ROLE OF FLEXO PRINTING IN THE COMING TIME

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Comexi Group

Shanghai
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ROLE OF FLEXO PRINTING IN THE COMING TIME

FLEXIBLE PACKAGING WORLD
MARKET TRENDS
MARKET DRIVERS
FLEXIBLE PACKAGING & LABELS
85 BILLION $ MARKET !!!!

Source: PIRA
2009 Flexible Packaging by region (tones)

- Western Europe: 32%
- Central and Eastern Europe: 10%
- North America: 24%
- South and Central America: 5%
- Asia Pacific: 6%
- Rest of the world: 23%
2014p Flexible Packaging by region (tones)

- Western Europe: 21%
- Central and Eastern Europe: 7%
- North America: 5%
- South and Central America: 9%
- Asia Pacific: 22%
- Rest of the world: 36%

Biggest increase in Asia-Pacific area by 5.1%
ROLE OF FLEXO PRINTING IN THE COMING TIME

FLEXIBLE PACKAGING WORLD

MARKET TRENDS

MARKET DRIVERS

FROM HERE...
ROLE OF FLEXO PRINTING IN THE COMING TIME

FLEXIBLE PACKAGING WORLD

MARKET TRENDS

MARKET DRIVERS

Mkt – Role of flexo printing

… TO HERE !
## Trends in PACKAGING

<table>
<thead>
<tr>
<th>RIGID PACKAGING</th>
<th>TO FLEXIBLE PACKAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAPER</td>
<td>TO PLASTIC</td>
</tr>
<tr>
<td>BIG PACKS</td>
<td>TO SMALL PACKS</td>
</tr>
</tbody>
</table>
## Trends in SUBSTRATES (long term)

<table>
<thead>
<tr>
<th>SUBSTRATE</th>
<th>TREND</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLYETHILENE</td>
<td>😞</td>
</tr>
<tr>
<td>POLYPROPYLENE</td>
<td>😊</td>
</tr>
<tr>
<td>POLYESTER</td>
<td>😊</td>
</tr>
<tr>
<td>POLYAMIDES</td>
<td>😊</td>
</tr>
<tr>
<td>OTHER POLYOLEPHINES</td>
<td>😊</td>
</tr>
<tr>
<td>COEX (HIGH BARRIERS)</td>
<td>😊</td>
</tr>
<tr>
<td>LAMINATES</td>
<td>😊</td>
</tr>
</tbody>
</table>
## Trends in INKS (long term)

<table>
<thead>
<tr>
<th>INK</th>
<th>TREND</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLVENT BASED</td>
<td>😞</td>
</tr>
<tr>
<td>WATER BASED</td>
<td>😞</td>
</tr>
<tr>
<td>CURABLE</td>
<td>😊😊</td>
</tr>
</tbody>
</table>
Trends in **PRINTING SYSTEMS** (long term)

<table>
<thead>
<tr>
<th>PRINTING SYSTEMS</th>
<th>TREND</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDIRECT IMAGING</td>
<td>FLEXO</td>
</tr>
<tr>
<td>INDIRECT IMAGING</td>
<td>GRAVURE</td>
</tr>
<tr>
<td>INDIRECT IMAGING</td>
<td>OFFSET</td>
</tr>
<tr>
<td>DIRECT IMAGING</td>
<td>DIGITAL</td>
</tr>
</tbody>
</table>

**FLEXOGRAPHY**

**ROTOGRAVURE**

**OFFSET**

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**ROLE OF FLEXO PRINTING IN THE COMING TIME**

**FLEXIBLE PACKAGING WORLD**

**MARKET TRENDS**

**MARKET DRIVERS**
Percentage from package value
TOTAL market value 11,652 M€
Countries: Ger, UK, Fr, It, Sp, Ned, Bel, Scan, Por

Source RCC/Comexi, 2010
FP Industry – 2009 analysis

Percentage from package value
TOTAL market value 31,875 M€
Countries: Canada, USA and Mexico

Source RCC/Comexi, 2010
Percentage from package value
TOTAL market value 19,566 M€
Countries: China, Japan and India

Source RCC/Comexi, 2010
QTEC: market key drivers

ENVIRONMENT
- Energy consumption
- VOC-free
- Carbon Foot Print
- Safety

QUALITY
- Higher resolution
- Resistance
- Glossier colors

COST
- Investment
- Running costs
- Change over cost

TIME-TO-MARKET
- Stocks
- Opportunity cost

...AND SHORT RUNS
Why Flexo vs Rotogravure

<table>
<thead>
<tr>
<th></th>
<th>FLEXO</th>
<th>ROTOGRAVURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print quality</td>
<td>150 -177 / 200* lpi</td>
<td>200 lpi</td>
</tr>
<tr>
<td>Dot gain</td>
<td>15-20 / 10* %</td>
<td>15-20 %</td>
</tr>
<tr>
<td>Optical density</td>
<td>100 / 125*</td>
<td>100</td>
</tr>
<tr>
<td>Emissions reduction (ratio)</td>
<td>1 / 0,4*</td>
<td>3 max.</td>
</tr>
<tr>
<td>Waste reduction (ratio)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Energy (ratio)</td>
<td>1 / 0,5*</td>
<td>4 max.</td>
</tr>
<tr>
<td>Inks cost /meter(ratio)</td>
<td>1 / 4*</td>
<td>1,5</td>
</tr>
<tr>
<td>Plates cost/meter (ratio)</td>
<td>1</td>
<td>1,5</td>
</tr>
</tbody>
</table>

