

wifag-polytype group – brilliance on top

Techma – ready for you!



A technology center to meet
the highest demands

polytype

Test your next process. Test us and test with us!



We are a global supplier of coating technology and coating equipment for the surface finishing of all kinds of flexible substrates.

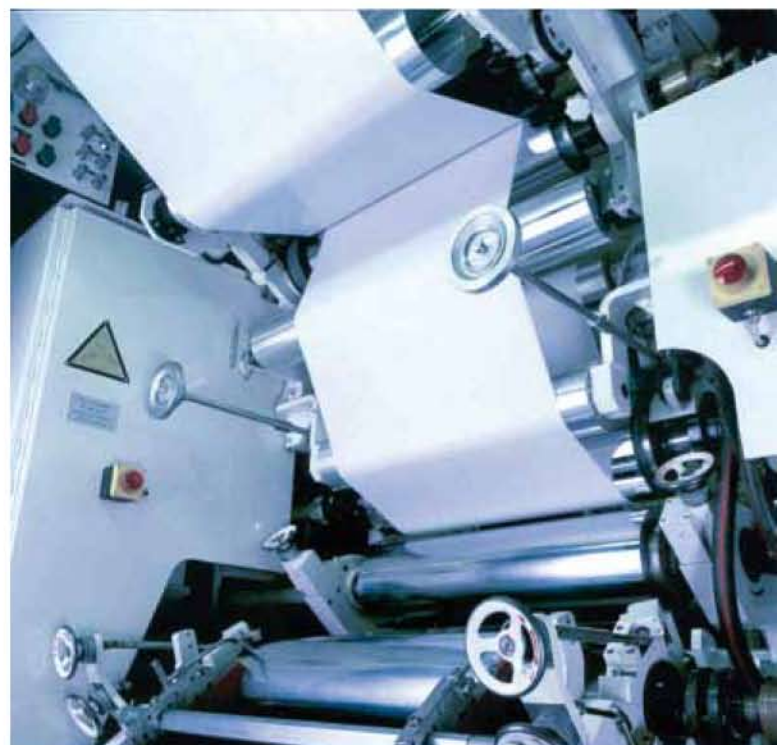
Our activities are geared first and foremost towards our customers and their products.

As a leading technology provider in our segment, we develop holistic solutions that meet the requirements of our customers for product quality, productivity and optimized product costs.

Polytype Converting AG is part of the wifag//polytype Group, allowing us to benefit from a broad technology base.

The //polytype Technology Center is a shared workplace where customers and //polytype engineers work together to further develop converting processes and optimize customized applications. The center is also dedicated to minimizing the manufacturing costs for products that require surface finishing.

Customers benefit greatly from joint feasibility studies designed to support investment decisions, the development and optimization of product formulations, scale-up from laboratory and pilot phases to series production, the validation of new designs, and staff training.



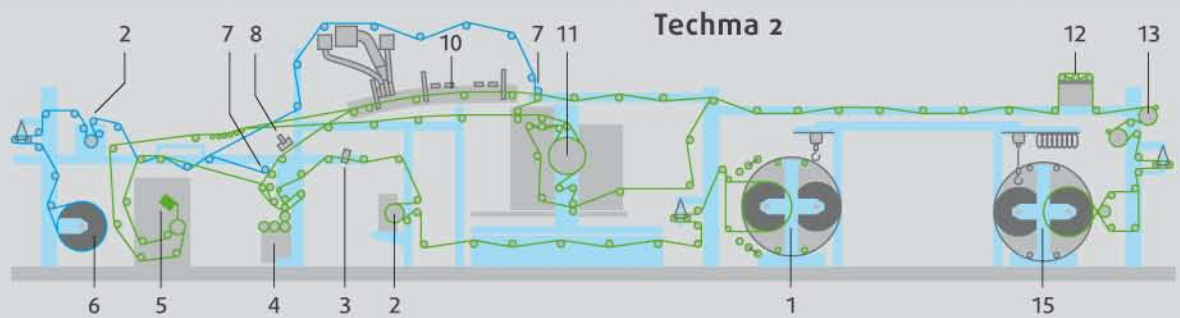
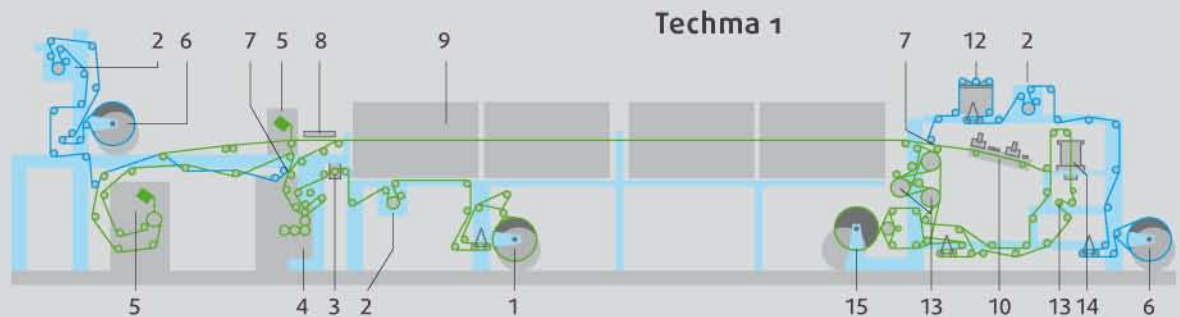
The //polytype Technology Center includes three flexible coating machines and two off-line test stands. Both areas are staffed by personnel who are passionate about experimenting and skilled at improvising.

