

Color on Demand

*Manfred Wiedemer
Océ Printing Systems
Poing, Germany*

Abstract

Color variable printouts are highly demanded for a better look, more detailed and easier to understand information, better readability of the documents, etc. On the other hand, printing color is more expensive, needs much more work for preparation and data processing and storage and is more complex.

The Océ VarioStream 9000 printer family is built to produce both color and black and white pages at competitive cost per page in a single device. Capital cost for a spot color engine is a small premium to comparable monochrome printers. The technology highlights of these recently launched printers will be presented to demonstrate the migration path of printing monochrome and color in an economical way. The value of mixed color jobs will be discussed as well as the flexibility of an engine at the crossroads: reducing cost versus creating value.

Different Layouts

The visual quality of documents is mainly determined by the kind and quality of paper and the layout of the printed content.

Certain fonts can convey a feeling or mood.

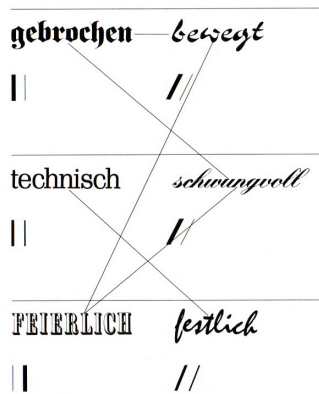


Figure 1. Meaning of characters

Bold or italic characters are other methods to underline important statements in monochrome printing.

Personalization however remains the most important point to get a high response rate for advertisements for example.

Color has a similar attractiveness for bills, tax statements etc.. The number of paid bills from mobile phones increased significantly after the amount to be paid was printed in red figures.

The brand recognition of IBM blue as an example for customized colors, Marlboro red and other brands is extremely high.

Finally some pie charts are only able to interpreted if the different pieces are printed in different colors.

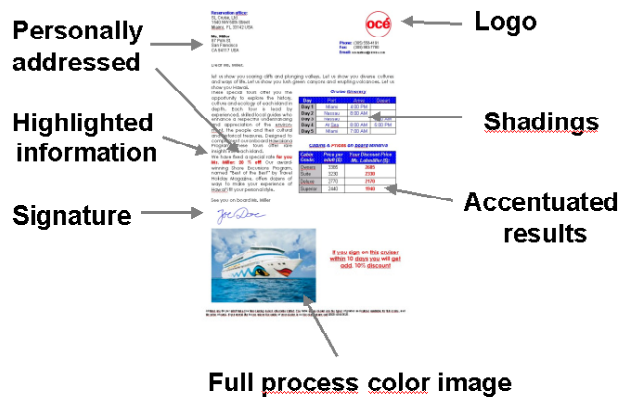


Figure 2. The added value of such printed documents is obvious

There is only one reason not to use personalized color printouts for all kinds of document; that is the cost.

For the layout you need more complex tools, for personalization usually a digital printer is required and often more expensive paper and inks have to be used.

Realization

With digital technology the generation of individualized color prints is no longer a job of specialized designers only. Powerful SW-tools enables many more people to generate the layout of high quality prints.

The costs for printing especially digital printing remains the highest hurdle keeping documents from being printed in this best quality.

Full process color printing always needs four layers of print plus additional costs in maintaining quality, like registration, and for performance.

On the other hand, there are a lot of documents where personalized color is not needed or only partly needed within a job or printed book, manual, documentation.

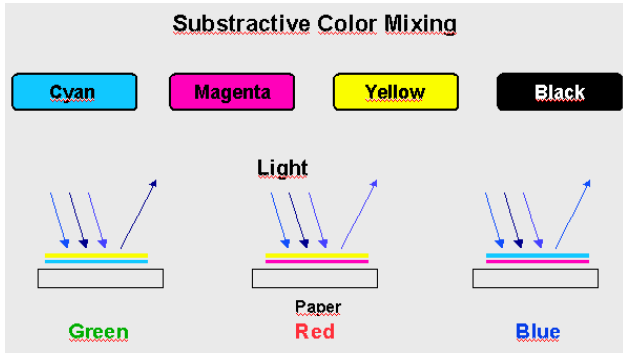


Figure 3. YMCK-development

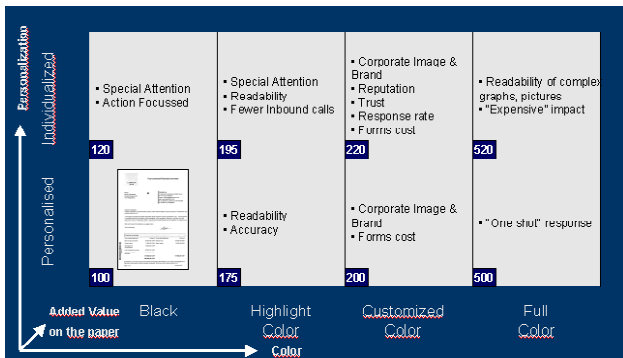


Figure 4. Job Definition

Combining a workflow and printing method which optimizes the costs and performance issues drove the specification for the Variosteam 9000.

Process Speed

With a nominal process speed of 1m/s the VS 9000 prints 800 ppm/A4 monochrome.

