Digital Print Enhancement
On a Narrow Web Press for Label & Flexible Packaging Applications

Jack Noonan
MGI Marketing Manager
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Topics:

• Introduction to MGI & Konica Minolta

• Present industry tech trends for "Digital Print Enhancement".

• Review technical challenges of roll-fed "Special Effects"

• Compare traditional processes to "Digital technology"

• Discuss "Customer Value" and new "Benefits"

• Conclusion – Q&A
The MGI & Konica Minolta Story
MGI: Integrated Industrial Group

The MGI Group

MGI Printing & Packaging Industries

Kora Packmat
Industrial Mechanics

Köra-Packmat

Ceradrop
Printed Electronics
3D Smart Printing

MGI
Corporate Introduction

- Global Business Founded in 1982 in Paris
- $400 Million Stock Market Valuation (2018)
- Offices & Operations in France, USA & Germany
- 14th Generation of Digital Toner Printing Presses
- 6th Generation of Digital Inkjet Printing Presses
- 35% Revenue Growth in Last 5 Years (2013–18)
- Konica Minolta is 40.5% Shareholder/200+ Staff
2008
1st Digital 2D Spot UV Solution – JETvarnish

2012
1st Digital 3D Embellishment Solution – JETvarnish 3D

2014
1st Digital Foiling Enhancement Solution – JETvarnish 3D + iFOIL

2016
1st B1+ (29”/75cm) Digital Enhancement Press – JETvarnish 3D Evolution
1st Roll-fed (16.5”/42cm) Digital Enhancement Press – JETvarnish 3D Web
1st Intelligent and Adaptive Print Registration System – AIS Smartscanner
1st Integrated, Fully Digital Print & Foiling Press – Meteor Unlimited Colors
A Standalone Special Effects Nexus

The World’s First 100% Web-fed Digital Enhancement Press
~ Finishing on Demand (FOD)
~ Variable Data Enhancement (VDE)
~ Variable Embossed Foiling for Paper, Plastic, Synthetic & Film
Digital Print Enhancement: A Technology Review
JETvarnish 3D (JV3D) Technology Summary

KEY POINTS:

1. A Completely Digital Inkjet Solution for Variable 2D/3D UV Textures + Embossed Foil

2. No Expensive tools or consumables needed: = No Plates, Screens or Dies!

1. No limitations for short runs or variable printing: 1 – 10,000pcs = Same job setup

2. Applies special effect to offset, flexo & digital output – on paper, plastic & synthetic stocks

3. Workstation software for Operator w/ Job Cost Calculator & Image Editor
JV3D Digital Enhancement Process

The MGI Method

- Inkjet Varnish Drops = Height Build
- Varnish = Foil Adhesion
- Curing = IR, LED & UV

Foil Roll

- High 3D
- Medium 3D
- Low 3D
- 2D Spot UV

200+µ
Multiple Special Effects on Same Piece

JV3D Variable Data Finishing (VDF):
• Personalization & Customization: Short + Long Runs!
• No Dies! No Plates! No Screens! 100% Digital Power!
• Universal Finishing Station for Offset & Digital Prints!
Label & Flexible Packaging Solution

JETvarnish3D Web
Digital varnish & iFOIL

Features
- Roll-fed FlexPack & Label Press
  - Corona Substrate Mgt.
  - Single Pass 232 Um
  - 17” Roll Width
  - Flexo Primer
  - 8220 Ft/Hr
  - Rewinder

Applications
- Healthcare & Beauty
- Household Goods
- Beer, Wine & Liquor
- Luxury & Limited Editions
- Laminated Layer Pouches
- Clear Plastic & Synthetic
- Shrink Sleeve Containers
PIA 4x InterTech Award Technology

MGI Digital Technology

Is Honored to Receive a Record-Breaking
4th PIA InterTech Award for the

JET Varnish 3D Series

Digital Print Enhancement Presses:
2D Spot UV, 3D Textures & Variable Embossed Foil

www.mgiusa.com
Technical Challenges for Roll-fed Digital Print Enhancement
Challenge: Diverse Inks & Substrates

Universal Print Enrichment Design Model For ALL Web-fed Output

Digital

Flexography

Offset

JETvarnish 3D Web

Digital varnish & IFoil

MGI
Digital Technology
Corona Treatment Module Option

Corona substrate treatment module
In-line system made to optimize varnish adhesion on complex printed substrates
Max Web Width: 420 mm
Power: 2 Kw
Flexographic UV Station

