PAPER CONVERTING AND PACKAGING TECHNOLOGY

PILOT LINE

- COEXTRUSION COATING
- COEXTRUSION LAMINATING
- CAST FILM COEXTRUSION
- SURFACE TREATMENTS
- DISPERSION COATING
- EDGE TRIMMING SERVICE
(co)Extrusion coating and lamination pilot line at TUT

Versatile Roll-to-Roll pilot line
- Production of packaging materials via
  - (co)Extrusion coating and lamination
  - 4 extruders, 5-layer technology with encapsulation technology
  - Dispersion coating (blade/rod)
  - Cast film (co)extrusion
  - Max. speed ~400 m/min, max. substrate width 550 mm
(co)Extrusion coating and lamination pilot line (TUT)

2. unwinding

Rewinding

Post-corona

Extruders (4)

Air and air flotation dryers

IR dryers

Dispersed coating

Flame

Unwinding

Corona/plasma

Laminator (pressure roll, chill roll, release roll)
Processes available at the pilot line

- (co)Extrusion coating (4 extruders, 5-layer technology, encapsulation technology)
- Extrusion lamination
- Surface treatment and modification (flame, corona, plasma, IR, UV, LFS)

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Extrusion

Plastics as pellets, dry blending is possible

Selector plug + Cloeren-feedblock

T-die with encapsulation possibility
## PILOT LINE SPECIFICATIONS

### PILOT LINE
- Max. line speed 400 m/min
- Roll materials: papers, boards, polymer films, cellophanes, textiles, alu foils etc.

### Main unwind
- Core 3” and 6”
- Max. web width in extrusion 550 mm (recommendation 500 mm) and 380 mm in dispersion coating
- Max. roll diameter 1100 mm

### Second unwind for the lamination
- Core 3” and 6” (recommendation 3”)
- Max. web width 550 mm (recommendation 500 mm)
- Max. roll diameter 1000 mm

### Rewind
- Pope reeler
- Core 3” and 6”

### Press roll (laminator unit)
- 320 diameter rolls (Shore A: 68, 78, 90 and 95)
- 200 diameter rolls (Shore A: 60, 78 and 90)
- Pressing pressure up to 5.5 bar

### Chill roll (laminator unit)
- Glossy or matt chill rolls
- Chill roll diameters 800 mm and width 600 mm
- Chill roll cooling or warming unit within temperature range 5 to 80°C

### Edge trimming
- Helios pneumatic knife holder
- Max. web width 600 mm and thickness 700 µm

### Plastic systems dehumidifiers and containers
- DR 100 MT (40°- 80°C): two 100 liters and one 250 liters containers
- DR 102 MT (40°- 120°C): two 250 liters containers
PILOT LINE SPECIFICATIONS

COEXTRUSION COATING

- Max. web width 550 mm (recommendation 500 mm)

Extruder A
- Diameter 60 and L/D ratio 30
- Max. output 90 kg/h LDPE (depending on the polymer)
- Polymer melt temperature and pressure measurement transducers
- Hopper loader

Extruder B
- Diameter 40 and L/D ratio 24
- Max. output 30 kg/h LDPE (depending on the polymer)
- Polymer melt temperature and pressure measurement transducers
- Hopper loader

Extruder C
- Diameter 30 and L/D ratio 25
- Max. output 20 kg/h LDPE (depending on the polymer)
- Polymer melt temperature and pressure measurement transducers
- Hopper loader

Extruder D (normally in encapsulation use)
- Diameter 30 and L/D ratio 25
- Max. output 20 kg/h LDPE (depending on the polymer)
- Polymer melt temperature and pressure measurement transducers
- Hopper loader

Die
- Cloeren EBR™ III A
- Internally Deckled Extrusion T-type Die
- Lip Heaters
- Edge Encapsulation System

Feed block
- Cloeren VG™ 5-Layer Dual Plane Feed block
- Streamline Manifold

Selector plugs (web - multilayer structure – encapsulation)
- web - B-B-B-B-B D/D
- web - B-B-A-A-A D/D
- web - B-C-A-A-A D/D
- web - A-A-C-B-B D/D
- web - B-C-D-A-A A/A
- web - B-D-C-D-A A/A
- web - C-D-A-A-B B/B
## PILOT LINE SPECIFICATIONS

### SURFACE TREATMENT

- Treatment width 500 mm, unless otherwise mentioned

**Corona**
- Vetaphone Corona-Plus
- Treatment power max. 4 kW
- Ceramic electrodes

**Post corona**
- Softal 50100
- Treatment power max. 1.5 kW
- Metal electrodes

**Atmospheric plasma**
- Vetaphone Corona-Plus
- Treatment power max. 2 kW
- Ceramic electrodes
- Argon and Helium, plus their mixtures with Nitrogen
- Treatment width 380 mm

**Flame**
- Hill Gmbh, type EF 75-1 (Burner CE62-500)
- Heat output max. 50 kW
- Gas supply propane
- Moveable flame unit and adjustable air gap

**UV**
- 2x12 kW medium pressure mercury lamps UVH
- 30 % UV radiation, 15 % visible light and 55 % IR radiation
- UV radiation: 15 % UVC, 8 % UVB and 7 % UVA

**Post heat treatment**
- Two heated rolls for post treatment e.g. for polymer films and coatings (max. 120°C)
- Followed by chilled roll to restore room temperature for substrate

**IR and air dryers**
- Total IR heating power 48 kW (5 adjustable units: pre and post IR dryers)
- Two air dryers and one air float dryer with max. temperature 200 °C
- Treatment width 450 mm (IR) and treatment width 380 mm (air dryers)
PILOT LINE SPECIFICATIONS

DISPERSION COATING

- Max. web width 380 mm
- Applicator roll width 300 mm
- Blade (LDTA) and rod (smooth and several grooved) coaters

IR and air dryers
- Total IR heating power 48 kW (5 adjustable units: pre and post IR dryers)
- Two air dryers and one air float dryer with max. temperature 200 °C
- Treatment width 450 mm (IR) and treatment width 380 mm (air dryers)

Chill roll (laminator unit)
- Glossy or matt chill rolls
- Chill roll diameters 800 mm and width 600 mm
- Chill roll cooling or warming unit within temperature range 5 to 80 °C