

VIGC

**EVOLUTIONS IN
FOOD PACKAGING
PRINTING**

**Brussels, Belgium
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**LOW MIGRATION OR
NO MIGRATION?**

THE 1000 DALTON RULE

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OVERVIEW

- ◆ Introduction
- ◆ Electrophotography – Xeikon process
- ◆ National and international legislation
- ◆ Migration - 1000 Dalton rule
- ◆ Traceability
- ◆ Why go digital?

INTRODUCTION

◆ Xeikon sites



- ◆ Lier, BE
Xeikon Digital solutions



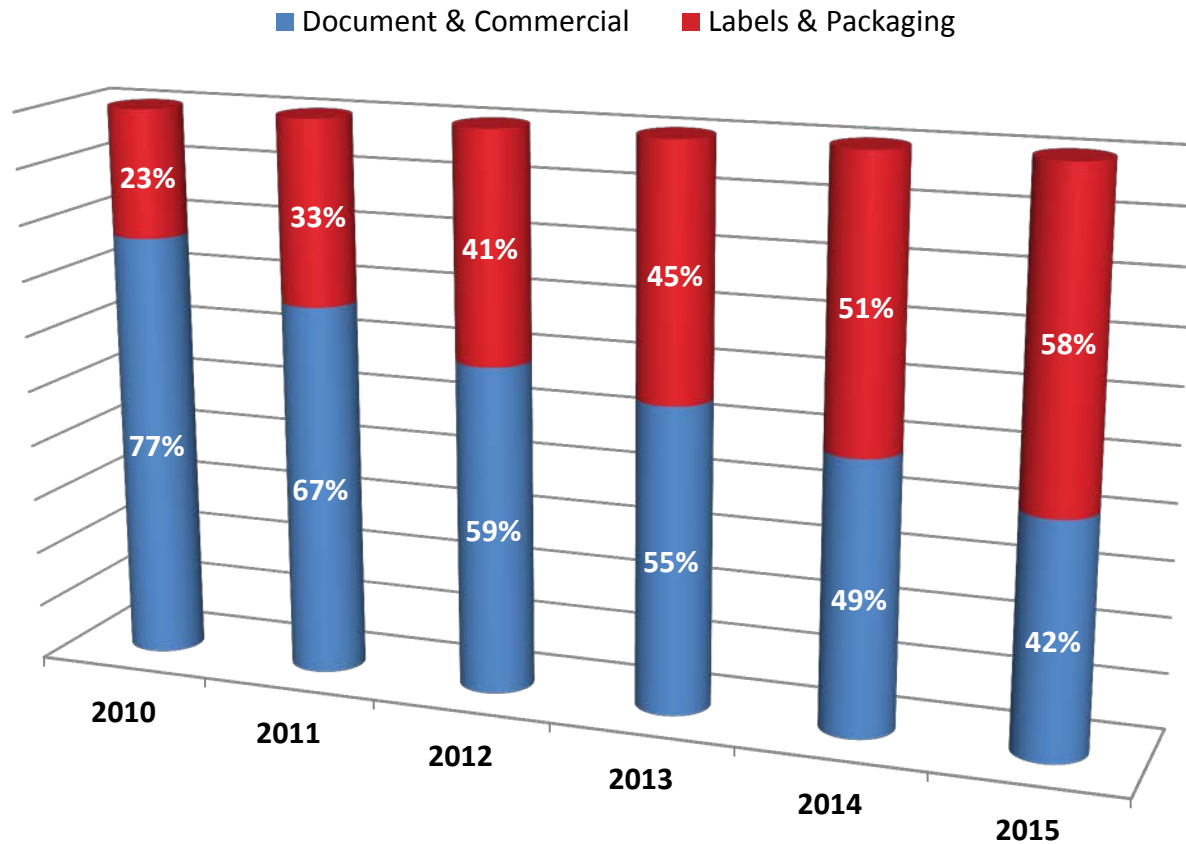
- ◆ Heultje, BE
Xeikon Toner Manufacturing



- ◆ Ypres, BE
Prepress solutions

INTRODUCTION

◆ Xeikon's digital revenue split per segment



INTRODUCTION

◆ Why is Xeikon growing in the **L&P** segment?

