

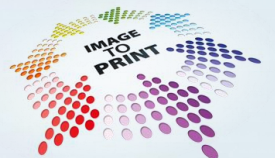


WINDMÖLLER & HÖLSCHER

Meeting the Sustainability Challenge

W+H's advances in Gravure and Flexo Printing

Tobias Skalischus
Regional Manager Technical Sales Printing



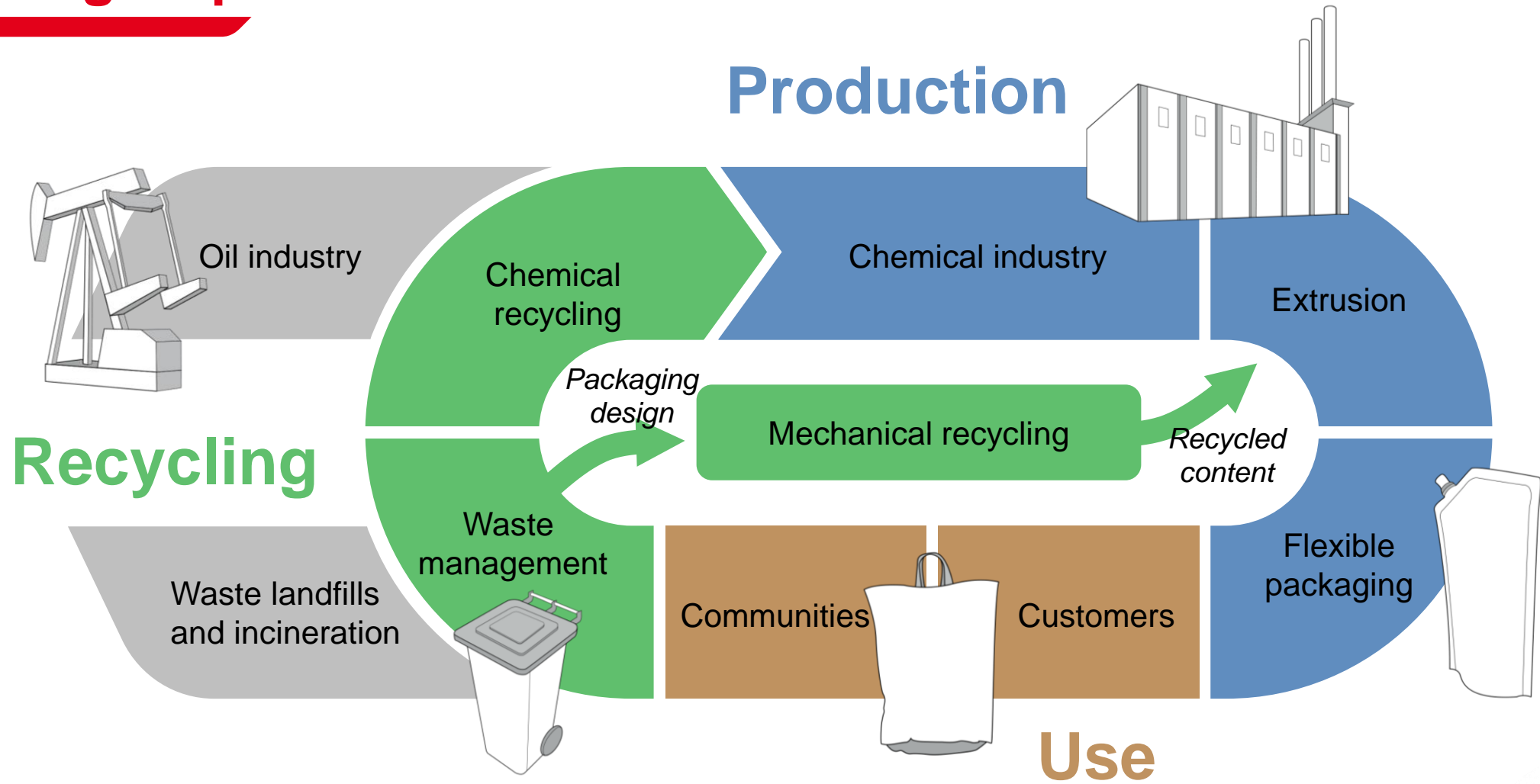


78 %

of global consumers feel that environmental sustainability is important, they like the idea of being sustainable, and want to live more sustainable lives.



