

Reduce Your Souvenir
Inventory Costs
Produce It In-House!

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Wouldn't it be great if you never got stuck with unsold or unwanted souvenir merchandise?

In a perfect souvenir world you would always have a good selection of the top selling merchandise, with little or no unpopular items waiting to be severely discounted or relegated to a dumpster at the end of the season.

In a perfect souvenir world you would only have to keep enough inventory on hand for a week's worth of sales.

In a perfect souvenir world you could test market different products with very little risk to determine which are going to be the best sellers.

In a perfect souvenir world you could replenish any hot selling stock within 24 hours or less.

In a perfect souvenir world you would have zero stock at closing time on the last day of the season.

In a perfect souvenir world you could experiment with size, style, color, etc to determine the best selections for your stores.

In a perfect souvenir world you could react quickly to changing customer tastes or seasonal variations.

But there is no such thing as a perfect world, right?

True, it's rare that you can have your cake and eat it too, but for many organizations there is the possibility of taking more control of souvenir merchandise inventory by producing a certain portion of it in-house as a complement to ordering large volumes of merchandise from traditional industry vendors. The key is determining what makes sense from a ROI perspective and where the breakpoints are for in-house versus contract production. And keep in mind, that there is a lot more to positive sales revenues than just selling price!

NOTE: To keep the file size manageable, I have not included any images in the handout. However, the PPT presentation used in the class will have plenty of graphics and examples of the concepts discussed. If you are interested in receiving the PPT after the seminar, please email me at jlamb@sawgrassink.com.

I'm A Retailer NOT A Manufacturer!

The reason most souvenir retailers purchase merchandise for resell, is that they don't want to be in the production business and for good reason. A true production facility has all kinds of recurring expenses including:

- Equipment Purchases
- Staffing & Training
- Production Supplies
- Sourcing Of Blanks
- Spoliage

But our focus will not be on converting your business into a production facility. Rather we will discuss the concept of "on-demand – short-run production".

On-Demand Short-Run Production

The concept of on-demand and/or short-run production is that it gives you the ability to produce limited quantities of merchandise as needed, whenever needed. The idea is not to replace contracted sources of large volume runs, but to take more control of your overall selection and availability of inventory. The benefits of on-demand production include:

- Test Marketing
- Fill-in Orders
- Just-In-Time Ordering
- Replenishment

On Demand Short Run Production – Test Marketing

If you had the ability to test market, you could experiment with different colors and styles of a certain garment by printing a few dozen of each and then monitoring their sales. The same thing goes with test marketing different graphics. Instead of taking a big risk by ordering a large quantity without any guarantees of customer satisfaction, you can test market small batches then initiate your large scale orders based on your market research.

Too many retail shops base their merchandise decisions on inaccurate or outdated information, which can hurt sales. Many customers either buy less or not at all, if they can't find what they are looking for. For example, many men prefer pocket t-shirts with designs on the BACK, as full front designs tend to accentuate the stomach/chest area. Said bluntly, front designs can make you look fat. But few retailers are carrying pocket tees with full back designs, and thus are losing business. On demand production allows you to place test this concept quickly, easily and efficiently.

The list of test marketing possibilities is long! But if done scientifically and routinely, you can really fine tune your merchandise selection based on the preferences of your customers, which means more merchandise out the door and less gathering dust on the shelves.

On Demand Short Run Production – Fill In Orders

Another benefit of in-house on demand production is the ability to “fill-in” shortages in inventory while waiting on a contractor to deliver a large volume order. Since most large volume producers have significant turn-around times, it’s quite useful to be able to run a limited quantity of fill-in merchandise while waiting on delivery, especially for hot selling products.

On Demand Short Run Production – Just In Time Ordering

Because in-house production gives you the ability to test market products, you should be in a position to adjust your selection of souvenir products so that everything is a hot seller, which means rapid turnover. Thus, you will be approaching zero inventory levels quicker than ever before, but by the same token, you will be able to supplement where needed so that you can engage in “just-in-time” ordering for the larger quantities.

