

May/June 2015

PostPress

Print Decorating, Binding and Finishing

A hand holding a magnifying glass over a globe with binary code and squares.

Quality Control & Inspection

INSIDE THIS ISSUE

- Gold Leaf Award Winners
- Issues with Laminating
- Narrow-Web Decorating

Sheet-Fed Foil – Hot and Cold!

by **Mike King**, Eagle Systems

With the variety of manufacturing options available to add multi-sensory packaging effects, brands across all industries are beginning to branch out and use foils. One of the most talked about points of confusion is the difference between hot foil and cold foil, along with what the pros and cons are of each method. This article will explore the pros and cons of these two separate methods for sheet-fed foil processes. Choosing the right method is tied to many factors, but having a baseline understanding will help with price, speed to market, branding and, ultimately, consumer impact.

Foil coverage

For most applications, the cold foil process is done inline on the printing press. If the image area (the area on the sheet that will be foiled) is small and does not make use of the majority of the foil roll over the sheet, there can be an excessive amount of waste in foil that is not applied. Comparatively, the hot foil process (most commonly performed offline on a hot stamping machine) allows for the foil roll to precisely index in small increments and thus maximizes the use of the entire foil ribbon. So, for smaller areas of foil coverage, hot stamping usually is the best choice to maximize the use of the foil.

In instances where the majority of the sheet or the entire sheet includes foil, cold foil can be a cost-effective choice. Large coverage of foil on the sheet will allow maximum use of the foil ribbon. In addition, if the job requires multiple colors of foil, then cold foil will be more economical, as it is all done in one pass and then overprinted to create the separate colors.

It is important to remember that saving foil necessarily does not calculate to job cost savings, as the whole picture needs to be considered. What most people don't realize is that job cost savings also encompass the process, logistics and other materials, as well. Sometimes, the breakeven point could be at



>> In instances where the majority of the sheet or the entire sheet includes foil, cold foil can be a cost-effective choice. Large coverage of foil on the sheet will allow maximum use of the foil ribbon.

1,000, 10,000, 100,000 or even 1,000,000 sheets before one process becomes more cost effective over the other. It is imperative to look beyond the actual foil material cost.

Where cold foil really becomes a game changer is when comparing it to using a laminated foil metallic board. Cold foil inline can create huge savings over laminated board and provide more flexibility with inventory. The other advantage over a foil laminated stock is that the portion of the package or product that is white can be reversed out of the foil, which eliminates the need to print white opaque ink in these areas. The white ink can create problems on press and sometimes needs two passes to properly cover. Other areas, like glue flaps or just plain printing on foil laminated board, can create challenges because the printing is being applied to a plastic material. The major savings is the actual dollar-for-dollar cost against the cold foil with board vs. foil board. A 10-cent savings is \$100,000 dollars on 1,000,000 sheets at the end of the year.

Imagine the savings if the cost was 53 cents apart! In the cold foil process, multiple webs of foil can be run, which realistically would be a small percentage of actual foil use. With foil board, the whole sheet is paid for and used, regardless.

Substrate considerations

Certain substrates can pose a challenge for the cold foil process, such as uncoated stocks. During the cold foil process, a layer of adhesive is applied to the sheet. Uncoated stocks tend to absorb the glue, resulting in less adhesive for the foil to adhere to when applied. This can lead to uneven surfaces, rough edges and flaking of the foil. Comparatively, hot foil stamping provides more latitude with substrate types since the foil is applied by a heated application onto the sheet vs. the use of an adhesive. So, the type of stock or substrate can have a huge impact on selecting cold foil vs. hot foil.

Inline vs. second operation

The cold foil process is done inline on press



and, therefore, eliminates the need for a second offline operation of hot foil stamping. Being inline also means that inks, varnishes and coatings can be applied over the cold foil on press, whereas this would require an additional press pass following the hot stamping process. There are inline efficiencies of cold foil with proper equipment and the knowledge of the process. However, if there are challenges with the setup and coordination of the cold foil process working with the printing process, the potential cost savings of performing the foil inline can diminish.

