Proofing & Prototyping in Corrugated

FPPA Annual Meeting

Fort Meyers

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Anderson & Vreeland

Proofing vs Prototyping

Requirements for Proto-Proofing

Benefits to the Corrugated Market

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Proofing vs Prototyping

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What is Proofing?

- Visual prediction of a printed piece using profiles
- Uses a proofing device
  - Kodak Approval
  - Inkjet Printer ex: Epson Stylus Pro
- Uses white proofing paper or film
  - The background of corrugated can be simulated
- Relatively quick
- Often shows part of the artwork

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Proofing Devices for Corrugated

Epson 11880 - 64 inches

- 8 Colors
- Resolution:
  - 2880 x 1440 dpi
  - 1440 x 720 dpi
- Speed:
  - 40″ x 60″ - 4:08 to 42:10
    - Typical is 19:45

Epson 9900 - 44 inches

- 11 Colors
  - Adds Orange and Green
- Resolution:
  - 2880 x 1440 dpi
  - 1440 x 720 dpi
- Speed:
  - 40″ x 60″ - 15:26 to 40:05
    - Typical is 24:20

Proofing Devices for Corrugated

Epson WT7900 – 24 inches

- First aqueous ink with white ink
- Can be driven by top industry proofing software including: GMG, EFI and Esko
- 9 colors
- Resolution:
  - 1440 x 1440 dpi
  - 1440 x 720 dpi
- Speed:
  - 24" x 20" Prints from 23:00 to 27:16

What is Prototyping?

- Creates a working version of a product or package
- Often not color accurate
- Can use the final material
- Can be difficult to include graphics

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Proofing vs Prototyping

Current Prototyping Workflow for Corrugated

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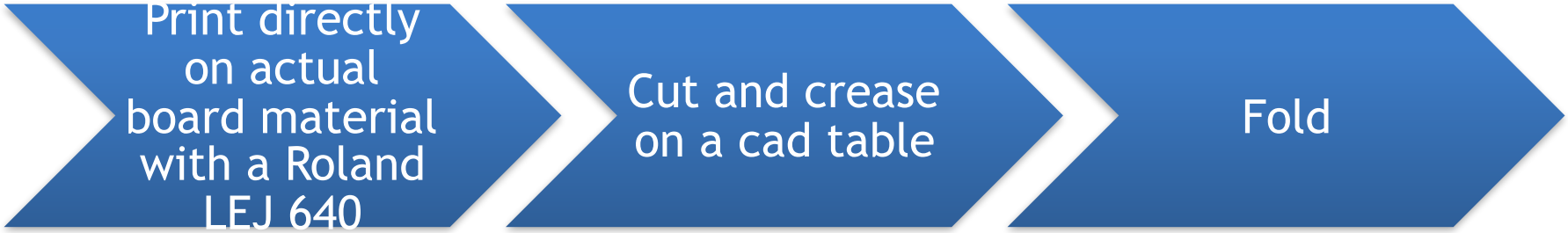
Proofing vs Prototyping

Modern Prototyping Workflow
for Corrugated



No More Laminating * Saves Time
Less Materials * Saves Money

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Proofing vs Prototyping

Roland LEJ 640 – 64 inches

- UV inkjet printer
- Can be driven by proofing software
- Resolution: 1440 x 1440 dpi; 1440 x 720 dpi
- Max Roll Thickness: 39 mil or .1 mm
- Max Sheet Thickness: .51 in or 13 mm

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Roland LEJ 640 - Ink Configuration

Cyan	Magenta	Yellow	Black	White	Gloss
Cyan	Magenta	Yellow	Black	White	White
Cyan	Magenta	Yellow	Black	Gloss	Gloss

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Proofing vs Prototyping

Roland LEJ 640 in Action

- Roland VersaUV LEJ-640 Hybrid Flatbed Inkjet Printer

Prepress Workstation

Prepress Workstation

Prepress Workstation

VersaWorks Station

- Requires Ethernet connection to RIP

Current status:
(*) Roland LEJ-640 includes Roland Rip VersaWorks
(*) For advanced Color Management the Roland can be driven by GMG, EFI or CGS directly

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Prepress Workstation

Prepress Workstation

Prepress Workstation

Plate RIP Station

ESKO

Shared folder

Proofing RIP Station

VersaWorks

PDF Files

OR

1 bit TIFF files

Current status:
(*) Roland LEJ-640 includes Roland Rip VersaWorks
(*) For advanced Color Management the Roland can be driven by GMG, EFI or CGS directly

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Kongsberg XP Table

- CAMM/CAD cutting tables
- Versatile tools allow for cutting, creasing, drilling and milling
- Special tools available for corrugated boxes
- Available in a variety of sizes

