



## **Rheology Solutions**

*Rheology Solutions is the sole Australian distributor of this product range and we welcome the opportunity of discussing your application requirements.*

*We hope the information you are seeking is contained within this file.  
If you have any questions, or require further information please contact us.  
We look forward to being of further service.*

*Regards from the Team at Rheology Solutions.*

**RHEOLOGY SOLUTIONS PTY LTD.** ACN 082 479 632

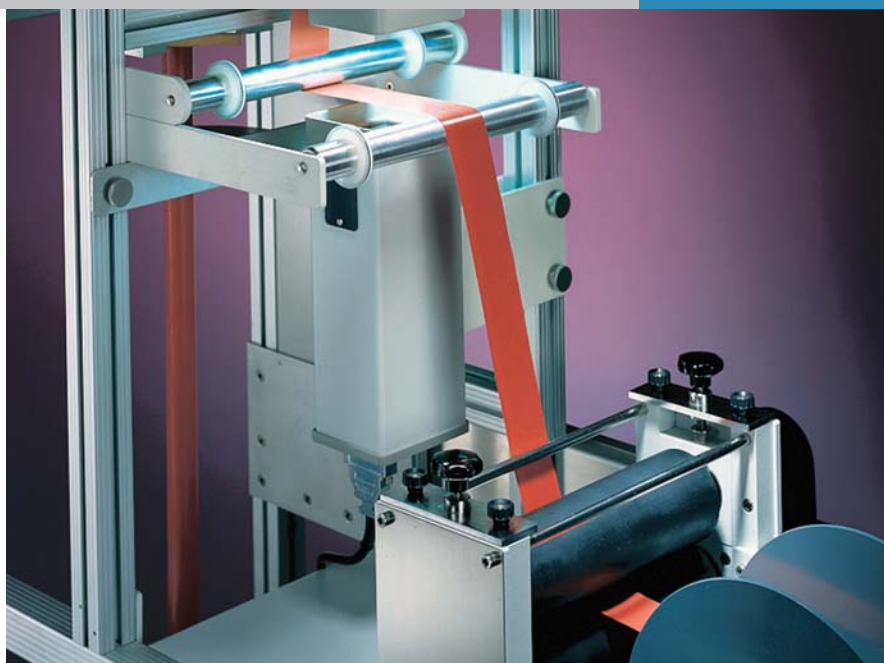
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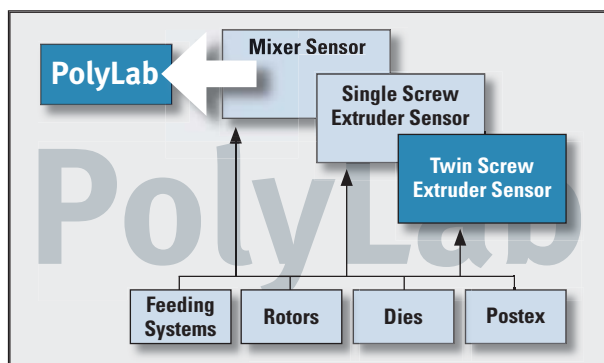
Film production simulation for polymer development, materials evaluation and parameter monitoring requires highly adaptive, small scale systems with complete process functionality. The PolyLab System and RheoMex extrusion line, in conjunction with a blown film die and take-off tower system, provide a means of accurate thin film production for total process evaluation with less than 1kg of material.

## HAAKE PolyLab

Blown Film Die /  
Blown Film Take-Off



**HAAKE PolyLab System:**  
the comprehensive  
torque rheometer system  
for lab and pilot plant.



### The Application

The blown film die creates a thin-walled tube which is inflated using compressed air to form a thin circular film. The blown film take-off is a mobile unit which then transports this film away from the blown film die, cools it under defined conditions and finally coils it. The films produced during this process can be used for:

- simulating the production process
- testing for gel particles
- testing the pigment distribution
- testing the transparency
- testing the color distribution
- testing the homogeneity
- testing for contamination and occlusions
- testing die mechanical properties of the polymer

### Blown film die

The blown film die is used in conjunction with a laboratory extruder. The molten polymer is formed into a thin-walled tube by being forced through a ring gap located at the end of the die. The inside of the extruded tube is inflated by air pressure.

