

Conveyor-based
PETWall Profiler[®]
Material Distribution Management System

Agr[®]



Conveyor-based Wall Thickness Profiling System for Bottle Production Management

- In-line process monitoring with laboratory accuracy
- Sidewall thickness profile monitoring to facilitate lightweighting
- Immediate, easily understood operator feedback
- Built-in reject system for non-conforming containers
- Compatible with Process Pilot[®] closed-loop software

Conveyor-based

PETWall Profiler® System

The conveyor-based PETWall Profiler® system offers a comprehensive approach to material management and blowmolder production monitoring for PET containers presented on a table-top conveyor.

With the conveyor-based PETWall Profiler® system, 100% of production containers can be monitored for proper material distribution. By continuously monitoring the container performance factors, this system provides a complete understanding of every container, including the base and finish areas. Given the close correlation of thickness distribution to section weight analysis, the implementation of a PETWall Profiler® system eliminates the need for inefficient section weight analysis activities. Because the PETWall Profiler® system identifies very small changes in material distribution with high precision, it offers manufacturers the ability to proactively manage the production process to a very fine degree, making it possible to eliminate distribution-related defects altogether.

The unique design of the conveyor-based PETWall Profiler® system is ideal for use where in-the-blowmolder installation is not practical or desired. This system installs easily on existing production lines and can operate on single or dual lines, at production speeds. It requires less than 28 inches of line space and can be mounted in close proximity to the blowmolder. The operator interface is a free standing unit and can be located up to 100 feet from the measurement system.

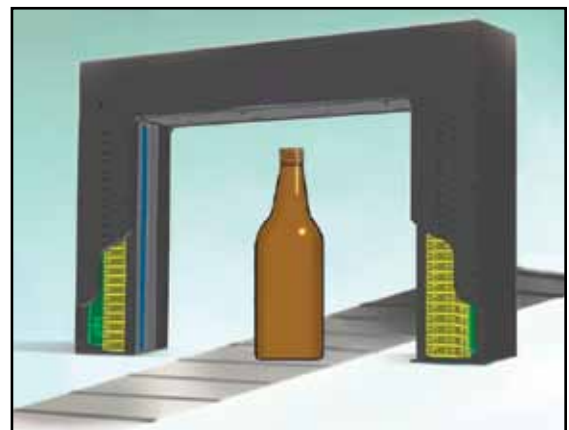
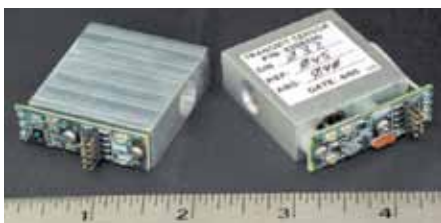
Total Sidewall Thickness Profile

The PETWall Profiler® system eliminates the question of “where to measure” by providing a total sidewall approach to distribution monitoring. The unique, LED based, miniaturized sensor design permits configurations of up to 32 measurement locations, depending on the size and shape of the container.

Sensors on the conveyor-based PETWall Profiler® system are positioned in a hermetically sealed, compact measuring unit that mounts directly over the conveyor. Bottles simply pass through the measurement unit as they travel downstream for other operations. The symmetrical orientation and close proximity of sensors in this system provide operators with the ability to effectively track and monitor even the slightest material shifts and distribution-related process issues over the entire bottle sidewall.

In-Line Operation with Laboratory Precision

The conveyor-based PETWall 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.



- Monitor material distribution changes anywhere on the bottle
- Improve blowmolder management and monitoring capabilities
- Reduce job start-up time
- Eliminate section weight activity
- Save energy and utility costs
- Dramatically reduce held product, scrap, and regrind
- Proactively manage lightweighting projects

The PETWall Profiler® system is protected by one or more of the following approved or pending U.S. patents or foreign counterparts thereof: 6863860, 6985221, 7253892, 7378047, 7374713, WO-2008/027569

The PETWall 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

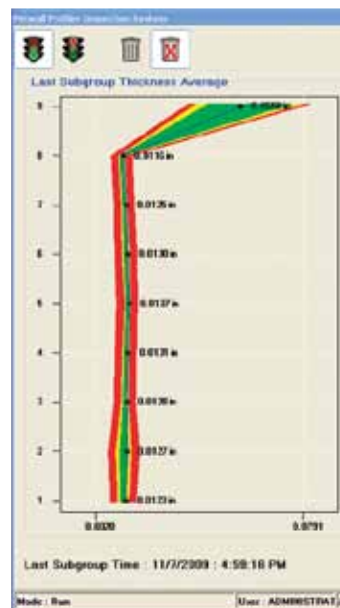
The PETWall Profiler® system provides shortened reaction time for detecting and solving production problems. Whether at setup and job change or during on-going production, the PETWall Profiler® system provides valuable, real-time feedback on the status of the blowmolder and the quality of every bottle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

- Continuous feedback on thickness distribution
- Real-time data communication with plant-wide process control systems
- Multi-point feedback of material movement over the bottle sidewall
- On-going process reports identifying status and trends
- Seamless integration with Agr's Process Pilot™ closed-loop control software

For Blowmolder Management

The PETWall 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 bottle production management. Operators can see results to all blowmolder adjustments within seconds after the bottle is blown, leading to more efficient operation and reduced costs. In addition, the conveyor-based PETWall Profiler® system provides:

- Feedback within seconds after a blowmolder adjustment
- Reduced setup time
- Faster learning curves for blowmolder operators
- Reduced scrap due to job change and routine operational adjustments
- Proactive management, eliminating held product, rework and scrap



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

30%+ improvement in accuracy and repeatability over previous systems

The Conveyor-based *PETWall Profiler*[®] System Adds Value

Eliminate Section Weighting

With the PETWall 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 PETWall Profiler[®] system, you can monitor material distribution in real time, on every bottle.

Comprehensive Information of Bottle Quality

The PETWall 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 PETWall 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 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 PETWall Profiler[®] system provides this capability and more.

AVAILABLE OPTIONS

- M-RULE shelf-life module - offers a means to predict CO₂ and O₂ bottle shelf-life performance characteristics, in real-time
- Vision inspection module - offers integrated random defect inspection for container base, seal surface and sidewall



Process Pilot[®] Blowmolder Closed-loop Control Software

The Process Pilot[®] control software works in conjunction with the PETWall Profiler[®] measurement system to provide a hands-free means to maintain the blowmolding process. The Process Pilot[®] program utilizes feedback from the PETWall Profiler[®] system to continually monitor and automatically adjust blowmolder settings, maintaining the blowmolding process at optimum levels without operator intervention.

Key PET Container Performance Areas

Creep _____
Gas Permeation _____
Burst _____
Stress Crack _____
Rigidity _____
Bottom Roll-out _____
Topload _____

