MGi
Digital Technology

JET VARNISH 3D *Web*
Digital varnish & iFOIL

Web-Fed Digital Solution
for In-Line

Spot UV Coating
Embossed Hot Foiling
4-Colors Printing & Metallic Effects
Die Cutting, Weeding & Slitting

Innovation in Motion

THE TECHNOLOGICAL REVOLUTION COLOR+

The *JETvarnish 3D Web Color+* offers an inline complete industrial solution for printing and embellishment (varnish and hot foil) with a production speed up to 18.9 meters per minute.

COSMETIC LABELS
Printed & embellished labels on JETvarnish 3D Web Colors+.

The integration of the 4-colors printing unit to the *JETvarnish 3D Web* embellishment solution, allows to simplify and optimize production proccesses and workflow, reduces the number of equipment, reduces the production time, reduces the number of operators, reduces footprint within factories, removes ruptures in the supply chain, removes set-up times and waste...

The *Color+* optional printer module on *JETvarnish 3D Web* is a toner based printer for 4-colors printing, with high quality thanks to high-precision dry toner and high-resolution equivalent to 3,600 dpi.

The high compatibility of the printer allows to print on several substrates from 60 up to 250 µm such as coated and uncoated paper and synthetics (PP, PET).

Color+ printer module allows more than just 4-colors printing thanks to the award winning technology Unlimited Colors, which can print unlimited metallics colors and foil effects. Printing jobs can also be embellished with the original foil color via a fusion of toner

WINE LABELS
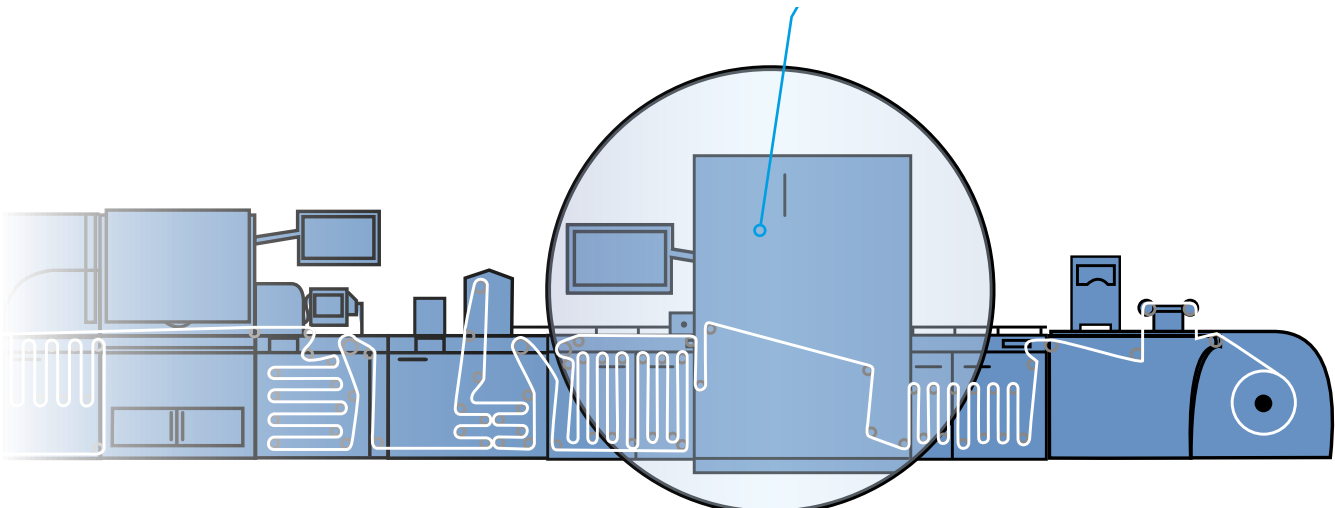Printed & embellished on JETvarnish 3D Web Colors+ with variable data.

WINE LABELS
Printed & embellished on JETvarnish 3D Web Colors+ with metallic effects.

& foil adhesion to the substrate surface. With no click charges involved, printers can also overprint the foil applied during the first pass with another application of CMYK toner to create a limitless kaleidoscope of tints & hues – as well as precise spot coats to match colors generated from other environments. The light-reflecting qualities of gold & silver foil provide a powerful foundation for expanding the gamut of effects to a virtually unlimited color range.

4-COLORS OPTIONAL PRINTER MODULE
- Print speed up to 18.9 meters per minute.
- 1,200x1,200 dpi 8 bits resolution (equivalent to 3,600 dpi)
- Web width 330 mm.
- Thickness substrates from 60 up to 250 µm.
- Wide compatibility of paper and synthetic media.
- Overprinting on foil with colors for unlimited metallic colors and foil effects.