◆ **Dedicated toners** since 2010:

- ◆ QA-I toner
- ◆ QA-IC (ICE) toner
- ◆ QA-CH (Cheetah) toner



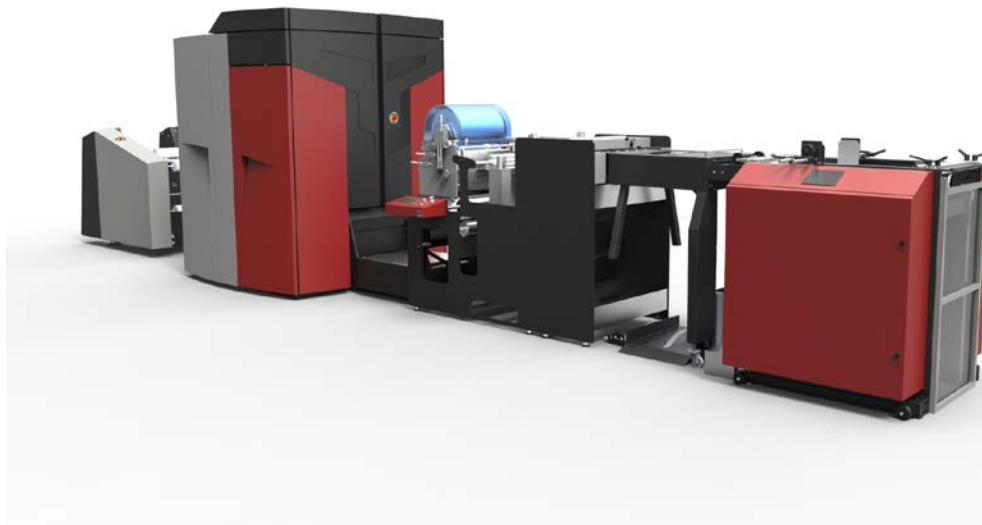
◆ **Dedicated digital presses**

◆ **Image quality** (1200 dpi 4 bit)

◆ **Substrate versatility**

INTRODUCTION

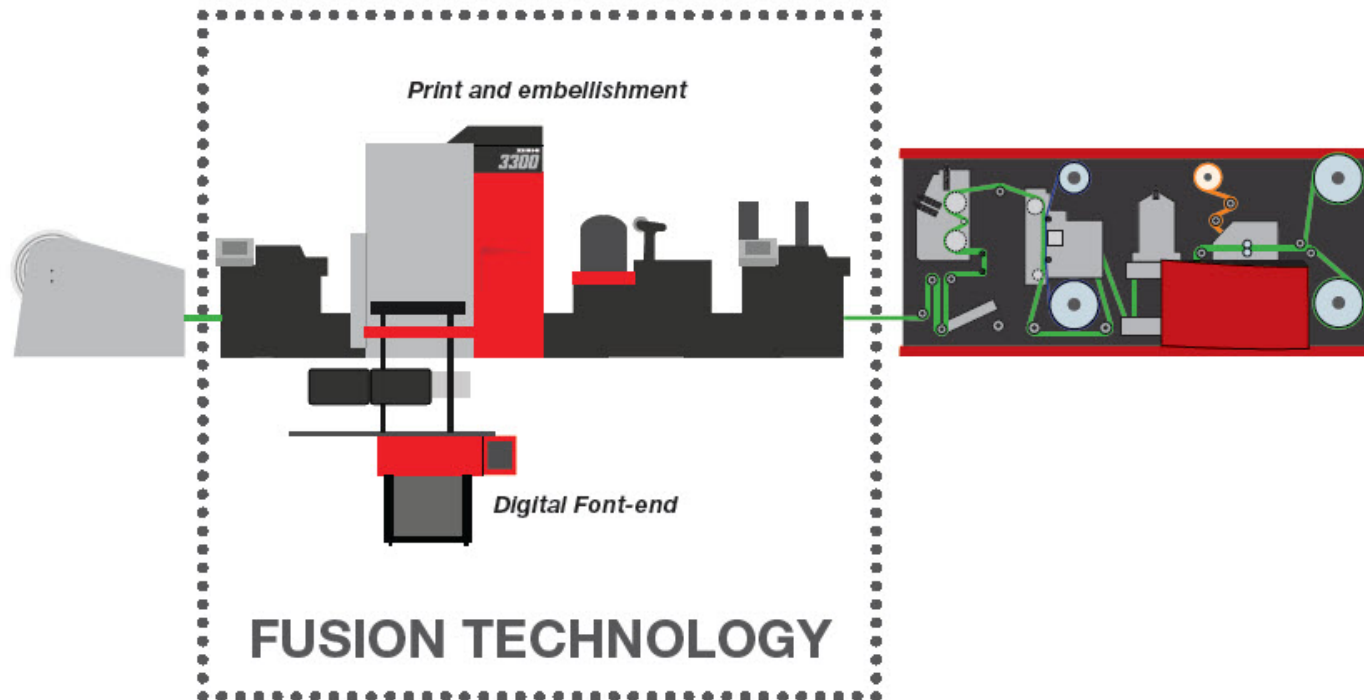
- ◆ Xeikon CX3
 - ◆ fastest digital label press
 - ◆ 30 m/min
- ◆ Xeikon 3000 series
 - ◆ 5 different presses



