

Why Gravure

***GAA Packaging & Products
Technology Conference***

FlintGroup

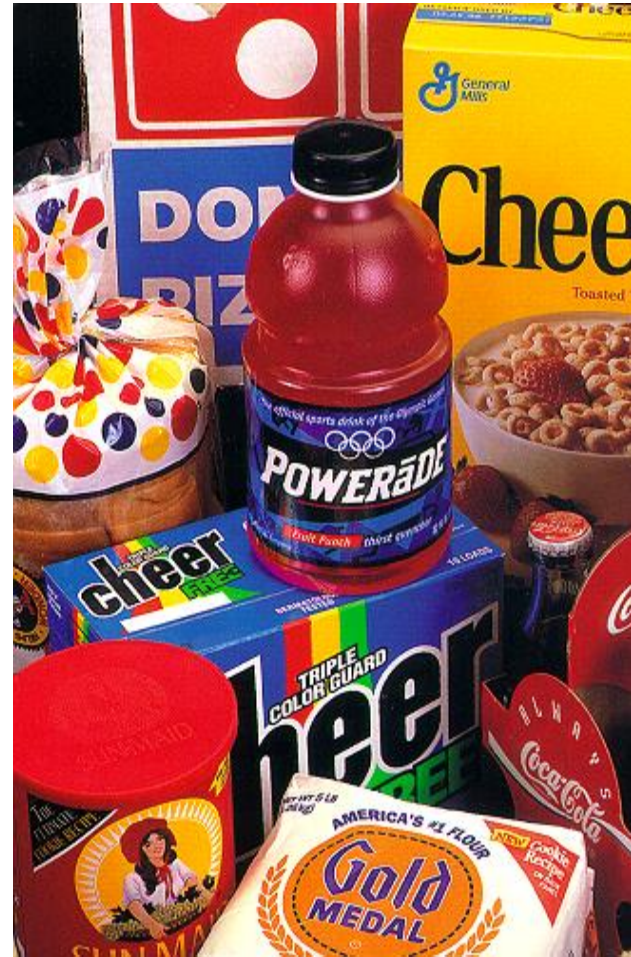
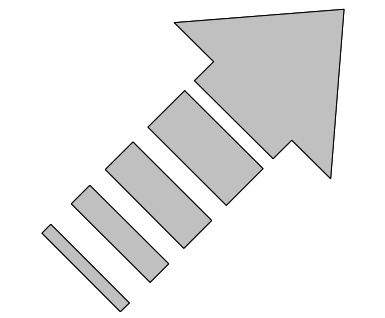
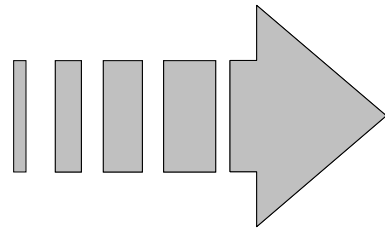
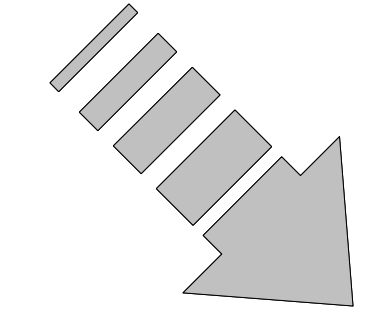
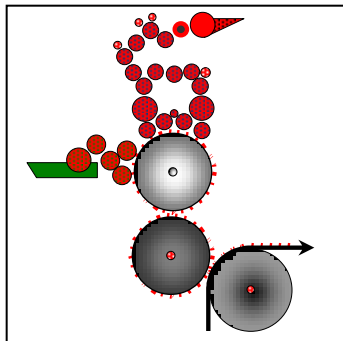
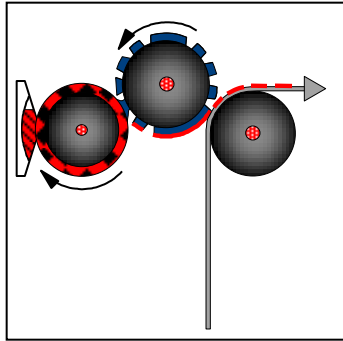
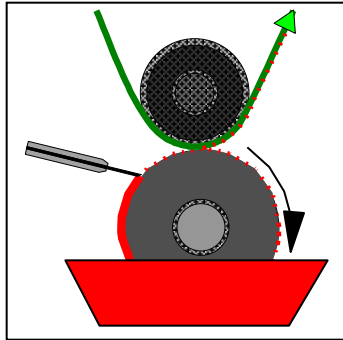
Packaging Ink Products