COSMETIC TUBES
Embellished on JETvarnish 3D Web.

The dynamically growing digital label, flexible packaging and book covers markets are expecting more flexibility, shorter runs and shorter time to market. Based on the worldwide success

of the award-winning JETvarnish/iFOIL technology, MGI is bringing greater customization and personalisation to the decoration label and flexible packaging markets with the *JETvarnish 3D Web.*

MGI has specifically developed the *JETvarnish 3D Web* to deliver exceptional value.
The *JETvarnish 3D Web* allows roll-to-roll printers to go digital for Spot UV Coating and Embossed Hot Foiling without dies, screens or expensive tooling. Using a 100% digital process, the MGI solution dramatically reduces makeready times, eliminates waste and offers true variable

data enhancement with personalized foil option on every label, sleeve, book cover or tube produced.

CAVIAR LABELS
Printed & embellished labels on JETvarnish 3D Web Colors+. with variable data.
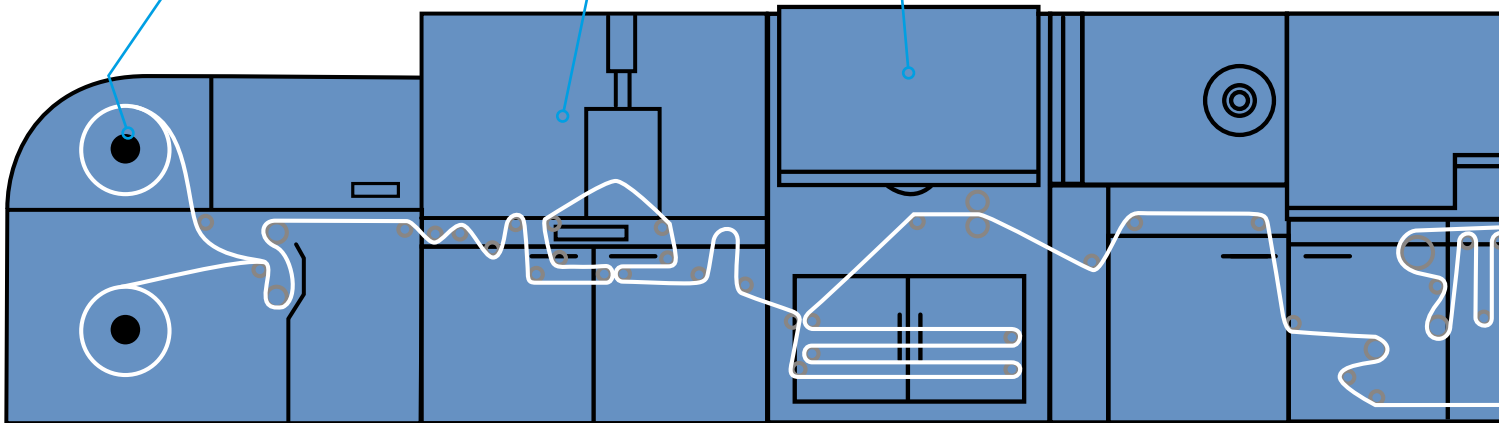
DIE CUTTING UNIT
- Optional semi rotary die cutting unit to finish labels in-line
- 2 slitter knives as standard (10 max)
- Gap master system as option

IFOIL TECHNOLOGY
- Adds luxurious value and profit margins to self-adhesive labels and flexible packagings.
- Foils from 100 up to 420 mm (3.93" to 16.53") width.
- Metallic, holographic and coloured markets foils can be used.
- 100% digital method eliminates all tooling required with conventional processes.

SECOND REWINDER
- Optional second rewinder.
- It avoids slitting reels overlapping situation when rewinding on the same shaft.

WEB FEEDING DIRECTION

WIDE COMPATIBILITY
- The JETvarnish 3D Web is compatible with the overall web-to-web printing technologies available on the market. It includes narrow web digital presses - such as Konica Minolta®, HP Indigo®, Xeikon®, Epson®, Durst®, EFI®, - and any traditional offset or flexo narrow web presses.
- Coated and uncoated materials, shrink films, synthetics, paper and light cardboard (ex. beverage, cosmetics & healthcare label stocks, wine stock) compatibility.

A FLEXIBLE COMBINATION OF
3 IN-LINE CURING & DRYING SYSTEMS
- LED to freeze the varnish and the 3D relief
- Infrared lamps for 2D jobs to spread the varnish evenly over the label.
- UV lamp to cure and fully polymerize the varnish.
- A cooling roll for application on film and PE shrink sleeve is included.