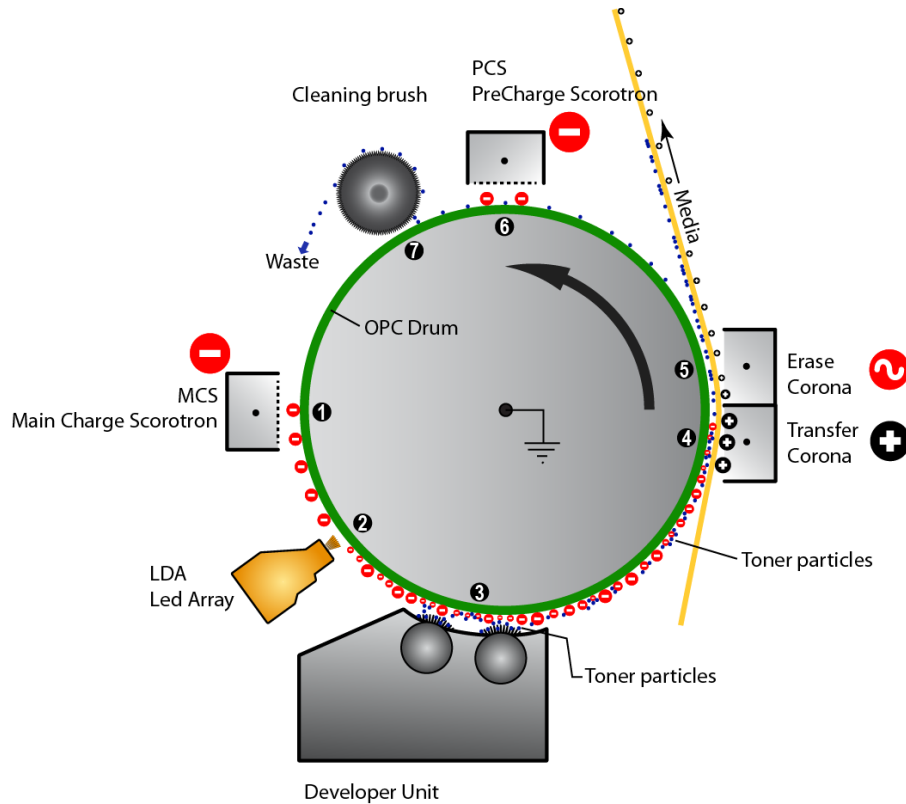
INTRODUCTION

◆ What will the future bring?