Flint Group has a broad portfolio of products for packaging applications:

- Flexographic
- Offset
- Energy Curable
- Letterpress
- Gravure
- Specialty Printing



Printing Processes



The Package is not the Product

- ▶ **The package is a throw away item, but must represent the product well at the point of sale.**
- ▶ **It must be good enough to “sell” the product, but must not add cost without benefits.**
- ▶ **Graphics must appeal to the buyer and position the product.**
- ▶ **CPCs will not pay for graphics unless it enhances market share or margin.**
- ▶ **Consumers don’t care about the print method. They want:**
 - ◆ Appeal
 - ◆ Consistency
 - ◆ Confirmation

Choice of Printing Process

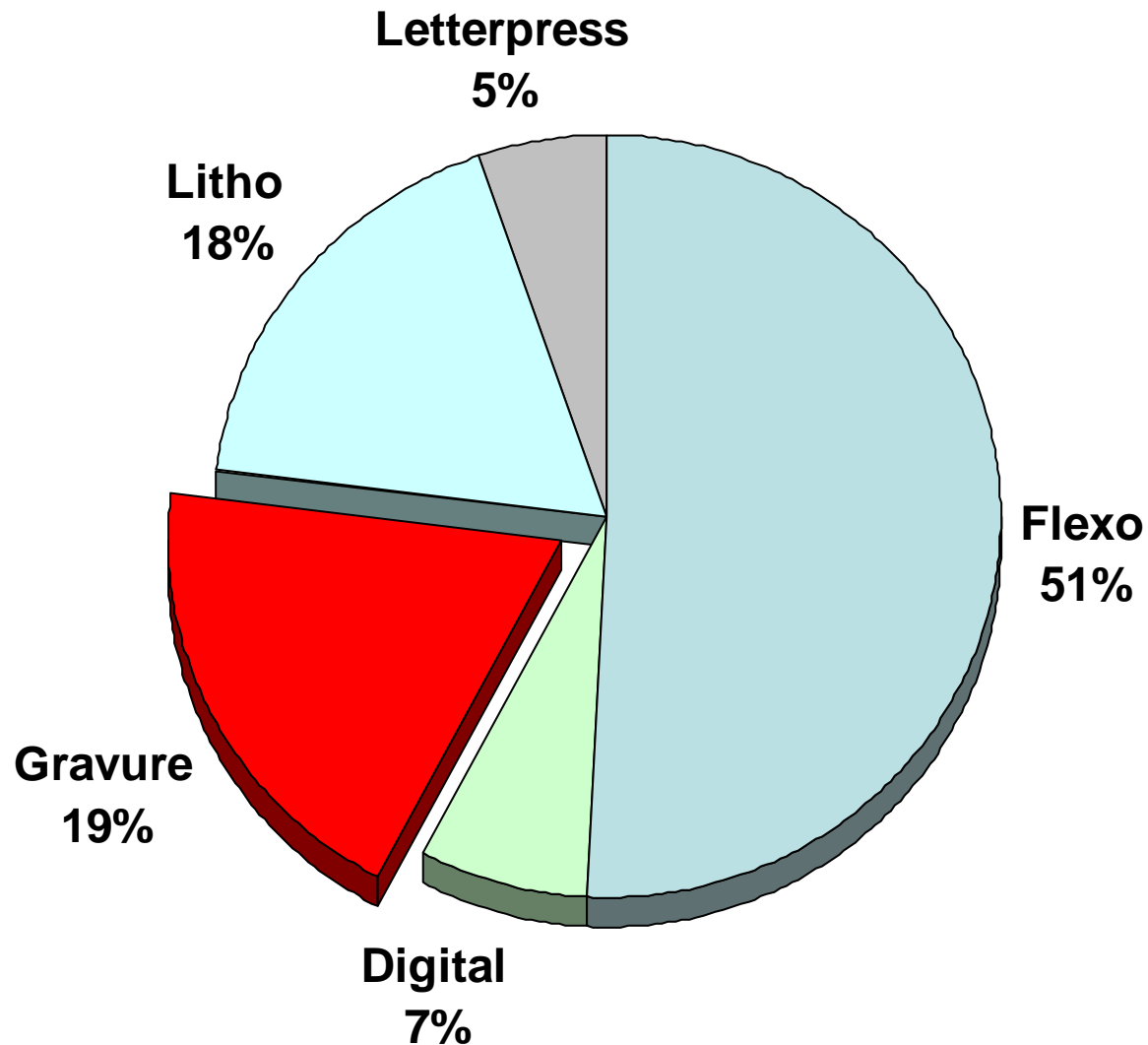
Depends on ...

