling process.
- Longevity is good indoors when un-laminated, and is extended with hard lamination for outdoor use from six months to one year.

Considerations for using aqueous-based inks:

- Typically must go through a laminate finishing process in order to protect for extended indoor and outdoor use.
- Using aqueous inks requires a coated print media for acceptable imaging.
- Limited availability: currently, aqueous-based inks are found only in roll-toroll printers and select board printers.

Mild Solvent Inks

These ink systems do emit volatile organic compounds, or VOCs, into the air. Several states, most notably California, regulate emissions from digital

Step 1: Understanding Inkjet Systems

- printing operations, regardless of type of solvent ink system used. It's important to check with state regulations to see if any appropriate measures need to be incorporated.
- Tend to have a low odor during production.
- Longevity of vinyl banners imaged with these inks ranges from one to two years un-laminated or longer depending on location and laminating options.
- For worker health and safety, ensure there are sufficient air exchanges to
 mitigate exposure to solvent fumes. Appropriate personal protective equipment
 should be worn as recommended by the manufacturer of the ink system used.

Considerations for using mild solvent inks:

- May emit hazardous compounds (VOC) in the air, even if they are not classified as having VOC content. The variety of in-state regulations means these inks could be classified as having VOC content in one state but not in another. It's important to check with state regulations to see if any appropriate measures need to be incorporated.
- The "eco" in eco-solvent originally referred to its economical price rather than the ink being "ecological" or "environmentally friendly," which the ink may or may not be. These inks generally contain glycol esters or glycol ether esters, which are both derived from mineral oil. Other eco-branded inks may have an acetone-based solvent or other non-VOC type solvent. These solvents are not designated by the Environmental Protection Agency as generating VOC content and are exempt from such regulation.

Solvent Inks

- Commonly regarded as the most economical inks for digital printing today, in terms of equipment costs and maintenance expenses.
- Solvent inks are available from many manufacturers.
- Less expensive per liter when compared to UV curable, but more of the solvent ink volume is solvent, which is evaporated into the environment.
- Produces highly durable outdoor prints.
- Uncoated media is less costly than coated media, which is needed for aqueous inks.
- Well suited to printing on soft and compatible flexible materials. Solvent ink can be used on low-cost, uncoated materials, such as vinyl, fabrics and banner materials.
- Longevity of vinyl banners imaged with these inks ranges from one to three years un-laminated; or longer depending on location and laminating options.

Considerations for using solvent inks:

- For printers using conventional solvent inks, appropriate ventilation systems and use of personal protective equipment should be evaluated to safely and effectively manage solvent vapor fumes in the workplace.
- These ink systems emit volatile organic compounds, or VOCs, into the air.
 Several states, most notably California, regulate emissions from digital printing operations, regardless of type of solvent ink system used. It's important to check with state regulations to see if any appropriate measures need to be incorporated.
- Solvent prints need to "outgas" several hours before laminating. Outgas
 is the release of organic solvent vapors that continues for some time after
 printing has concluded.
- Increased VOC emission legislation in North America and Europe could impact the future use of these inks in the international marketplace.

UV-Curable Inks

- More versatile in terms of what they can be printed on: Rigid substrates, such as board product, plastic, glass, wood, ceramics and metal.
- Can help achieve fast production because there is no "wait time" for prints to dry.
- Savings on production costs because of great media versatility, despite having up front equipment costs that are higher than other digital printers.
- Print heads clog less in the parked position because these inks are not evaporative in nature.

