DIVERSIFIED GRAPHIC MACHINERY

How to Save Over $1,200,000.00 By Making Your Existing Foil Stamping Process More Efficient

Pressure is on print finishers, printers and packaging printers now more than ever. Customers don't want to hold stock so the trend is now for shorter runs with multiple re-orders and because technology enables stock levels to be monitored in real time when an order is placed today the finished goods have to be delivered tomorrow.

When I started working at a book printer in 1984 our average run length was 25,000 books with a lead time of 2-3 weeks. Now when a book is ordered on a Monday it has to be printed, bound with the cover stamped and embossed and delivered to the customers warehouse within 48 hours. To make matters worse the average run length is 1100 sheets and the customer will have negotiated a unit copy rate that so he only pays for one make-ready regardless of the number of times the job re-orders.

However, make-ready is the area where you can make huge efficiencies without spending a lot of money that will allow you to deliver on time and in budget without compromising quality or losing money.

Optimising your make-ready will not only save you money, it will also make your pricing and delivery times more attractive to your customers. This will give you a competitive edge and gear you up for short run jobs.

Here are some simple techniques you can use to make foil stamping more efficient.

1. Analyse your processes
2. Take as many processes off-press as possible
3. Prioritise and optimise your processes
4. Minimise as many sources of variation as possible
5. Use technology
6. Manage your materials
7. Manage your workflow
8. Constantly review and refine each process and sub-process

1 - Analyse your processes

The first stage to optimising your press make-ready time is to understand that the make-ready process is a series of sub-processes.
Typical stages are:-

Setting the feeder and delivery
Positioning the foil reels and stringing through the press
Calculating and programming the foil advance
Locking dies on the honeycomb
Registering the dies to the sheet
Patching-up.

Once you have determined the stages, focus your efforts on the sub-processes that will give you the best return.

The first and most obvious step is to take as many processes off-press as possible. This is a simple application of the widely used SMED / Lean Manufacturing process since the foil stamping presses are very expensive equipment whose idle time must be reduced.
If you cannot take a process off-press try to manage the process so that the press operator has to spend as little time on it as possible.

Many of the processes can be moved to pre-press stages that can be performed in advance of the press make-ready.

Your goal is to minimise the make-ready time –first we will concentrate on the processes and then we can look at workflow.

Most of the processes can be either performed offline or optimised to reduce your total make-ready time by over 65%.

2. Take as many processes off-press as possible
So let's look at the processes.

2.1. Locking dies on the honeycomb.
This should always be a pre-press function. Locking up dies on-press is a huge waste of resource and should be avoided at all costs.

Traditionally most companies position dies using a vinyl; however this is prone to human error & poor accuracy with results varying from person to person. Even with dies locked up off-press with a vinyl you can still expect to spend a considerable amount of time making adjustments on press.

Consider investing in a modern, proven and efficient die registration system using state-of-the-art servo motors that always move to the correct position every time, eliminating mechanical variation.
This will increase the accuracy of positioning the die and reduce a possible source of process variation (human error).
The operator should only move the die on the honeycomb to the preset positions.

The registration system should also be able to be calibrated to each honeycomb/press combination (fingerprinting) and to automatically compensate for heat expansion of different honeycomb materials e.g. steel and aluminium.
This will reduce another source of process variation (different materials).

Finally, the system must be able to factor in board stretch from the printed sheet as well as working directly from a PDF of the foil stamping separation.

The sequence that you lock up the dies can make a difference to the patch up when the job re-orders. Number your dies and lay the dies in the same sequence every time. This means that you will be able to use the same patch up sheet.

2.2. Registering the dies to the sheet.

When you register the dies to the sheet on press you should be looking for at least 80% perfect positioning each time with a maximum positional variation of 0.005".

Board is a volatile material and the image can vary from pallet to pallet, so registering the dies to the sheet has to be done on press.

However if you have optimised your lockup process this should be reduced to a matter of a few minutes, if at all. Typically this can save at least 1 hour on-press for a job with 8 dies.

2.3. Positioning the foil reels.

Invest in a good foil management system that can work either from a manual setup or a PDF to record the position of each foil area on the sheet.

This information can be used to calculate the optimum width of each foil reel and its position on the foil shaft & create a cutting program. If your press has removable shafts having a spare set for each drive will reduce the foil reel setup to a simple lock & load operation.

2.4. Calculating and programming the foil advance

Your foil management system needs to be able to calculate all the constant pull & long/short pull combinations automatically, tell you how much foil you need and recommend the optimum advance program for each drive and also when to stop the press for changeover in long runs.

2.5. Setting the feeder and delivery

From the sheet width you can set the guides for the feeder and delivery so that the sheet is centred on the press.