**ROLL WITH DIFFERENT SIZED
BOOK COVERS**

The *JETvarnish 3D Web* is designed for both 2D (flat)/3D Embossed Spot Coating over flexo, offset or digital web-fed printed output. Hot Foiling can be added with glamorous metallic foil to embellish self-adhesive labels,

book covers, shrink films and flexible packaging. A digitally finished end product by the MGI solution provides eye-catching sensory enhancements and dramatic tactile sensations that brand owners are looking for, to distinguish their products at the point of sale.

JETvarnish 3D Web is the first and only equipment able to realize embellishment (varnish and hot foil) on **shrink films**.

JETvarnish 3D Web thanks to its labels die-cutting unit and roll slitter knifes offers a complete solution for an optimized production.

MGI has been developing, constantly for years, with a concern to respond as closely as possible to the needs of its customers, new innovations and solutions.
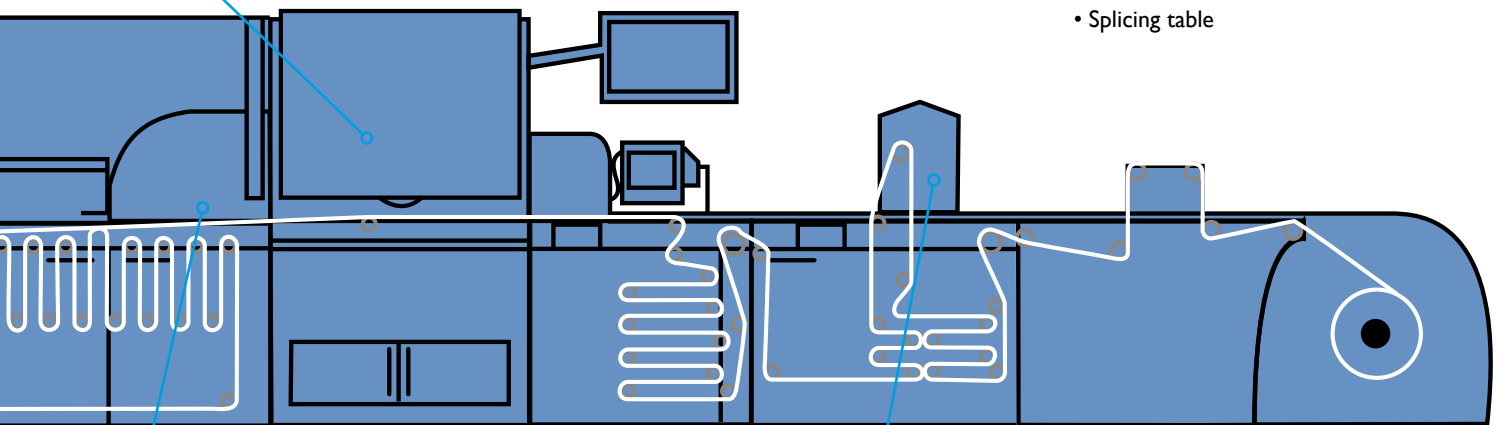

SLEEVES
Embellished on JETvarnish 3D Web.

MGI INKJET PRINT ENGINE FOR SPOT UV COATING & EMBOSSING
- MGI's exclusive inkjet technology with precise piezo (drop-on-demand) applications
- Relief height independently adjustable
- Switch from one job to another with no equipment cleaning required
- High gloss varnish from 7 to 232 µm
- Only one varnish for 2D and 3D

ROLL UNWINDER & REWINDER
- Web width from 100 mm up to 420 mm (3.93" to 16.53")
- Rolls from 10 to 4,000 m
- 3 inch diameter air shaft
- Reels up to 850 mm/33.4" diameter
- Automatic reel diameter calculation
- Automatic tension adjustment
- Web guide for ±15mm / 0.6" lateral correction
- Splicing table

FULL ROTARY FLEXO UV STATION
- Inline Rotary Flexo UV station for full varnishing or priming.
- Makes UV varnish and hot foiling finishing possible on many substrates including uncoated materials.

ENVIRONMENT

Enhanced UV protection with lower energy consumption than traditional UV systems.

No makeready, no plates (offset), no screens (silkscreen), no dies (hot foiling), no waste (electricity, paper, varnish and time).

No cleaning steps between jobs (automatic inkjet head cleaning system). Reduction of consumables (elimination of many plastics).