Considerations for UV-curable inks:

- Tend to be more expensive than other ink systems
- True flatbed UV printers have a less flexible ink set than Hybrid flatbed printers, which need flexible ink for the roll-to-roll option
- Not all UV inks share the same adhesion qualities to various substrates
- UV ink handling and cleaning requires gloves; people can become sensitized to UV ink from handling.
- Requires UV lamps on the print heads for the purpose of ink curing. The UV lamps must be changed out periodically. Newer LED UV lamps have lower electrical costs and last many times longer than mercury halide lamps.
- High-energy consumption for mercury vapor UV lamps used in some UV printers.
- The use of hard lamination is not possible due to the height of the hardened UV ink
- These inks are considered a non-VOC ink product and are often not subject
 to regulation by state environmental agencies. It is still important that you
 check with your state agency to see if any appropriate measures need to be
 incorporated.
- Evaluation and appropriate use of personal protective equipment should be incorporated into your facility's operations. Use of protective eye wear, safety glasses, to mitigate exposure to UV lights and use of gloves to reduce possible dermal exposures.

Latex Ink

- Latex is a term used to describe a water-based dispersion of very small latex polymer particles.
- The in-printer curing process (heaters) evaporates the water-based ink
 components and causes the latex particles to coalesce into a durable film
 that encapsulates the pigments and bonds to the print media.
- Prints have high-stretch performance and conformability.
- Latex ink printed onto textiles exhibits good adhesion.
- Some of these ink systems do emit volatile organic compounds, or VOCs, into the air. Several states, most notably California, regulate emissions from digital printing operations, regardless of type of solvent ink system used. It's important to check with state regulations to see if any appropriate measures need to be incorporated.
- As with all ink systems, evaluate and implement proper use of personal protective equipment when handling these systems.

Considerations for using Latex inks:

- Only currently available from a limited number of printer manufacturers.
- Substrates are heated for printing and high heat is used for curing/drying the substrate.
- Energy costs of the drying system need to be accounted for.
- Media stretching may occur due to the high curing temperatures.

Step 2: Pricing, Margins & Profitability

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If you are struggling with pricing models for your wide-format business, let's start with some basic tips to help get you in the right mindset:

1. Forget the past

If you have experience with other print-pricing models, such as those used for litho or digital document printing, do your best to ignore them. They don't apply to wide-format digital imaging. Document printing models are based on longer run lengths and other production priorities. We've heard numerous stories of imagers new to wide format initially undercharging because they were using pricing models created for conventional printing.

2. Reconfigure your overhead

With wide-format imaging, you need to consider all aspects of your overhead, such as order entry and equipment maintenance for print runs as short as a single print. The margins on specialty production are considerably higher than the margins on conventional printing.

3. Consider your product's "unique value"

Consider the value of the completed product in the marketplace. The capabilities of wide format are so diverse, and the markets served are so different, that a single, common pricing structure isn't practical. Will a single banner and a fine art print have the same margin? Unlikely. Some imaged products have only slim margins, while other products easily drive 40–70 percent margins. In fact, some products have margins exceeding 100 percent.

4. Research, research, research

Developing your pricing strategy takes research. You'll learn best from your own experience. To get started, get cost estimates from manufacturers and suppliers, as well as other imagers. Know what the competition charges for products similar to those you plan to produce. And evaluate the value you are providing the customer.

Return on Investment (ROI)

To determine your costs, you need to establish a return on investment (ROI) for your wide-format imaging system. Determining ROI will be a bit of a moving target, until you learn more about the costs associated with the process. But you should start with your best estimates and adjust accordingly. **Download a "plug-and-play" Excel spreadsheet version of this form from SGIA.org.** This form will help you estimate the ROI on your output device. You should also consider the costs and revenue associated with any finishing you might provide or sub-contract.

Factoring in all the Factors

There are several factors to consider when calculating financial assumptions involving high-dollar digital output devices. These costs can be broken down into fixed costs and variable costs. Here's a basic spreadsheet to get you started.