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Proofing vs Prototyping

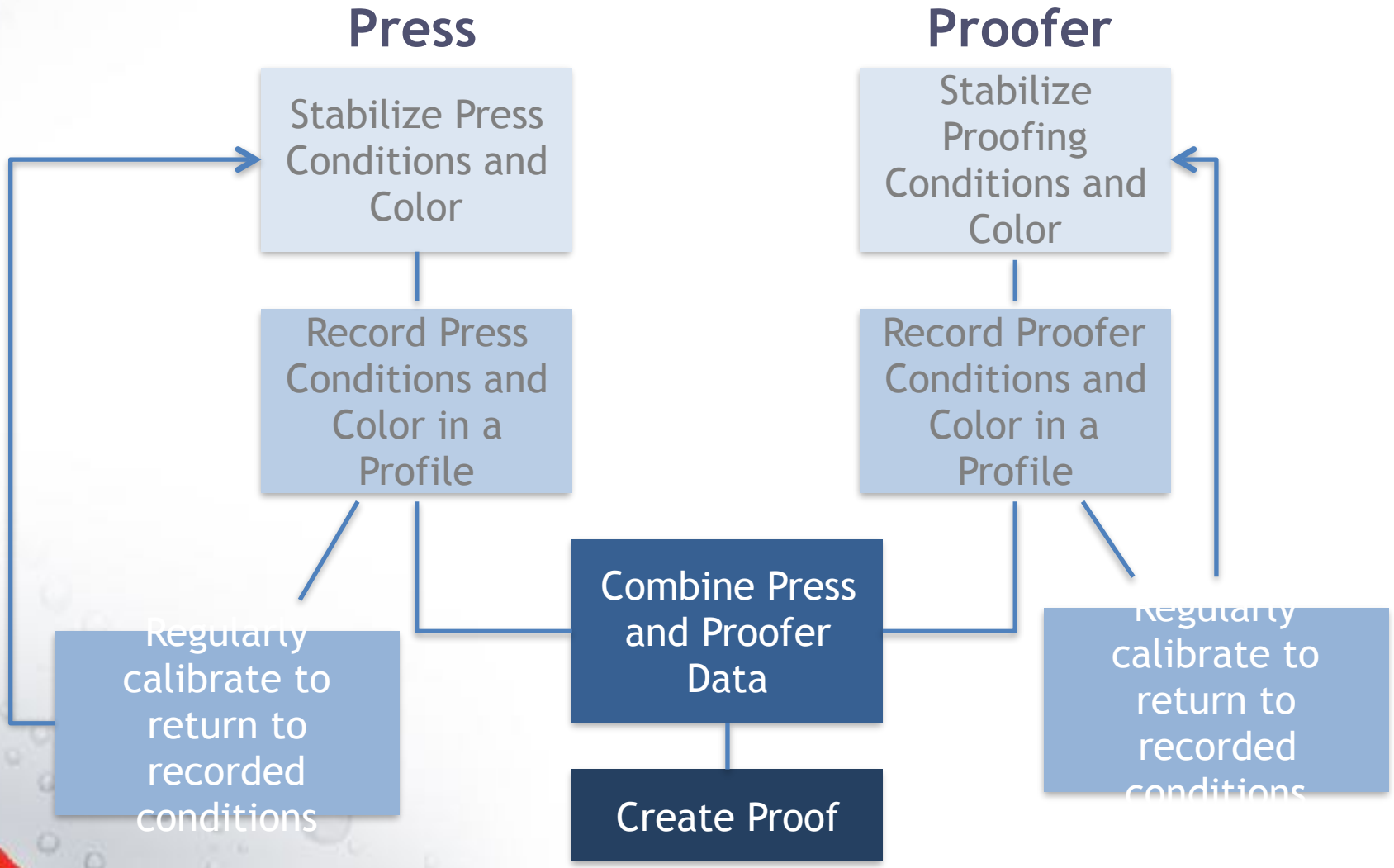
Roland LEC 330 and 540

- 330 – 30 inches, 540 – 54 inches
- First UV inkjet printer/cutter with white and gloss
- For film and paper board material
- Can print, cut, perf cut and crease
- Can be driven by proofing
- Resolution: 1440 x 1440 dpi; 1440 x 720 dpi
- Max printing thickness: 39 mil or .1mm

Can proofing and prototyping be combined?

YES!

The Proofing Process



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Requirements for Proto-Proofing

What Makes a Printed Piece?

- Design
- Substrate
- Line Screen
- Screen Angle
- Ink
- Dot Gain
- Anilox
- Doctor Blade

- Impression
- Density
- Cylinder
- Plate
- Mounting Tape
- Press Speed
- Registration
- Proof

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Requirements for Proto-Proofing

What Makes a Proof?