- ▶ **Run size economics**
- ▶ **Graphic reproduction**
- ▶ **Graphic elements**
- ▶ **Substrate**
- ▶ **In-line processing**
- ▶ **Packaging size**
- ▶ **Special effects**
- ▶ **Security elements**
- ▶ **Quality requirements**
- ▶ **Equipment availability**

▶ **Time and Cost**

If lead time and cost were not a consideration Gravure would own the majority share in packaging.

Packaging Ink Market by Printing Application



Printing Methods by Packaging Segment

PACKAGING SEGMENTS									
	Flexible Packaging	Folding Carton	Corrugated	Retail Bags	Multi wall Bags	Labels	Metal Cans	Rigid Plastic Containers	Fast Food Containers
Gravure	X	X			X	X			X
Flexo	XXX	X	XXX	XXX	XXX	XXX			XXX
Litho		XXX				X	X	X	X
Letterpress						X	XXX	XXX	
Digital		X	X			X			
Screen						X		X	

Gravure

▶ Strengths

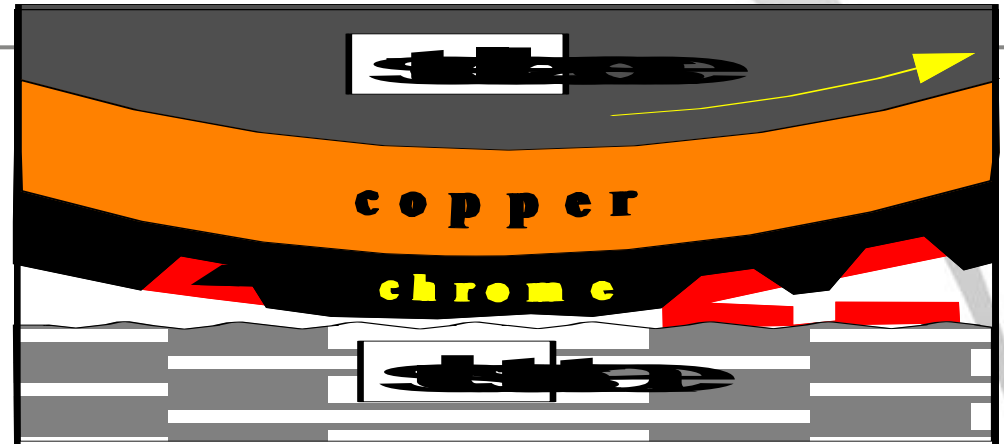
- ◆ Excellent print quality
- ◆ Low speed sensitivity
- ◆ Variable size cells

▶ Weaknesses

- ◆ Costly for shorter runs (cylinder costs)
- ◆ Lead time
- ◆ Set up time and waste
- ◆ the edges of text shows a rough halftone appearance
- ◆ Individual dots may appear to have a hole in their centers