Step 2: Pricing, Margins & Profitability

SGIA Wide-Format Equipment ROI Calculator

Εn	ter fixed costs				Example	
	Equipement purchase price		\$	-	\$ 10,000.00	
	Monthly capital equipment lease payment		\$	-	\$ 375.00	
	Employee costs per hour		\$	-	\$ 12.50	
	Monthly rent allocation for device		\$	-	\$ 375.00	
	Monthly electrical costs when operational		\$	-	\$ 25.00	
	Maintanace /service agreement per month	1	\$	-	\$ 75.00	
	Marketing and sales allocation		\$	-	\$ 950.00	
	Administrative cost allocation		\$	-	\$ 950.00	
En	ter variable costs					
	Price of Ink per square foot		\$	-	\$ 0.75	
	Price of substrate per square foot		\$	-	\$ 1.25	
En	ter sales and production estimates					
	Sales price per square foot		\$	-	\$ 20.00	
	Sellable total square feet including scrap			-	300	
	Production time in hours			-	120	
RΕ	SULTS:					
M	ontly revenue		\$		\$ 6,000.00	
М	onthly Expenses					
	Equipment		\$	-	\$ 375.00	
	Maintanance		\$ \$ \$ \$ \$ \$	-	\$ 75.00	
	Ink		\$	-	\$ 225.00	
	Media		\$	-	\$ 375.00	
	Labor		\$	-	\$ 1,500.00	
	Overhead			-	\$ 2,300.00	
		Total expense	\$		\$ 4,850.00	
Gr	oss profit		\$		\$ 1,150.00	

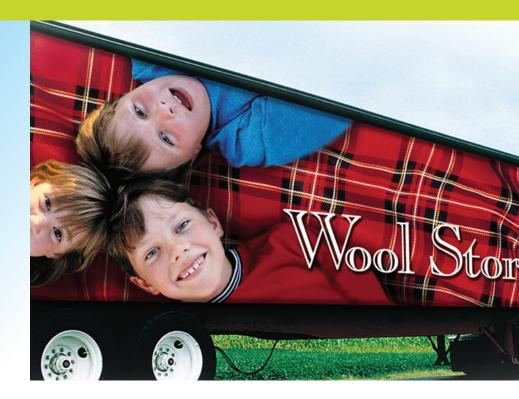
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Download a "plug-and-play" Excel spreadsheet version of this form from SGIA.org, search on "ROICalculator."

With wide-format imaging, you need to consider all aspects of your overhead, such as order entry and equipment maintenance for print runs as short as a single print. The margins on specialty production are considerably higher than the margins on conventional printing.

Step 3: Exploring Top Products for Wide-Format Imaging

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Wide-Format imaging is more than just banners and posters — the versatility of the industry can be overwhelming. Let's examine the media, inks and finishing that go into constructing these inkjet-printed products.

Flexible Indoor Prints (POS/POP)

Commonly referred to as point-of-sale (POS) or point-of-purchase (POP), these graphics are typically not mounted to a rigid substrate. They could be grocery store hangings or presentation graphics that need to travel rolled up for a meeting. They are also used in traveling banner stands or other fixtures.

Media can range from papers to plastics or films, textiles and semi-rigid substrates. The media used is more dependent on the client's needs and proposed look of the graphic. All of the ink systems can be used (water, solvent, latex and UV curable), depending on the duration and location of display. Typically POS /POP prints are not mounted to a rigid substrate. Flexible presentation prints may be either hard laminated or liquid laminated. There are also solutions for printing where no laminating is required, depending on the graphics location and duration of display.

Backlit Displays

Backlit display is a method of enhancing graphics by lighting the image from behind, which then displays the advertising message more clearly to the viewer. You've probably seen them in airports, at the mall or a bus stop. These can be imaged by inkjet water, solvent, latex or UV inks or by using photographic imaging devices.

Backlit materials matched for your printer's ink set is the best choice, as they provide the best light transmission and color balance for display purposes. Backlights can either be produced using front imaging onto white film or paper, which is then laminated, or by using a product that can accept an image printed reverse on the backside. There are many other media options available (Photo based inkjet, white film, translucent vinyl, etc.), but experimenting may be in order to achieve optimum results. Different light boxes have varying degrees of illumination; check your output and test at the actual brightness levels to look for optimum density.

