Müller Martini

Why is Offset printing interesting for Flexo and Rotogravure Printers

Limitations of different processes
Quality, lead time and cost advantages
**Ever Tightening Packaging Industry Requirements**

- Increasing numbers of SKUs for more products, sizes and languages decreases print volumes of individual jobs.
  - In the past printers had one or two job changeovers per day, today between 3,5 and 12
- Important to reduce the capital commitment of finished products
  - no stock of printed products, print-on-demand
- High print quality demand, which is very difficult to achieve in the flexo printing
- Reprints often have minor changes; for this reason flexo plates and gravure cylinders cannot be reused
- For reprints it is absolute necessary to achieve exact reproduction of the previous print job.

**Comparison of printing processes**

- **Flexo Printing**
  - expensive printing plates (~$260- 325 /m²)
  - Screen resolutions 120-133 lines/in
  - In HD Flexo typically 150 lines/in

- **Rotogravure Printing**
  - very expensive cylinders (~$520- 780/m²)
  - Typically 175 lines/in engraved
  - Very long web paths in the machine
  - very long lead time (1 – 7 days)

- **Offset Printing**
  - in-expensive printing plates (~$15- 26 /m²)
  - Typical resolutions of 200 lines/cm
  - Stochastic screens dot size 20 µm
  - short lead time (5 – 10 minutes)
Variable size offset printing

- Traditional technology for print format changes through exchanging of printing cassettes
- Step-less variable technology for print format changes through exchanging of:
  - Plate cylinder/sleeve
  - Blanket cylinder/sleeve

Highlights of Müller Martini Offset Technology

- Müller Martini already is experienced in Label and Packaging printing with Offset Technology
  - More than 40 Alprinta V installations, mainly in label printing
  - More than 100 VSOP installations in label and packaging printing
- Offset printing has by far the lowest image carrier cost
- Finest graduations in screens possible (1%-100%)
- Most economic process for short and medium runs (2,500 – 50,000 m²)
- Flexible construction kit: most presses are combinations with flexo- and/or rotogravure units and also it’s easy to extend in a second step
- UV, UV inert and/or EB in the offset process plus water or solvent based flexo/rotogravure printing offers the highest possible flexibility
Muller Martini

Fit for profitability

GOSS INTERNATIONAL

Packaging and Converting: New Options and New Opportunities
Trends: what brand owners want

**Shorter runs and faster turn-around times**
- Expanded targeting and personalization of packaging
- Volume – but many smaller versions
- Shorter shelf life and time to market
- Respond to marketing opportunities

**Lower cost**

**Higher print quality**
- Brand differentiation
- More sophisticated graphics

**More “green”**
- Substrates
- Production processes

Why now for web offset?

**New web width advantages**

- Advanced automation – lower waste

- Better variable repeat technology: cost and ergonomics

- Stable supplier with industrial web offset experience
Goss Sunday Vpak – new offset opportunities

- Wider formats
- Higher productivity
- Premium print quality
- Short-run agility
- Lower cost
- Lower waste
- Industrial reliability

Two Sunday Vpak platforms

- **Sunday Vpak 3000**
  - 1120-1905 mm width
  - 457 meters/minute

- **Sunday Vpak 500**
  - 520-1051 mm width
  - 365 meters/minute
Advanced Goss Sunday press features

- Gapless blankets
- 3-Form inker
- Servo-drives
- Presetting
- Closed loop
  - Tension
  - Register
  - Color
- Digital workflow
- Auxiliary integration

Quick-change sleeve technology

- Single-sided printing
- Infinitely variable repeat
- Interchangeable plate and blanket adapter sleeves
- Composite bridging sleeves
- “White Light” layer
- Automatic adjustment
  - Plate/blanket cylinders
  - Ink train
  - Impression
Vpak value proposition

Shorter runs and faster turn-around times
- Vpak Web Offset Plate Image
  - Ability to change plates in unit
  - Job to press in minutes vs. hours or days

Lower cost
- Low cost versioning (plate image cost)
- Lower pre-press cost (offset vs. flexo plate or gravure)
- Goss unique white light layer blanket reducing repeat cost up to 50% compared to other offset alternatives
- Maintain high print quality on lower cost substrates
- Nested image savings