This is a successful technique used by many manufacturers who prefer to keep their inventory levels as close to zero as possible. They strategically schedule delivery of all needed parts and supplies as close to the date required as possible. In theory, those components roll off a truck and directly onto the assembly line, eliminating the need for costly storage space and excess inventory gathering dust.

While that works fine for manufacturing, which has very precise scheduling, retail is a different animal because of the cyclic nature of sales. Thus, true just-in-time ordering can be challenging to say the least. However, within reason, if you have short-run production capabilities, you can engage in this practice to some degree.

On Demand Short Run Production – Replenishment

With some large contractors you are required to place your full seasonal order at one time. While the products may be delivered at staggered intervals, the concept of replenishment doesn’t exist, as you will only get the remaining pieces of the original order on the schedule established at time of ordering. In-house production gives you the ability to replenish when your supplier is unable or unwilling.

On Demand VS Contract

At first glance, the **concept** of on demand production for souvenir merchandise sounds quite appealing, but of course nothing is that easy. Bringing production in-house, no matter how basic the operation, is a truly foreign concept for most retailers and should be approached with caution, research and a full understanding of the challenges vs. benefits.

Because of the investment you will need to get any degree of in-house production, it's highly unlikely that you will actually be able to produce any souvenir merchandise at a lower price than if you contract it out. On a price per piece basis, it will almost always be cheaper to contract it out, as high volume shops have large scale capabilities, which you will not be able to compete against.

The most logical reason for in-house production is for improved inventory management. But assuming that this is a legitimate concern for your operation, the next question is: what type of production makes the best sense to bring in-house?

On Demand Processes

The majority of souvenir products are created using one of the following processes:

- Embroidery
- Screen Printing
- Direct-To-Garment Printing (DTG)
- Digital Transfers
- Sublimation

All of these processes are primarily for apparel. However sublimation is used for a variety of hard products such as photo-gifts as well.

The top two, embroidery and screen printing, are considered analog processes and typically require the most labor and prep time to support. The bottom three, direct-to-garment printing, digital transfers and sublimation are considered to be digital processes and require very little in the way of labor, capital equipment, preparation and support.

Embroidery

Embroidery is a computerized sewing process that uses patterns of stitches to create graphic images. Theoretically, any fabric-based product can be embroidered, provided that a needle can easily pass through the material and the product can be mounted in the machine's framing system.

The most popular souvenir products for embroidery are caps, shirts and jackets.

Embroidery – The Process

The first step is creating artwork with a level of detail that can be sufficiently reproduced with stitching. The artwork is then converted into a digital format, a process called digitizing. This is not an automated process and can easily require an hour or more per design. The digitized design is then loaded into the controller and the garment is placed in a frame and attached to the machine. The required threads are added to the machine, with a typical limit of 15 cones (which means a limit of 15 colors) per machine sewing head.

Once the machine is started, it will continue running automatically until the end of the design, unless a problem is encountered along the way, such as a thread break.

Embroidery – The Challenges

On the surface, embroidery is a simple process because everything is self-contained within a single machine and the production process is automated. But there are several very distinctive challenges for adding embroidery as an in-house on-demand process:

- Artwork Prep & Digitizing – Typically contracted out.
- Garment Hooping – Requires labor.
- Low Production Speed – Average Cap is 5-10 minutes. Full Back Shirt can be 1-3 hours.

Time is money and embroidery is a slow process, with a typical machine running at 800 stitches per minute (spm). Actually that is lightning fast, but with a typical cap design having 7500 – 10,000 stitches, the process runs long. Large scale embroidery operations use multiple machines capable of producing up to 18 items with the same design at the same time in order to make the process cost effective.

Embroidery – Startup Costs

For purposes of discussion, these are “ballpark” figures for equipment and staffing. The numbers include machinery and components required to support it including hoops, threads, bobbins, backing, etc.