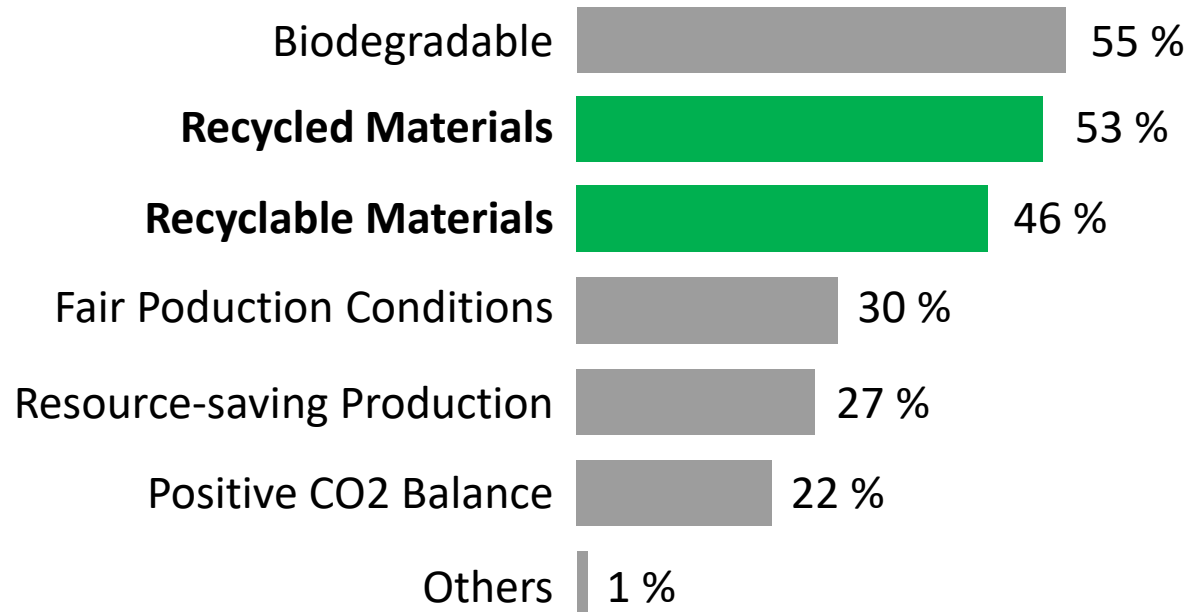
The goal: A circular economy in which resources are used for as long as possible



Substrates are strongly associated with sustainability in the minds of consumers.

Consumer perception:

»What is sustainable?«

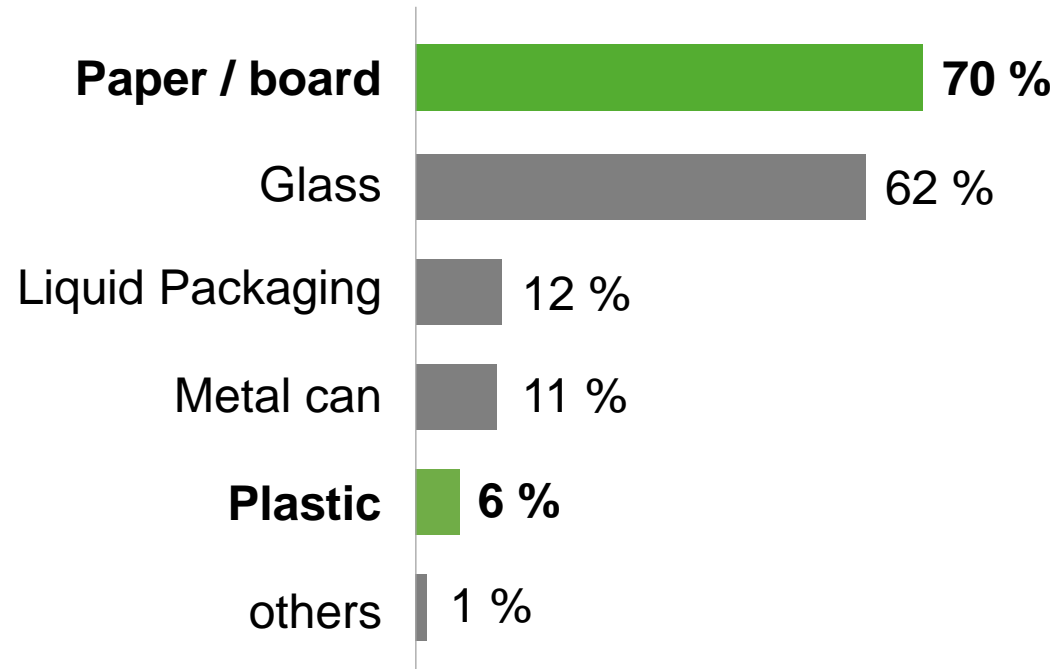


Simon, Kucher & Partners - Global Sustainability Study 2021
Percentage of respondents per category



Paper is the first choice when it comes to consumer perception

Which materials are particularly sustainable?