### Ring gap die features:

- variable ring gap width for quick and individual test adjustment, as well as easy and rapid cleaning
- measurement of pressure and melt temperature directly within the die allows for an accurate examination of the melt conditions

## Cooling ring

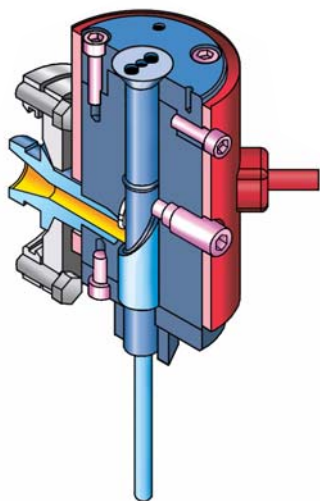
The cooling ring is designed to cool down the inflated molten polymer film in a defined manner. The freezing process of the film can thus be accurately controlled.

### Cooling ring features

- continuously adjustable air flow rate for exact control of the cooling process for each specific application
- air flow in radial or axial direction for optimal film cooling
- labyrinth manifold within the cooling ring for evenly dispersed cooling across the film surface

## Blown film take-off

The blown film take-off transports the extruded film in an upward direction. The collapsing guide, made from round wooden bars, forms the film bubble to a flat, double layered film which is in turn fed to the press rollers. This process leads to a pressure build-up within the film bubble and thus to the inflation of the film. The blown film take-off consists of the following main parts:



## Air flow control device

- integrated cooling air ventilator with separate control for exact definition of the cooling process

## Press roller block

- rubber press rollers with continuously adjustable gap for optimal matching to the film
- additional guide rollers for controlled transport of the film along the whole take-off path
- variable lateral traction guide prevents lateral drifting
- wide take-off speed range for adaption to the extruder output capacity

## Pull roller block

- spring-loaded rubberized pull rollers automatically compensate for uneven profiles especially when starting up
- adjustable gap for individual take-off settings
- synchronized press and pull roller speed to prevent additional stretching/elongation

## Winder

- exchangeable winder rolls with lateral traction guide for defined winding of the film
- automatic winder speed compensation: no diameter-dependent speed setting necessary

## Speed control

- easy-to-use integrated Postex control box with sealed key pad
- electronic speed control with computer-controlled speed setting, data documentation and start/stop routine and optional manual operation
- control in forward and reverse direction for excellent handling, especially when starting and finishing a test
- high resolution in low speed range:

non-jolting take-off even at very low take-off speeds

## Safety

- emergency cord with easy access for immediate emergency stop
- electronic torque limitation protects drive unit from overloading

## Handling

- compact mobile unit with integrated drive unit and control box
- two locking spindles for stationary operation provide exact adjustment in front of the blown film die
- ergonomically optimized, easy-to-operate design with fully integrated control electronics

## Accessories

- Camera system for film inspection with automatic detection of gel particles, impurities and defects
- Add-on set for special applications such as e.g. HDPE which contains: guide basket, calibration screen and die insert with retaining plate

Technical Specifications	
<b>Blown Film Die:</b>	
Ring diameter	25.0 mm (35.0 mm)
Pin diameter	24.0 mm (34.0 mm*)
Gap width	0 - 0.8 mm
Measuring ports	2
Max. temperature	480°C
<b>Cooling Ring:</b>	
Inner diameter	48 mm
<b>Blown Film Take-off:</b>	
Take-off speed	0 - 12 m/min
Motor capacity	115W
Mains connection	230 V ±10%, 50 / 60 Hz
Dimensions (L x W x H)	100 x 58 x 195 cm
Weight	approx. 74 kg
* Available on special request	

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