Web offset advantages vs. sheetfed

Higher Productivity for the same crewed hour
- More throughput
- Roll-to-roll improves efficiency of downstream operations up to 40%
- Reduced labor costs

Substrate savings / flexibility
- No Gripper margin: 0.5-1.2% substrate savings
  - Annual savings in 6-figure range
- Nesting capability: up to 15% substrate savings
  - Annual savings in 7-figure range
- Substrate variability no curling issues allow lower quality/cost substrates
- Readily incorporate value added features
  > Ink Jet
  > Calendering
  > Gravure, flexo, screen
  > Lamination
  > Heatset drying
  > Embossing
Packaging and Converting: New Options and New Opportunities

Thank You!

Komori HUV Technology
Komori HUV

• HUV is defined as “High Efficiency UV”, created by Komori

• HUV is a NEW unique curing system that is extremely efficient consisting of revolutionary lamp, ink and coating technology

• HUV is not…
  - Traditional UV
  - LED
  - “Hybrid” UV (blended ink)

Komori HUV

• HUV efficiency results in full curing of 400% ink coverage…plus varnish…plus coating with a SINGLE bulb

• If special effects requiring dry traps are needed, interdeck HUV lamps can put anywhere necessary
  - They are not needed for layered curing
Komori HUV

- HUV characteristics:
  - No ozone generated
  - Low energy cost
    - Lamps and cooling
    - Lower than UV and lower than IR
  - Tremendously reduced heat to the sheet
    - Great for plastics
  - Ink gloss – without coating – rivals oil based ink
  - No ink dry-back or coating gloss reduction over heavy solids
  - Very fast make-readies
    - Blanket packing does not need to be adjusted with sheet size when using HUV

Komori HUV

- HUV is solid technology
  - Komori has around 150 presses installed with HUV with the number changing daily
  - HUV can be retrofit to existing presses (some restrictions)
  - Adding HUV to a press is a great way to
    - Speed overall production
    - Enhance print with special effects
    - Reduce print defects
    - Eliminate coating
    - Add ink color vibrancy to uncoated stock
    - Eliminate spray powder
    - Lower print costs
KOMORI HUV

Thank You
The Situation with Dryers from the Start

- Drying systems were not integrated from the start of machine concept.
- Meaning they were never harmonized with:
  - Sheet travel
  - Chilling of components
  - Exhaust of heat from the press.
Reduction of energy consumption – with DryStar UV

UV: ¾” closer to the sheet = 25 % less energy needed

Thank You!
Foils and Plastic Package

- Upper sheet guide, feeder, coated
- Roller holder on the suction-belt feed table
- Flat sheet guiding rollers, feeder (rubber)
- Sheet travel monitoring for each transfer drum
- Mechanical board guiding system
- Modification to Infeed (sheet guiding rollers, air-blast, front lays, polished head stops)
- Antistatic equipment from KERSTEN - special version for plastic foils feeder/ Infeed/delivery
- Incl. additional compressor
In Line Corona Treatment System

- Apply a static charge to substrate to change Dyne level of substrate
- Solves ink adhesion problems
- Rapida 106, and the Rapida 145
Anilox Loader for Coating Unit 106

- 3 Anilox rollers in one unit
- Fully automatic change over
- No tools required
- Parallel process within the make ready

Rapida 106 KBA Vary Dry UV

- UV modules can be used for either final or interdeck drying
- Very fast dryer module exchange with patented connector system
- VariDry dryers matched to the geometry of KBA presses
- Combination of UV interdeck dryers and impression cylinder washing possible

Customer benefits:
- High flexibility in press configuration
- Fast set-up times during production
- KBA AMS UV: The dryer with lowest energy consumption in its class
Thank You!

Koenig & Bauer AG
www.kba.com
RadTech Webinar

Summary - Ready For Production

• Partnership between Ink/Equipment/Technology Innovators brings advantages of LED to Converters - NOW!

