45 YEARS OF FLEXOGRAPHIC INNOVATION

White Paper about CleanPrint

Asahi Photoproducts

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Asahi CleanPrint

Faster time to market

Brand owners are seeking faster time to market with higher quality packaging that stands out on the shelf. They want to achieve this at an ever-lower price point. And increasingly, they are looking for suppliers that can produce packaging with a reduced environmental footprint.

Packaging printers/converters need ways to significantly improve efficiency in order to meet these demands while increasing quality to address the growing use of photographic images on packaging. They want to meet the sustainability demands of brand owners, but also understand there are benefits for their businesses as well, with less waste and a cleaner work environment.

Brand Owners decorate their packaging to position and promote up to the moment that the consumer uses the product. So, printers/converters need to understand what an image that stands-out looks like and how it reacts on a flexographic printing press. Increasingly, these label and packaging designs include photographic content, which historically has been difficult to produce with adequate quality levels using flexographic printing technology.

45 Years and Not Stopping Now

As we look back over the last 45 years, we at Asahi Photoproducts are proud of our contributions to the label industry and flexographic technology. Both AFP™ and AWP™ plates, introduced in 1982 and 2000 respectively, represented significant innovation to flexography, and we're not stopping now! Let's take a quick look at the history and take a deeper look at the latest generation of flexographic plate technology: CleanPrint.

At the Core: The Flexographic Press

Forty-five years ago, the narrow web "reel-to-reel" market was dominated by two flexographic printing press manufacturers. As the need for labels became more complex, other manufacturers, started to emerge with novel design features. The rapid expansion of the label market combined with growing competition meant that better flexographic printing equipment was available, and by 1972 the first commercial four-colour process printing was possible. Today, flexographic printing is competitive with both offset and gravure for both labels and packaging – and even with digital except for very short runs below 1,000 linear meters! There has been a great deal of progress, and we are proud of the role we have been able to play in fostering this progress through the introduction of innovative flexographic plates and plate processors.

Computers Have Played a Key Role

The introduction of the Apple Macintosh in 1984, the first mass market computer featuring a graphical user interface, built-in screen and mouse, had a revolutionary impact on prepress for labels. And a Danish company followed in 1988 by bringing computer imaging systems to market that revolutionized the creation of label and packaging images and artwork. This set the stage for many other innovations that have driven the market forward, including the introduction at drupa 1995 of the first flexographic computer-to-plate system. Today, computers play an integral role in everything, from sparking the first design ideas to getting the final product on the shelf.

Anilox Developments

Forty-five years ago, cell counts did not exceed a maximum of 550 cells per linear inch. Many anilox rolls worked with ink film thicknesses of 4 to 7 microns. In 1990, an 800-line-per-inch design with a 60° hexagon cell was developed by Harper and was a phenomenal success. This new cell pattern also helped reduce ink film thickness. This new roll could control ink film thicknesses to 0.5 ~ 1.5 microns and quickly became the industry standard. Cell patterns can now be etched at 30°, 40°, 60°, and recently random patterns are used, with cell counts reaching of up to 1,800 cells per inch.

Cleaning of anilox rollers with such fine screen engravings is paramount. Some manufacturers coat their rollers to help keep the cells free from drying ink. Conventional off-press cleaning methods include ultrasonic cleaners or soda blasting, in addition to fine bristle brushes.

And, Of Course, Plates

Photopolymer plate technology first came to market in 1974. Based on “Free Radical” polymer chemistry which uses ultra-violet (UV) light to form 3D relief graphic images, these plates continue to undergo development advances that have been critical to the ability of flexographic printing to not only be competitive with other printing technologies, but to become the leading label and packaging production printing technology.

This is where Asahi’s more than45 years of experience with innovation in polymers has truly come into play.

In 1982, we launched our AFP™ family of plates with specific benefits for labels and packaging. AFP™ plates are manufactured using Butadiene and Styrene to improve the malleability of the plate and the drape of the plate around small circumference cylinders This solved plate lifting issues. AFP™ also was the first solid plate to have a wide exposure latitude, which enabled solids and halftones with one main exposure. This was a major development in flexography.