◆ **FUSION technology**



ELECTROPHOTOGRAPHY

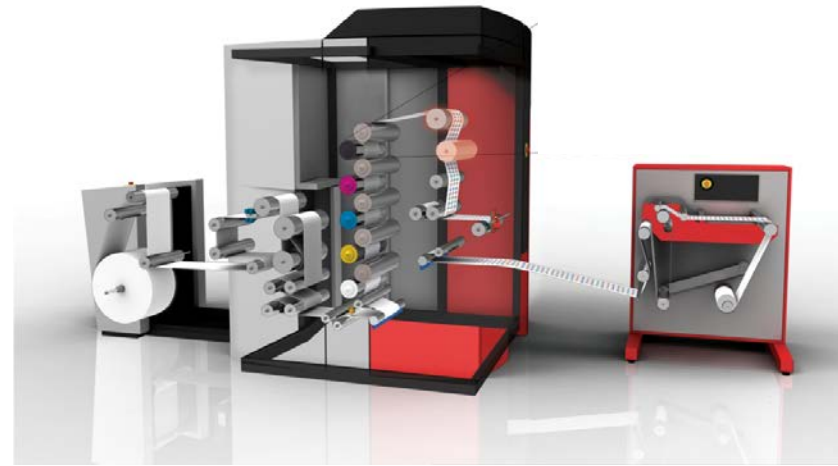


1. Charging of the OPC
2. Writing of the latent image
3. Development
4. Transfer to the substrate
5. Charge erasing
6. Pre charging
7. Cleaning



XEIKON PROCESS

- ◆ Full rotary printing - variable repeat
- ◆ 1200 dpi 4 bit print quality
- ◆ Variable web widths
- ◆ Printing speed is not affected by
 - ◆ label or repeat size
 - ◆ # colors used
- ◆ Perfect repeat imposition
- ◆ Very accurate Color to Color registration



LEGISLATION



LEGISLATION

- ◆ **General requirements (Framework regulation):**
- ◆ “Materials and articles, including active and intelligent materials and articles, shall be manufactured in compliance with good manufacturing practice so that, under normal or foreseeable conditions of use, they do not **transfer their constituents** to food in quantities which could:
 - ◆ endanger human health;
 - ◆ bring about an unacceptable change in the composition of the food;
 - ◆ bring about a deterioration in the organoleptic characteristics thereof.”

MIGRATION

- ◆ **‘migration’** means a partition and diffusion controlled transfer process of small molecules from the food contact material or article into food or food simulant
- ◆ 3 types of migration
 - ◆ through the substrate
 - ◆ set-off to the reverse side (e.g. by rewinding or stacking)
 - ◆ gas phase transfer (VOC)
- ◆ **‘overall’** vs **‘specific’** migration limit

MIGRATION

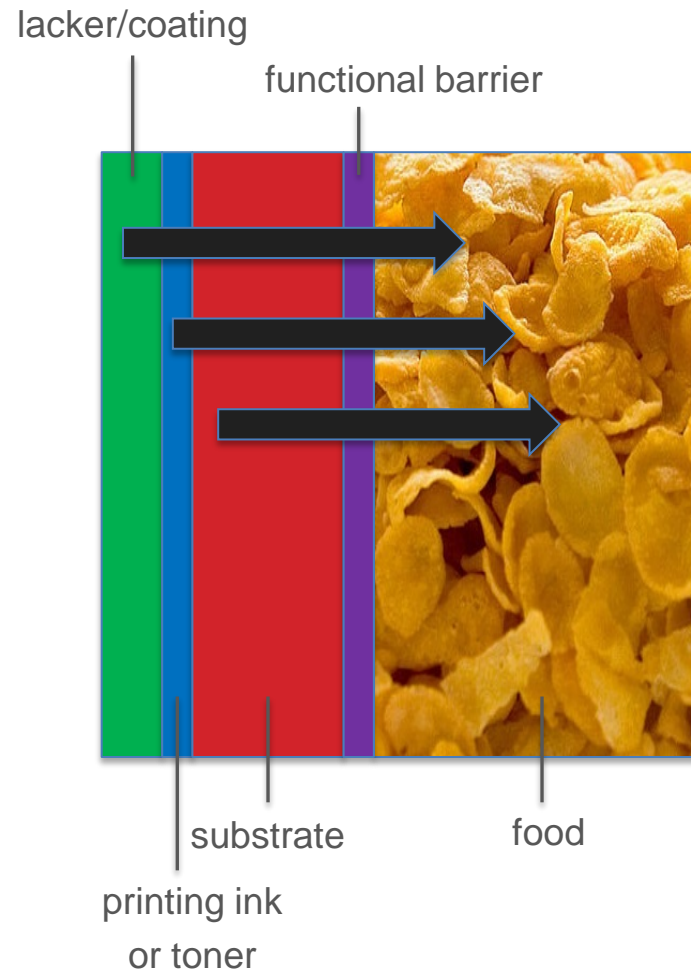
- ◆ **‘overall migration’** means the sum of the amount of volatile and non volatile substances released from a material or article into food or food simulant. The Overall Migration Limit (OML) means the maximum permitted amount.
- ◆ **‘specific migration’** means the amount of a specific substance released from a material or article into food or food simulant. The Specific Migration Limit (SML) means the maximum permitted amount.