• In market and delivering value
  • Inks that cure across the production gamut - Process/Line/Varnish
  • Energy to cure at higher rates than traditional UV systems - 16W/CM²
  • Quantifiable operating benefits to the converter
  • Unique capabilities compared to Hg UV - deeper curing at higher speeds

• In operations
  • First system in place and running
  • 10 station 17” Mark Andy Performance Series press
  • Validating an anticipated 12 month payback

• Beta/Validation wrapping up on 12/20/12 - a complete success
• Production availability of ProLED and Ekocure starts 1/21/13
• Questions? - Contact Greg Palm email-Gpalm@markandy.com
UV LED Inks - EkoCure™

- **Flexo Inks:**
  - UV LED UV Flexo system - developed on bio-renewable technology
  - Available in a full range of colors and pigment selection
  - Supplied press ready at optimal viscosity
  - Suitable for a wide variety of applications
    - Self adhesive labels (coated & uncoated papers, BOPP, PE, PLA and synthetic films)
    - Shrink Sleeves - PET-G, PVC, OPS, etc.
    - Tags & Shrink labels
    - Cartons (carton boards)

- **Screen Inks:**
  - UV LED UV Rotary Screen Opaque White
  - Colors to be developed

- **Other Ink Products:**
  - UV Flexo Coatings (gloss, matte, TTR) & Lamination Adhesives
  - UV Flexo Shrink Whites (high and low COF)
  - UV Flexo Metallics (silver and gold range)

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Mark Andy ProLED Curing System

- **System Shown At Labelexpo**

- **Mark Andy Performance Series P5**

<table>
<thead>
<tr>
<th>Color</th>
<th>Line count</th>
<th>BCM</th>
<th>Flint # - EkoCure™</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>1000</td>
<td>1.2</td>
<td>UEX10101</td>
</tr>
<tr>
<td>Magenta</td>
<td>1000</td>
<td>1.2</td>
<td>UEX30104</td>
</tr>
<tr>
<td>Cyan</td>
<td>1000</td>
<td>1.2</td>
<td>UEX50104</td>
</tr>
<tr>
<td>Black</td>
<td>1000</td>
<td>1.2</td>
<td>UEX80101</td>
</tr>
<tr>
<td>Varnish</td>
<td>360</td>
<td>5.0</td>
<td>UEX00104</td>
</tr>
</tbody>
</table>

- All aspects of print quality/performance/operations validated
- Strengths are as good or better than HgUV
- Usage is the same - no need for special protocols
- Ink adhesion via industry accepted testing - fully passed
- LED system and power fully integrated into press controls
Mark Andy ProLED Beta Customer Benefits

<table>
<thead>
<tr>
<th>Benefit Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>57% Lower Energy Consumption</td>
</tr>
<tr>
<td>Higher production speeds than HgUV</td>
</tr>
<tr>
<td>No Ducting/Blowers/Heat Loss</td>
</tr>
<tr>
<td>No Moving Parts - e.g. Shutters, Fans</td>
</tr>
<tr>
<td>Lifetime LED</td>
</tr>
<tr>
<td>395 NM - Reduced spectral energy</td>
</tr>
<tr>
<td>Maintenance - 85% Reduced</td>
</tr>
<tr>
<td>No IR - Heat Friendly</td>
</tr>
<tr>
<td>PVC, BOPP, PET validated w/ no chill rolls</td>
</tr>
<tr>
<td>Environmental - No Hg; No Ozone</td>
</tr>
<tr>
<td>50% Smaller Environmental Footprint</td>
</tr>
<tr>
<td>No application concerns</td>
</tr>
</tbody>
</table>

February Session

- Full review of data and results of beta tests
  - Application review - job ticket, materials, coverage
  - Performance by application - quantitative review of performance
  - System configuration and technical overview
  - Ink review
- Commercial benefits to be discussed
  - Realized benefits shared
  - ROI/Payback model reviewed
- Future of LED
  - Technology Curve - is there space for Hg in the future
  - Low migrations inks and LED - a good match?
- All aspects of print quality/performance/operations validated
  - Strengths are as good or better than Hg UV
  - Usage is the same - no need for special protocols
  - Ink adhesion via industry accepted testing - fully passed
  - LED system and power fully integrated into press controls
Thank You!

