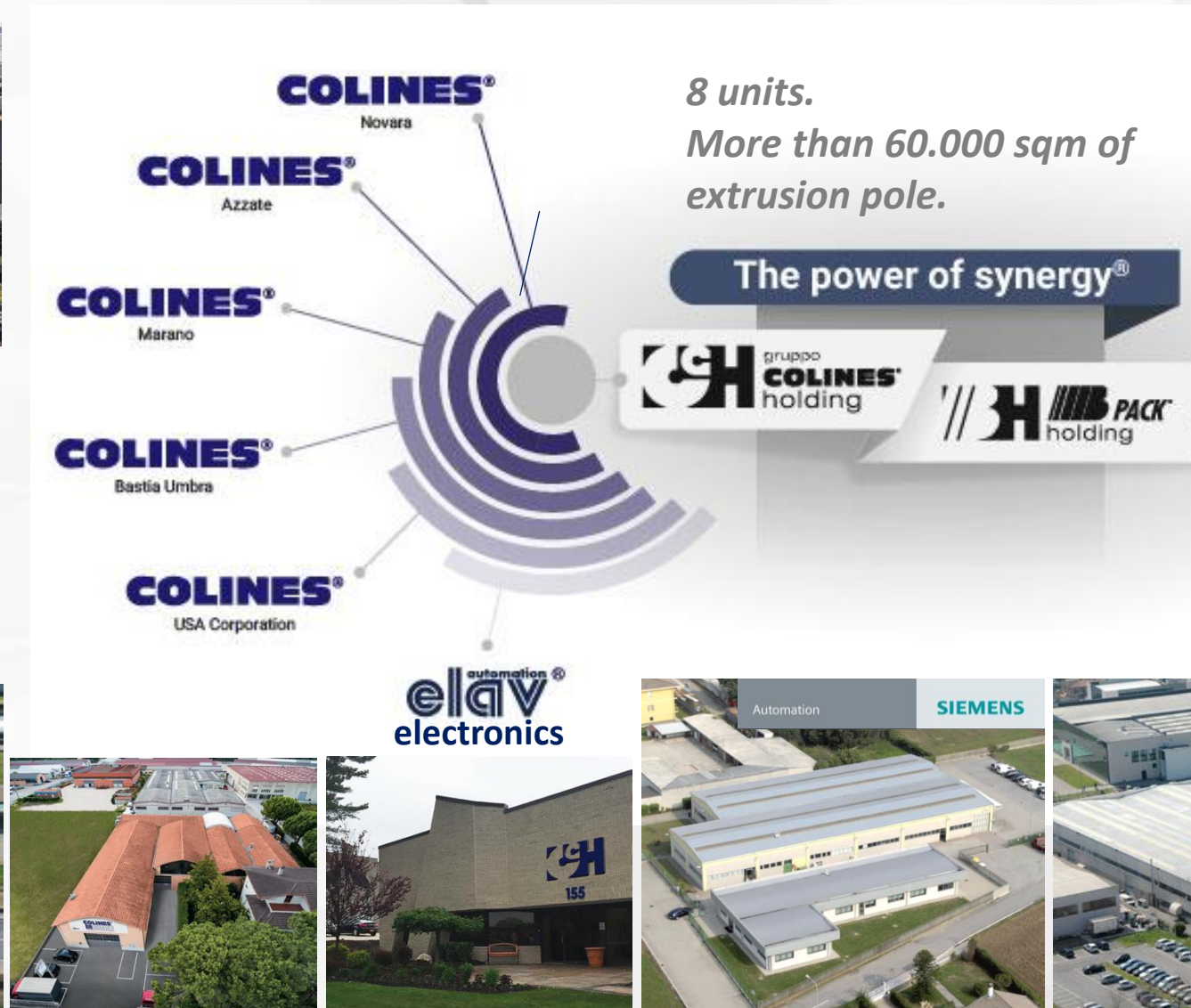


Cast films trend and current technological challenges.