Digitizing & Editing Software	\$5000 - 10,000
Staffing – 1 person*	
Single Head Embroidery Machine	\$15,000
Staffing – 1 person can operate up to three single head machines	
Six Head Embroidery Machine	\$50,000
Staffing – 1 person per machine for multi-head style machines	

**Most firms contract out digitizing services to professionals who know how to engineer designs to run flawlessly without costly thread breaks. The prices of contract digitizing are so competitive, that there is no advantage of in-house capabilities.*

Embroidery – Production Costs

Time is money! The more stitches in a design (size) the longer it takes to produce. Plus, setup time can be significant, as machines have to be prepped by installing and sequencing threads. Hooping is also a process that can range from 30 to 60 seconds per garment, which adds up on a multi-head machine.

Typical Cap Design	7500 – 10,000 stitches	10 – 15 minute run cycle
Typical Small Chest Logo	7500 – 10,000 stitches	10 – 15 minute run cycle
Full Back Logo	50,000 – 200,000 stitches	75 – 270 minute run cycle

For purposes of comparison, we will assume an operational cost of \$30.00 per hour for a production operation. With that in mind, you could reasonably produce 6 caps per hour using a single head embroidery machine, with the cost working out to about \$5.00 each. Same thing for a small chest logo. However with a full back (or front logo) the cost could easily skyrocket to over \$135 per piece. Not very economical under any circumstance.

Embroidery – Summary

It's pretty much impossible to compete against the offshore embroidery production companies when it comes to large designs or large volume production. However, these same companies do not want to deal with small runs and cannot offer competitive pricing for quantities typically below 12 dozen pieces. Their economy of scale is based on cheap labor, minimal downtime, and large scale equipment resources.

For on demand production, the area where it makes the most sense is when dealing with quantities less than 144 pieces when using multi-head machines and under 24 pieces when using single head machines. In addition, the focus needs to be on designs with a limit of 7500 stitches to keep the production rates low.

One key use is custom "while-you-wait" orders. A typical baseball cap costs \$1.50 blank. 7500 stitches worth of embroidery is about \$7.50. Retail selling price is \$25.00. Using stock designs, it's easy to let the customer choose the design they want on the cap of their choice. Combine this option with standard templates and the customer can add custom text, further increasing the perceived value of the item.

Screen Printing

Screen printing is synonymous with t-shirts, as 90% of the graphics applied to tees are done so using this process. But for the most part, any type of apparel can theoretically be screen printed.

The most popular screen printed souvenir products are t-shirts, sweat shirts, tank tops, shorts, jackets, blankets, jerseys and dresses.

Screen Printing – The Process

Of all the processes being discussed, screen printing has the longest, most challenging setup. It begins with creating and processing the artwork. Since the number of colors that can be printed are determined by the number of stations on a given press, care has to be used in creating the images so they can be physically reproduced in the proper detail and color.

The artwork must then be broken down by color, in a process referred to as color separation. An individual screen is then created for each of the color separations, a process that is lengthy and detailed. The screens are then installed in sequence on specific stations of the press and an alignment procedure is initiated.

Once the preparation is complete (can be several hours) the printing can begin. Each color of the design is applied in layers, one at a time, then the shirt is removed and placed in a dryer for curing.

Screen printing machines are available in manual and automatic configurations. Manual presses are capable of putting out about 50 - 100 shirts per hour, depending on the number of stations. Automatic presses can output up to 1000 shirts per hour.

Screen Printing – The Challenges

Obviously, the first challenge is artwork and setup. Beyond that, the size of an image and the amount of ink coverage required will have an effect on the setup process.

Challenges also arise with different fabrics, as it's necessary to use different inks with different fibers, such as cotton versus polyester. Plus, it requires a significant amount of heat to cure the inks, so the fabric must be able to withstand 300°F without damage.

In addition, screens must be reclaimed after use, which means a thorough, labor intensive process of cleaning, drying, and reprocessing.

Presses are sold by number of colors. Machines range from one color up to about 18 colors. Obviously, an 8 color design cannot be printed on a 4 color printer.

Screen Printing – Startup Costs

Screen printing requires quite a bit of equipment, including a machine, an exposure system, a drying cabinet, a washout sink, a dryer, and various supplies and accessories. Obviously, the more colors a system can produce, the higher the costs of the equipment.

The numbers referred to here are very “ballpark” and being used for purposes of discussion only.