For a long-term display, the best ink choices are solvent, latex, or UV curable. Water-based inks will also work for a short duration backlight printing.

Step 3: Exploring Top Products for Wide-Format Imaging



Retail POP Display



Retail POP, Featuring Backlit Display



Retail Store Front

Laminating the print is seldom necessary when it comes to backlit displays. There are exceptions if the display is doing double duty as an outdoor sign during the day and a light box at night. In that case, lamination will help to reduce fading over time. To face-mount a backlit print to a piece of Plexiglass or other material, use a pressure sensitive, optically clear adhesive, which is available from many laminate manufacturers.

Fleet/Transit Graphics

Vehicle graphics can be seen primarily as rolling advertisements on the sides of any vehicle on the road these days (think about Nascar and all those sponsor graphics). Mobile graphics get more viewings per mile than all other formats combined. Placements of graphics on all types of transit (buses, trains, cars and planes) are becoming a regular sight these days.

Dominating the media market for fleet/transit graphics is white, pressure sensitive cast vinyl with an opaque backing. It's dimensionally stable, suited for long-term (as long as three to five years) outdoor applications and/or irregular surfaces. It is the best option for long-term vehicle graphics applied directly to the surface of the vehicle. There are two major classes of vinyl for inkjet printing: Cast and calendered. Cast vinyl is better suited for irregular surfaces, as it is capable of conforming. Calendered vinyl, which is usually less expensive, is perfect for flat surfaces, and can be printed and cut easier. As far as inks, fleet graphics can be printed with solvent-based, latex and UV curable inks. To protect the product, laminate with either a matching vinyl over-laminate or liquid laminates.

Floor Graphics

Consider mobile graphics and take it in another direction: down. Floor graphics offer the opportunity

to place high-impact, short-term advertising where it is noticed most — on the floor. Floor graphics are frequently used for promoting products at point-of-sale, branding, large arenas, and also to guide people around malls, supermarkets and airports. A large floor graphic can also be seen from a greater height — like a higher floor of the mall, overlooking a food court.

Media used could range from poster grade paper to photo grade papers, vinyl or printable aluminum foil. **Additionally, all ink systems could be used for floor graphic production, including: Water based, solvent, latex and UV curable.** Graphics should be laminated on the front with a certified "floor graphic" laminate that is slip and scuff resistant. The graphic is then laminated on the back with a removable adhesive. There are

a number of manufacturers producing components specific for this type of product.

Wall Coverings

Wall covering are best suited for indoor posters, presentations, POS (point-of-sale) graphics, mounted prints, exhibition graphics, promotional displays, directional displays, subway advertisements, wall murals, small billboards, construction signage and concert promotions. They are also used as digitally produced wallpaper found in hotels and the entertainment industry.

Appropriate media includes most outdoor, wet-strength, or water-resistant paper that can be applied to walls either using wallpaper application materials or removable pressure sensitive adhesives.

Textured fire retardant vinyl is used for digital wallpaper and is applied using traditional wallpapering methods.

Wall coverings should be printed using solvent, latex or UV curable inks. Finishing can be either with hard laminates or liquid lamination depending on materials and environment.

Window Graphics

Window graphics can be as small as a business name on a glass door or graphics that cover multiple windows, forming a mega graphic on an office building. There is no limit as to what you can produce. Choices for media (depending on location and duration of display) include paper, vinyl and white film with opaque backer applied. The print could also be produced using a static cling film, which does not

require adhesive. Special window perforation materials are available that can be imaged on one side, and are black on the back, allowing workers inside the building to see outside. These graphics are adhered to the inside of the glass using a removable pressure sensitive adhesive. Inks that are suitable for window graphics include solvent, latex and UV curable. To finish the product, apply an optically clear, dual-purpose adhesive film to the face of the print, and a durable laminating film to the back if appropriate for the given media.