Cast film trend and current technological challenges

- Group Profile
- Market scenario
- Extrusion lines for flexible packaging POD
- Features and applications



Use of Flexible Packaging in a Modern Era

CONVENTIONAL LAMINATES

3-ply

- Printed layer: BOPP/BOPET film; ink reverse printed
- Adhesive
- Eventual Barrier (if required): MET BOPET/Alu foil
- Adhesive
- Sealing layer: CPP, PE



MODERN LAMINATES

2-ply

- Printed layer: MOPP/BOPP; Metallized or AlOx for reverse printing
- Adhesive
- Sealing layer: CPP, PE



Industry 4.0
READY

Deep Know-how on: **Raw materials, Formulations, Market demand and Final applications**

- Recyclable solutions
POD lines
- Lower production costs
iR technology
- Product enhancement
MDO units
- Process enhancement
Touch-less operations
- Analysis enhancement
Live software

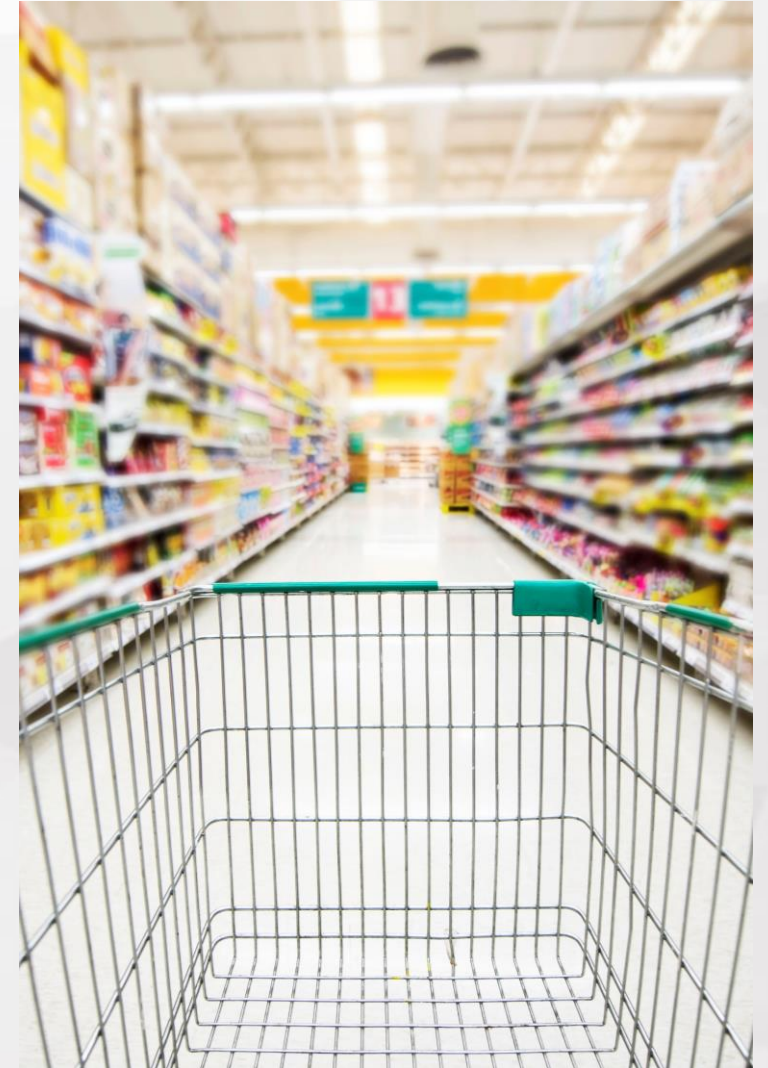
Properties of Cast PP/PE films

- High Sealability and transparency
- High clarity and gloss
- High moisture barrier
- Excellent flatness
- Superior resistance to tears and punctures.
- Resistance to grease and oil
- Good anchoring of inks and adhesive to Treated Surface.



