Digital Printing for Textiles

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September 25, 2008

Printing on Textiles vs. Paper

- Textiles absorb and reflect light differently than paper due to a 3-D structure
- Due to many different fibers, each reacts differently to type of ink
- Printing on textiles takes more time
- Calibration of the printer for textiles is difficult
- Highly porous textured surface & various levels of absorption of the ink
- Strict end-use requirements to meet color-fastness, abrasion and typical wear and tear
- Apparel end use requirements for assembly

Digitally printed Types of Fabric

- Cotton 48%
- Cotton/polyester blends 19%
- Polyester 15%
- Viscose 13%
- Polyamide, polyacrylic, wool and silk account for a small percentage

Screen Printing vs. Process Color

- Screen printing- spot color process, which means colorants are pre-mixed
- Process color- done with ink-jet printers where the colors are mixed on the fabric
- Inkjet technology began to emerge for fabric printing around 1995
- Inkjet printing has significantly reduced the time and cost of the production of sampling
Inkjet Printing

- Three basic components: print head, ink, medium
- Continuous Ink Jet (CIJ) and Drop-on-Demand Ink Jet (DOD)
- CIJ- Ink is applied by squirting the ink through nozzles at a constant speed with a constant pressure applied
- DOD- Ink droplets are ejected only when needed to form the image

Color Profiles

- A color profile tells the printer which color to lay down on the fabric and in what quantity
- For instance, acid inks used on silk will need a different profile from reactive inks used on cotton.
Advantages of Direct Inkjet Printing

- Full preparation of screens is not necessary
- Register between the screen and color control isn’t a problem
- Gives the designer direct control over the appearance of the colors
- Last minute decisions can be made before printing
- No waste of time and money spent on screens that were made for only for sampling and often are discarded

Digital Printing from a Designers Perspective

- Technology and creativity
- Resistance to technology
- Flexibility and opportunities, more freedom

Challenges

• Transferring a digital design to the fabric to the fabric it is printed on
  – The observers vision
  – Digital image capture
  – Computer monitor display (RGB)
  – Digital color printer (CMYK), calibration
  – Illumination, D65 or D50

Color Management Systems

• Main purpose is to provide a control system so that measured color data of a design may be reliably and accurately transformed into output data for display on a monitor or as input to a printer, so that the appearance of these outputs reliably represents the design to the observer.
• Helps assist in the transfer of color data from image capture through to the final printing system (cross-system transfer)

DuPont™ Artistri® Digital Textile Printing

• DuPont™ Artistri® inks are available in both pigment and dye-based formulations that combine DuPont proprietary pigment dispersion, polymer and ink formulation technology.
• Artistri® inks offer superior results for digital textile printing – brilliant colors, excellent fastness properties, and robust print reliability.

COT Digital Printer
Advantages of Digital Printing & Using Digital Technology

http://www.techexchange.com/thelibrary/academia.html

• Digital printing allows the artist to increase the complexity of their designs
• Relieves the artist of the sometimes harmful repetitive motion entailed with hand printing
• Reduces the artist’s and the environment’s exposure to chemicals
• Increases the speed at which the artist can produce intricate designs
• Allows for the creation of designs that are not possible by hand.

Problems Using Digital Printing & Digital Technology

• Costly investment for the technology (computer, textile design software, digital printer, inks and dyes, color management software and tools)
• The artist looses intimacy with the materials
• The absence of hand control in the application of color can jeopardize surface interest created by the human touch
• The separation from the materials can be a compromise to the artist
• Every artist has a unique attraction to the tools and tactile elements of their chosen medium. Advanced technology separates the artist from the tactile senses

Interesting Websites:

• http://www2.dupont.com/Artistri/en_US/sales_support/printers/cp_home_furnishings.html
• http://tigger.uic.edu/~hilbert/Glossary.html – Digital Printing Terms
• Future technologies:
  – 3-D printing to create textiles with laser sintering technology
  – Freedom of Creation
    http://www.freedomofcreation.com/
Resources Used:


• Websites:
  • Texexchange.com (TC2)
  • http://www.digitaltextile.com/