BLOWN FILM
AIR RING TECHNOLOGY







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BRAMPTON ENGINEERING
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A Davis›Standard Company

STRONGER TOGETHER



EXPANDED PRODUCT PORTFOLIO

VECTOR® - AIR RING TECHNOLOGY

More Efficient Cooling
Higher Output

Uniform Air Flow
Better Gauge

Smart, Digital, Saved
Repeatable Quality

A team of BE experts has completely re-invented how blown film is cooled, and our patent pending Vector® is the result. Using aerospace engineering and deep understanding of how traditional air rings work, we have developed a ground-breaking approach to efficiently distributing chilled air uniformly around the bubble using a single inlet while controlling the flow to secure stable "bubble lock" and to achieve higher output on your blown film line.

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Gloucester Engineering

EGAN®

VECTOR®

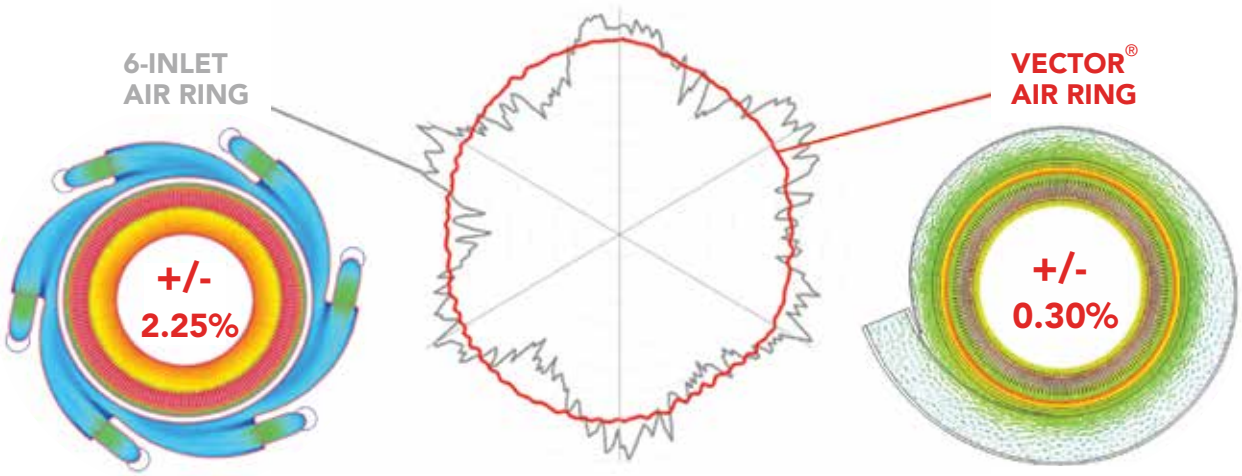
Single Inlet Air Ring Technology

Vector is Smart! – Digital Setup Memory & Monitoring

Vector® provides de-coupled control of "bubble lock" and air flow allowing easier set-up and optimization for a wider operating window for all types of films and BUR's . Operators can now maximize process output without affecting bubble stability. All settings stored in memory for repeat orders. Pressure, Air Flow and Temperature are continuously monitored and alarmed to ensure process repeatability.

More Uniform Air – Better Gauge Uniformity

Using the most modern Aerospace Computational Fluid Dynamics software, we have advanced the air distribution uniformity to a new level in the industry.



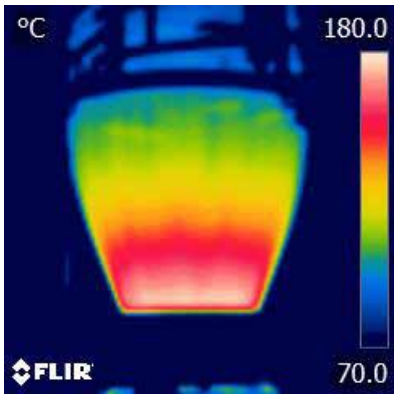
6-inlets means 6 high-low flowrate variations: +/- 2.25%

Airflow Velocity Variation (%) around the lip

Vector® single inlet yields dramatically more uniform flow +/- 0.30%

Blown Film Technology

More Efficient Cooling - Higher Output



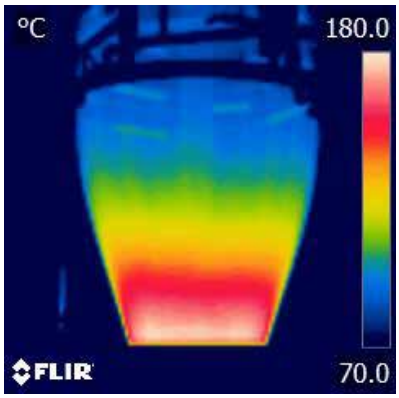
6-INLET AIR RING

55% Blower Speed

High pressure drop

IR Thermograms

Comparing the cooling of identical blown film bubbles running at the same output rate, gauge, and lay flat width, with the same frost line height.