Simon, Kucher & Partners - Global Sustainability Study 2021
Percentage of respondents per category

Examples of Paper Based Packaging



Confectionary



Powder



Potatos



Multipack Fruit



Diaper Bag



Dry Noodles



More sustainable substrates – Three different approaches



Paper-based packaging

- Renewable raw material with good recycling infrastructure
- Influence on packaging processing



Post-consumer recycled materials

- Legislation as a driver for increased PCR use in Europe
- Sustainability goals of the brand owner as a driver



Mono Materials MDO PE Film

- Mono-material structures for better recyclability
- Large investments in equipment are being made



Sustainable Solutions from a Flexo and Gravure Machine Builder Point of View

Paper Based Packaging

First choice for customer

Printing on PCR Rich Materials

Challenges and Solutions

Mono Materials

MDO-PE Film



Challenges in Paper Packaging

» PACKAGING PROPERTIES

Realize the product properties required for the packaging

Barriers

Sealing



Source: Huber

» EFFICIENT PRODUCTION

Efficient Packaging Production and Filling of goods

Wrinkles

Surface Damage



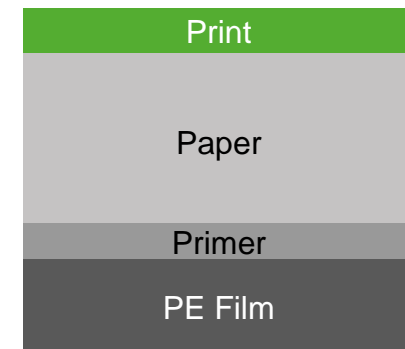
Source: Rovema

» RECYCLABILITY

Maintain good recycling properties

Other Ingredients

Efficient Use of Material



MIRAFLEX'' | Paper Ready Production



- ✓ Diaper packaging made out of Paper
- ✓ Bag machine Garant EXTRA 5-FS
- ✓ Printed on W&H MIRAFLEX''
- ✓ Waterbased inks



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Printing on PCR Rich Collation Shrink Material

Different types of Post Consumer Recyclate

Collecting, sorting, processing and regranulation for another usage



Virgin resin

First use of resin

From well known resin suppliers



PIR

Pre-consumer recyclate

From film production scrap



PCR (B2B)

Post-consumer recyclate commercial

From commercial collection



PCR (B2C)

Post-consumer recyclate household

From household waste



Printing on PCR Rich Collation Shrink Material

- 40 µm transparent PE film with up to 50% PCR (Post Consumer Recyclate) content combined with virgin material
- Fluctuating material quality resulting in unstable process in terms of:
 - Repeat tolerances
 - Web shifts
 - Web breaks
 - Creases
 - ...



Our Competence



Single Source Know-How from W&H

- ✓ Blown Film Extrusion
- ✓ C.I. Flexo Printing
- ✓ Rotogravure Printing



Printing on PCR Rich Collation Shrink Material

ACCURATE!

REPEAT CONTROL

STABLE!

