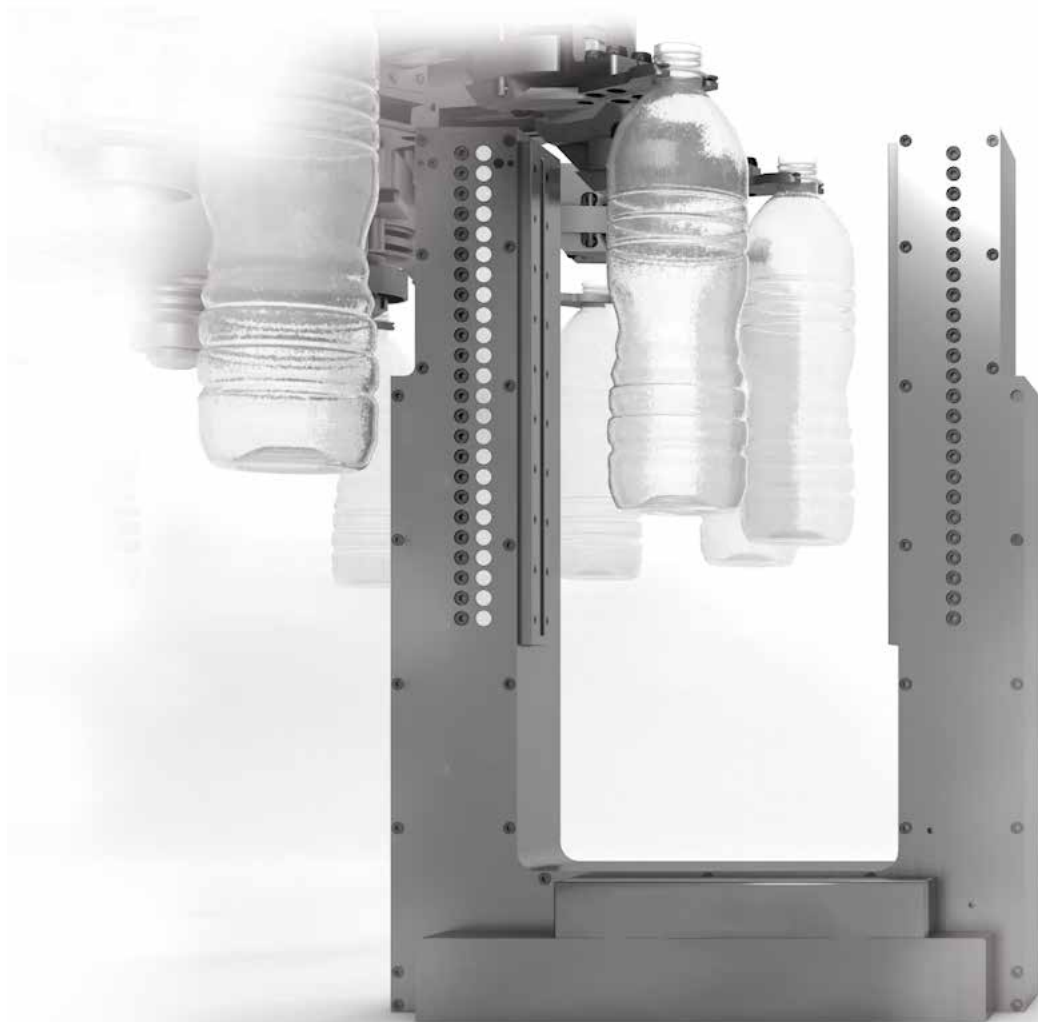




Pilot Profiler[®]



IN-THE-BLOWMOLDER MATERIAL DISTRIBUTION MANAGEMENT SYSTEM

Comprehensive
blowmolder
performance
monitoring

Continuous
material
distribution
measurement
on every bottle

Preventative
maintenance
and diagnostics
for blowmolder
management

Real-time alerts
to identify process
variations that
affect bottle quality

Immediate
feedback on
blowmolder
adjustments
and changes



Pilot Profiler® System

The Pilot Profiler® in-the-blowmolder material distribution management system offers the most comprehensive method for wall thickness measurement and blowmolder performance monitoring available today.

The Pilot Profiler® system, with its comprehensive measurement approach, provides a complete understanding of the bottle, including the base and finish areas. With this knowledge, container performance factors are continuously monitored on a per bottle basis. Given the close correlation of thickness distribution to section weight analysis, the implementation of a Pilot Profiler® system in a blowmolder eliminates the need for inefficient section weight analysis activities. Because the Pilot Profiler® system identifies small changes in material distribution that affect bottle performance, it offers manufacturers the ability to proactively manage the production process to a very fine degree, making it possible to eliminate distribution-related defects.