In 1985, Asahi invented the dry germicidal UVC lamp anti-tack process that eliminated the wet process by bromide.

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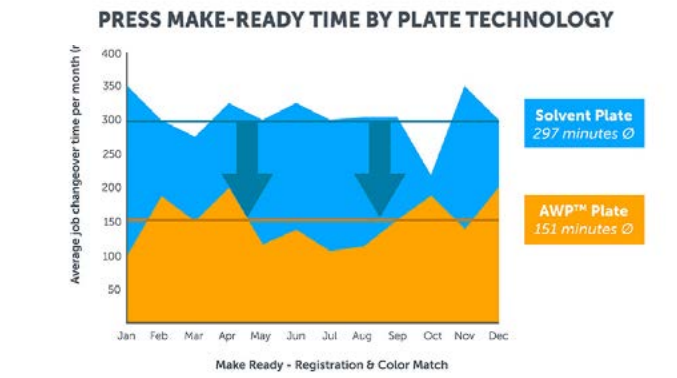
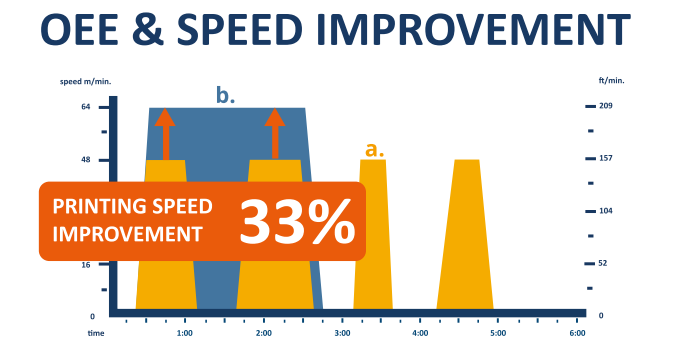
Then in 2000, we began manufacturing the first aqueous plate technology for the labels and packaging industry. Years later, this was combined with what we now call CleanPrint. The result was plates from Asahi Photoproducts that have been specifically engineered to transfer all remaining ink to the printed substrate. This is due to the plate's lower surface energy. CleanPrint plates do not need to be cleaned as often as conventional digital solvent plates.



Reduction of plate cleaning stops creates a significant productivity improvement, resulting in as much as a 50% reduction in makeready waste. More specifically, it reduces ink filling, particularly important for mid-tone printing, and that means fewer press stops for plate cleaning as well as consistent printing quality over the entire production run. The result is significant improvement in printing press OEE, 30% or more in many cases.



Asahi CleanPrint White Paper: 45 Years of Flexographic Innovation

Unique Asahi engineering also facilitates

kiss touch printing pressure

Lighter printing pressure ensures constant repeatability of printing quality during the production run as well as longer plate life.

Beyond Water Washable

Asahi's CleanPrint has received great market reception in our line of water-washable plates, and we are now excited to be extending this capability to other plate categories in our portfolio. Not only will this help flexographic printers increase productivity, but it will also extend the range of applications they can offer customers, including the ability to transfer even more work from offset to flexo.

Most recently, Asahi introduced AFP™-BFT H plates, the only out-of-the-box built-in FlatTop plate in the market that feature CleanPrint, which is designed to facilitate kiss touch printing pressure. These new plates, fit seamlessly into any workflow available today, including standard tube UV, high energy UV diode exposure or FULL HD imaging systems; and require no special equipment. This is just one example of how Asahi is planning to extend CleanPrint to more plates in its portfolio to make the technology available for high-quality flexographic printing on the widest possible array of substrates, including those that are difficult to print on.