New UV/EB Press Technologies

- Don Duncan
  Director of Research
  Wikoff Color Corporation

Customer Focused • Technically Driven
New UV/EB Press Technologies

The Comexi CI8 Offset Press

- A central impression drum lithographic press
- Full litho ink and dampening roller trains
- Sleeved cylinder technology
- Servo drive technology
- High degree of automation
- EB curing – VOC free chemistry
- Targeted for flexible packaging printers
A central impression drum lithographic press

- CI drum allows use of extensible substrates
- Smaller footprint than in-line presses
- Front/Back roller trains move as a unit
- Some printing units can be flexo (whites/coatings)
- Familiar look and feel to current flexible packaging printers
- Gives high lithographic print quality

Full litho ink and dampening roller trains

- Front/Back roller trains move as a unit
- Gives easy access for plate washing
- Operator control from hand-held tablet
Sleevd Cylinder Technology

- Fast cylinder preparation (Off press)
- Easy cylinder exchange
- Variable repeat length (Infinite steps)

Servo Drive Technology

- Fast and accurate register & Auto job set-up
- Auto positioning of the cylinders
- Auto positioning of the print units
High Degree of Automation

- Auto ink key setting (CIP3 ink profile)
- Auto ink water balance (Combined ink & water curves)
- Auto pre-inking
- Auto roller washing

EB Curing – VOC-free Chemistry

- Lower energy requirements vs. Solvent
- No solvents used – no flammability, less hazards
- Proven technology for printing food packaging
- Fine screens (60 to 120 L/cm)
- Various screening options (AM & FM)
New UV/EB Press Technologies

The Uteco Onyx 810 EB CI Flexo Press

- A central impression drum flexo press
- Flexo printing with no interstation drying/curing
- Sleeved aniloxes with Thermilox® temperature control
- Thermowash® inking and automatic washing
- Specialized chambered doctor blade aniloxes
- EB curing – low to no VOC chemistry
- Targeted for flexible packaging printers
A central impression drum flexo press

- Standard CI flexo printing
- No interstation hot air dryers
- No interstation UV/EB curing units
- Inks “dry” through evaporation and “cure” later
- Not wet-trapping, but trapping without drying
- Handles all flexible packaging substrates

Sleeved aniloxes with Thermilox® temp. control

- Patented system
- Guarantees the accurate and continuous control of ink temperature
- Pre-conditions ink temperature
- Keeps ink temperature constant at a set point
- Keeps ink viscosity constant through temperature control
- Keeps plate temperature constant during long runs
- Optimized for UV and EB inks
Thermowash® inking and automatic washing

- Extension of successful SprintWash® system, now optimized for UV/EB
- Capable of handling higher viscosities
- Reduces stress on the ink
- Ink stirring without foaming
- Fully automatic washing capability

Specialized chambered doctor blade aniloxes

- Newly optimized for UV/EB inks
- Patented system allows automated variable ink outlet geometry for chamber
- Guarantees proper ink flow and pressure in chamber
EB curing – low to no VOC chemistry

- Essentially zero emissions
- Essentially zero migration
- Environmentally friendly
- Cures at end of press, no interstation driers
- Three types of inks
  - Containing water
  - Containing solvent
  - 100% solids
- Ink colors trap without any active drying

New UV/EB Press Technologies
The Komori–Chambon OR Offset Press

- An in-line lithographic web press
- Offset printing with EB curing after the coating unit
- Sleeved cylinder technology
- Can integrate offset, gravure and flexo units
- Fully automated control
- EB curing – VOC-free chemistry
- Targeted for folding carton and flexible packaging printers

An in-line litho web press with EB curing

- Web widths from 520 to 1220 mm
- Speeds up to 350 m/min.
- Substrates include paper, paperboard and laminates
- Variable number of printing units available
- Highly automated control systems
- Proven technology, running at multiple printers
- EB inks wet–trap and cure at the end of the press
Sleeved Cylinder Technology

- Patented sleeve lock-up system
- Light weight but demandingly rigid aluminum sleeves
- Infinitely variable repeat size
- Variable repeat sleeves manufactured locally at printer

Can integrate litho, gravure and flexo units

- All three printing technologies available on the same press
- Optional placement of different units
- Allows specialized printing not available on single-technology machines
Fully automated control

- All is line-controlled by one computer, the Supervisor
- Allows machine presetting
- Includes a management information system
- Includes preventive maintenance programs

Hear presentations on Innovations in UV & EB Printing & Packaging from...

February 26-27, 2013 – Redondo Beach, California

www.uvebwest.com