Total Sidewall Thickness Profile

The Pilot Profiler® system eliminates measurement location issues with its unique total sidewall "profile" approach to distribution monitoring. LED-based, miniaturized sensors permit configurations of up to 32 measurement locations depending on the size and shape of the container.

Sensors on the Pilot Profiler® system are positioned in a hermetically sealed, compact measuring unit that fits neatly inside of two-stage blowmolders. The symmetrical orientation and close proximity of sensors permits the Pilot Profiler® system to effectively track and monitor material shifts throughout the sidewall. This combined with a per bottle sampling rate of over 1,000 measurements for each sensor, permits detection of even the slightest material movement.

On-Line Operation with Laboratory Precision

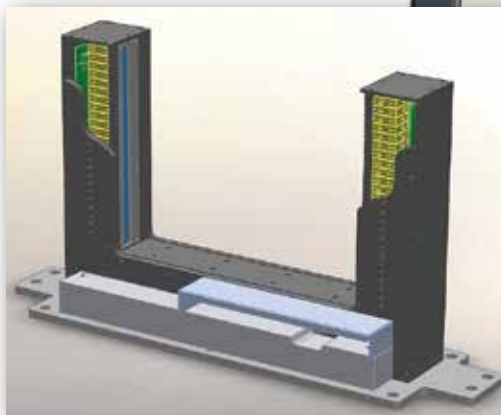
The Pilot Profiler® system incorporates a patented LED light technology for thickness measurement that offers low energy consumption, long life and unprecedented measurement accuracy, rivaling results found in laboratory-based systems. Based on Agr's proven IR absorption measurement method, highly accurate and repeatable thickness measurements can be performed at production speeds on PET containers, regardless of shape, design and color.

Seamless Integration into the Blowmolder

The Pilot Profiler® systems are designed to work seamlessly within your blowmolder, utilizing the blowmolder's timing signals and reject system without interfering with bottle production. Versions of the Pilot Profiler® system are available for a wide variety of the most common blowmolders in use today.

- Monitor material distribution changes anywhere on the bottle
- Improve blowmolder management and monitoring capabilities
- Reduce blowmolder downtime
- Proactively manage lightweighting projects
- Save energy and utility costs
- Dramatically reduce held product, scrap and regrind

**ON-LINE
DISTRIBUTION
MEASUREMENT WITH
LABORATORY
ACCURACY!**



The Pilot Profiler® system is protected by one or more of the following approved or pending US patents or foreign counterparts thereof: US 7,354,538; US 6,863,860; US 7,378,047; US 7,374,713; US 7,780,898; US 7,924,421; US 8,208,141; EP 1,348,92; JP 4,606,704; CA 2,421,444; EP 2,875,63; EP 2,067,003; CA 2,920,885; US 7,924,421; US 9,539,756; JP 5,271,908; CN101578495;

Providing Critical Information

The Pilot Profiler® system provides a wealth of information that can be used to improve blowmolder efficiency and facilitate enhanced process management on a daily basis.

For Process Management

The Pilot Profiler® system provides shortened reaction time for detecting and solving production problems. Whether at setup and job change or during on-going production, the Pilot Profiler® system provides valuable, real-time feedback on the status of the blowmolder and the quality of every bottle including:

- Continuous feedback on thickness distribution
- Real-time data communication with blowmolder controls and other devices
- Multi-point feedback of material movement over the bottle sidewall
- Mold and spindle correlated thickness data
- On-going process reports identifying status and trends
- Seamless integration with Agr's Process Pilot® automated blowmolder control system and Pilot Vision™ preform and bottle inspection systems

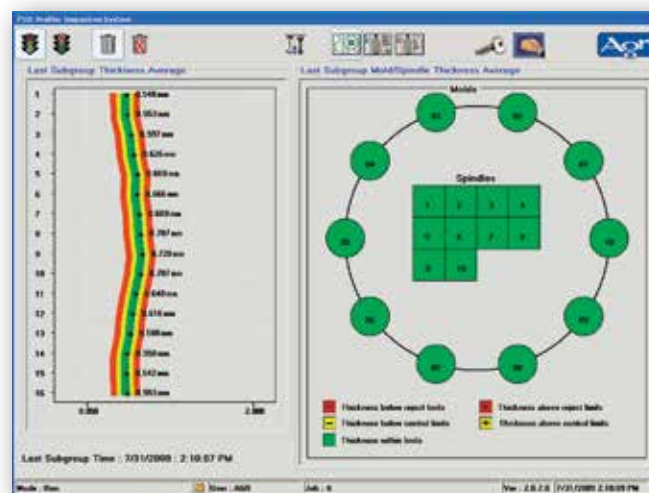
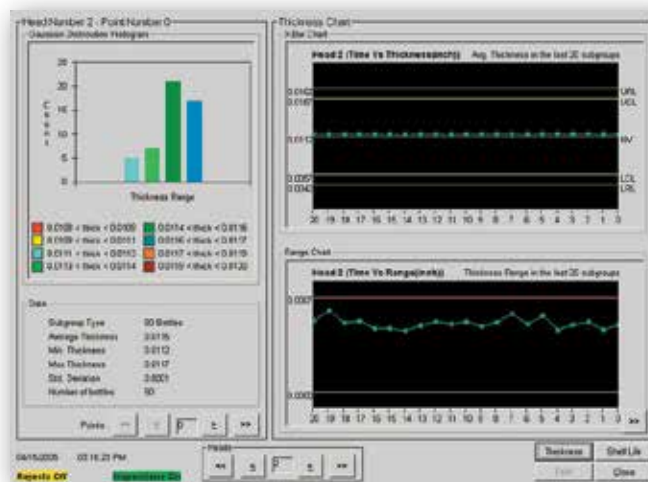
For Blowmolder Management