Main applications CPP/CPE ; MOPP/MOPE

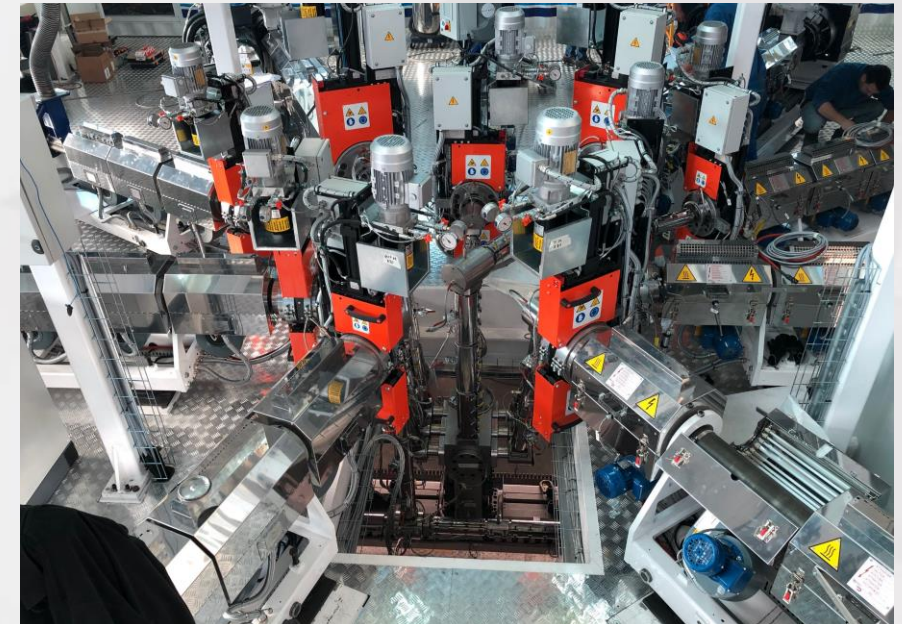
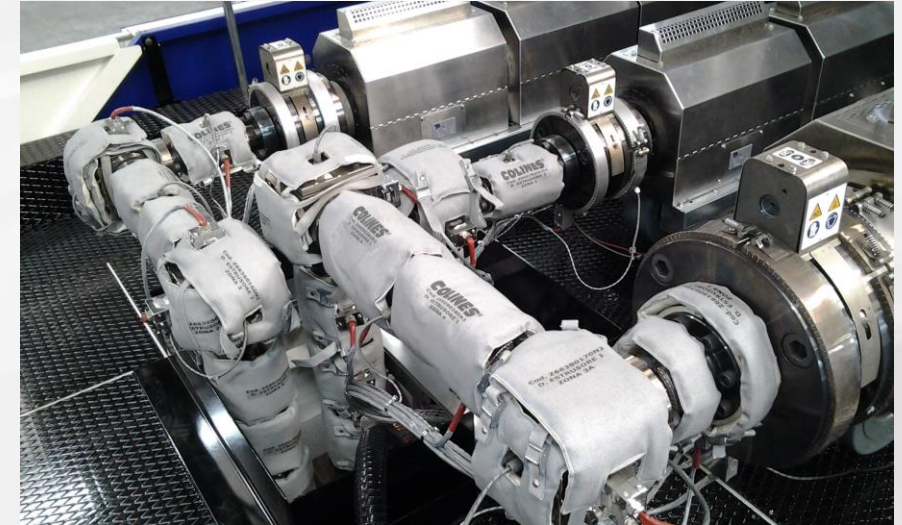
- Lamination CPP Films
- Metallized CPP Films
- CPP Bag Films
- Bread Packing Film
- Anti-Fog Films
- High Gloss Printing Films
- Lidding Films
- Retort Films
- Medical Films
- Deep Freeze Films
- Thermoforming Films
- Twist Films
- Stationery Films
- Textile Packing Films



Extruders

Designed to perform

- **LGS® Screws** with high wear resistant surfaces design optimized for PP and PE resins
- Specially designed feed-zones
- Working range MFI 0.8 – 12
- Different filtering options
- Advanced techniques for Energy Efficiency



Extruders

Infrared heating system

- **30% flat saving** over traditional technology (contact heaters ceramic/iron)
- Providing visible gain in screw torque and mass flow generated by the extruders (lower specific energy applied).
- Simplified and engineered application for rapid tube servicing.
- Economic and reliable solution.
- Proprietary software developed.