- Design
- Substrate
- Line Screen
- Screen Angle
- Ink
- Dot Gain
- Anilox
- Doctor Blade
- Impression
- Density
- Cylinder
- Plate
- Mounting Tape
- Press Speed
- Registration
- Proof

Record of Current Conditions

Proof Matches Print

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Requirements for Proto-Proofing

What Happens if a Variable Changes?

- Design
- Substrate
- Line Screen
- Screen Angle
- Ink
- Dot Gain
- Anilox
- Doctor Blade
- Impression
- Density
- Cylinder
- Plate
- Mounting Tape
- Press Speed
- Registration
- Proof

New Print

Original Print/
Proof

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Requirements for Proto-Proofing

Requirements for Creating a Color-Accurate Proof

- A Stable Printing Environment
- Press Fingerprint (for dot gain)
- Color Characterization
- Proofing Software
- Measuring Device
- Proto-Proofer

Requirements for Creating a Color-Accurate Proof

- **A Stable Printing Environment**
- Press Fingerprint (for dot gain)
- Color Characterization
- Proofing Software
- Measuring Device
- Proto-Proofer

A Stable Press is Reproducible

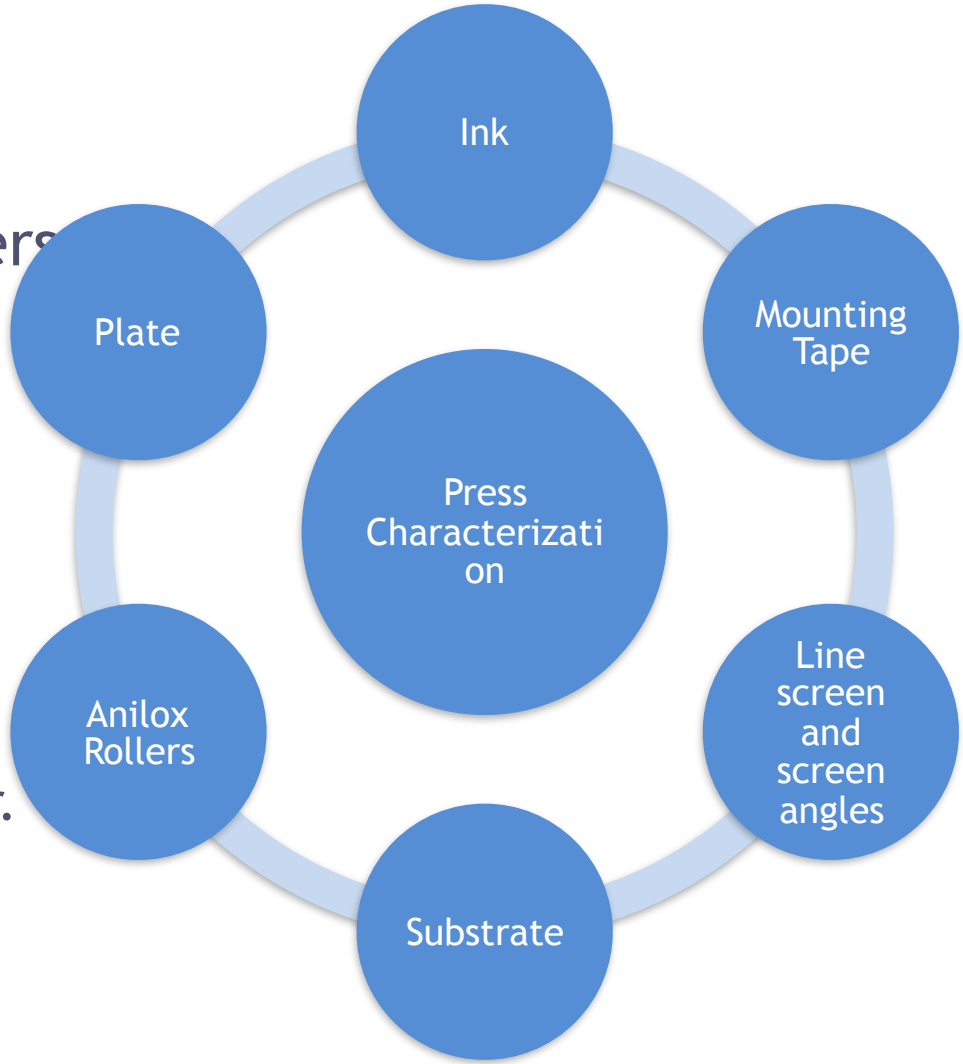
- Are print results stable & repeatable?
  - A proof is only accurate when the press is stable.
- A proof is configured to match a specific set of press conditions.
  - Once set up, the proof will always stay the same.
- When the press conditions change, the proof conditions need to change.

