Océ VarioStream 9000 – Solutions for Publications, Transactions and Mailings

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Abstract

Using the recently launched duplex web printing system Océ VarioStream 9000 the production efficiency of publications, transactions and mailings can be improved significantly. The basic features of the new digital printer platform to improve the quality and the economy of industrial digital printing are the automatic paper feed, the single-point and remote operating, the single-pass duplex ergonomics, the remote service diagnosis, the UP³I preparation, the wide range of paper qualities (36 g/m² to 240 g/m²) which can be used, the Flexi Dark feature to adapt the maximum optical density (OD) to the application and the variable OD-curve to fit the appearance of the printed goods to that produced on other engines.

Figure 1. VS 9000 consisting of the components operator panel, paper input module, print module, fusing module and filter module.

Heavy Duty Industrial Printing

The VarioStream 9000 is a new generation of digital b/w and color printing systems that is based on more than 30 years experience and know-how in digital industrial printing. The design of an electronic printing system dedicated to industrial b/w and color printing has to fulfill mainly the following requests: robust mechanical design, high productivity and reliability, duplex printing, print quality comparable to conventional offset, versatile interfaces, highest flexibility in the daily use, efficient serviceability and long term protection of the investment.

The VarioStream 9000 is a completely new developed technology platform. A basic target in this platform concept is the migration path from b/w to color. That means upgradeability starting from b/w to 2, 3, 4, 5 colors, process color and even company colors – all at low additional engine cost, low cost per page, and easy to use.

The Océ VarioStream 9000 is designed to fulfill these demands. Figure 1 shows a photograph and figure 2 a functional sketch of the printer.

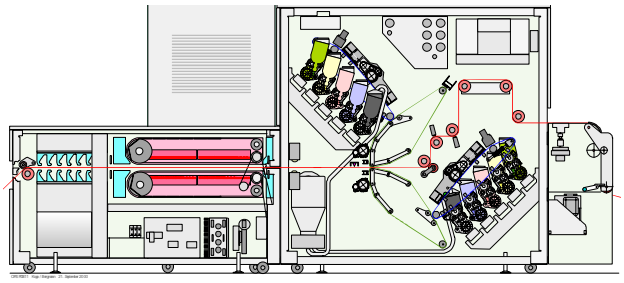

Figure 2. VS 9000 paper input, print module and fusing module

As main technology components, the new system contains two electrophotographic printing units working with OPC belts, intermediate belts, a two component tribo-jump- development and a LED printhead. Each of the printing units is prepared to be operated with up to five developer stations. The two printing units form the images for the upper side and for the rear side of the paper. The transfer of both images is realized simultaneously which provides a perfect registration. The electrophotographic process speed is 1 m/s. That means the 1/1 printing engine produces 800 A4 pages per minute. In the two color engine and in the multicolor systems the color separations are generated sequentially, collected on the intermediate belt and transferred simultaneously to the paper. The paper transport is designed to handle a wide range of paper qualities from 36 g/m² to 240 g/m² and up to 19 inches print width. An active web position control is integrated in the print engine. This extends the range of standard applications considerably. The fusing module consists of infrared heating equipment which fuses the toner images on both sides of the paper web simultaneously. A cooling module is included to reduce the paper output temperature to an appropriate level.

Productivity

Océ VarioStream 9000 is as a single-pass-duplex printer an all-in-one machine. That means only one system has to be operated for simplex-, duplex-, b/w- or color-applications. Every application is produced at the highest possible speed. In any case the production cost fit to the application. That means e.g. no color-cost-overhead for b/w-applications.

Low set-up times start with the automatic paper feed feature in combination with the full duplex paper path in which all synchronization and registration tasks are done automatically. Even the integrity of the printed data is proved automatically with integrated sensors and special patented algorithms.

The graphical user interface (GUI) is designed to have a single point of operation. This includes an UP³I-interface that brings all operator panels of the different machines of the pre- and post-equipment in the print-line to the printer's GUI. The GUI is ergonomically in a WINDOWS look and feel designed. The GUI supports the operator of the machine in a graphical display which enables intuitive handling and guides the operator through all procedures e.g. the change of consumables like the OPC belt or corotron cassettes with step by step instructions.