MIGRATION

- ◆ The **overall migration limit** according to the PIM regulation is set at 60 ppm (parts per million) for a cubic package with a surface area of 6 dm²
- ◆ This relates to 60 mg of migrant per 1 kg of food (simulant), or 10 mg per 1 dm² of surface area in contact with the food (simulant)
- ◆ The limit of no concern (limit of no migration) is set at 10 ppb (parts per billion)
- ◆ The **specific migration limit** lies in between these two values

MIGRATION

◆ 'functional barrier'



MIGRATION

- ◆ ‘So it’s not only our toner ?’
- ◆ Combination of all parts of the package:
 - ◆ Substrate
 - ◆ Lacquer or laminate
 - ◆ Coatings
 - ◆ Decoration
- ◆ Storage conditions
- ◆ Preparation conditions



MIGRATION

- ◆ Migration (mobility) depends on:
 - ◆ **size of the molecule (the larger, the lower the mobility)**
 - ◆ temperature ($\pm 1000x$ higher mobility at 100 °C vs 25 °C)
 - ◆ time (related to shelf life)
 - ◆ nature of the food (dry/wet, fatty, dairy, ...)
 - ◆ type of substrate (PE/PP different from PET, metallics, ...)
 - ◆ type of coating (shielding ability?!)

'1000 DALTON RULE'

- ◆ Molecules weighing more than 1000 Dalton (g/mol) are not considered to migrate
- ◆ In practice this means > 70 carbon atoms on average
- ◆ Typical examples of 'heavy' molecules:
 - ◆ Synthetic Polymers
 - ◆ Biopolymers
 - ◆ Proteins
 - ◆ Polysaccharides

XEIKON TONER

- ◆ General composition of toner:
 - ◆ > 90% polyester (transparent polymer)
 - ◆ pigments
 - ◆ additives (fillers, charging agents, ...)
- ◆ Average size of the toner particles is 7-8 micron

XEIKON TONER

- ◆ Dedicated toners for labels and packaging
- ◆ Different melting temperatures, depending on the application
 - ◆ QA-I vs ICE and CHEETAH toner
- ◆ Several food approvals and other certificates:
 - ◆ ISEGA
 - ◆ FDA
 - ◆ Deinkability
 - ◆ Swiss List/Nestlé
 - ◆ Eco

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TRACEABILITY

- ◆ Traceability of the packaging material
- ◆ Xeikon QR code on labels
 - ◆ Traceable to:
 - ◆ Batch
 - ◆ Ingredients
 - ◆ Process parameters
 - ◆ Which toner at which customer

TRACEABILITY

i-nigma

CREATE **FREE** BUSINESS MOBILE SITES WITH **TAPTO.COM**

ABC

XEIKON-QA-TSB-1893

SB 1200 g

TONER PRODUCED WITH CERTIFIED 100% GREEN ENERGY

Made in Belgium

XEIKON ECO

our hed.

1892, 3657, 36A1

XEIKON

Back Share

WHY GO DIGITAL

- ◆ Complementary technology to conventional printing
- ◆ More economically viable for short and medium runs
- ◆ Value-added printing
 - ◆ Variable data
 - ◆ Security aspects to prevent counterfeiting
 - ◆ Just in time business concept
 - ◆ More automated workflow
- ◆ Quick variations in design (christmas, halloween, ...)

CLOSING REMARKS

- ◆ National and international legislation
- ◆ Dedicated (low migration) toners for L&P market
- ◆ Dedicated suites (self adhesive & heat transfer labels, folding carton, ...)
- ◆ Food certification
- ◆ Traceability
- ◆ Sustainability

QUESTIONS?