Requirements for Creating a Color-Accurate Proof

- A Stable Printing Environment
- **Press Fingerprint (for dot gain)**
- Color Characterization
- Proofing Software
- Measuring Device
- Proto-Proofer

Press Fingerprint

- Establish target parameters
- Document conditions
  - Print consistently
  - Print as you print daily
- Fingerprints are used to generate base dot-gain curve.
  - Optimize and balance color.

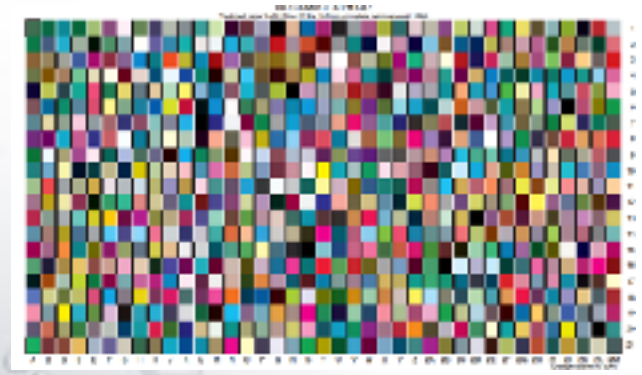


Requirements for Creating a Color-Accurate Proof

- A Stable Printing Environment
- Press Fingerprint (for dot gain)
- **Color Characterization**
- Proofing Software
- Measuring Device
- Proto-Proofer

Color Characterization

- Measures the color gamut a press is capable of producing
  - Use the same settings from the press fingerprint
- A target (generally 2 pages) will be printed
  - This 2 page target should be ripped with the dot gain curve from the fingerprint applied
  - Measure to create a color profile of your press



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Requirements for Creating a Color-Accurate Proof

- A Stable Printing Environment
- Press Fingerprint (for dot gain)
- Color Characterization
- **Proofing Software**
- Measuring Device
- Proto-Proofer

Proof Software

- Calculates how to match the press color using the proofing device.
- Creates the profiles needed for matching.
- Allows for workflow and hot folder creation to make multiple printing easy.

gmg color

efi print to win.

ESKO

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Proofing Software Options

There are many packages and options when purchasing proofing software. These options often require additional fees and licensing.

- **One-bit**
  - Allows printing of one-bit tiffs or Len files
- **Simulated Dot**
  - Creates a simulated halftone dot in the proof
- **Color Manager**
  - Includes calibration tools and color profile creation, modification and optimization software
- **Spot Color Manager**
  - Creates custom spot colors and spot color libraries
- **Verifier**
  - Includes software that reads control strips and generates a pass/fail sticker based on the readings
- **Device Type**
  - Different licensing is often required for the different types of devices, different ink sets (i.e. orange and green, white) and different sizes.
- **Number of Devices**
  - Additional licenses are often required to drive multiple devices

Requirements to Create a Color Accurate Proof

- A Stable Printing Environment
- Press Fingerprint (for dot gain)
- Color Characterization
- Proofing Software
- **Measuring Device**
- Proto-Proofer

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Measuring Device

- A measuring device, such as an X-Rite i1iO table allows you to create color profiles
- Measurement devices and software are chart specific
- These devices allow you to verify your proof and calibrate your proofer.
- These devices read the LAB values of color.

Measuring Device

- i1Pro 2 and i1iO table
  - i1Pro 2 can be used with the table to read charts printed on thin substrates up to 10 mm thick substrates.
  - Can also be used as a hand-held spectrodensitometer for spot color readings.

Requirements to Create a Color Accurate Proof

- A Stable Printing Environment
- Press Fingerprint (for dot gain)
- Color Characterization
- Proofing Software
- Measuring Device
- **Proto-Proofer**

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Proto-Proofer

- It can be an inkjet proofer
  - Epson 900 series
- Or specialty device
  - Roland LEJ-640.
- Make sure that the device you choose will meet your end goals.
  - Do I want to make just proofs or prototypes?
    - How important is spot color matching?
  - Do I need to print white or varnish?
  - Do I want to print on custom material?
    - How thick is my material?
  - Do I want the device to cut?

Benefits to the Corrugated Market

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Set Accurate Expectations

- Color managed proofs represent a close match to the final press outcome including:
  - Color
  - Appearance of half-tone dots
  - Traps
  - Gain
  - Appearance of white and varnish ink
- Prototypes on final material mean there will be fewer surprises later
- Customer, Trade Shop and Printer all have the same expectations

Effective Sales Tool

- Samples of past work are good reference, a prototype with customer's artwork has ***wow*** factor
- Easier Proto-Proof creation, means a final version can be brought to the customer faster

Less mistakes in final stages

- Problems are often caught in the proto-proofing stage:
  - Moiré
  - Trapping errors
  - Photo Editing
  - Incorrect graphics placement

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