Floor Graphics



Vehicle Wrap

Vinyl Banners

Vinyl banners are great for indoor/outdoor banner applications, such as kiosks, exhibition graphics, street signage, building signage, shopping center displays, suspended ceiling installation.

The media to use includes most reinforced vinyl banner materials; smooth, opaque, and translucent materials that may also be used in typical banner applications. Another option for a banner is a textilebased product. These are ideal for short- to long-term applications depending on the chosen materials.

Images printed on vinyl banner materials must use pigmented inks, solvent-based inks, latex or UV curable inks. To hang the banner, grommets with corner reinforcements are recommended. Wind slits may be a consideration in finishing. Lamination can be either hard lamination or using liquid laminates.

Mounted Indoors Display

Mounted or rigid displays are the mainstay of modern advertising efforts. Every retail environment has a mix of display materials and substrates, which display various branding efforts.

Inkjet papers, vinyl, textile or film are all suitable media types. Direct printing onto rigid substrates, such as foamcore, gatorboard, aluminum, wood and other materials is also possible with flatbed or hybrid printers. All ink systems (water based, solvent, latex and UV curable) are suitable for mounted indoor displays. It's best to laminate with the appropriate method and material when graphic placement requires a higher endurance level.



You see them everyday — extremely large signs on a rigid flat panel or stretched over a billboard framework,

used for advertising everywhere and anywhere. Billboards can be found everywhere, not only for roadside advertising — they can also be found on buildings, truck sides and in urban centers.

For billboard signage that uses a framework to stretch vinyl, you can use any flexible vinyl banner, scrimreinforced banner, smooth, opaque or translucent material. These materials are typically in the 12-20 ounce weight range. Typically, these are imaged with a solvent-based, latex, or UV ink jet printers. In addition to billboards, these materials are also suited for building outdoor signs and some flexible truck signage.

Solvent-based inks, latex inks, UV curable are the best ink choices for billboard signage. Liquid laminates are used to protect and enhance the billboards longevity. Hard lamination equipment is not available over 80 inches in width.



Fleet Graphics



Custom Towel



Wall Coverings

Additional Ideas...







Window Graphics

Achieving production goals

Awnings

Backlit (illuminated bus stop signs, etc)

Banners

Bathroom tiles

Billboards

Building Graphics

Building wrap, covering unsightly construction and scaffolding

Business meetings, presentations to the Board (pie charts, bar charts)

Cafeteria menus, health notices

Classroom Teaching, charts, flip charts

cloth, even upholstery.

Clothing, t-shirts, caps, and more, via dye sublimation or direct printing

Coffee mugs

Commercial Signs

Concepts, seasonal and holiday themes (Christmas, Easter rabbits, etc).

Courtroom graphics, charts, statistics

Crime scene reconstructions

Curtains, drapes (you can print directly onto textiles or also via dye sublimation)

Custom wallpaper or murals

Customer appreciation (tips on how to accomplish)

Decoration, fine art giclee or photo-realistic images

Directional signs

Directories

Display of mottoes, logos for brand identification

Event signage, everything from advertising to directional help

Exhibits, displays

Fire safety notices, evacuation maps and notices

Floor covering (yes, you can even print on floor tiles of various material even rugs)

Floor graphics

Floor plans, locational maps of the building, campus or complex



General announcements

Hotels, Restaurants, Casinos

Identification

In stores signs can help sales, specials, bargains, prices, promotions, aisle markers

In-house training: charts, flip-charts

Kitchen tiles (ceramic tiles via dye sublimation)

Legal Graphics

Menus

Motivational posters,

Murals, especially entrance area and board room (make the boss happy)

Parking lot signs

Photos of all sizes

Plus all the same items you can print for home use, namely wallpaper, murals, curtains, table

Point of purchase (POP), which is also known as POS, point of sale

Pole signs

Recognition of achievement, such as "employee of the month"

