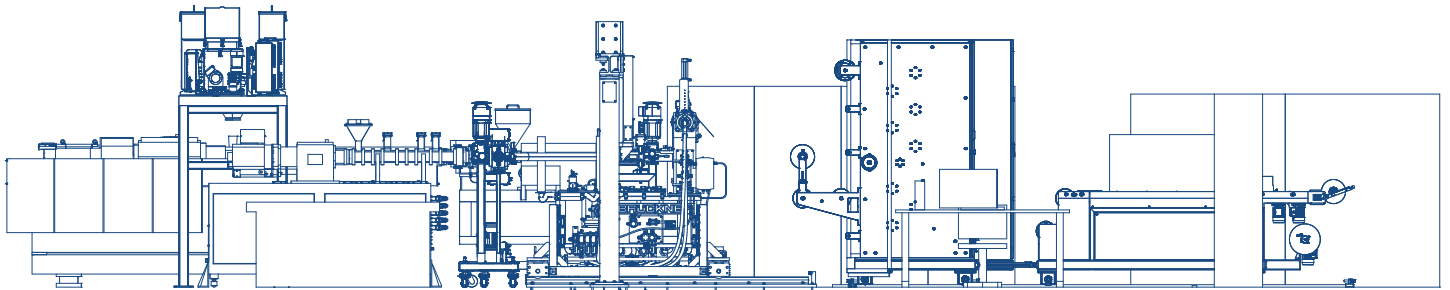


Laboratory Extrusion Line

Multi-layer film extrusion for various film types

Highlights

- Excellent mixing and homogenization of blends with a 56 D twin screw extruder
- Co-extrusion with 3 extruders and die with multi-layer feedblock
- Cast film for simultaneous stretching using the lab stretcher
- Cast film and MD-oriented film for subsequent stretching on the lab stretcher
- Set-up for basic R&D for battery separator films



Features

- Two twin screw extruders and one single screw extruder
- Granulate, powder and liquid feeding units; for instance for the basic battery separator film R&D activities
- Slid die with multi-layer feed block for the extrusion of single- or multi-layer cast films (ABA or ABC film structures)
- MDO for the stretching of the cast film in machine direction



Laboratory Extrusion Line

Multi-layer film extrusion for various film types

Technical data



Multipurpose Die

Slot die Ultraflex U-100	
Feedblock:	3-Layer Ultraflow IV-L
Width:	270 mm
Die lip gap:	0,2 – 2,0 mm
Die lip adjustment:	13 differential push/pull screws
Bolt pitch:	21 mm
Heating:	5 electrical heated temperature zones + heated die lips
Laminar adaptors:	ABA, CBC, ABC, B
Extruder configuration:	B: BSF-HEX or HEX or COEX ABC: A=HEX, B= BSF-HEX, C=COEX ABA: A=HEX, B=BSF-HEX CBC: C=COEX, B=HEX or C=COEX, B=BSF-HEX

Resin supply

Dosing unit 1	
Dosing A:	gravimetric pellets 0,3-30 kg/h
Dosing B:	gravimetric pellets 0,3-30 kg/h
Dosing C:	powder 0,1-10 kg/h
Dosing unit 2	
Dosing A:	gravimetric pellets 5-30 kg/h
Dosing B:	gravimetric pellets or powder 5-30 kg/h

Extrusion

Main extrusion 1		
BSF-HEX: Twin screw extruder ZSE 40HP-56D		
Screw diameter:	40 mm	
L/D-ratio:	56:1	
Speed	400 rpm	
Degasing:	2 passive vacuum zones	
Liquid dosing:	Prepared at 6 zones	
Metering pump:	4,7 ccm/rev	
Filter:	Pre-strainer:	500 µm
	Screen changer:	100-500 µm @ 7 cm ²
Output max.:	5-40 kg/h	
HEX (Co-extrusion 1)		
Twin screw extruder ZE25Ax42D-UTXi		
Screw diameter	25 mm	
L/D-ratio:	42:1	
Speed:	600 rpm	
Degasing:	3 vacuum zones (1 passive)	
Liquid dosing:	Prepared at 6 zones	
Metering pump:	4,7 ccm/rev	
Filter:	Pre-strainer:	500 µm
	Screen changer:	100-500 µm @ 7 cm ²
Output max.:	5-30 kg/h	
COEX (Co-extrusion 2)		
Screw diameter	30 mm	
L/D-ratio:	30:1	
Speed:	250 rpm	
Metering pump::	2,8 ccm/rev	
Filter:	Pre-strainer:	500 µm
	Screen changer:	100-500 µm @ 3.1 cm ²
Output max.:	1-15 kg/h	

Casting unit

Chill roll diameter:	350 mm
Chill roll width:	350 mm
Chill roll temperature:	15-130°C
Pinning system:	Electrostatic wire, high pressure air knife, nip roll
Water- /Solvent-bath:	20-60°C
Speed range:	0,2-30 m/min

MDO

Machine direction orienter LMDO-350-250			
	Preheating	Stretching	Annealing
Number of rolls:	5	2	3
Roll diameter:	250 mm	90 mm	250 mm
Roll width:	350 mm	350 mm	350 mm
Roll surface	Chrome	Chrome	Chrome
Nip rolls (rubber):	2	2	2
Speed range:	0,2 - 30 m/min		
Stretching ratio:	1-10		
Stretching gap:	1 (stepless adjustable)		
Roll temperature range:	20-150°C		
Option:	Unwinder for R-2-R operation		

Pull roll stand

Winder LWU-350/L	
Roll diameter:	2 x 200 mm at inlet, 6 x 50 mm at idler rolls
Roll width:	350 mm
Speed range:	0,2-30 m/min
Number of drives:	3
Edge trim	with wind up cassettes
Winder:	pneumatic clamped, core Ø 3 Inch