

KOENIG & BAUER

Developments in Fiber-based Packaging

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Koenig & Bauer – CFTA Conference 24.04.2024

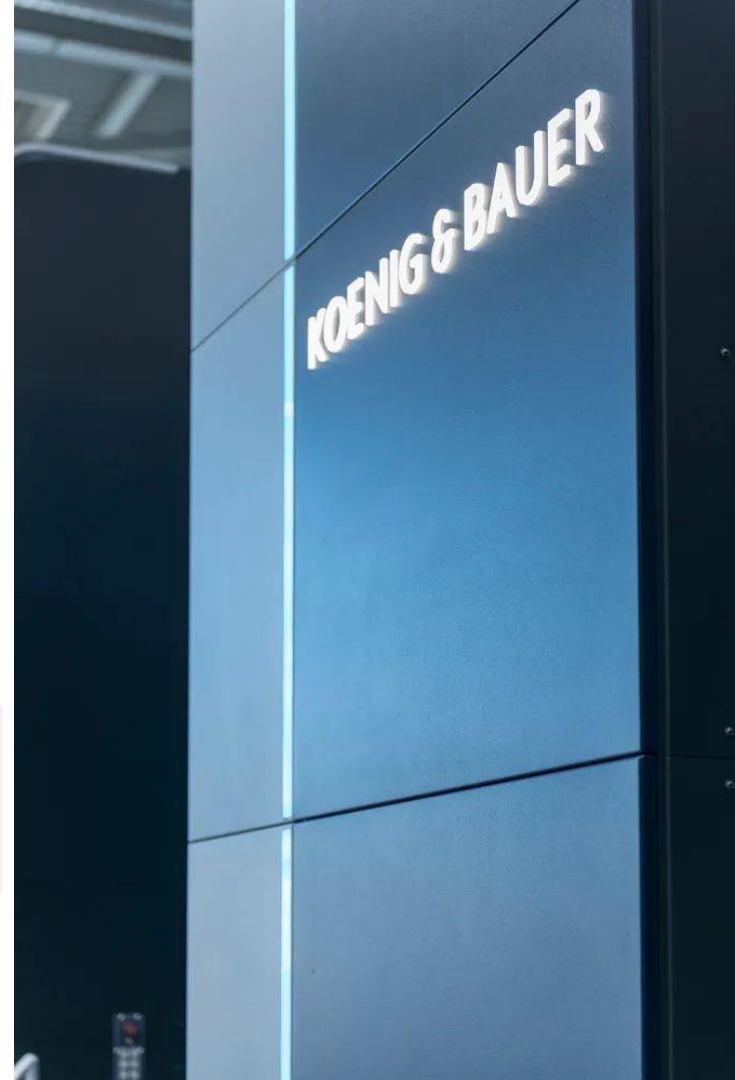
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Agenda

Market Trends Fiber-based Packaging

- Market Trends
- Market Requirements

Packaging & Packaging Waste Regulation Solutions in Fiber-based Packaging



Fiber-based Packaging and Film Packaging

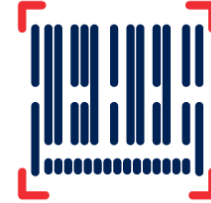
Market Trends



Mega-Trend Sustainability



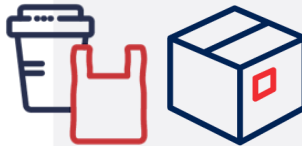
Brand Protection



Track & Trace
Connected Packaging



Uncertainty due to PPWR
& Amount of Regulatory



Consumers' Lifestyle Decisions
(Health, Convenience & eCommerce)



Time to Market &
Differentiation

Sources: Koenig & Bauer Market Study, L, N & P Market Model, The Future of Paper vs Plastic Packaging to 2028 - Emma Gotch (Smithers), Fefco - Plastic Reduction Report March 2024

Fiber-based Packaging vs. Film Packaging

Resulting Market Requirements for Packaging Design & Printing

1. Requirements Packaging Production

- flexibility & agility
- short time to market
- low-risk testing of product designs
- increased variability of marketing campaigns

2. More Make-Readys during Production

- product diversification
- short lifecycles of products
- short-term advertising actions

3. Changing Content in Packaging

- language
- pictures & pictorial warnings
- QR-codes
- instructions for disposal and sustainability information (PPWR)

4. Variability in Packaging & Substrate Changes

- multi-layer packaging to single-layer packaging
- recycled content in substrates
- new substrate inventions