Mastermind touch less operations

Featuring REFLEX die

- Mastermind is a proprietary system developed by COLINES
- Auto calibration and mapping throughout electronic management of die bolts
- Automatic settings of m/c parameters
- Automatic die deckling for fast width change
- Faster lip adjustment response
- Reduction in product waste



AUTOMATION PACKAGE FOR TOUCHLESS LINE CONTROL

- Contributing to optimize line uptime.
- APC Automatic Profile Control (proprietary technology).
- Based on Siemens SIPLUS HSC4200 technology
- Management by Central Interface Unit, Profinet interfaced.
- Power output modules complete with heaters break detention.



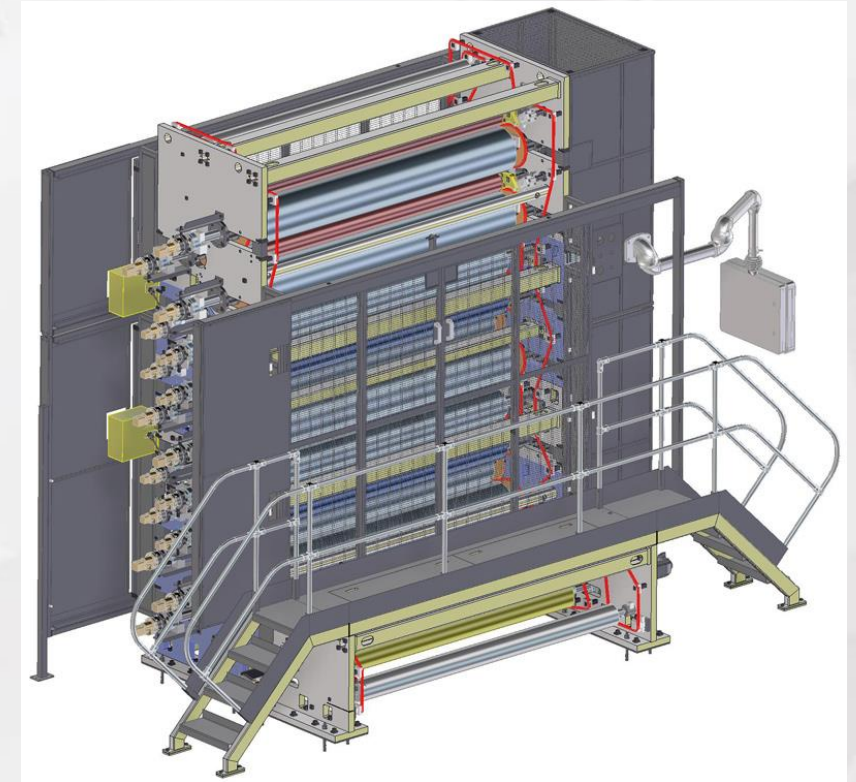
Big Mouth® cold trims re-feeding

Proprietary system (200+ installations globally)

