Taking Inkjet Product Decoration to the Next Dimension

Debbie Thorp, Business Development Director

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• Software & hardware component supplier and strategic partner to printer OEMs, integrators & large end users
• Powerful & flexible technology to suit system and application needs
  • Build better products - reduce development time - get products to market faster
• Expertise in large systems - any number of printheads – any amount of data
The Challenge

• The world is not flat
• We live in a world of shapes

Images credit: Reddit Blog & Guaranty Solar & JK Motor Factors
Decorating Shapes

• Analogue print technologies can decorate huge range of shapes.....and they do it so well....

• But digital printing has many benefits and so we want to apply the benefits of inkjet technology to printing onto different shapes too.
• Inkjet printheads love flat surfaces
  • It’s what they’re designed for
• If only.....
Inkjet Direct to Shape (DTS)

• Market started with tubes and cylinders
Single to Full Height Coverage

One head – wet on dry curing – lower throughput

Two heads – wet on wet printing – higher throughput
“Skyscraper” mode
DTS Inkjet Systems - Tubes

- Many systems are now installed and in production
- A selection....

Images credit: Machines Dubuit, Hinterkopf, KHS, Martinenghi, InkCups Now, Mimaki, Wifag Polytype web sites
Cones

• Next step: cones or conical/tapered shapes
Increasing density

Nozzle misalignment

Screening issue - changes in dot gain

Time of flight differences

Image printed without correction

High Resolution

Low Resolution

Without image correction software
Image Compensation for Cones

- Correct nozzle alignment
- Density correction
- No dot gain issues
- No screening artefacts
Full Height Printing - Cones

- Enabling full height printing onto larger conical containers – GIS Curved Surface Map Generator
DTS Inkjet Systems – Cones/Cups

EPS, Machines Dubuit & InkCups
Now are all here at the show
Tubs

- Mixture of flat and curved surfaces
- Required corrections change during the print
  - Often from pixel to pixel
- GIS multi-dimensional nozzle, density and screener correction technology that can be adjusted to each surface type and associated application process
So What’s Next?

• The market wants to print onto more complex shapes
  • Automotive parts
  • Industrial components
  • Aerospace
  • and much more....

• Lot of activity so far using robotics
  • Many customised non-public systems in operation

• Next step = full ‘wrapping’ or full coverage printing of an object
GIS Sphere Printing

• From concept to reality
Wrapping

3D Mesh + Texture =

• Lots of tools available for wrapping
  • Well established technologies from gaming, augmented reality industries etc.
  • Lots of different ways to wrap, edit directly onto 3D surfaces
How to Print?

• Select the print path over the object
• “Unwrap” the image…
  • Taking into account the constraints of the object to be printed, inkjet printhead, capability of the robot

Latitude  Spiral  Freestyle

Images credit: Health Herbs 365 & Natural Awakenings
GIS Software Simulation
Implementation

GIS Print Server

Import

Unwrap

Colour Sep & Screening

Swathe Decomposition

Robot Control

Creation Tools

3D Mesh + Texture

RGB Swathes, BMPs & Masks

Grey Level Bitmaps

Swathe Paths
From Concept to Reality

• GIS technology takes into account:-
  • Geometry of every nozzle in the head
  • Geometry of the object
  • Print path taken by the head
• Compensate for the density effects caused by the surface printing on
• Optimise the screener for shape printing onto
• Compensate for the behaviour of the datapath

• Just the beginning....
  • Opens up many new opportunities for printing onto different shapes – with full coverage (and full colour)
Want to Find Out More?

Please visit our stand #548

Debbie Thorp, Business Development Director
debbie.thorp@globalinkjetsystems.com

Global Inkjet Systems Limited
Edinburgh House
St Johns Innovation Park
Cowley Road
Cambridge CB4 0DS - UK

Tel: +44 (0)1223 733 733
Web: www.globalinkjetsystems.com