CleanPrint: The Details

In designing next-generation flexographic plates, Asahi's polymer chemists have created chemical structures that can hold precise image structures, including the smallest highlight dots, for the entire duration of a print run. While this may sound simple, it took an enormous amount of innovation to achieve and is unique in the marketplace. Marketed as CleanPrint technology, Asahi Photoproducts views this approach as the future of flexographic printing. We believe it will ultimately allow label and packaging printers/converters to phase out the more environmentally damaging and less reliable solvent-based platemaking processes. Our future plate innovations will focus more and more on a cleaner water-wash technology and make CleanPrint a synonym for our future development approach in balance with the environment.

In fact, that's exactly what U.S. packaging manufacturer and converter The Robinette Company has achieved. The company, which employs 300 and specializes in sustainable packaging for the food, beverage, nutraceutical, construction, textile and health care markets, has been using Asahi AWP™-DEF water-washable plates for several years, and is in the process of upgrading to Asahi AWP™-DEW plates for even more productivity improvements. This has enabled Robinette to completely eliminate solvent-based platemaking. And the results speak for themselves:

1. The platemaking process has been reduced from three hours for solvent-based plates to a first-plate-out-time of 60 minutes with Asahi AWP™-DEW plates, and subsequent plates are delivered in less than 20 minutes. The result is a more than 33% increase in capacity and the elimination of hazardous chemicals, revolutionizing the plate room.

2. With solvent plates, presses at Robinette delivered a 49.58% Overall Equipment Effectiveness (OEE). Now with Asahi AWP™ plates, that has jumped to 64.92%, a 31% increase in OEE for the press room, with reduced makeready times and fewer press stops for plate cleaning.

3. More specifically, the average time it took press operators to change a job with solvent plates was 297 minutes while AWP™ plates took an average of 151 minutes, a 50% reduction in makeready time.

As the Robinette Company has found, CleanPrint plates from Asahi Photoproducts have been specifically engineered to transfer all remaining ink to the printed substrate. This is due to the plate's lower surface energy. CleanPrint plates come up to colour faster and do not need to be cleaned as often as conventional digital solvent plates. Reduction of makeready times combined with fewer press stops for plate cleaning reduces substrate waste and creates a significant productivity improvement. In addition, Asahi CleanPrint plates can consistently reproduce highlight dot sizes smaller than the thickness of a human hair, enabling precise, faithful reproduction of photographic images using flexographic printing technology.

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This makes CleanPrint plates ideal for use with a fixed colour palette printing process. By using a fixed color palette printing process with Asahi CleanPrint plates, companies can achieve even greater efficiencies. Not only is the changeover time between jobs substantially reduced, but it is also easier to gang jobs for more efficient use of plates and substrates, improving time to market even more. Fixed color palette printing is a proven approach that has long been successful in offset printing.

Now, with the precise and predictable performance of Asahi CleanPrint plates, fixed color palette printing is viable in flexo printing operations as well. It can be implemented with CMYK inks, but even more can be gained with a 7-color range of inks, typically CMYK/OGV, which can achieve more than 90% of Pantone colors.

Experience informs us that flexographic printers using a fixed colour technique significantly increase efficiency from about 50% to around 85% just by that one simple fact of using the same fixed colour sequence in the press.

Clean and in balance with the environment

With CleanPrint plates, Asahi Photoproducts continues to innovate platemaking technology with a solution that aim to produce plates in an office-type environment, processing photopolymer and reducing VOC's into the atmosphere. CleanPrint plates use less ink, emitting fewer VOCs in the pressroom. There is less makeready waste and waste due to plate cleaning press stops, adding even more environmental sustainability to the process.

Looking Ahead

CleanPrint plates offer a win/win solution to flexographic platemaking. Flexo printers/converters win by increasing capacity and reducing costs. Brand owners win by reliably acquiring extremely high-quality labels and packaging that set them apart on the shelf without incurring excessive costs. Everyone wins by making the flexographic printing process more environmentally sustainable.

We believe flexography will continue to be the dominant printing technology for labels and packaging for some time to come, and in addition to extending CleanPrint to other plates in our portfolio, we are working hard to continue to bring even more innovations to market, including both plate and processing technology, so that 45 years from now, we can again look back on a history of innovation and contributions to the market.

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