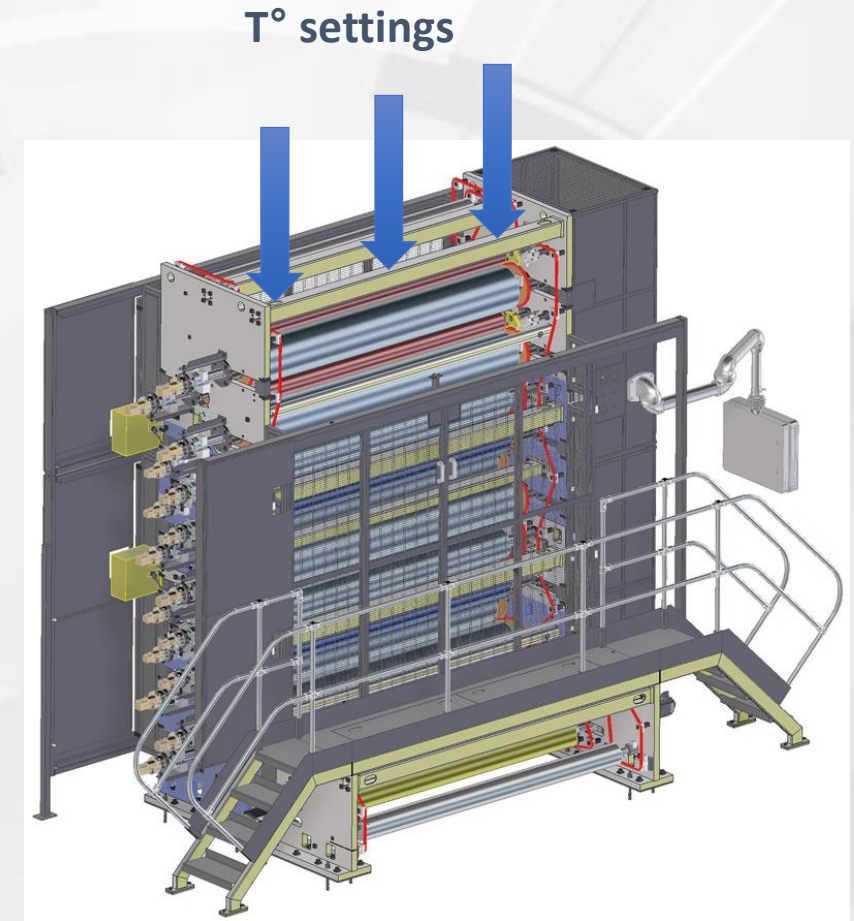
- Provide ideal pre-mixing and air extraction.
- Result in a homogenous and compact stream.
- Natural pressure consistency results in a perfect longitudinal thickness tolerance.
- 4.5 kW/h consumption at max output.
- Avoid use of melt pump for pressure stability
- Permits different trims employment in modern film structures, as follows:



- **MDO** - Film orientation in Machine Direction
- Supplying MDO unit from 1980
- New technology (PATENTED)
- Modular design
- Production of;
 - MOPP
 - MOPE



- **iR heating > segments set-up, limited neck in**
- Very low energy consumption (0.1÷0.2 kW/kg)
- No heating thermoregulation units required > less space
- No oil leakling > cleaner production room