Up to ten different developer units can be installed to print up to 5 different kind of toner on each side of the paper.

The average speed is determined by the application's use of different colors within a job.

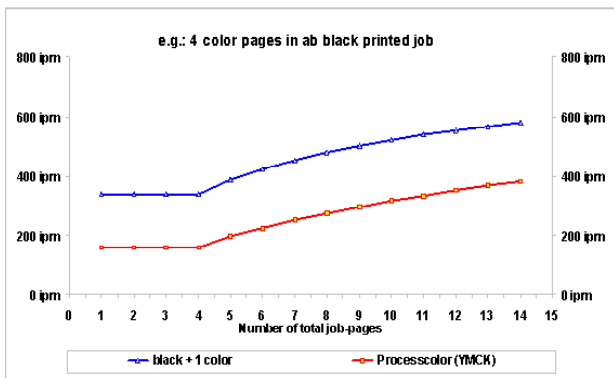


Figure 5. Increase of Printspeed - Job Mix

The main advantage of this concept is the flexibility for the customer on his way to migrate from b/w to color printing.

Only the developer units have to be changed or added to adapt the printer for different applications.

Any combination of b/w, and highlight colors, up to full process color use the same expensive aggregates, such as controller, and imaging units at their maximum performance.

The process speed of 1m/s offers at least a performance of 160ppm/A4 printing full process color (YMCK) applications, which is comparable with the "specialized color engines" (single-pass-printers).

This process speed was chosen after intensive studies on future run length, average mix of b/w and colored pages (highlight, customized color, full process color) within a job and optimized economically solutions of processing power for the controller and server.

If necessary and economic useful we are able to adapt the performance range of these printer family.

The VS 9000 uses an intermediate belt for collecting the color layers. This offers a better registration compared to a multi-pass-engine, collecting the color layers on the paper. Additionally it protects the sensitive photoconductor material and extends the variety of media to be printed.

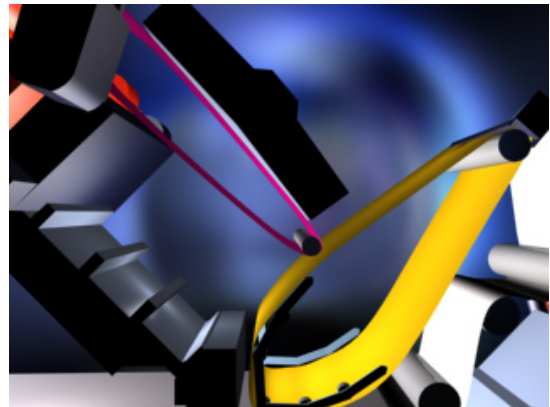


Figure 6. OPC Belt and Transfer Unit

Inks

In addition to the development of the VS 9000 product family the printer is prepared to work with company specific colors. This feature will enable the user of these printers to use plain paper without any preprinted logo. Only 30% of the known specific company colors can be printed by YMCK without changing the color.

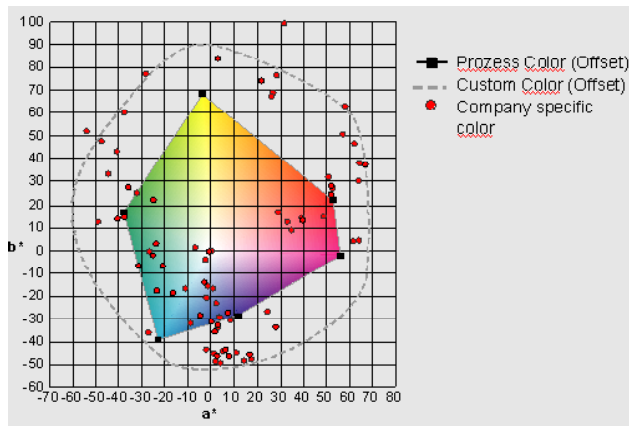


Figure 7. R, G, B, Y, M, C, Highlight Color, Custom Tone, Special Colors

Conclusion

Color prints are more attractive and usually offer more and more readable information to the customer.

The added value of personalized colored documents produced on digital printer has its price.

One solution to make color digital mass production affordable is color on demand, as used in the VS 9000.

The flexible combination of different developer units, each representing one color or a special ink, offers the most economic solution for specific applications.

The very high speed of the printing process enables an appropriate performance for mixed jobs, b/w up to full process color.

Biography

Manfred Wiedemer is Vice President Technology and key components of Océ Printing Systems in Poing, Germany. He received his Engineer diploma in Automation and Precision Engineering.

In 1967 M. Wiedemer joined the central laboratory of Siemens working on the first high speed impact printers.

From the start of the first laser printers in 1972 he has held different positions in developing printer mechanics, controllers and device controllers. From 1977 he became group leader for all electrophotographic printers within Siemens. He launched the PCM-controllers, LED/Page-stream and Demandstream-printer families as well as the first cut sheet engines in the '80s and '90s.

Since 1985 he was appointed to the head of printer development within Siemens. In the mid-1990s he started the development of the newly announced VS 9000.