▶ Challenges

- ◆ Use of lower quality substrates
- ◆ Length of web path
- ◆ Cylinder cost
- ◆ Economy of short runs



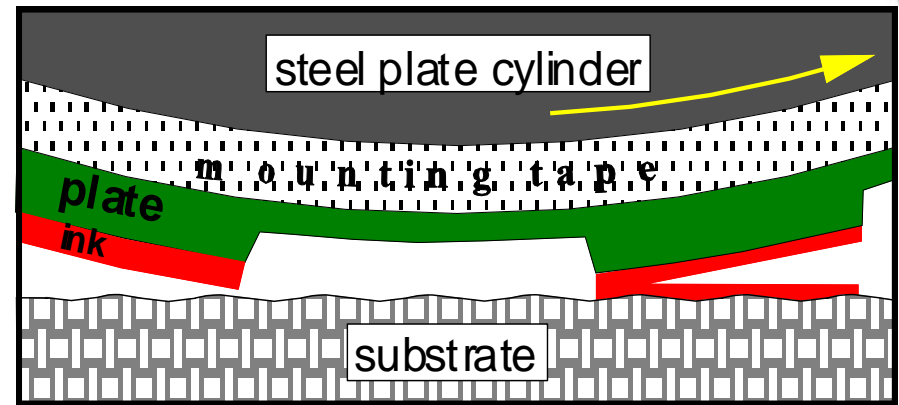
Flexo

► Strengths

- ◆ Can be used for the widest number of substrates
- ◆ Good fit for most packaging run sizes
- ◆ Capable of in-line operations

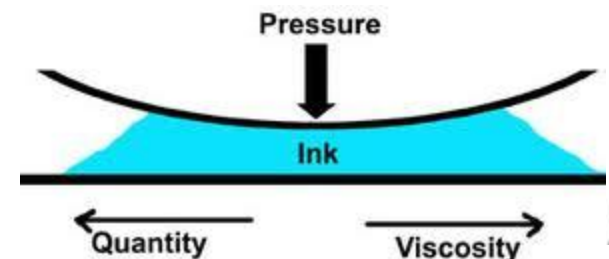
► Weaknesses

- ◆ Run-to-run consistency
- ◆ Dot gain
- ◆ Registration
- ◆ Impression dependent
- ◆ Type can often appear to be surrounded by a sharp-edged "halo."



► Challenges

- ◆ Aspiring to gravure quality
- ◆ Uniform solid print quality
- ◆ Reputation



Litho

▶ Strengths

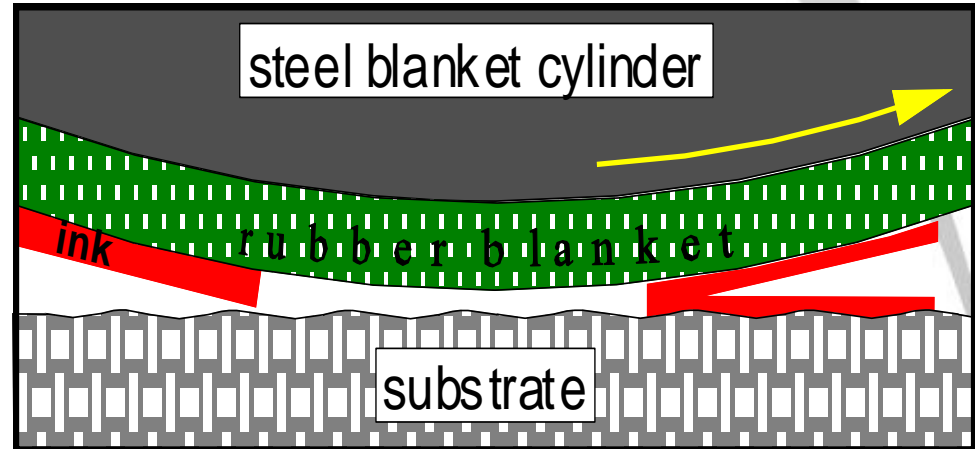
- ◆ Good print quality
- ◆ Low cost plates
- ◆ Low dot gains
- ◆ Fine Screens
- ◆ Speed to market
- ◆ Type edges are well defined