VECTOR® AIR RING

35% Blower Speed

Less than half the pressure drop

VECTOR®S

The Next Level in Auto Gauge Control

Vector® has more uniform air flow around the lip than typical air rings, whether single-inlet or traditional multi-inlet. Since variations in air velocity result in inconsistent cooling and variations in film gauge across the width, the Vector® air ring can improve the uncorrected film gauge (also called starting gauge) by as much as 60-80%.

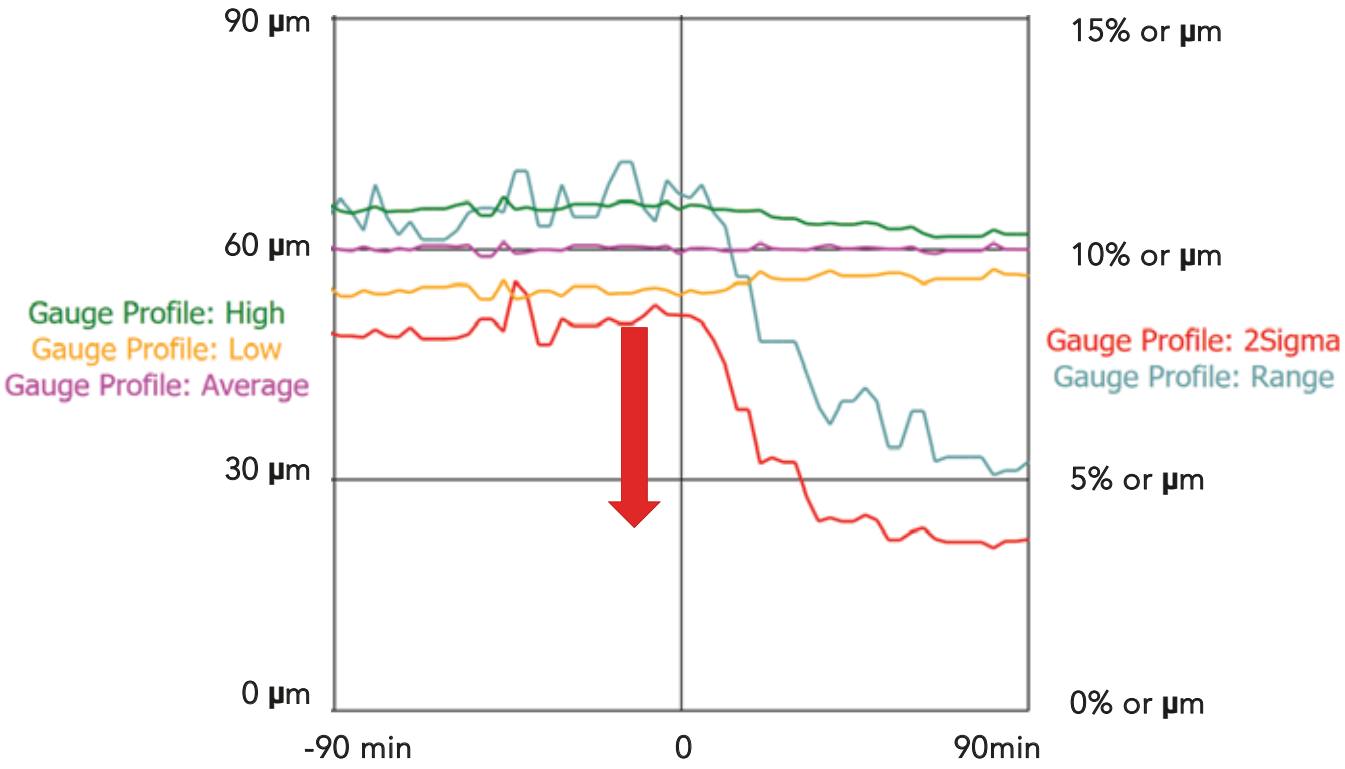
For even better film quality and continual correction, the Vector S option is a segmented air flow auto gauge system which adjusts air flow around the lip to correct measured gauge variations, without adding heat to the film. Control is precise and accurate due to 2 key design features:

- Highest resolution in the industry, with 180 control points on Vector S500 and 252 control points on Vector S800
- Streamlined lip design minimizes mixing of airstreams, meaning that control adjustments translate directly to gauge corrections without excess blurring