* Curable inks
## TIME TO MARKET DRIVER

<table>
<thead>
<tr>
<th>GRAVURE</th>
<th>FLEXO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CILINDERS</td>
<td>PLATES</td>
</tr>
<tr>
<td>DAYS / WEEKS</td>
<td>HOURS / DAYS</td>
</tr>
</tbody>
</table>

**Time to Market Driver**

- **Gravure**: Cylinders take days to weeks for production.
- **Flexo**: Plates take hours to days for production.
COST DRIVER

7 colors printing, 400 mm print repeat, 1250 mm press width

Cost €

Job size

Gravure
SB Flexo

30%
COST DRIVER

7 colors printing, 400 mm print repeat, 1250 mm press width

Cost €

- Gravure
- SB Flexo

Job size

- 25000 m²
- 50000 m²
- 75000 m²
- 100000 m²

ENERGY

Role of flexo printing in the coming time
COST DRIVER

7 colors printing, 400 mm print repeat, 1250 mm press width

Cost €

<table>
<thead>
<tr>
<th>Job size</th>
<th>Gravure</th>
<th>SB Flexo</th>
</tr>
</thead>
<tbody>
<tr>
<td>25000 m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50000 m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75000 m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100000 m²</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
COST DRIVER

7 colors printing, 400 mm print repeat, 1250 mm press width
SUSTAINABILITY DRIVER

- Environment
- Compressed air
- Productivity
- Power consumption
- Gas consumption

Role of Flexo Printing in the Coming Time
ROLE OF FLEXO PRINTING IN THE COMING TIME

FLEXIBLE PACKAGING WORLD
MARKET TRENDS
MARKET DRIVERS

SUSTAINABILITY DRIVER

Emissions & waste reduction

Note: Flexo machines with solvents
CO2 Emissions Progress

Note: Flexo machines with solvents
ROLE OF FLEXO PRINTING IN THE COMING TIME

FLEXIBLE PACKAGING WORLD

MARKET TRENDS

MARKET DRIVERS

SUSTAINABILITY DRIVER

<table>
<thead>
<tr>
<th>Coffee Packaging</th>
<th>Product Weight</th>
<th>Packaging Weight</th>
<th>Product-to-Packaging Ratio</th>
<th>Packaging Weight per 100 g Product</th>
<th>Energy Consumption MJ/11.5 oz</th>
<th>Emissions Kg CO₂-e/11.5 oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal Can with Plastic Lid</td>
<td>11.5 ounces (326 g)</td>
<td>96.38 g</td>
<td>3:1</td>
<td>29.56 g</td>
<td>4.21</td>
<td>0.33</td>
</tr>
<tr>
<td>Plastic Container &amp; Lid</td>
<td>11.5 ounces (326 g)</td>
<td>50.53 g</td>
<td>5:1</td>
<td>18.26 g</td>
<td>5.18</td>
<td>0.17</td>
</tr>
<tr>
<td>Flexible Brick Pack</td>
<td>11.5 ounces (326 g)</td>
<td>11.33 g</td>
<td>29:1</td>
<td>3.47 g</td>
<td>1.14</td>
<td>0.04</td>
</tr>
</tbody>
</table>

F.P.A. Case study

Flexible Packaging
Less Resources. Less Footprint. More Value.
SUSTAINABILITY DRIVER

WHAT ABOUT FLEXIBLE PACKAGING PRINTING PROCESS SUSTENABILITY?
SUSTAINABILITY DRIVER

SOLVENT BASED vs NON SOLVENT BASED FLEXIBLE PACKAGING PRINTING

NON SOLVENT BASED

SOLVENT BASED
SUSTAINABILITY DRIVER

GLOBAL POLLUTION DUE TO THE USE OF SOLVENT-BASED INK AND INCINERATOR

425,000 Tn of VOC’s emitted per year

8,000,000 Tn of CO₂ emitted per year

80,000 Tn of residual VOC’s
SUSTAINABILITY DRIVER

Emissions & waste reduction

Role of flexo printing in the coming time

Flexible Packaging World
Market Trends
Market Drivers

Non Solvent Based
Solvent Based
Non Solvent Based

Flexible Packaging
Less Resources, Less Footprint, More Value
A world of opportunities opens up before your eyes ... READY FOR THE FUTURE

THANK YOU !