▶ Weaknesses

- ◆ Limitations of print repeats
- ◆ Sheetfed rather than roll-to-roll
- ◆ Special effect printing
- ◆ Difficult to match brand colors

▶ Challenges

- ◆ Speed
- ◆ In-line operations
- ◆ Substrate limitations



Letterpress (Dry Offset)

► Strengths

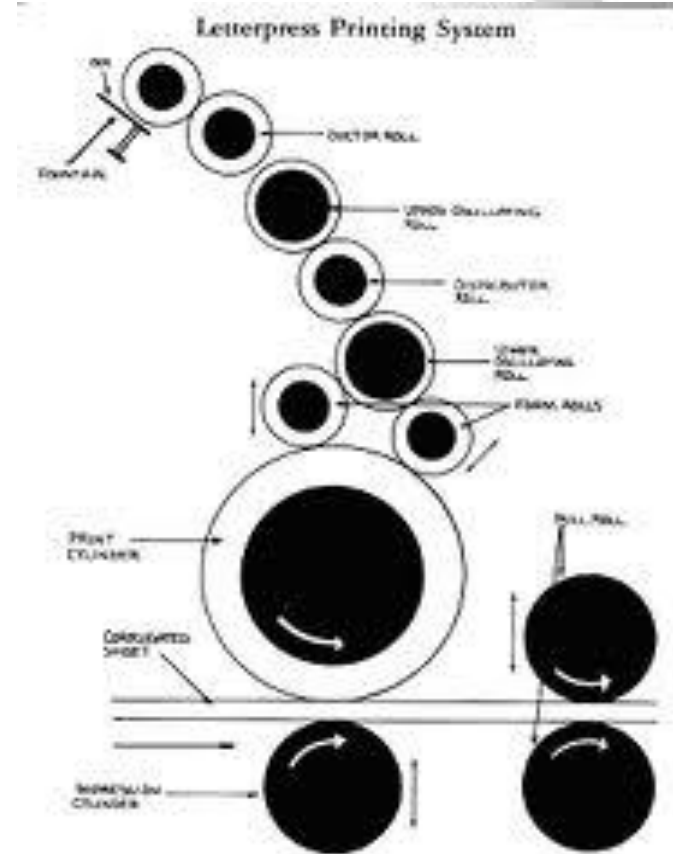
- ◆ Excellent detailed printing
- ◆ Long and well established process

► Weaknesses

- ◆ Low production speed
- ◆ Presses are expensive
- ◆ Little investment into technological improvements

► Challenges

- ◆ Cost competitive with other printing applications
- ◆ Diminishing base of packaging installations



Digital

▶ Strengths

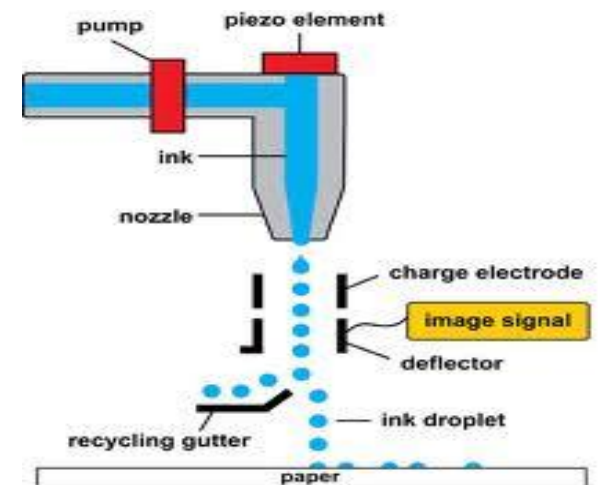
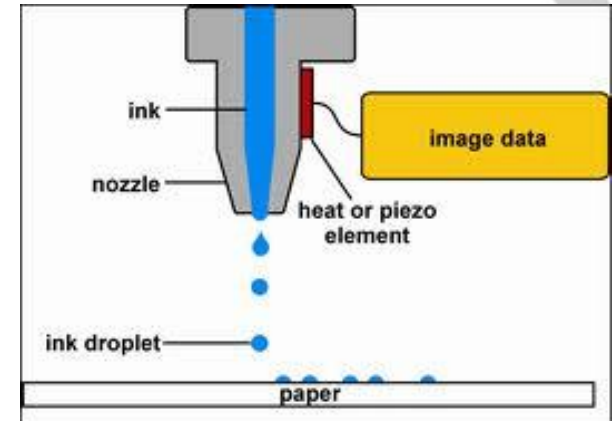
- ◆ Variable data
- ◆ Very short runs
- ◆ Low set up cost