Rotary Flexo UV Station:

- **PRIMER Station**
  => Uncoated / Structured Materials
  - Full Varnishing Station
  - Protection Varnish
  - Anilox cylinders
Flexographic UV Station – Primer Application

- Apply Varnish & Foil on Uncoated Substrates & Structured materials (wine)
- Varnish used as protection

- Glossy Varnish
- Matt Varnish
- Varnish for Uncoated
- Protection Varnish
From 50µ up to 400µ

- **Paper:**
  - Coated / Uncoated / Textured / Film

- **Light Cardboard / Folding Carton**

- **Self-Adhesive Labels**

- **Shrink Film**
  - PVC / PETG

- **White or Transparent Synthetics**
  - PP / PE / POPP / PET
Substrates for Label - Paper

Paper Substrates Includes:

- **Uncoated Paper:** used for labels, which require textured printing quality

- **Coated paper:** used for high-quality labels

- **Thermal paper:** used for variable data overprinting, e.g., declaration labels

- **Metallized paper:** used for special visual effects or as a substitute for hot foil printing

- **Dark adhesive paper:** used for covering incorrect packaging or other printed matter contents

- **Specialty Paper:** displaying special structure or color shade; used for wine labels, e.g.
Synthetic Substrates Includes:

- **Polypropylene or PP:**
  fairly durable and thermally non-expansive

- **Metallized PP:**
  (same characteristics as PP): used for labels with special metallic visual effects

- **Polyethylene or PE:**
  more stretchable/flexible substrate; used for compressible packaging, e.g.

- **Polyester or PET:**
  maximum durability and persistence
Challenge: Registration

AIS Scanner

All JETvarnish 3D Presses:
• “Scan & Go” Tech
• Intelligent Inkjet Mgt.
• Automatic Job Setup
• Instant Makeready
• Zero Potential Waste
Adaptive Inkjet Synchronization

Rectified Labels

Skew

Stretch* Contraction*

Shift X & Y

*Total / Partial
Universal finishing registration

- No registration marks!
- Artificial intelligence registration
- Treats each piece like a separate job
- Detects digital, offset & flexo printing defects
- Analyzes each piece and generates new print file
- Manages inkjet flow to correct printing defects
Spot UV & Embossing Station

⇒ Spot UV Varnish station for 2D Flat & 3D Tactile effects (from 3µ up to 200µ)

⇒ Switch from one job to another with no equipment cleaning required.

Also includes UV LED to freeze the varnish for the 3D effects, and the AIS SmartScanner for Automatic Registration.
Dynamic Curing flexibility

Advanced Curing Methods

- InfraRed Lamps for high Flat 2D Effects
- LED Lamps for high 3D Texture Effects
- UV Lamp for Varnish curing (Polymerisation)
- Chiller Roller Underneath Curing System

- 2nd Buffer System
  - Rewinding
  - Speed Compensation
Challenge: Roll Tension Management

2 Buffer System

- Wind/Re-Wind/Review Process
- Speed Compensation Inkjet Heads & iFOIL Hyper-sensitive roll module
Challenge: Foil Application

- 100% Digital Hot Foiling Process
  - NO Plates
  - NO Dies
  - NO Make-Ready
  - Use Market Hot Foils

MGI
Digital Technology
OptiFOil Management System to minimize waste
- Foil widths from 100 mm (3.9’’) to 420 mm (16.5’’)
- Foil roll core diameters: 1’’ and 3’’
- Lengths from 400 m (1,310 ft.) to 2,000 m (6,500 ft.)
- Available market foils (including metallic tones, holographic and multiple colors)
- Up to 3 simultaneous foil rolls (x3 Colors in 1 pass)
Challenge: Maximize Productivity & Efficiency

1. Choose the Job from the list (CMYK + Mask files)

2. Choose Desired Varnish Thickness

3. Press Play button to launch production
An Innovative Software Suite

Manage your job

Predict your costs

Fine tune your images
Flexible Automatic Settings Management

100% Digital Settings Management

MGI Digital Technology
MGI Unique Spot Varnish Editor

On the fly JOB EDITING

- Modify
- Create
- Adjust

⇒ Instant Proofing with high quality

⇒ Multiple Version Possible

⇒ Finding best result on the fly
Maximize Profitability - The MGI Predictive Cost Calculator