Techma 1 is used for applications involving thermal drying or curing, Techma 2 is dedicated to radiation-curing products, and Techma 3 can be used to conduct testing with minimal quantities of raw materials. The Polytest 260 Curtain test stand is used to trial curtain coating applications, while the Polytest 440 is a small laminating machine for solvent-free one- or two-component adhesives and lacquers.

All the machines are highly flexible and very versatile. In particular, they can process all types of substrates between 1 and 500 μm thick, with widths ranging from 50 to 840 mm and at speeds between 0.1 and 1525 m/min. They are compatible with all kinds of liquids, with and without solvents and with viscosities between 0.5 and 50,000 mPas. There are more than 50 different coating and laminating methods to choose from. One particular highlight is the curtain coating method with up to three functional coatings and the option of adding digital printing units.

The ultimate technology center – Techma 1 + 2 + 3

- // Solvent based liquids
- // Thermal drying/curing
- // Substrate speed: 10 – 1'000 m/min
- // Substrate width: ≤840 mm

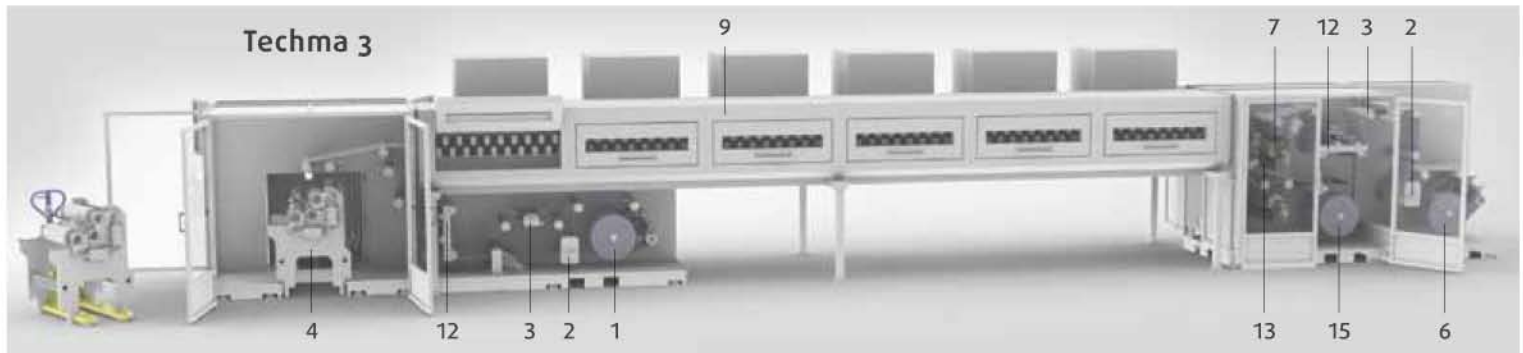


- 1 Unwinder
- 2 Corona
- 3 Web cleaner
- 4 Coater
- 5 Curtain coater
- 6 Laminator unwinder
- 7 Laminator
- 8 IR radiator
- 9 Dryer
- 10 UV radiator
- 11 EB radiator
- 12 Web edge controller
- 13 Cooler
- 14 Re-moisturizer
- 15 Rewinder