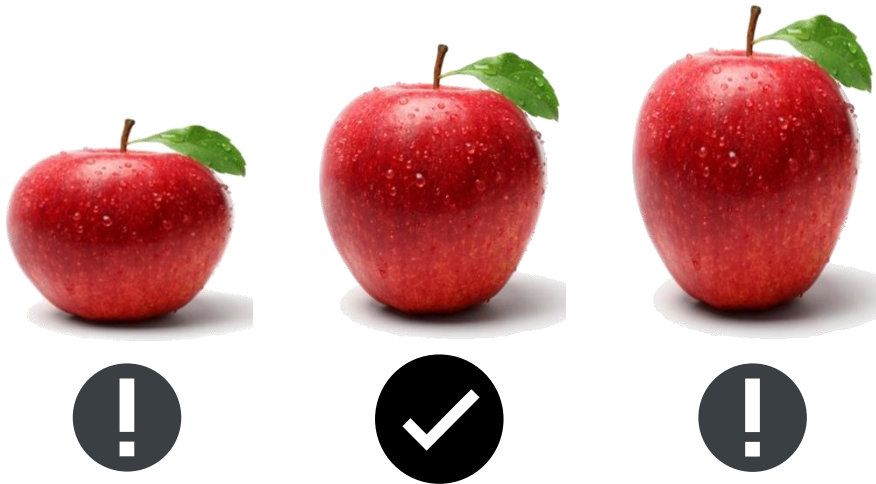
WEB CONTROL & HIGH
CORONA TREATMENT

EFFICIENT!

SLITTING / REWINDING



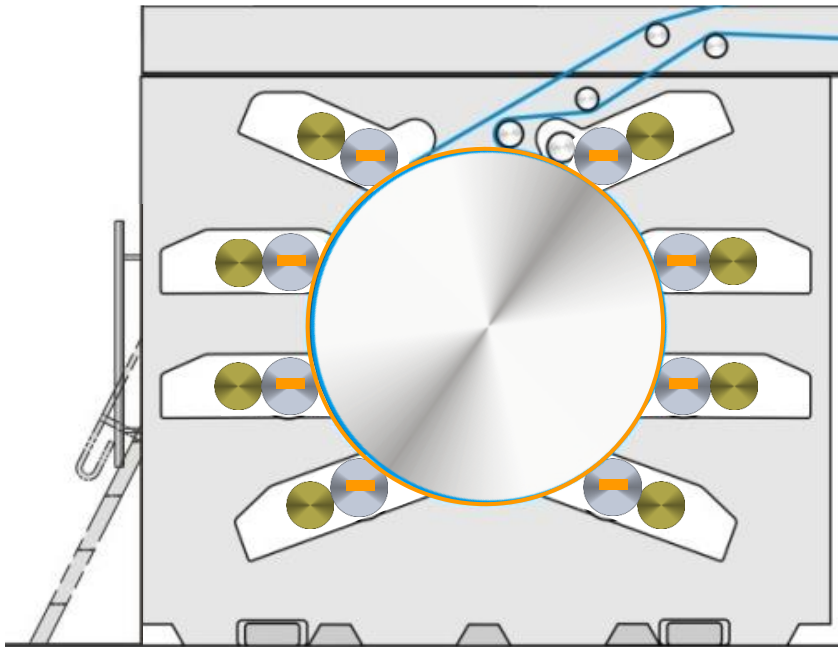
Repeat Control



ADVANTAGES

- ✓ Continuous measurement of the actual print repeat length under tension conditions
- ✓ Display of changes in print repeat length over time (trending)
- ✓ Dynamic repeat length corrections during production
- ✓ Perfect register during correction even at full speed

Repeat Control



ADVANTAGES

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Supergrip Idlers + CI Torque Motor



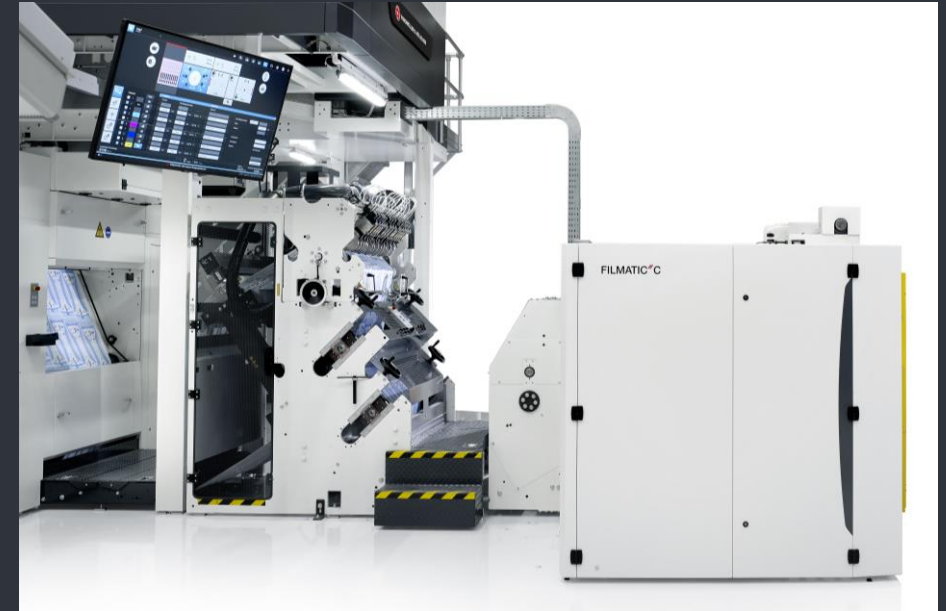
ADVANTAGES

- ✓ Homogeneous web transport through the machine
- ✓ Less shifting of the web in the drying tunnel



