Océ Printhead and CrystalPoint™ Technology

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Introduction

At Drupa 2008 Océ introduced the ColourWave 600 as the first product using Océ's proprietary CrystalPoint technology. The CoulourWave is a wide format printer for Technical Documentation environments (CAD/GIS) as well as indoor display graphics, signage and point-of-purchase. CrystalPoint technology enables fast printing on plain uncoated papers, with zero drying time through the use of special phase change tonerlike inks providing excellent printquality and good adhesion properties.

Legacy in toner printing and clear application focus

The development of CrystalPoint technology at Océ started with a clear vision on applications for a well defined market segment: wide format full colour printing for indoor graphics and CAD/GIS applications. In this segment thermal aqueous inkjet has been and still is the dominant technology. HP and Canon dominate the marketplace by leveraging their inkjet technology developed for small format SOHO applications. However, aqueous inkjet technology has some clear drawbacks that are mainly related to the use of water as a carrier liquid:

- Special coated inkjet media are required for high printquality and productive printing at high ink coverage.
- Limited printquality (color gamut, feathering) and speed on plain uncoated papers.
- Reliability limitations due to clogging of nozzles (evaporation of water).
- Emission of VOC's (cosolvents).

With its legacy of market leadership in wide format printing for CAD/technical drawings based on electrophotographic tonerbased systems, Océ set out to develop an inkjet technology to combine the strengths of both inkjet and toner based printing.

Within Océ R&D the idea behind the development of CrystalPoint technology was quickly designated as 'tonerlike' inkjet with focus on the ability to print on uncoated media (plain papers, low cost) with high productivity and reliability. After more than 10 years of development, the first product using CrystalPoint technology has been succesfully introduced into the market in 2008 as the ColourWave 600, and so far the technology has redeemed the promises described above. It features a printspeed of 2A0/min enabled by using only 2-pass printing without any visible banding. It is able to print on uncoated stock while maintaining a large color gamut. The reliability matches the level known from wide format B&W toner based printing. But all this came at a price. Océ had no options for technology leverage, meaning that special types of printheads and inks needed to be developed from scratch.

Printheads, inks and printing process

The presentation will describe in detail the background on Océ's CrystalPoint technology, its devlopment and applications. It will cover:

Océ's piezo printhead technology

- Basic design & key characteristics
- High temperature capability enabling a wide ink range (up to 150C)
- Paint Technology for 100% prediction and compensation of nozzle failures
- High speed single-pass banding free printing

CrystalPoint technology

- TonerPearls
- gelling phase change ink jetting
- 'Solid in-Solid out' concept

Main challenges & advantages

Application in wide format printing

- Océ's ColourWave 600 product features
- Market-Technology fit

Figure 1. ColourWave 600

Author Biography

Marcel Slot is Vice President of Development at R&D of Océ-Technologies B.V. in the Netherlands. He studied physics at Twente University of Technology after which he joined Océ 19 years ago. He was involved in technology and product development for 14 years as a projectleader, focussing on electrophotography and inkjet printing process technology and material science. Before he was appointed vice president of Development he was director of a Research department for 3 years. He is 42 yrs old, is married, has two daughters and lives in a small farmhouse in a village near the headquarters of the Océ group.