The centerpiece of **Techma 1** is the thermal dryer that comprises four zones, each three meters long, which can all be used as both support roll or flotation dryers. The blow-out speed and temperature of the air above and below the substrate can be set over a broad range. The unwinder and rewinder operate in stop-and-go-mode. Upstream of the coating station, the substrate can be tensioned, cleaned and pretreated with Corona. In-between the coating station and dryer, customers can opt for wet laminating and predrying using an adjustable IR radiator. Downstream of the dryer, further options include dry lamination, cooling, UV radiation, and re-moisturizing.

- // Solvent-free liquids
- // Radiation curing
- // Substrate speed: 10 – 1'525 m/min
- // Substrate width: ≤840 mm

- // Tests with minimal material quantities
- // Thermal drying/curing
- // Substrate speed: 0.1 – 100 m/min
- // Substrate width: ≤500 mm



Techma 2 is used for the processing of radiation-curing liquids. Key features include adjustable microwave-powered UV arc lamps and an adjustable electron beam unit. Both are suitable for oxygen-reduced operation.

The unwinder and rewinder operate in continuous mode. Overlapping splices with short tail lengths right up to maximum machine speed demonstrate the technical superiority of the unwinder and rewinder.

Upstream of the coating station, the substrate can be tensioned, cleaned and pretreated with Corona. In-between the coating station and radiators, customers can opt for optional wet laminating and predrying using a small adjustable IR radiator. Dry lamination is available downstream of the UV radiator. Cooling and edge control for the substrate are supported downstream of the two radiators.

Techma 3 is a narrowband system for tests with minimal quantities of liquid. It enables coating at very low substrate speeds. The coated films are hardened using hot air. The dryer comprises six zones, each 1.5 meters long, which can all be used as both support roll and flotation dryers. The blow-out speed and temperature of the air can be set over a broad range in every zone. The winders operate in stop-and-go mode. Upstream of the coating station, the substrate can be tensioned, cleaned and pretreated with Corona.

The following methods are available for coating:

- // Slot die with vacuum chamber
- // Gravure roll in direct or indirect configuration and forward or reverse operating mode
- // Smooth rollers in dual, triple or quadruple arrangement and forward or reverse operating mode

Downstream of the dryer, further options include dry lamination and substrate cooling.

Specification of		Techma 1	Techma 2	Techma 3
Web speed	m/min	10 - 1'000	10-1'525	0.1-100
Web width	mm	≤ 840	≤ 840	≤ 500
Winders				
Main unwinder, roll diameter	mm	1'000	1'250	500
Operating mode		stop and go	continuous roll change	stop and go
Core inner diameter	mm	70, 76, 150	70, 76, 150	70, 76, 150
Main rewinder, roll diameter	mm	1'000	1'250	500
Operating mode		stop and go	continuous roll change	stop and go
Core inner diameter	mm	70, 76, 150	150	70, 76, 150
Secondary unwinder for wet laminating, roll diameter	mm	1'000	1'200	
Tertiary unwinder for dry laminating, roll diameter	mm	1'000	1'200	500
Operating mode	mm	stop and go	stop and go	stop and go
Core inner diameter	mm	70, 76, 150	70, 76, 150	70, 76, 150
Splice type		manual	manual	manual
Web tension				
Unwinder	N	40-700	20 - 800	30 - 500
Rewinder	N	50 -1'200	20 - 1'000	30 - 500
Wet lamination				
Max. cylinder temperature	°C	120	120	
Dry lamination				
Max. cylinder temperature	°C	190		140
Corona treatment				
Max. power for coating and laminating	kW	7	20	3
Max. power for laminating	kW	7	7	
Solidification				
Thermal drying and curing				
Principle		evaporation by hot air		evaporation by hot air
Design		flotation or support roll		flotation or support roll
Number of zones		4		6
Zone length	m	3		1.5
Air speed	m/s	10 - 40		10 - 30
Air temperature	°C	40 - 350		40 - 250
Principle		evaporation by infrared	evaporation by infrared	
Number of lamps, medium waves		18	15	
Power per lamp	kW	3	3	
Power regulation	%	0 - 100	5 steps	
Number of carbon lamps		18		
Power per lamp	kW	3		
Power regulation	%	0 - 100		
Radiation curing				
Principle		UV radiation	UV radiation	
Number of UV lamps (microwave and arc types)		2	6	
Power per lamp	W/cm	80 - 160	80 - 240	
Nitrogen inertization	ppm O ₂	≤ 50	≤ 50	
Principle			EB radiation	
Electron acceleration	kV		125 - 250	
Max. output at 175 kV	kGy m/min		14'000	
Nitrogen inertization	ppm O ₂		≤ 50	
Re moisturization				
Principle		2 sided steam foil		