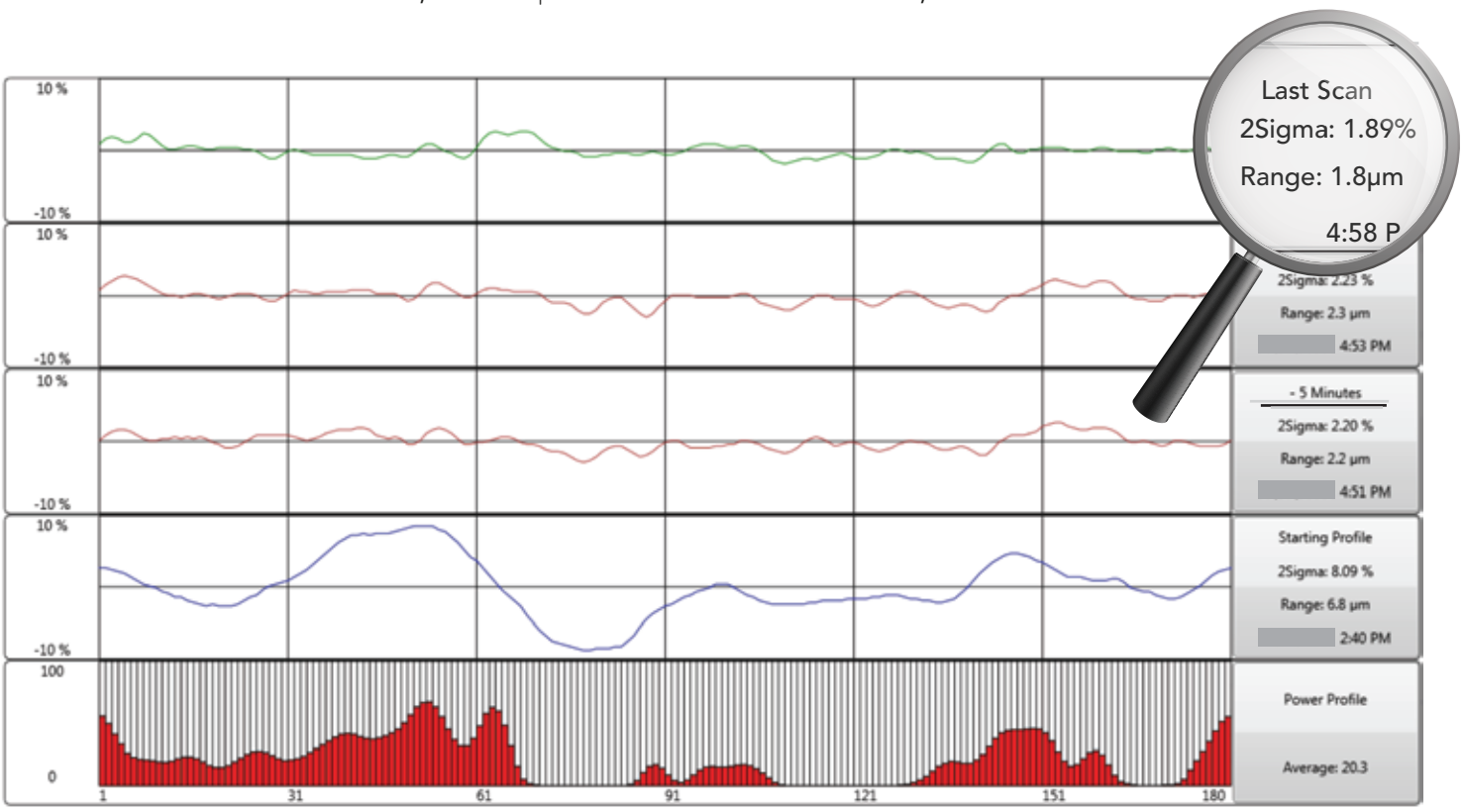
Actual Field Test Results

Size	BUR	Output	Thickness	Width	Type	Starting gauge	Corrected gauge
VS500	1.40	189 kg/hr	35 µm	660 mm	PA, EVA	8%	2%
VS500	1.23	185 kg/hr (line speed limited)	20 µm	580 mm	PA	9%	3%
VS800	1.42	500 kg/hr (limited by other factors)	60 µm	1600 mm	PE	8%	3.5%
VS800	2.00	550 kg/hr (limited by other factors)	30 µm	2250 mm	EVA, PE	10.5%	4.8%
VS800	2.27	850 kg/hr (limited by other factors)	40 µm	2500 mm	PE, EVOH	9.5%	2.7%

Screenshot of ITALYCS Gauge profile trends showing variability across the width of the film (reported as 2σ) decreasing from 8% of average gauge to 3.5% within 30 minutes, for a 60µm film 1600mm wide, made with Vector S800



The I-Flex page of ITALYCS HMI showing three recent gauge profiles and the starting profile, with 2σ reduction from 8% to 2%, for a 35µm barrier film 660mm wide, made with Vector S500



Payback in Months

More Efficient Cooling	Higher Output 10% and more	$136,000
Uniform Air Flow	Better Gauge 1% less material	$ 47,000
Smart, Digital, Saved	Repeatable Quality Save at least 15 mins per changeover	$ 33,000

Savings every 12 Months: $216,000

*Case study results of client's line with Vector® Air Ring

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