Your foil management system must combine the information for processes 3, 4 & 5 into one page providing a simple printout prepared ahead of time and included in the job bag will save precious machine time.

2.6. Patch-up.
The first time a job is foil stamped you will have to patch up the sheet from scratch. However, if you use the same layout sequence for your dies and lock them up on the same honeycomb and stamp on the same press you can use the patch up sheet from the previous run as a start point.
This simple stage can reduce your patch up process dramatically.

3. Prioritise and optimise your processes
Pareto's 80/20 rule can be applied to many manufacturing processes.

If you assume that 80% of the make-ready time is consumed by 20% of the process this will greatly focus your attention on the areas you need to concentrate on to achieve the maximum improvement.

Accurately locking up your dies, fingerprinting your honeycombs, calculating an optimal advance program along with reel positions and reusing the patch up sheets will dramatically improve your overall make-ready process.

4. Minimise as many sources of variation as possible
The biggest source of process variation in manufacturing is human error.

Foil stamping and embossing make-ready relies on human operators. However, it is possible to provide these operators with the tools to do their job better and to reduce the effect of variation.

The current method of locking up the dies is the major source of human error and variation, so a good die registration system will pay for itself over and over again for a modest investment.

Using the same honeycomb/press combination and patch up sheet for re-orders will give you a good start.

Use digital technology wherever possible to lock up your dies and calculate your foil programs. This reduces the amount of human measurement (and error).

5. Use technology
Digital workflow has been available from the design & imaging departments through to the litho stage for many years. It is a tried and trusted process that works, and now it would be impossible for printers to survive without it.

So why is it acceptable today to lock up dies using a vinyl and use the same make-ready methods that were being used 20 years ago?

A proven die registration system exists in the marketplace that uses digital workflow and has been used daily for foil stamping & embossing by the leading print finishers, book printers and luxury packaging printers in Europe and the USA for more than 10 years.

Printers are used to creating separations for process colours, pantones, varnish etc and the original artwork is designed for this purpose. Generating a PDF for foil stamping and embossing operations can be reduced to a 1-click operation at the imaging stage and the PDF also replaces the cost of producing a vinyl film.

Even if you are a print finisher your customer is capable of producing PDF separations and emailing them to you ahead of time.

6. Manage your materials

Always buy the best foil available.

Trying to save a few cents on material can cost you hundreds of hours in the long run on press make-ready and having to run the press slower.

A good foil management system will allow you to calculate exact material requirements so that you only use what you need for the job.

The 80/20 rule applies here also – 80% of the material you use regularly comes from 20% of the stock grade/shade options available.

Be flexible with the way you order foil. Use the full range of standard supplier lengths & widths. Be prepared to cut the foil to suit the reels and don't just work on standard lengths. Your foil management system can allow you to use the off cuts on the next job so you don't waste anything.

In many cases you can save 15% or more material on a job and also reduce your inventory by a similar amount, improving both your cash position and profitability at a stroke.

7. Manage your workflow

Make sure all your materials for the next job to be run on press are properly prepared and delivered to the press ahead of time. If your press operator has to leave the press to look for foil, dies, vinyl, sheets you are wasting valuable machine time.

If you are using a PDF to lockup the dies (this is the preferred, modern method) make sure that your imaging department prepare the files well ahead of time.

Whenever a new job is logged in for production you should be able to take simple steps to ensure that each person in the chain knows exactly when and what he needs to do to make the work flow smoothly.

Nowadays everyone is under pressure, but if you assign tasks (e.g. imaging dept to prepare PDF, pre-press to lockup dies & cut foil etc) in a timely manner there should be no reason for the press to be standing waiting.

8. Constantly review and refine each process and sub-process

Don't think that once you have introduced new methods to improve your make-ready the job is done. I cannot stress how important it is to constantly manage the process.

Financial Incentives

In today's economic climate it goes without saying that it is imperative for us all to examine our production methods in order to improve profitability and stay ahead of the competition.

Figures quoted in this article headline are easily achievable.

Let's take a typical example

- If you lock up on average 48 dies a day (both foil stamping and embossing) You could save more than $900,000 over 5 years on machine time by using a good die registration system.

- if you spend $150,000 a year on foil you could save more than $ 300,000 in machine time and materials over 5 years on material and machine time by using a good foil management system.

Des O'Keefe is the founder of Insight Graphic Systems Ltd, a company specialising in registration systems on litho, foil stamping & embossing presses for more than 20 years. Insight Graphic Systems have installed more than 40 of their die registration systems (**Die Co-Ordinator**) worldwide over the last 10 years.
Insight has also developed a foil management system (**Foil Co-Ordinator**) to complement their die registration system.

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Die Co-Ordinator and Foil Co-Ordinator are marketed in the USA by Diversified Graphic Machinery, Red Bank, NJ.

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