Polytest 260 Curtain + Polytest 440

- // Curtain coating pre trials
- // Curtain property analysis
- // Determining physical and chemical compatibility of multilayer liquid films

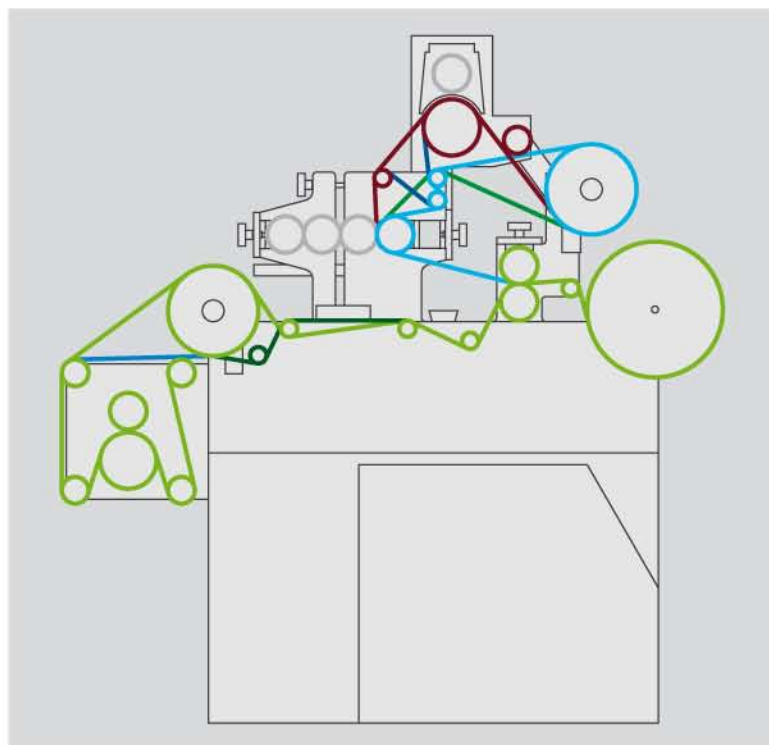


The **Polytest 260 Curtain** is an off-line system for developing product formulations that are suitable for subsequent curtain coating applications. In particular, the equipment is designed for evaluating the stability of liquid curtains with regard to external disturbances and fluid-internal physical and/or chemical contaminations, i.e. for determining the minimum volumetric flow rate/width. In addition, the equipment is suitable for measuring the dynamic surface tension of the curtain fluid by using the Mach angle method, as well as for evaluating the relative wettability and chemical compatibility of adjacent liquid layers in a multilayer film assembly.

Specifications of Polytest 260 Curtain

Type of die:	Multilayer slide
Width of die:	260 mm
Number of slots:	3
Length of curtain:	200 mm

- // Laminating tests
- // Solvent-free one- and two-component adhesives and lacquers



The **Polytest 440** is a laboratory laminating machine for solvent-free, one- and two-component, cold or warm application adhesives and substrates commonly used for lamination. At a coating weight of approx. 0.5 – 5 g/m², all standard solvent-free adhesives up to 90°C and a viscosity of approx. 500 – 10'000 mPas can be used. The preparation of the adhesive such as preheating, dosing or mixing is done outside the machine by the usual means available in a laboratory. These accessories are not included in the scope of supply. The adhesive is prepared off-line and poured manually into the laminating machine.

Specifications of Polytest 440

Web width:	max. 440 mm
Web speed:	10 m/min
Max. reel diameter:	200 mm

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