FILMATIC^{CC} with Inline Slitter

- ✓ Particularly suitable for thin films like PE / MDO-PE mono-materials, backsheet film, non-woven and PCR substrates
- ✓ Inline Slitter with razor blades or rotary knives for up to 18 ups
- ✓ Incl. edge trim with automatic edge trim cutters
- ✓ Precise separation of the multi-ups with 2 adjustable and driven spreading rollers
- ✓ Laser-assisted core positioning



ADVANTAGES

- ✓ For winding-critical and stretch-sensitive products
- ✓ With low production waste
- ✓ And high production speeds

Sustainable Solutions from a Flexo and Gravure Machine Builder Point of View

Paper Based Packaging

First choice for customer

Printing on PCR Rich Materials

Challenges and Solutions

Mono Materials

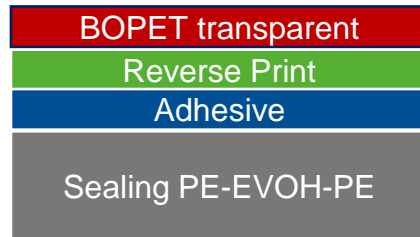
MDO-PE Film



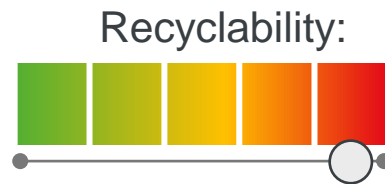
From Multimaterial to Monomaterial Packaging Structure

