State of the Industry in UV Inkjet

By Dan Marx

At RadTech's e/5 2004 UV&EB Technology Expo and Conference, the Digital Printing and Imaging Association (DPIA) sponsored a day of educational presentations on UV-inkjet technology. Speakers presented information on UV-chemical formulation, inkjet head design, ink, and UV-light exposure systems. Each presentation is summarized below.

UV inkjet session at RadTech's e/5 2004 UV&EB Technology Expo and Conference.

Presentations

James Goodrich, Sartomer Company

James Goodrich, of Sartomer, a raw materials supplier for UV technology, reported on the use of high-temperature curing in UV-inkjet printing. New formulations could result in a number of improvements in the process, including increased opacity, increased speed and increased resistance to abrasion.

Rick Larson, Aellora

Rick Larson, of Aellora, presented information on the recent development of opaque white ink for inkjet applications. He reported that the successful application of white ink requires a careful balance of chemistry and system design. Moreover, he elaborated on the difficulty of developing systems that can effectively force the large amount of pigment needed for opaque white through an inkjet head. Larson said that in addition to uses for graphic applications (allowing for color-accurate printing on a wide range of non-white substrates, including clear surfaces), opaque white can also be highly effective in the marking of circuit boards, a market currently served by screen printers.

Grant Shouldice, SunJet

Grant Shouldice, of SunJet, indicated that the major developments in UV-inkjet printing are the introduction of white into ink sets and the move toward inkjet systems for the printing of packaging graphics, which is expected to be a huge market. He also stated the need for users of the technology to fully understand the safety and health concerns associated with UV technology. Shouldice said that even in the face of a growing use of solvent inkjet, UV might ultimately flourish, based on its production efficiency.

Howard Baldwin, Spectra

Howard Baldwin, of Spectra, a manufacturer of inkjet head technology, reported on head and system implications for UV inkjet. He stated that UV-ink systems work well with inkjet heads, as the inks are not prone to drying in or on the head. Following on the statements of Goodrich, Baldwin said, "Two

UV Inkjet: The Players

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Digital Printing & Imaging Association (DPI) is the international trade association for users of wide- and narrow-format digital imaging technology and their associated supplier base. DPI works to educate its members and industry about new technologies, new markets and new developments in digital imaging.
www.dpia.org

Fusion UV Systems Inc. develops and tests new products and processes for UV-curing applications and is a provider of such technology. Today, more than 10,000 customers, representing a wide range of end-use markets, use Fusion UV equipment.
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Sartomer Company is a global supplier of acrylate/methacrylate monomers, oligomers, photoinitiators, hydrocarbon resins, hydroxyl-terminated polybutadiene resins (HTPB), functionalized polybutadiene resins, styrene maleic anhydride resins and other specialty chemicals used in coatings, composites, inks, elastomers, adhesives, electronics and optics.
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Sericol is a manufacturer of screen, digital & narrow web printing inks. Sericol serves as the primary distributor of the Inca line of inkjet imaging devices.
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Spectra is a developer and manufacturer of piezoelectric inkjet printheads and related consumables and accessories. Spectra has developed significant intellectual property and multiple generations of proprietary drop-on-demand ink jet printheads.
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SunJet focuses on inkjet business. Through creative partnerships, the company serves the principal markets of commercial graphics (large format graphics, packaging and commercial print, publishing, industrial decoration), marking systems, textiles and office applications. SunJet is a global operation, working through its parent company Sun Chemical.
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Xennia is an independent company specializing in contract ink development for the inkjet industry. The company offers customized inkjet printing solutions for a range of industrial, commercial and packaging applications.
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trends exist in ink development—those of a high viscosity, which will contribute to faster inkjet printing, and those of low viscosity that will bring increased print durability. For a system to work effectively, partnerships between ink supplier, equipment manufacturer and printhead provider must be established and maintained."

Terry Amerine, Sericol

Terry Amerine, of Sericol, presented on the use of UV inkjet in graphics markets. According to Amerine, the claims that the technology allows printers to image any substrate were mostly true. While the graphic imaging industry is driven by application, not by technology, he believes UV-inkjet technology will prosper because it is profitable and allows for printing on the widest variety of substrates.

"UV-inkjet technology currently has a number of challenges to contend with including image quality, color range, and a lack of options in specialized ink, all of which could cause imaging companies to resort to some other technology. While the technology, is effective in the short run market (200-300 pieces), increases in speed may soon drive that break-even point out threefold (600-900 pieces). UV technology will be complimentary to increases in print speed because the process includes instant curing and only slight dot gain," Amerine said.

Elaborating on equipment, he reported that single-pass printing technology is the "holy grail" for inkjet imaging and that a number of companies will soon be debuting narrow-format single-pass machines. Smaller, roll-to-roll UV-inkjet units are now hitting the market.

Dr. Alan Hudd, Xennia

Dr. Alan Hudd, of Xennia, a manufacturer of printheads for inkjet systems, stated the need for wetting of

UV-inkjet inks to allow for some amount of dot gain, which is needed to obtain acceptable print quality. He elaborated on UV-inkjet technology. "It will contribute to major advantages in electronics, such as the printing of RFID tags. A great deal of the diversity in UV-inkjet technology will occur beyond the scope of traditional applications for graphic imaging."

Sean Skelly, Jetrion

Sean Skelly, of Jetrion, stated that technology development should closely reflect the needs of the end-users of the technology and elaborated that a systems approach to the technology will provide a more effective mix of equipment and consumables. "Like UV in other imaging industries, no one ink product will be sufficient to fulfill the needs of all required applications."

Panel Discussion

The program ended with a panel discussion. In this discussion, Baldwin; Amerine; William Dougherty, Sartomer; and Jeff Okamitzu, Fusion UV Systems, presented brief views into the future of inkjet heads, equipment, chemicals and exposures systems, respectively. The speakers' brief presentations presented a truly bright future for UV inkjet. Most interestingly, Okamitzu reported that the introduction of cold curing using LED technology is still a possibility, but that it would require significant changes in the chemical composition of ink systems in order to become viable in the real world.

Background

Over a year ago, DPIA entered a partnership with RadTech International NA to provide technology exchange and educational information on UV-inkjet technology. In addition to the recent el5 session, the partnership has also produced the RadTech/DPIA UV Inkjet Committee and the DPIA Digital UV Printing Information Center, which is found on *www.dpia.org.* ◗

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