The Pilot Profiler® system gives operators with varying levels of knowledge and experience a common tool that can be used to provide immediate feedback for blowmolder adjustment and management. Operators can see results to all blowmolder adjustments within seconds, leading to more efficient operation and reduced costs. In addition, the Pilot Profiler® system provides:

- Visual indications to help locate sources of problems
- Immediate feedback when a correction is made
- Reduced setup time and troubleshooting for job changes
- Faster learning curves for blowmolder operators
- Reduced scrap due to job change and routine operational adjustments
- Accelerated blowmolder troubleshooting
- Proactive management, eliminating rework and scrap

Available Options

- Partial Mold set: facilitates wall thickness and vision-based defect detection when operating with a partial mold set
- Reject verification: confirms all specified rejects are removed
- CrystalView material orientation and optimization
- Lightweighting Option
- Process Pilot® automated blowmolder management system



- Best precision for on-line thickness measurement in the industry
- Over 1000 measurements per sensor/per container
- No job change required
- Over 32,000 discrete measurement points per container
- Monitors 100% of production

The Pilot Profiler® System Adds Value

Eliminate Section Weighting

With the Pilot Profiler® system, there is no longer a need for time-consuming and wasteful indirect measurement methods, like section weight analysis, to determine material distribution in a container. This system provides a comprehensive approach, directly measuring the sidewall at all critical locations. There is no interpretation required or risk of waiting for results. With the Pilot Profiler® system, you can monitor material distribution in real time on every bottle.

Comprehensive Information of Bottle Quality

The Pilot Profiler® system continuously monitors the bottles you produce, offering an efficient method to manage the blowmolding process. Unlike other methods, this system lets you manage your blowmolder based on actual bottle quality, not arbitrary settings.

Effective Tool for Lightweighting

As bottles become lighter and production speeds increase, proper distribution is absolutely critical. The Pilot Profiler® system's ability to monitor distribution with high accuracy over the total sidewall of a container makes it an effective lightweighting tool to help ensure that even the lightest container meets design specifications.

Importance of Proper Material Distribution Management

Proper material distribution is critical to the manufacture and performance of PET containers. By closely monitoring and managing material distribution during the stretch blowmolding process, the efficiency of the blowmolder and the performance quality of bottles produced can be maximized, saving time, energy and money. The key to accomplishing this is tied to the ability to accurately measure material distribution over the entire sidewall of the bottle. The Pilot Profiler® system provides this capability and more.

Lightweight Option

The Lightweight Option expands the capability of the Pilot Profiler to measure PET material as thin as 0.001" (0.025mm) without sacrificing accuracy or repeatability. This option provides bottle producers with active lightweighting programs the ability to accurately monitor and control material distribution in bottles with very thin sidewalls—taking their program beyond current limits.

The Process Pilot® Blowmolder Management System

The Process Pilot system controls the blow molder based on direct feedback from bottle measurements. Measurement feedback through continuous monitoring is used to automatically adjust blowmolder settings, maintaining the blowmolding process at optimum levels. The Process Pilot management system is designed to ensure that all final production bottles have the desired quality and performance attributes in spite of environmental, blowmolder or material variations that occur during the production process.

The Process Pilot approach is based upon three fundamental concepts:

- 1 Measure:** Agr's Pilot Profiler® measurement system monitors every bottle to identify on-going changes in material distribution.
- 2 Control:** Process Pilot closed-loop control software proactively manages the blowmolder thickness measurements to maintain desired material distribution and produce consistent, high quality bottles.
- 3 Optimize:** Process Pilot enhancement tools give you the means to optimize bottle production to a target that is most suitable for the product, application or operational goals—making it possible to efficiently produce the best performing bottles with maximum profitability.

Agr's Pilot Vision™ system further expands process and quality management capabilities by incorporating vision-based inspection in conjunction with the Process Pilot blowmolder management system. This powerful combination offers a total process and quality control program for PET containers that includes thickness management, random defect detection and stable, consistent production 24/7, that can only be achieved through automated blowmolder control.