The Océ Remote Service Diagnosis makes remote-controlled service and guidance possible. With this system the Océ technician knows in advance what needs to be done and which parts to bring. This guarantees a minimum of downtime of the system.

Flexibility

The VarioStream 9000 sets a new standard in flexibility. The first engine type of the platform is a black and white duplex engine containing just one developer station per printing unit (1/1). The second machine type of the platform is a two color duplex printing engine with two developer stations in each printing unit (2/2). For the next years the launch of the 3/3, 4/4 and 5/5 engines is planned. The 4/4 engine will have an additional variant of a full color duplex printer.

Beyond the YMCK process colors the Océ CustomeTone® colors are in preparation which would allow printing customized colors like company colors.

The Printer can be equipped with any combination of developer stations which enables a variety of color-modes (e.g. 1/1, 2/2, 5/5, 2/1, 5/4, 3/2, …). The color-modes are automatically matched to the requests of the print job. Color stations that are not in use are automatically switched off and cause no costs when they are not used.

This all opens the way to a maximum in flexibility for applications that can be printed. Besides standard applications like bank statements or invoices new possibilities in the direct mail area or in book printing are enabled, even special applications like medical package inserts on very thin paper.

Print Quality

The new process control provides the means to set the maximum optical density level in a wide range (OD max. = 0.7 ... > 2) and to change the tone curve shape independently. This so called Flexi Dark feature gives the possibility to match the tone curve of other printing machines (see figure 3) to get a similar appearence of the printed applications. On the other hand, this tool gives also the opportunity to reduce toner consumption remarkably, which is important for instance in newspaper printing.

Figure 4 shows the same image printed at different maximum optical density levels on VS 9000.

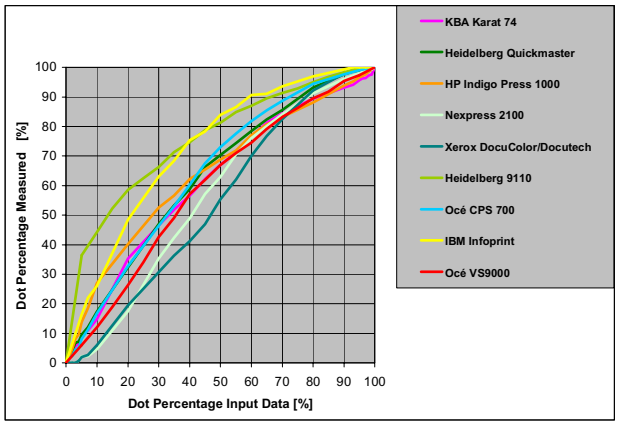

Figure 3. Tone curves of VS 9000 compared to tone curves of other printing engines

Figure 4. Different optical density levels printed on VS 9000

The print quality level of the VS 9000 is comparable to offset because of the 600 dpi multilevel printhead, the high uniformity of the OPC belt, the very soft toning system combined with an extended color space and the contactless fusing process.

Conclusion

Using the recently launched duplex web printing system Océ VarioStream 9000 the production efficiency of publications, transactions, mailings and book printing can be improved significantly.

The basic features of the new digital printer platform improve the productivity, flexibility, print quality and economy of industrial digital printing. In combination with the unique migration path from black & white to color printing a maximum range of profitable businesses will be enabled.

Biographies

Edmund Creutzmann is Executive Director Product Development for Continuous Feed Printers in the R&D Department of Océ Printing Systems in Poing, Germany. He is responsible for the development and testing of the print engine and print-process in the Océ high speed heavy duty printers. Particularly he is responsible for the new Vario Stream 9000 product line.

E. Creutzmann is in this business with Océ and Siemens since 1979. He received his degree in physics and engineering from the FH of Munich and holds about 100 patents worldwide.

Martin Schleusener is Executive Director of Electrophotography in the R&D Printer Technology & Components Department of Oce Printing Systems in Poing, Germany. He is responsible for technology development of the electrophotographic processes and components of Océ's high speed heavy duty printers. M. Schleusener is with Oce/Siemens since 1990.

He received his PhD degree in physics from the Technical University of Magdeburg and holds more than 50 patents worldwide.

M. Schleusener is a member of the IS&T and had served as European Program Chair and member of the Advisory Committee of former IS&T NIP conferences.