▶ Weaknesses

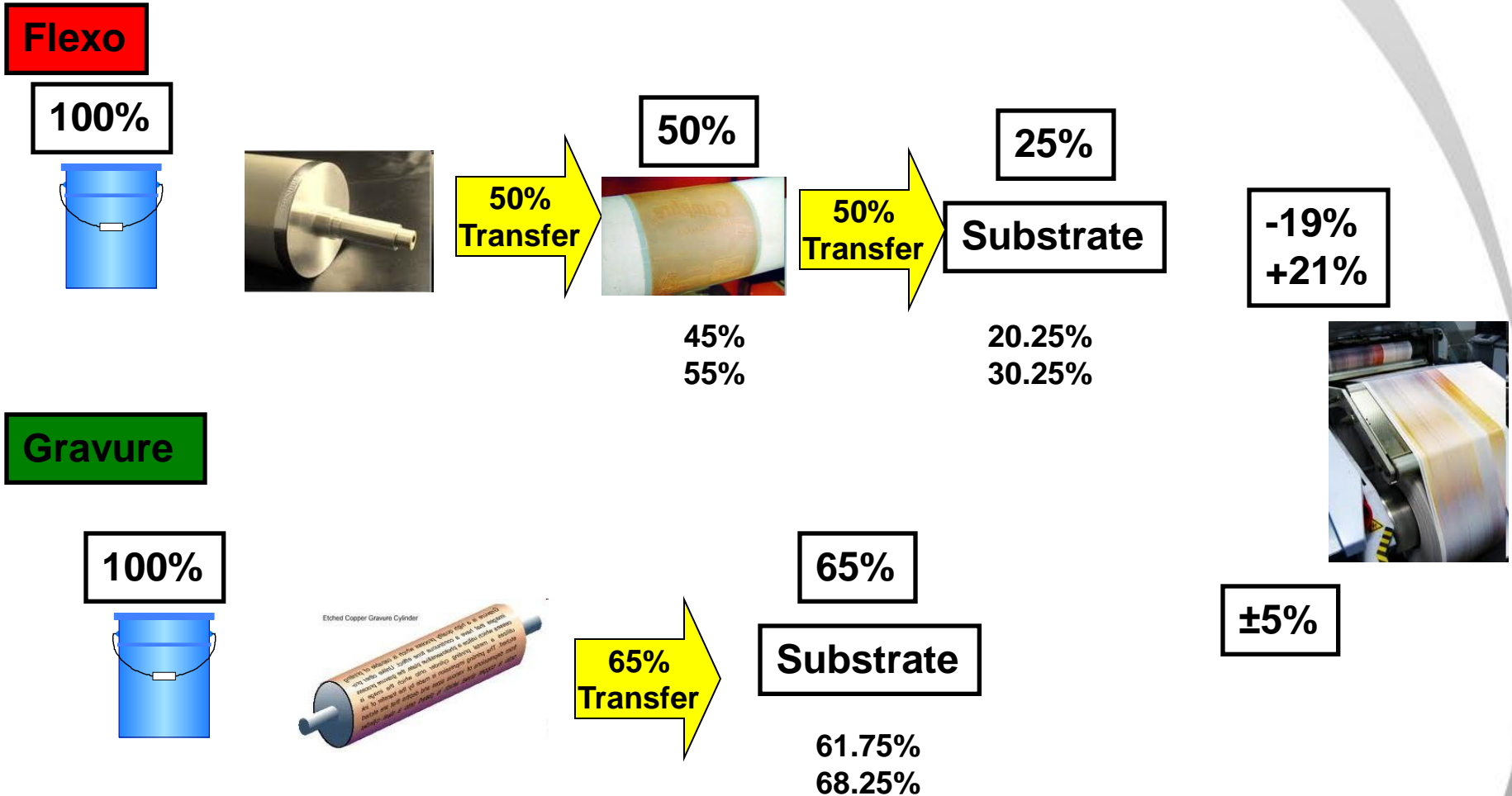
- ◆ Size (width)
- ◆ Speed
- ◆ Capital Cost
- ◆ Consumable Cost