Safety notices

Sails for sailboats

Signs and decorations on vehicles

Sponsor signs at sports events

Stage backdrops

Stage curtains

Table cloth

Theater Graphics

Trade shows displays

Traditional signs, backlit, floor graphics, promotions etc

Traffic accident reconstructions

Vehicle Graphics

Visitor welcome notices, sign-in procedures

Window displays and backdrops



Vinvl Banners

Window Graphics



Mounted Indoor Display

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Golden Image Competition Gain immediate international acclaim with your free entry in SGIA's esteemed Golden Image competition. Winners are formally recognized among their imaging peers in the Golden Image Gallery at the annual Expo.		✓

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Marshall Atkinson, Visual Impressions



SGIA provides members with the tools and information needed to make the best possible decisions for their business.

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Step 4: Allocating Your Workforce

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Let's take a look at some of the roles you'll need to fill in your wide format business.

Brand New Baby

New businesses should keep a sharp eye out for efficient multi-taskers for startup personnel, who initially may be responsible for multiple functions in the printing process. The wide-format printing industry needs workers who can process customer files, print jobs, operate the printer(s), do quality checking (proofing) and perform finishing tasks if necessary. Depending on the size and nature of the initial business model, any combination of job functions may be performed by any number of individuals.

Adding to The Family

Wide format digital is very different than document printing. The aspect of each job can be unique in its characteristics. The correct media has to be loaded by hand for roll-to-roll printers or flatbed sheets. For flatbed printing the media might need to be cleaned, media thickness checked, nozzles checked, file size confirmed, cut path registration marks applied or not. This is the opposite of press runs, where longer runs and spot checks are the norm. Workers with efficiency, an eye for detail and dedication to knowing what's going where are ideal.

Evolving Job Roles

When bringing wide-format inkjet printing to your business, your current workforce might need some rearrangement. New equipment usually means new workflows and methods. Depending on the digital equipment purchased, personnel can either be moved to a new position, or existing persons who have knowledge can merge the new job responsibilities with their existing ones. Whether you move people or merge job functions depends on how you run your business and the personnel in your company. The following job functions reflect some of the detailed tasks wide format imaging companies find essential.

Digital Production Management

- Develop a solid project management process for delivering world-class digital content on time and on budget. Develop timelines, schedules and processes for production control.
- Manage development of in-house or external production team.
- Ensure the integrity of the online systems and information through implementation and maintenance of established system management practices, processes and controls.
- Remain current with the latest digital trends and technology.

Step 4: Allocating Your Workforce

Quality Control

Quality control managers inspect and test products at various stages in the production process. They establish testing procedures to determine a product's dimensions and its mechanical, electrical, or chemical characteristics. They also may set up and perform testing on materials, parts, or finished products to measure product performance under a variety of conditions. Quality control managers are responsible for the documentation of test results. A manager or statistician will usually prepare the data in the form of a graph or chart.

Digital Printer Operation

Good working knowledge about the printer's operation and maintenance. Loads and unloads materials, runs jobs on correct media, corrects printer anomalies as needed, performs printer cleaning functions as necessary. Prints jobs and reports to production manager.

Color Management

The color manager exercises control over printers to assure consistent repeatable color from all printing devices. Develops color managed workflows as well as media profiling for all devices. Track color over time and has the ability to change or stop running jobs to ensure color correctness. Must have advanced color knowledge in the use of color management and software.

Finishing

Finishing departments can have multiple positions depending on the equipment. A finishing department could be performing lamination, routing and cutting, grommeting, mounting, sewing, heat seaming or other functionality. Some finishing needs trained operators, while other positions do not.

Starting a new business or adding to an existing one is going to be a collective effort. While you are researching what products to start with and which equipment and materials to buy, remember to consider your workforce as well. These are the people who are going to help make your business a reality. Consider any existing employees who have a unique specialty or who want to further their print education and take on a new role. Be clear about your objectives when interviewing candidates for your new business — putting the right people in the right places will save you time and money, and result in profitibility.



While you are researching what products to start with and which equipment and materials to buy, remember to consider your workforce as well.