Sheet-fed cold foil process is approximately thirty years old, but only has truly developed into a viable and economical solution in the last six to seven years. With only around 160 cold foil systems in operation worldwide, those interested in pursuing cold foil must do their homework and speak with others involved already in the process. Of course, this scenario also is true with the hot foil process. Utilizing the proper equipment for hot is essential in today's world.

Careful planning and utilization of reliable equipment are essential to ensuring the job runs consistently and that the printing press does not have to be stopped multiple times through the run.

When a customer is looking for a foil and embossed image, many times the foil and embossing can be applied at the same time on an offline foil press utilizing a combination (foil and embossing) die. When this is the case, running offline vs. inline is the better option because a separate pass will be necessary either way to accomplish the embossed image.

Foil tension also can be an issue if the proper cold foil equipment is not being used. Some cold foil units require special foil tension programming which, if not properly set, can cause tension issues and breaking. This can cause foil damage, foil dust and inferior product. Without proper tension throughout the run, there is the risk of the foil not being applied securely to the sheet and allowing proper bond with the ink. There are retrofit machines that do not require special programming for foil tension and help eliminate this issue.

Foil color

There only are two colors available in cold foil, with the most popular being 98-percent silver and 2-percent gold. Also, a limited number of holographic patterns now are available for cold foil. For larger orders, foil manufacturers may be able to provide specific colors and patterns with a cold foil formulation. To achieve a specific color other than the silver or gold, it is necessary to lay down ink over the foil being applied on press. Utilizing four-color process (CMYK), there virtually are an unlimited number of colors that can be created through overprinting cold foil. PMS colors can be used to create a particular color as well.

Comparatively, hot foil has a wider range of metallic foil colors readily available, such as gold, silver, blue and red, etc. In addition, hot foil stamping offers other types of foils, such as holographic, specialty patterned, pigmented and clear foil options that are not available with the cold foil process.



>> There only are two colors available in cold foil, with the most popular being 98-percent silver and 2-percent gold. Hot foil has a wider range of metallic foil colors readily available, such as gold, silver, blue and red.

Brilliance of foil versus flexibility

Hot foil traditionally results in a more brilliant look vs. cold foil – although the final outcome of a cold foil transfer has come a long way in recent years. The customer needs to make the final determination on what will work best for the specific application. Hot foil may provide more overall brilliance, though cold foil has more reflective angles than hot foil because of the sheer process and the way it is applied.

The idea behind the cold foil process is that various colors of foil need not be stocked and any color under the rainbow can be created with CMYK or PMS colors. The beauty of this is even more apparent when the customer comes in for a press check on cold foil and says the color is off a bit. With the cold foil process, the color easily can be changed with prepress adjustments on the printing press because the color comes from the overprint on the foil.

In the same scenario with hot foil, there may be a delay in the job if the foil stamper does not have the customer's exact color pick of foil in stock. Unfortunately, many foil stamping shops have a lot of unused hot foil and a great deal of it never gets used again. With the overprinting of silver foil for most cold foil applications, there is little to no leftover inventory that cannot be used in the future.

Conclusion

When choosing between hot and cold foiling, it's important to keep the end game in mind. It's best to start with the product's particular needs and then find a match based on how well the capabilities of each technology align with the product. The following questions are examples of what needs to be addressed:

<<

What is best for the application? It is key to understand what the product does and who it's targeting. The application itself should be able to point to one process over the other.

What is the budget? While budget shouldn't be the first consideration, it often can dictate a particular solution.

With what substrate is the foil being used? Again, the substrate may determine the preferred method of foiling. Certain substrates only work with hot foil, while others are best with cold foil.

What type of look is being sought? One of the easiest ways to decide whether to use hot or cold foil stamping relies on the type of look the customer wants. The customer is the ultimate decisionmaker to determine the best approach. ✦

Mike King is owner and inventor of Eagle Systems' hot and cold products. For years, Eagle Systems has focused solely on foil machinery and foil process developments, including the introduction of high-tech servo technology to the world of hot foil indexing. For more information on hot and cold foil products, visit www.thefoilexperts.com.

“What most people don't realize is that job cost savings also encompass the process, logistics and other materials, as well. Sometimes, the breakeven point could be at 1,000, 10,000, 100,000 or even 1,000,000 sheets before one process becomes more cost effective over the other. It is imperative to look beyond the actual foil material cost.”