THE TECHNOLOGICAL REVOLUTION: ARTIFICIAL INTELLIGENCE SMARTSCANNER (AIS)

The *MGI AIS system* is a revolutionary registration development for the printing and finishing industry:
- Eliminates more than 80% of operator setup time spent on registration processes, and reduces make-ready waste
- Allows quick and seamless integration within job workflows with simple, automatic "scan and register" setup process
- Supports rapid equipment amortization with increased throughput, faster job completion and greater productivity
- Removes unnecessary operator wage costs & paper makeready waste associated with analog setup processes
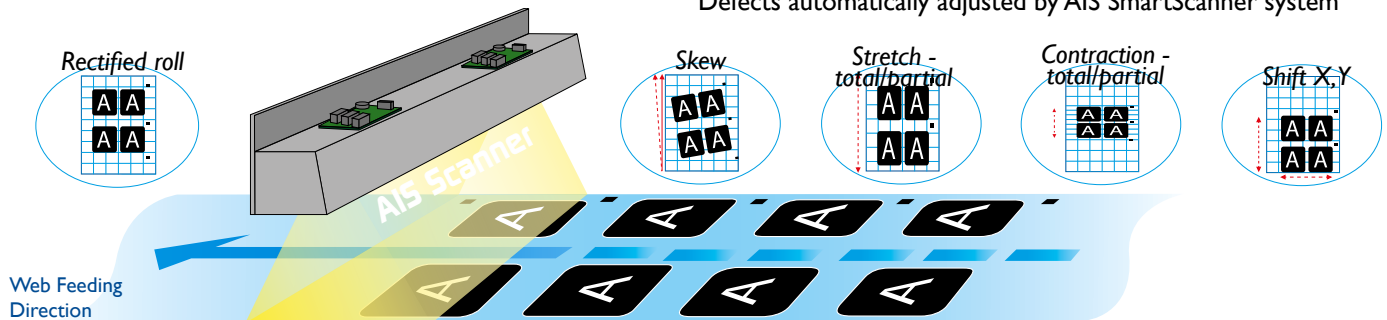
The *AIS system* uses Artificial Intelligence to create an automatic varnish and hot foil registration for inkjet heads over the preprinted roll. It is fully compatible with *Variable Data Printing (VDP)* jobs. Using print image and inkjet synchronization algorithms, the exclusive and patented AIS system runs at more than 5,000 billion of operations per second. Without operator intervention or a decrease in feeding speed, it makes corrections and adjustments for any defects generated by the original offset or digital printing run and any lamination process.

Examples:
- Roll and image skew
- Roll and image shift on X and/or Y direction
- Roll and image stretch – partial or total
- Roll and image contraction – partial or total

"ARTIFICIAL INTELLIGENCE THAT DOES THE WORK FOR YOU."

Defects automatically adjusted by AIS SmartScanner system

Rectified roll

AIS Scanner

Skew

Stretch - total/partial

Contraction - total/partial

Shift X,Y

Web Feeding Direction

SOFTWARE SUITE AND TOUCHSCREEN INTERFACE

SPOT VARNISH EDITOR
An easy to use tool designed by MGI for editing job enhancements on-the-fly. This eliminates wasted time going back and forth between your production and prepress departments. The *JETvarnish 3D Web* operator can do job file modifications right from the production floor. This tool is designed for a high production work environment and improves operational workflows between production and prepress departments.

INTEGRATED PRODUCTION COST CALCULATOR
Based on the job file, this powerful calculator forecasts cost down to the penny - information that has never been available before with traditional spot coating technologies.
This tool allows you to calculate and predict accurate production costs, helping to make reliable and precise job estimates.

FLEXIBLE SETTINGS MANAGEMENT
The *JETvarnish 3D Web* software interface is able to digitally manage and change all the machine settings - including print speed, drying & curing systems, *iFOIL* speed, pressure and temperature.

Technical Specifications

Printing Speeds

Up to 42m/mn[1] (depending on application).

Supported Web Widths

From 100 mm (3.93") up to 420 mm / 16.53"

Finishing Width

The maximum image width is 405 mm / 15.9"

Substrate Types[2]

From 50 up to 400 microns (μm)
- Coated, uncoated and textured paper, film or label
- Self-adhesive labels
- White or transparent synthetics, PP, PE, POPP, PET
- Light cardboard/folding carton
- Shrink film[3] : PVC, PETG

Wide Compatibility

Compatible with the overall web-to-web printing technologies. narrow web digital presses and the traditional offset or flexo narrow web presses.