▶ Challenges

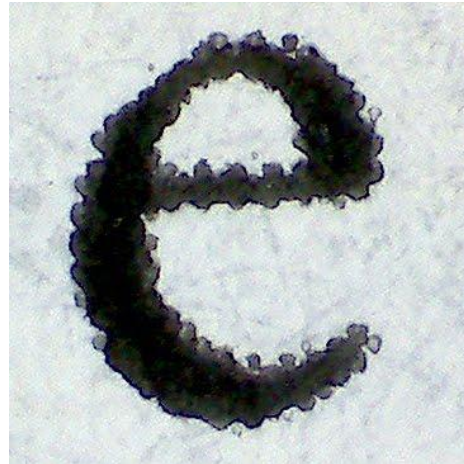
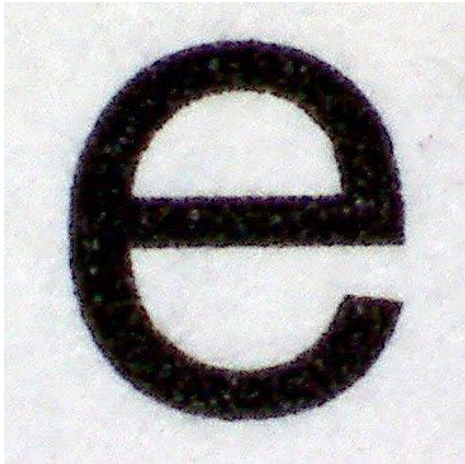
- ◆ Cost competitive to other printing applications
- ◆ Speed
- ◆ Equipment evolution



Impact of Ink Transfer $\pm 5\%$



Which Printing Application is Best



The best printing application depends on:

- ▶ The product being printed
- ▶ The quality and performance expectations
- ▶ Real world limitation of the processes
- ▶ Cost considerations

And there are always Trade Offs

Print Quality Comparisons Gravure to Flexo

	HIGH QUALITY	
	GRAVURE	FLEXO
DOT GAIN	+	+
HIGHLIGHT DOTS	+	+
SHADOWS	+	+
SOLID DENSITY	+	+
SOLID UNIFORMITY	+	+
IN-LINE CONVERTING OPTIONS		+
REGISTRATION	+	+
SPECIAL EFFECT CAPABILITY	+	
COLOR GAMUT	+	+
CONSISTENCY (JOB-TO-JOB)	+	
SUBSTRATE FRIENDLY		+
SHARP EDGES		+
VIGNETTES	+	+
SPEED CONSISTENCY	+	
TRAP	+	+

Advantages for Gravure

- ▶ **Increased drying capability**
- ▶ **Variable ink volume lay down (cell size variability)**
- ▶ **High print quality (brilliant colors)**
- ▶ **Very good consistency**
- ▶ **Cost effective for longer runs**
- ▶ **Variable repeat length**
- ▶ **Low operator impact**
- ▶ **Specialty ink “friendly”**

Key Challenges:

- ▶ **Shorter run lengths**
- ▶ **Faster turn around time (concept to print)**
- ▶ **Quality gap narrowing**
- ▶ **Meeting environmental compliance**
- ▶ **Reducing cost**

Gravure is described as a “Mature Industry”

**With maturity comes
*WISDOM***

**Focus on applications and markets which
need and utilize gravures strengths**

**And anticipate change and adapt to meet
the challenges.**

Thank You

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