4 color manual system (complete)	\$4500 - \$6500
8 color automatic system (complete)	\$30,000 - \$60,000
Conveyor dryer	\$2500 - \$16,000

Screen Printing – Production Costs

Time is money! It all comes down to how many pieces per hour you can generate against the hourly cost of operation. This includes accounting for the setup time as well. For example, if the hourly cost was \$30.00 and you had a four color manual press that could reasonably deliver 50 pieces per hour, your production cost is about \$0.60 per shirt above the cost of the shirt.

However, you must also factor in the setup time. Assuming that artwork prep and screen burning was being done by a separate department in parallel with production; you could probably convert your press from one job to the next within 60 minutes. Thus, it's a 2 hour production run, which just increased the cost to \$1.20 per shirt.

But there is also the cost of artwork and screen prep. Most screen printing shops cover those costs with separate charges, but because you are doing this in-house you are incurring the costs as part of the printing project, so maybe the true cost of printing is now rising to \$2.20 per shirt, plus the cost of the shirt.

The profitability key for screen printers is large runs, as it keeps the presses busy and downtime to a minimum. Thus, screen printing has never ranked highly as an on-demand short run solution, though single color jobs can break even in small runs, because it's possible to produce a higher number of units per hour, than with a 4, 6 or 8 color job.

Screen Printing – Summary

The reality is that screen printing is not a viable on-demand short-run solution due to the lengthy amount of setup time. For the most part, you will never be competitive against an outside contractor and should leave screen printing to those who specialize in it, unless you are selling thousands of shirts per week and feel a need to have in-house production simply to better manage delivery of your products. After all, you do have a captive audience who is buying souvenirs based on filling a need, rather than dirt cheap pricing.

Analog Versus Digital Embellishment Processes

Embroidery and screen printing are legacy production processes with a proven history. However, both of them are considered as analog based on the amount of labor, skill and knowledge required of the artwork and preparation processes.

Recent developments in digital technology have yielded several cutting-edge processes that have minimal setup, preparation and production requirements, meaning the cost of doing one piece is very close to the cost of doing multiple pieces. Plus, the labor and equipment costs are extremely low.

Direct-To-Garment Printing

DTG printing is all the rage with apparel decorators because it provides full color imaging without the setup hassle that is inherent with screen printing. Though not as fast, it definitely is more cost-competitive with shorter runs of product.

The most popular screen printed souvenir products are t-shirts, sweat shirts, tank tops, shorts, jackets, blankets, jerseys and dresses. It is not physically possible to print on headwear with DTG.

DTG – The Process

Other than making sure you have a good quality, high resolution image, there is very little that has to be done in terms of artwork preparation. There is no limit to the number of colors that can be printed and no color separations are required.

The image is first setup on a computer and then transmitted to the DTG printer, which is essentially a large inkjet printer that accepts garments instead of paper. The garment is automatically fed into the printer while ink is sprayed directly onto the surface, actually penetrating into the fibers of the fabric. Production time is about 2 minutes with most printers for a full back design.

Once printing is completed, the garment is removed from the printer and cured using either a heat press or conveyor dryer, which adds another minute or so to the process.

DTG – The Challenges

The most significant challenge of DTG printing is “white ink”. By far, the best color to print on, regardless of the process used, is white as it ensures the colors of the graphic are rich, vivid and sharp. In addition, since most printing systems do not have white ink, thus, it’s impossible to recreate the color white. When printing on a white background, the white area of a design is simply left open, so that the white background shows through. This of course works fine on white garments, but what about colored ones, especially darks?

Screen printers use a specially-formulated white ink that goes down first in order to provide a base for the design. Essentially, they are creating a white background on top of the colored fabric for the design to be applied on top of. But in order to accept the remaining inks, the white ink must first be cured using a quick burst of heat from a device called a flash cure unit. Once that is done, the rest of the printing continues with excellent results.

DTG units don't have the ability to flash cure, so white ink for these machines has to be created so that it cures in some form or fashion when coming in contact with air. Different systems use different approaches, but the concept is the same – white ink must be able to dry quickly.