Unwinder

- Maximum roll diameter capacity: 850 mm / 33.4"
- Standard inside core diameter: 3 inches
- Maximum roll weight: ±120 kg / 264 lbs

Printer - 4 colors (Optional)

- 4-colors (CMYK) dry toner
- Up to 18.9 meters per minute depending on the media used and the selected effects desired.
- Subtrates from 60 up to 250 μm.
- High compatibility of paper media and synthetics (PP, PET).
- Substrate width 330 mm.
- Printing width up to 320 mm
- 1,200x1,200 dpi 8 bits resolution (equivalent to 3,600 dpi)
- Overprinting on foil with colors for unlimited metallics colors and foil effects.
- Variable data in foil and 4-colors printing for text, number, pictures, graphic personnalization...
- Bypass mode

UV Flexo Station

An integrated flexo station for full size sleeve coating in rotary. This station is used to apply a UV protection varnish or sealing varnish prior to finishing. The module comes with an UV dryer.

The station is equipped with an anilox cylinder. Additional anilox cylinders are available as upgrade options.

Spot UV Coating and Embossing Station

This station uses MGI award-winning inkjet technology for producing Spot UV Coating. Any defined label area can receive Spot UV Coating with or without raised 3D texture effects.

A simple grey level TIFF file designed by Prepress controls the surface area and the thickness of the varnish applied over the printed roll. This 100% Digital process eliminates traditional plates, screens and dies.

Varnish thickness

From 7[2] to 232[2] μm of varnish thickness (from 2D flat coats to 3D raised effects).

Inline curing

The unit is equipped with UV dryer and a cooling drum for optimum web temperature control. The curing sequence also includes a special forward and backward roll motion to dry each label and eliminate waste between runs.

UV Varnish

Gloss varnish 99 GU.

Hot Foiling Station

The hot foiling station adds luxurious effects and brand value to label and packaging products. Any defined label area can receive digitally-controlled foil with or without raised effects.

A simple grey level TIF file designed by Prepress controls the surface area and the definition of the foil applied on the printed roll. This 100% digital process eliminates traditional dies, plates and screens.

Foil application can be bypassed when not necessary.

- Foil widths from 100 mm/3.9" up to 420mm/16.5 "
- Foil roll core diameter: 1" and 3"
- Foil lengths 400 m / 1,310 ft or 2,000 m/ 6,500 ft
- Up to 3 simultaneous foil rolls in the width.

Die Cutting Unit (Optional)

A semi-rotary die cutting unit is available as an option to finish labels in line on the JETvarnish 3D Web. The unit uses a 21" magnetic cylinder as a standard[4] and an automatic registering system. 2 sliter knives are included as well as a matrix rewinder.
- format in semi-rotary : 100 up to 480 mm
- maximum matrix diameter : 600 mm
- 2 slitter knives as standard : 10 max
- GapMaster® system for die height adjustment as an option.

Second Rewinder (optional)

Servo-motorized unit
- 600 mm/23,62" maximum roll diameter capacity
- Standard inside core diameter: 3 inches

Rewinder

Servo-motorized unit
- 850 mm/33.4" maximum roll diameter capacity
- Standard inside core diameter: 3 inches
- Maximum roll weight: ± 120 kg/264 lbs

Other Options

Corona substrate treatment module
In-line system made to optimize varnish adhesion on complex printed substrates.

Variable Data Printing
- Manage and edit files on the workstation
- Full variable data (text, graphic, image) for both 2D/3D Spot Coating and Hot Foiling areas
- Integrated barcode (1D/2D) reader system & controller
- Raster Image Processor (RIP) as an option

Printing Press Compatibility List

Narrow Web Printing Presses
- Digital
  - Konica Minolta
  - HP Indigo
  - Epson
  - Xeikon
  - EFI
  - Durst
  - etc.
- Offset
  All manufacturers and technologies : UV, H2O or WATERLESS
- Flexo
  All manufacturers and technologies : UV or Water base

Dimensions & Weight

Up to 15.2[5] x 1.58 x 1.81 m
Up to 49.87[5] x 5.18 x 5.91 ft (L x w x h)
1 meter / 3.3' clearance required on all 4 sides
Weight: ± 6,847 kg / 15,060 lbs

Technical Requirements

400 V - 3Ph
240 V - 1Ph
Dry air compressor (oil-free): 8 bar / 102 psi - 24m³/h / 6 cfm

All speeds are nominal.

(1) speed will vary according to printing parameter used.
(2) confirm substrate compatibility with MGI.
(3) not compatible with optional 4-colors printer
(4) size can be adapted to customer need from 14" to 25"
(5) full option size - depending on the configuration