**100 mm neck-in (iR technology)
250 mm on standard MDO (oil)**

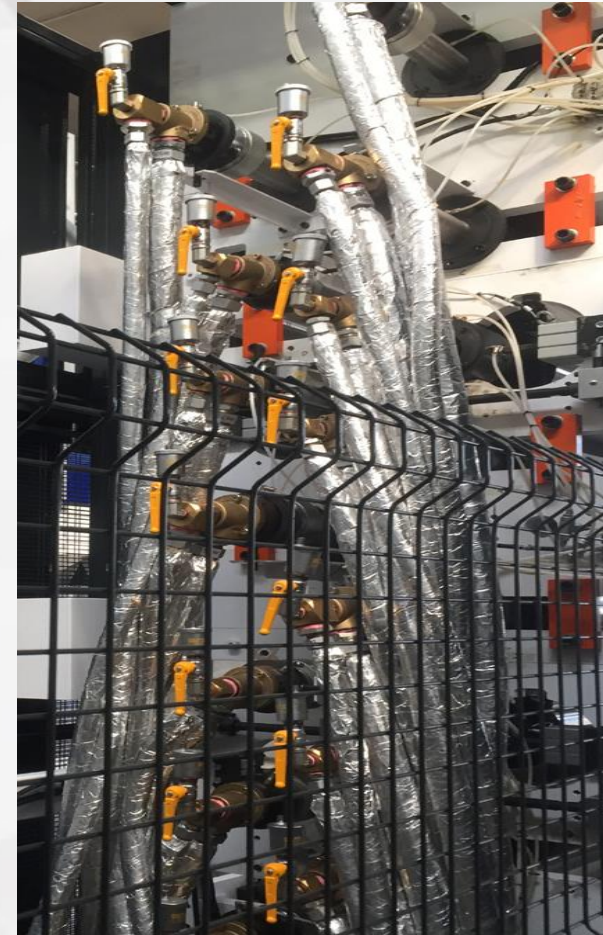
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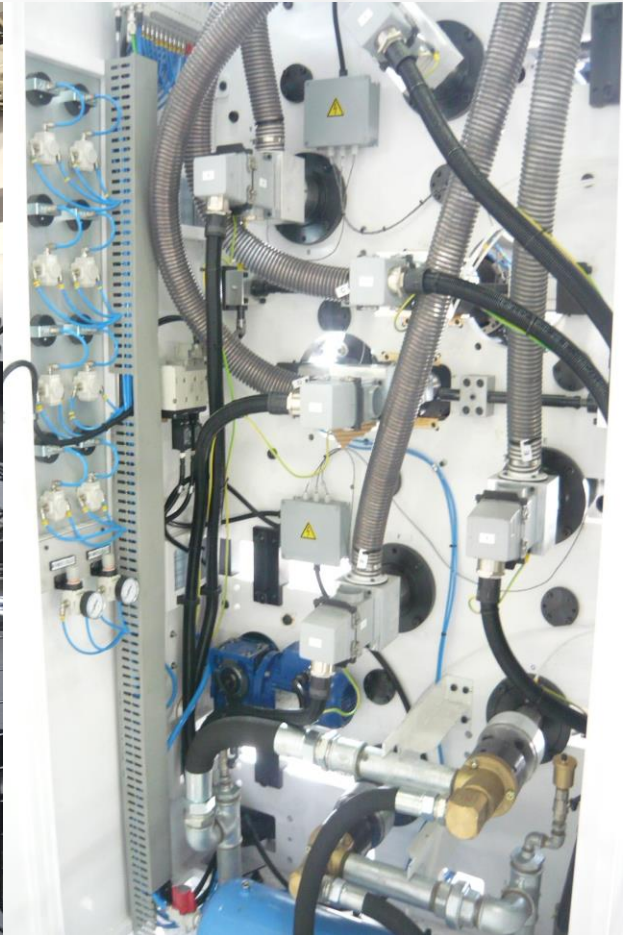
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- **No oil leakling > cleaner production room**