Because of this quick drying characteristic, white ink has a tendency to cure/harden within the print heads if not maintained properly, which in turn will destroy the print head – an expensive proposition. Thus, white ink has gotten a bad reputation within the world of DTG and some printers don't even support it. The key is to fully understand your system and follow the instructions (to the letter of the law) as prescribed by your equipment manufacturer.

But considering that 75% plus of all t-shirts sold are white, it is not necessarily a requirement that you be able to print on any other color, especially for on-demand, short-run production.

The other challenge with DTG is choosing and using the proper ink set for a given fabric. Inks typically are manufactured for specific applications, so the ink that works great on cotton, may not be appropriate for synthetic materials.

DTG – Startup Costs

The nice thing about DTG is that it's pretty much a self-contained process that requires very little in the way of equipment for production. The numbers referred to here are very "ballpark" and being used for purposes of discussion only.

DTG Printer	\$12,000 - \$30,000
DTG Printer – white ink capability	\$25,000 - \$50,000
Heat Press	\$800 - \$1500
Conveyor Dryer*	\$2500 - \$16,000

**Conveyor dryer is an option in place of a heat press to support larger runs of printing.*

DTG – Production Costs

Production costs are very low, as there is very little setup required. A typical full back design takes about 2 minutes to print and 1 minute to cure if using a heat press. If using a conveyor dryer, the cure time is in parallel with printing instead of in series, meaning more pieces per hour.

Assuming \$30.00 hour operation costs, you can easily produce 20 shirts per hour when using a heat press, which means a cost of \$1.50 shirt without any hidden costs.

DTG – Summary

DTG printing is simple and cost effective with little required in the way of skill due to the point-and-click nature of the process. Theoretically, it would be easy to train retail employees to handle DTG printing when needed, rather than having a staff of specialized workers just to support printing. On a cost basis it's cheaper than screen printing up to around 144 pieces.

Digital Transfers

The word transfer conjures up some negative images for anyone who has been in the souvenir business for the last 15 years. But modern digital transfers are a totally different application than the old school rubbery emblems of yesteryear. The digital transfer process of today is very similar to DTG printing with identical results for a lower cost.

The most popular screen printed souvenir products are t-shirts, sweat shirts, tank tops, shorts, jackets, blankets, jerseys and dresses.

Digital Transfers – The Process

The production process for digital transfers is quick and simple. An image is setup on a computer and sent to an office style, inkjet printer equipped with the proper ink set. The image is then printed on a sheet of transfer paper.

The paper and the item being printed are placed in a heat press and pressed together for about one minute at 400°F. During pressing, the inks transfer from the paper into the fibers of fabric. When the heat is removed, the paper is discarded, leaving behind a high resolution image that is comparable to DTG and screen printing.

Depending upon the size of the image and the printer being used, print time for a digital transfer is about 30 seconds with press time clocking in at about 60 seconds.

Digital Transfers – The Challenges

Just like with DTG, white ink is a problem. Unfortunately, with transfers white ink is not an option, thus you are limited to white shirts or designs without white ink. Other than that, digital transfers are simple enough that virtually anyone can learn the process in a relatively short period of time.

Digital Transfers – Startup Costs

The digital transfer production process makes use of off-the-shelf desktop inkjet printers that are equipped with (and support) the proper transfer inks. In addition, the ink manufacturer will supply a new software driver to reprogram the printer for this purpose. Beyond that, a heat press will be required as well. The numbers referred to here are very “ballpark” and being used for purposes of discussion only.

Compatible Ink Jet Printer (with ink)	\$500 - \$2500
Heat Press	\$800 - \$1500

Digital Transfers – Production Costs

With a printing time of 30 seconds and a pressing time of 60 seconds, it’s easy to produce about 20+ shirts per hour which works out to \$1.50 per shirt against an hourly rate of \$30.00.

It should also be noted that since you are printing onto transfer paper instead of garments, a printing screw-up will only damage a sheet of inexpensive paper instead of a garment.

Digital Transfers – Summary

From an angle of simplicity and cost, digital transfers rank high on the list of suitable in-house applications of on-demand short-run printing for souvenir merchandise. The most notable drawback is the lack of white ink, which can limit your range of printing options, but in terms of fill-in orders and test marketing, the process works fine.