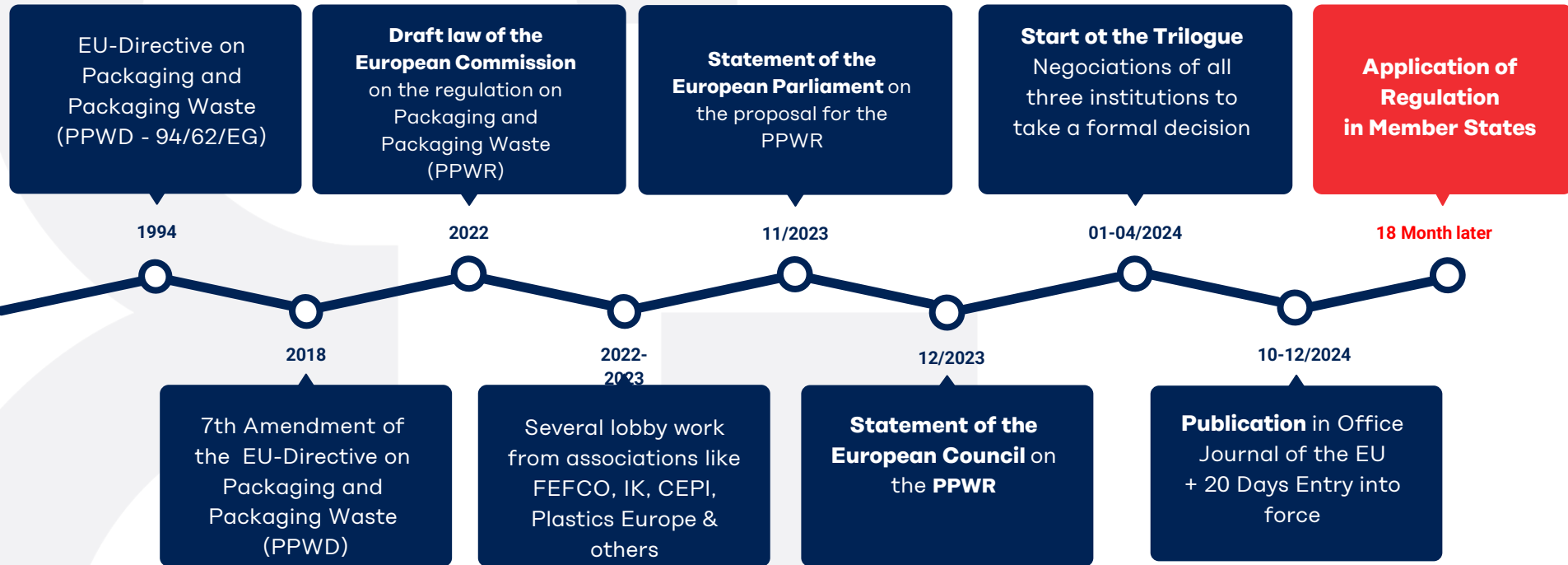
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**Packaging & Packaging Waste
Regulation (PPWR)
Latest Update**

we're on it.

Packaging & Packaging Waste Regulation

Development

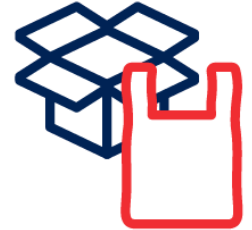


Packaging & Packaging Waste Regulation

Main Regulations – Current Status t.b.c.

European Commission, Council and Parliament agreed the so called Trilogue and now negotiate the formal Form of the Trilogue

- Main Regulations were presented
- Final definition of 'composite material', 'high quality recycling' and 'plastic'
- Restriction on PFAS in packaging and no restriction on BPA
- Definition of recyclable packaging & categorized in grades A to C
 - Designed for material recycling
 - Can be separately collected
 - Packaging is in compliance with delegated acts
- Targets for minimum recycled content in plastic packaging
- Maximum empty space ratio of 50% in grouped, transport and e-commerce packaging
- Restrictions on single use plastic packaging to apply as of 2030
- No ban on packaging used for cosmetics and hygiene products and single use fiber-based packaging
- Reuse targets for transport packaging or sales packaging used for transporting products including via ecommerce: 40% by 2030 & 70% by 2040
- Further...





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Koenig & Bauer - Solutions in Fiber-based Packaging

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Fiber-based Packaging and Film Packaging

Machine Solutions RotaJET & CI-Flexo in Packaging



Folding Carton
Food



Folding Carton
Personal Healthcare



Flexible Packaging
Film



Flexible Packaging
Fiber-based

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Digital Printing for Film Packaging

Approach of Substrate Challenge Film

- Ongoing collaborations with several partners
 - Central cylinder and contactless inkjet printing of RotaJET is suitable for printing film
 - Flexible packaging exhibits highly diversified substrates with various surface properties
 - Water-based inkjet printing vs. non-absorbent material
 - Challenge of printing on variety of substrates with a single primer-ink-combination
 - Up to now insufficient range of substrates implemented
- We print on all these substrates with our CI-Flexo portfolio!

Aluminium
BOPA BOPP
Paper &
Cardboard
BOPET COPP HDPE
CPA/CPE/CPP Nylon
Laminates
PVC / PVCD OPA/OPP
PE/PET/PP LDPE

Digital Printing for Barrier Papers

with heat-sealability

Solution for fiber-based flexible packaging

- Successful collaboration between Koenig & Bauer with sappi & UPM
- Sustainability mega trends drives demand for fiber-based packaging
- Estimation of more diverse substrates overall through regularities & environmental awareness

sappi
The word for fine paper



Open House Box

With fiber based flexible packaging.

Substrates provided by



&



Happy Farm Box:
Printed on the inside of this box were printed on the RotaJET
Customer Technology Center Würzburg

Outer packaging inside:
Printed on the RotaJET on MM X-Liner 180 gsm, 1200 x 1200 dpi, 135 m/min

Outer packaging outside:
Printed on the digital water-machine CorruJET for digital corrugated post
print from Koenig & Bauer | Dürst-IT 1200 x 800 dpi

Example of a Salad bag:
Printed on the Koenig & Bauer XD PRO the all-round flexo CI press
for individual demands in the field of flexible packaging



High Volume Digital Print for Packaging

Customers

Tetra Pak® Connected Package



Digital printing for aseptic carton packaging in Europe



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