Multimaterial

Typical Structure



Recyclability

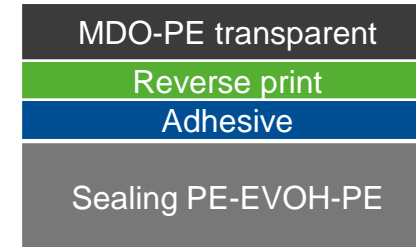


Replacement of
PET with MDO-PE

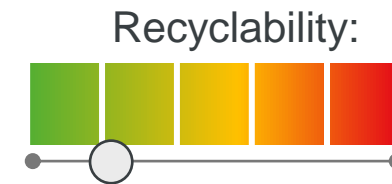


Monomaterial

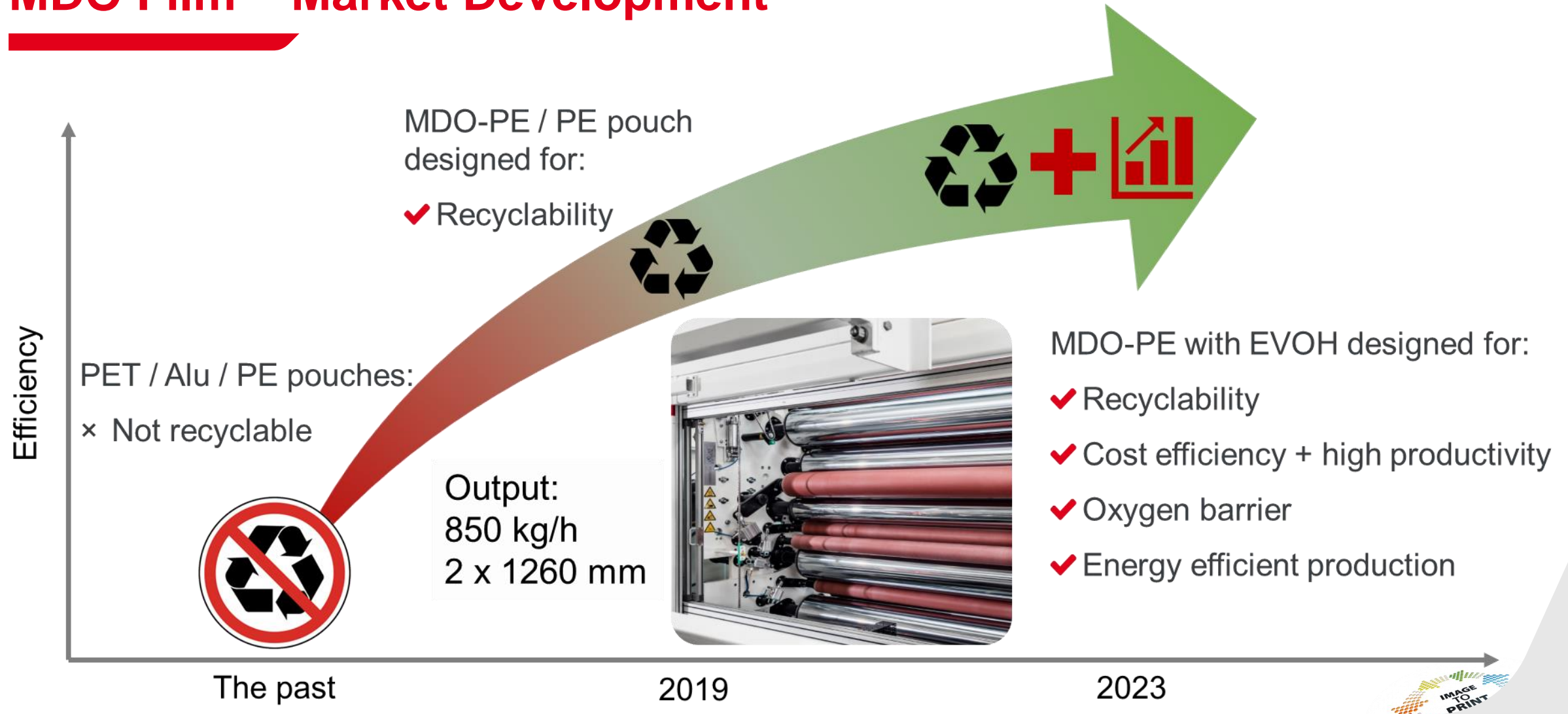
Typical Structure



Recyclability



MDO Film – Market Development



MDO Film – Printing Challenges



- ✓ 25 µm MDO-PE
- ✓ Sealing film with EVOH
- ✓ Extruded on VAREX™ with inline MDO
- ✓ Printed on W&H HELIOSTAR™



