Flexography and Sustainability: 
The Great Plate Debate
Background

There can be no doubt that environmental impact is a hot topic in the packaging industry today. All players in the supply chain are continually challenged to take action to improve their sustainability scorecard, and flexographic printing is no exception; attention to environmental issues has been steadily increasing over the last decade as the flexographic printing process has grown in importance in the packaging market.

A large portion of that attention has been focused on the flexographic plates themselves and, more specifically, the processing methods associated with imaged plate production. The Great Plate Debate, which has been running for the last couple of years between some of the key long term plate suppliers*, has been squarely focused on the merits of solvent vs. thermal processing for flexographic plates, with both camps declaring their preferred technology victorious; an outcome that has left the market somewhat confused.

This paper offers a new perspective on the debate and discusses how Kodak believes that making a plate choice for maximum impact on sustainability should consider the bigger picture for the overall flexographic printing process, and how other factors can easily dwarf the single element that is plate processing.

A New Perspective

The impact of the plate on printing performance cannot be ignored

A great danger exists in considering plate making (imaging and processing) as an isolated element from a sustainability perspective. The simple fact is that the product of that plate making process, the imaged plate itself, has the power, through its unique characteristics, to impact the printing performance and thus the contribution that the printing operation itself makes to the sustainability picture; rest assured, it’s a large contribution.

In its Life Cycle Analysis (LCA), DuPont specifically stated that their study assumed that “imaged plates perform equivalently in printing, regardless of which process was used for plate processing and imaging,” thus eliminating the impact that different plates might have on the overall sustainability ‘big picture.’

Kodak’s position is that while this is a convenient assumption to make to enable a direct comparison between plate processing technologies, it actually, by design, ignores the greatest impact that a plate technology can have on sustainability: how it performs on press.

It’s time to stop focusing on one small part of the picture and consider the big picture.

Explaining the Big Picture

The truly significant factors

When reviewing the flexographic printing process, it is important that we consider all of the key contributors to environmental impact. FIGURE 1, based on data published as part of the DuPont LCA in 2008, illustrates the significant components involved, and indicates that substrate, ink, electricity, etc. used in the printing process, are all far more significant than the plate in the overall picture. The plate is shown as being typically 1% or less of the overall impact. This is no great surprise, of course, when we stand back and think about it. Presses are great energy consumers and every print run utilizes considerable volumes of ink and substrate.

But what this chart reveals is that in order to have the maximum positive impact on the sustainability of the flexo printing process, we really need to focus on those ‘big ticket’ items. It tells us that if our plate has the power to drive optimum performance and reduce the substrate and ink waste on press, it has the power to have a much larger impact beyond the plate component itself.

Next, if you consider the plate element of the overall picture in more detail, the photopolymer plate itself is the more significant contributor to environmental impact. Figure 2 indicates that raw materials comprise about 75% of a plate’s environmental impact; plate processing comprises about 25% or less.

From this data, upon which the published studies both generally agreed, it is clear that the next best way to have a positive environmental impact is simply to use fewer plates. It might seem glaringly obvious, but it’s undeniably true. Not only does using fewer plates reduce the impact from the manufacture of the photopolymer itself, but one less plate used is one less plate processed. And every plate that is eliminated reduces:

- Mounting tape
- Mounting time
- Cylinder / Sleeve cleaning
- Disposal costs
- Ink
- Setup waste

Reduction in the actual number of plates made is the next biggest contribution that a flexo plate can make to improve sustainability.

So if the plate technology you choose has the power to reduce the actual number of plates you make per job, it has the power to make a far bigger impact on sustainability than simply choosing one processing method over another.

Figure 2: Plates vs. Plate Processing

The plate itself contributes significantly more to the non-renewable energy consumption and greenhouse gas emissions than the plate processing component.

So Where Does That Leave Plate Processing?

Putting it all in perspective

From the data that we see above and the observations we read in published studies we learn that the whole plate and platemaking element contributes less than 1% of the total non-renewable energy used in the flexo printing process; and only about one quarter of that 1% is the plate processing element. So, while every impact counts, it is important to put into perspective that the Great Plate Debate between solvent and thermal processing is focused on making small changes to one quarter of 1% of the total impact.

Let’s compare that to the impact that you could make by reducing on-press waste by 25%. The study published by DuPont quotes a figure of 8% scrap for flexo printing. That scrap comprises both substrate and ink.

If we study Figure 1 again it would be reasonable to conclude that:

- Overall ink and substrate accounts for about 75% of the non-renewable energy produced in the flexo printing process.
- If 8% of that is scrap, then scrap ink and substrate must contribute about 6% of the non-renewable energy used.
- If you can reduce that scrap by 25% you can logically impact 1.5% of the total.

Compare the 1.5% that can be impacted by waste reduction to the fraction of one quarter of 1% that can be impacted by plate processing choice, and you can start to see the benefit of considering the big picture.

For maximum impact on sustainability choose a flexo plate based on its power to reduce on-press waste and the number of plates per job.
How Can You Reduce On-Press Waste and Use Less Plates?

*Klexcel NX Plates in action*

The Kodak Flexcel NX Digital Flexographic System was designed with maximum print production efficiency in mind. Through unique imaging technology and patented plate making processes, *Flexcel* NX Plates have finished plate characteristics that are in a class of their own. Kodak’s even-height flat-top dots go all the way down the tonal scale, providing unparalleled impression latitude, superior plate robustness and expanded color gamut. As a result, they:

- **Come to color faster**
- **Last longer on press**
- **Can be re-used more often**
- **Enable the reduction of spot colors through better four color process performance**
- **Eliminate the need to split line and tone work**

Indeed, it is common with wide web flexible packaging users of the *Flexcel* NX System to eliminate the practice of splitting the solids and tone and have all on one combination plate. They reduce the number of spot colors and make greater use of process printing and report that plate life compared to comparable traditional digital flexo plates for like jobs, increases 2 to 5 times. And these plates really do come to color faster—just ask any press operator that works with *Flexcel* NX Plates.

In fact, on average, printers that use *Flexcel* NX Plates tell us that:

- They have reduced setup waste on press by 25%
- They have reduced the total number of plates they use by 20%

This puts them in a position where they can make a SIGNIFICANT impact on their sustainability goals. By the way, reducing waste and using less plates is not a bad thing when it comes to those all-important cost control goals as well.

Make an Informed Plate Choice

Making decisions for maximum impact on sustainability is all about looking at the big picture—that’s what all the environmental gurus tell us. Making a flexo plate choice is no different.

Consider the flexo plate as a tool that has the power to make a significant impact on sustainability improvement in the pressroom. If maximizing sustainability is important to you, we have learnt that you should look first to the factors that have the greatest impact. Make it your priority to choose a plate that can help you reduce on-press waste and use fewer plates, irrespective of processing method.

Take a new perspective on *The Great Plate Debate* and consider the big picture.