Cost of production calculator

- Varnish TIF file
- Varnish coverage of the sheet (9.66%)
- Thickness of the Varnish (3D)
- Varnish consumption to produce the job
- Total production Cost for 1,000 B2 sheets
Digital Print Enhancement
Vs
Traditional Technology
## Evaluation Criteria

### Hot Foil process evaluation guidelines

| Print Quality       | - 3 Dimension  
|                     | - Solid printing  
|                     | - Sharpness  
|                     | - Substrate diversity  
| Process Stability   | - Stable result  
|                     | - Job to Job Reproducibility  
|                     | - Standardization  
| Cost Effectiveness  | - Set up time and waste  
|                     | - Consumable cost: material, plates  
|                     | - Investment Cost  
| Handling            | - Operator qualification  
|                     | - Ability to adjust and change Design  

## Rotary Hot Foil – Evaluation Chart

### Evaluation:
- **Rotary Hot Foil**

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### Cold Foil – Evaluation Chart

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## Flat Bed Hot Foil – Evaluation Chart

**Evaluation:**  Flat Bed Hot Foil

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Main Characteristics:

- High investment cost
- **3 Dimension design**
- Digital Hot foil
- Adjustment on Press possible with the End Customer
- High quality and glossy solids
- Good sharpness even mixing solids and details
- No plate cost / No lead time to go on press
- No Foil saving option « Yet »
- Multi-process possible: relief + Hot foil
- Standardized system
- Trained operator
- Reduced Waste
# JETvarnish 3DW – Evaluation Chart

**Evaluation:** JET VARNISH 3D

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## Evaluation Chart Summaries

### Evaluation:
- **Rotary Hot Foil**
- **Cold Foil**
- **Flat Bed**
- **Jet Varnish 3D**

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*Note: The chart uses symbols to indicate performance levels across different criteria.*
Customer Value: Extends Digital Value to New Markets
Key App – Beverage Containers
Key App – Food Containers
Key App – Serialized, Limited Editions

- Security & Commemorative Value
- Flexo Primer for Uncoated Stocks
Key App – Small Batch, Boutique Jobs

Fast-Growing Biz Models

- Craft Beers & Spirits
- Custom Cosmetics
Key App – Healthcare/Personal Care
Key App – Beauty & Cosmetics
Key App – Luxury Consumer Goods
Key App: Variable Data Holograms

MGI Patent: AHDP©

- Brand Value: Functional & Attractive
- Security/Protection/Anti-Counterfeiting
How Digital Print Enrichment Builds Brand & Customer Relationships
The Enhanced Print Business Model:

Create a unique competitive image for Print Buyers & Brands.

So, they can have more powerful "Print Experiences"....

...and the Brands can increase profitability.
High Value Brand Marketing Toolset

- **Limited Editions**
  - Collector’s Souvenir Strategy

- **Versioning**
  - Variable Data Foiling (VDF)

- **Regionalization**
  - Local Messages & Content

- **Affinity Marketing**
  - Sports, Entertainment, etc.

- **Personalization**
  - Name of Recipient

- **Language-specific**
  - English, Spanish, Chinese

- **Customization**
  - Product/Audience-Specific

- **Seasonal**
  - Holiday Editions
Variable Data Finishing (VDF)

Brand & Agency Content Messaging Impact:

- Increase Awareness
- Increase Responses
- Personalization & Customization
- Create Omni-Channel Links
Variable Data Finishing (VDF)

Messages That Sell & Increase Client Campaign Success!

- Production Power
- Prototyping Tool

- Campaign-specific Content
- Optical & Physical Engagement
A Simple Financial Equation...

Add Value = Add Profit!

Additional benefits:
Bring your Brands to Life!
(and strengthen your customer relationships)
Conclusion: Energizing Brand Communications & Content

• Digital Special Effects Benefits:
  – Fast, Flexible & Very Cost-Effective
  – Adaptable Flexibility Can Make Each Campaign Unique
  – Eye-catching, Sensory Power Can Increase Consumer Awareness & Retail Purchase Potential
  – Fast Job Turnaround/Delivery Timeframes (Short Run)
  – Create Competitive Shelf Differentiation
  – Exponential Prototyping & Design Power
  – Can Revitalized a Brand Image & Perceived Value
Innovation in Motion

~ Q & A ~

Thank You