MDO Film – Printing Challenges

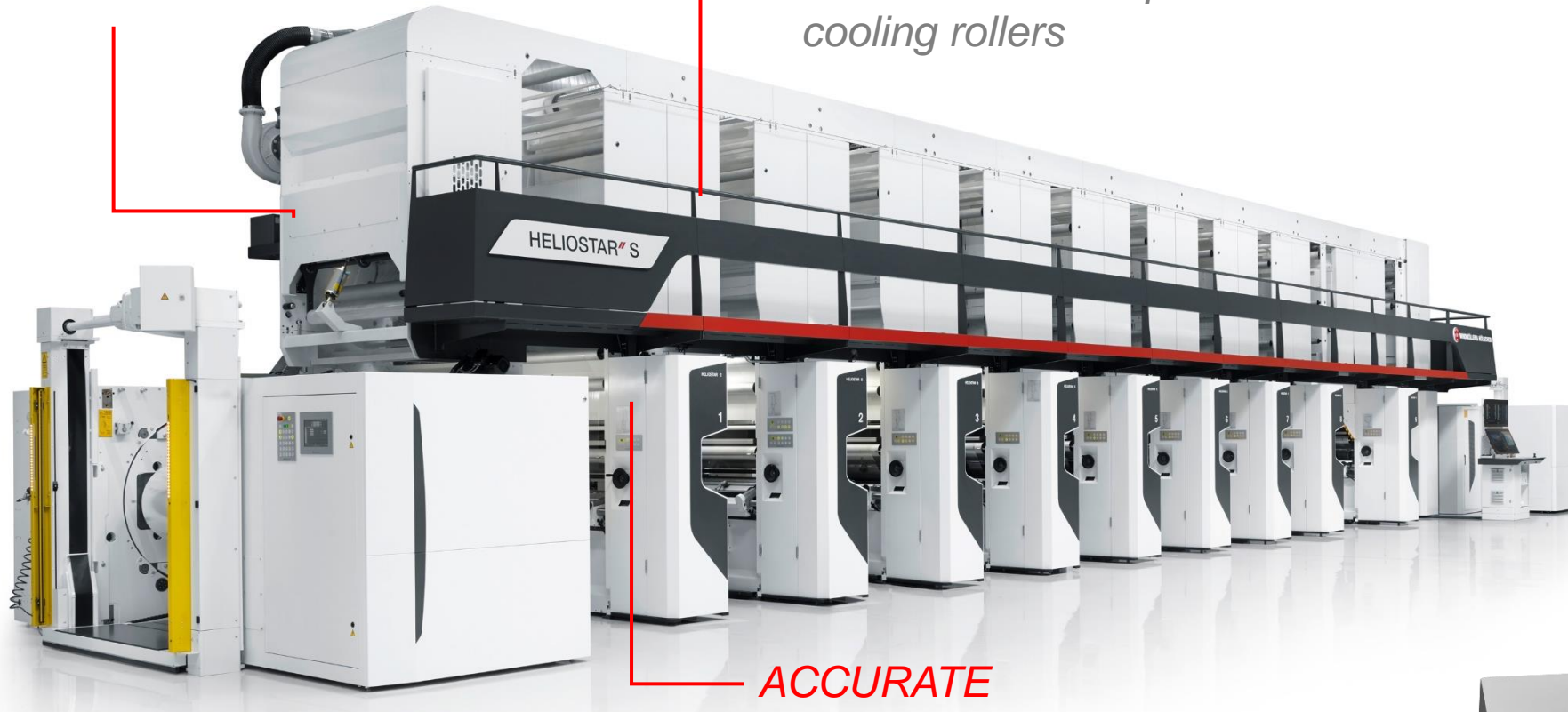
STABLE

*Advanced web control including
SUPER GRIP Rollers*

PRODUCTIVE

*Effective drying and cooling of sensitive
materials with temperature controlled
cooling rollers*

- ✓ 25 µm MDO-PE
- ✓ Sealing film with EVOH
- ✓ Extruded on VAREX™ with inline MDO
- ✓ Printed on W&H HELIOSTAR™



ACCURATE

*Fast and accurate register with
EASY-SYNC and HELIOCONTROL*



MDO Film – Printing Challenges



- ✓ 25 µm MDO-PE
- ✓ Sealing film with EVOH
- ✓ Extruded on VAREX™ with inline MDO
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Super Grip Roller



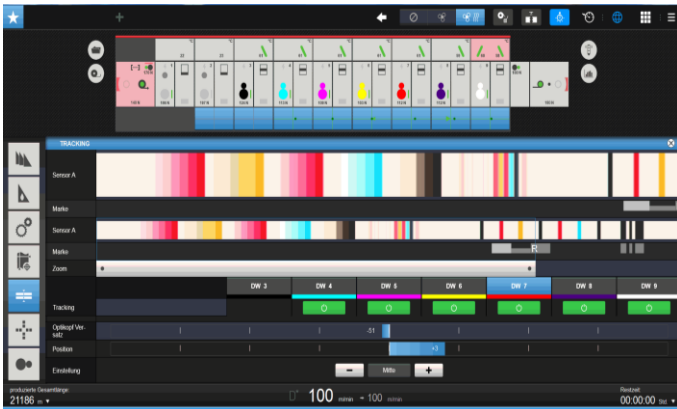
SUPER GRIP Web Path Rollers

- Special surface treatment for improved guiding of the web
- Suitable for all kind of plastic films and paper

✓ ADVANTAGES

- Improved register during production
- Less roll change waste
- Thin gauge material “enabler”

Heliocontrol



Register Sensor for Perfect Register

- Twin Eye sensor for reliable register control
- Sensor tacking for outstanding sensor processing

✓ ADVANTAGES

- Reliable even with low contrast inks and lacquer
- Extremely fast register control
- Less waste after splice
- Easy to handle

Temperature Controlled Chill Rolls



Web temperature control

- Individual temperature setting for each chill roll
- Shutter valves for each chill roll
- All integrated into Procontrol

✓ ADVANTAGES

- Shrinkage control
- Better register accuracy
- Higher film stability



MDO-PE Splicing Knife



MDO splicing system

- New blade development
- Designed for stretchable substrates

✓ ADVANTAGES

- Safe splice
- High speeds
- Low tension



**Thank you very much
for your attention!**