Conventional oil system



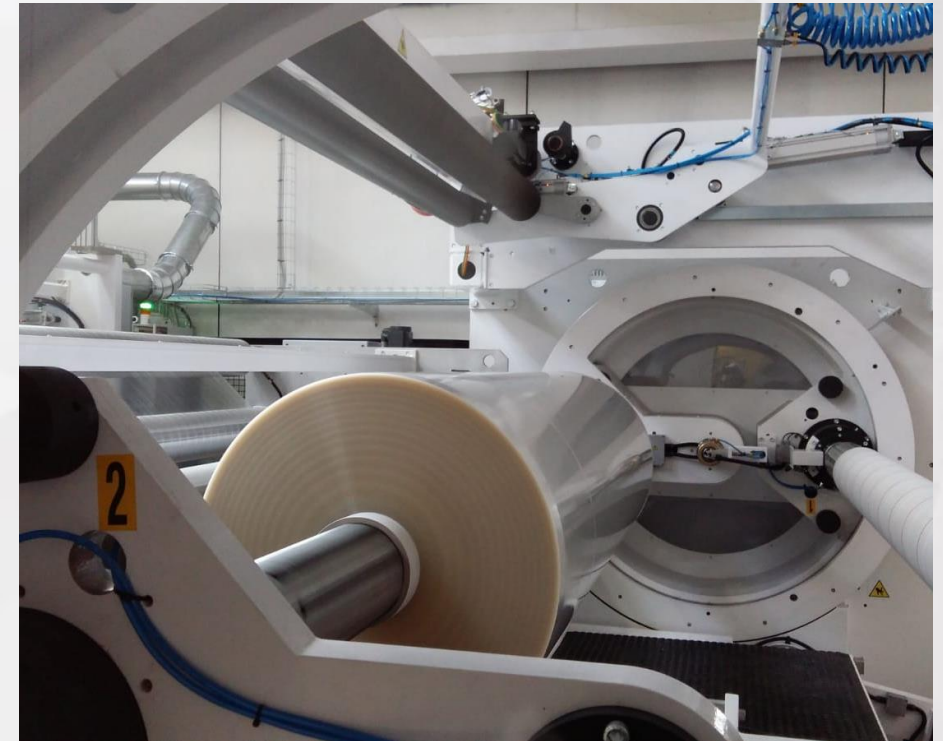
Modern iR system

Winding

Modern Engineering

- Turret system up to 6000 mm wide
- Independent rotary arms execution up to 3600 mm
- Possibility to wind-up by gap or contact
- Electro-mechanic contact unit
- In-line slitting at maximum speed
- Most precise tension control up to 1200 mm OD

Reel produced at 380 m/m
18 micron film, metallization grade
@ Amcor Thailand



Enhanced film features

MOPP/MOPE films

- OPTICAL
- PHYSICAL
- MECHANICAL

Higher transparency
Lower haze value
Enhanced gloss effects

Better film planarity
Improved dimensional stability
(very low shrinking ratio)

Better tensile strength
Higher load break
Linear tear propagation

Packaging structures

Recyclable solutions

- **Stand-up pouches**
- **Sachet**
- Packaging reduction, optimization and recycling
- Global Market size 50 Billion € by 2025
- Lighter, less space occupied
- Contains Liquid, solid and semi-solid
- Food, medical and cosmetics



Potato Chips

Recyclable solutions

- Current Packaging Structure
 - Print PET/Met BOPP/extPE/LDPE
 - Print PET/Met PET/LDPE
 - Print PET/MET CPP / CPP
- Packaging Details
 - WVTR Requirement
 - OTR Requirement
- Alternative Structures
 - Print Bopp/MET PP/CPP
 - Print MOPP/MET PP/CPP



- High Demand Segment
- Growing Competition
- Recycling Challenge

Biscuits and cookies

Recyclable solutions

- Current Packaging Structure
 - PET/BOPP/LDPE
 - PET/LDPE
 - BOPP/LDPE
- Packaging Details
 - WVTR Requirement
 - OTR Requirement
- Alternative Structures
 - Print BOPP/ CPP
 - Print MOPP/ CPP
 - Print MOPE/ CPE



- High Demand Segment
- Growing Competition
- Recycling Challenge

Stand-up pouches

Large employment in stand-up-pouches and Doypack

- Printable
- Retortable (134°C)
- Tearing properties
- Straight and parallel
- No laser scoring or PA tearing



Labelling films

MOPE Recyclable solutions



MOPE film to be used as
replacement for current label in PE
Standard PE film thickness:

-60μ to 90μ

MOPE thickness:

30μ to 45μ

- **Gloss effect**
- **Improved planarity**



Lidding films

MOPE Recyclable solutions



A-PET trays / traditional laminate
- blown PE 60μ (sealing) + BOPET 12μ (reverse printed)

A-PET trays / Mono-material, PE solution laminate

V1: blown PE 60μ (sealing) + MOPE 18μ (reverse printed)

V2 : CPE 50μ (sealing) + MOPE 18μ (reverse printed)



**MOPE films to be used
with A-PET trays.**

Thanks for your attention

Pilot lines range:

No.2 cast film lines 1600 mm and 2600 mm with MDO

No.2 blown film lines 1800 mm and 2600 mm with MDO

No.2 cast stretch film line 1500 mm and 3000 mm

Get in touch with us

francesco.peccetti@colines.it

info@colines.it

The background of the slide features a large, stylized compass rose on the left side, with its needle pointing towards the top right. The right side of the slide has a grey gradient background with the word "COLINES" in a large, blue, sans-serif font, followed by a registered trademark symbol. Below the logo, there are several white, curved lines that resemble a stylized sunburst or a series of radiating lines. A blue arrow, part of the compass rose, points towards the top right, following the direction of the "COLINES" text.

COLINES®