Sublimation

Sublimation is basically a digital transfer process designed to work specifically with polymer fibers. The end result is the capability of printing on apparel and a wide range of hard products such as photo gifts and promotional products.

Popular sublimation items used for souvenir merchandise include: apparel, photo panels, dog tags, key chains, mugs, magnets, mouse pads, puzzles, etc.

Sublimation – The Process

From a production standpoint, the sublimation process is the same as for a digital transfer. The real difference is found in the chemical makeup of the inks. Sublimation is unique in that it is formulated specifically for polymer fibers. During the pressing part of the process, the temperature causes two parallel things to happen: the inks to turn into a gas and the polymer fibers physically open up. Those two events combined mean that the sublimation ink penetrates and embeds into the fiber instead of just on the surface. When the product cools

back down, the sublimation dye is permanently captured within the polymer fiber. The end result is a high resolution image that won't crack, peel or chip, and in the case of apparel, won't fade when washed.

The process for sublimation is quick and simple. An image is setup on a computer and sent to an office style, inkjet printer equipped with the proper ink set. The image is then printed on a sheet of transfer paper. The paper and the item being printed are placed in a heat press and pressed together for about one minute at 400°F. When the heat is removed, the paper is discarded, leaving behind a high resolution image that is superior to DTG and screen printing.

Depending upon the size of the image and the printer being used, print time for sublimation is about 30 seconds with press time clocking in at about 60 seconds.

Sublimation – The Challenges

Just like with DTG and digital transfers, white ink is a problem. Unfortunately, with sublimation white ink is not an option, thus you are limited to white substrates or designs without white ink. The other challenge is that sublimation only works with polymer fibers and in the case of apparel that means polyester. However, when it comes to moisture-wicking poly-performance apparel, sublimation is by far the best method of imprinting. In addition, the polyester trucker's style of caps are best decorated using sublimation.

Other than that, sublimation is a simple enough process that virtually anyone can learn how to do it in a relatively short period of time.

Sublimation – Startup Costs

The sublimation production process makes use of off-the-shelf desktop inkjet printers that are equipped with (and support) the proper sublimation inks. In addition, the ink manufacturer will supply a new software driver to reprogram the printer for this purpose. Beyond that, a heat press will be required as well. The numbers referred to here are very "ballpark" and being used for purposes of discussion only.

Compatible Ink Jet Printer (with ink)	\$500 - \$2500
Heat Press	\$800 - \$1500

Sublimation – Production Costs

With a printing time of 30 seconds and a pressing time of 60 seconds, it's easy to produce about 20+ shirts per hour which works out to \$1.50 per shirt against an hourly rate of \$30.00.

With smaller items, such as photo gifts, the print time can easily drop to 10-15 seconds, which means a lot more pieces per hour for smaller size substrates.

It should also be noted that since you are printing onto transfer paper instead of garments, a printing screw-up will only damage a sheet of inexpensive paper instead of a garment.

Sublimation – Summary

While sublimation does have the potential to print apparel and headwear, perhaps the greatest appeal is the wide range of hard souvenir and photo-gift items that can be printed with permanent, high resolution images quickly and easily. When you look at the different processes in terms of the most versatility, sublimation ranks at the top of the list.

Conclusion

Obviously, you are in the business of selling not producing. But with all of the low cost digital options, it may make sense to have better control over your inventory management by supplementing contract production with on-demand, short-run production as needed. The beauty of this arrangement is that for the most part you won't need to invest in a lot of equipment or staff. In fact, in many cases you can simply cross-train existing staff to run production when needed, as it will not necessarily be a full-time endeavor.

Beyond souvenir merchandise, in-house capabilities can also provide a method to produce staff clothing as well as some promotional products. In fact, for establishments who wish to create a full-time production facility, large scale production will provide a wide range of products and services that can support the entire operation.

The technology is there – it's up to you to decide how to apply it.

Thanks For Attending!

If you have questions of me after the event, please feel free to contact me at:

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