

# Advancing glass container quality

Agr International and its subsidiary, American Glass Research, have a long history in the advancement of glass container quality, as David Dineff explains.

The roots of Agr International date back to 1927, with the opening of Preston Laboratories, a company that provided technical support and research services to the burgeoning glass industry of the time. Over the years, scientists and technicians at Preston Laboratories developed many techniques and devices for analysing the strength and performance of glass containers. Their work set the standards that are still used today for the production and quality management of glass containers around the world.

In 1961, Preston Laboratories officially became American Glass Research and moved its facilities to the present location in Butler, Pennsylvania. In addition to glass container research and development, the company expanded its manufacturing capabilities to meet growing demand for testing equipment. The product catalogue included laboratory devices for measuring thickness, pressure and coatings, as well as a host of other devices essential to managing the quality of glass bottles.

In the late 1960s and early 1970s, the company experienced a period of considerable growth, during which its portfolio of products was greatly expanded to include a wide assortment of laboratory, on-line and sampling test systems for glass containers. This established American



Agr facilities... then and now.



Glass Research as the leading supplier of quality control equipment to the worldwide glass industry.

## LIGHTWEIGHTING LEADER

The introduction of the Agr OLT (On-Line Thickness Selector) in the early 1970s was a watershed event in the history of Agr and for the glass container manufacturing industry. The OLT was the first product of its kind that could accurately measure wall thickness on every bottle produced, at production speeds.

Until the equipment's arrival, bottle makers had been sampling and measuring wall thickness by hand during routine quality checks. However, these quality checks were time-consuming, labour-intensive and not statistically significant to ensure that every bottle met minimum thickness requirements. Consequently, bottles were over-designed to include extra material to ensure they met performance and safety requirements.

The OLT changed everything. With the equipment installed on a production line, every bottle was measured for sidewall thickness. Bottles that did not meet minimums were automatically rejected. Production managers no longer had to worry about bottles with thin walls getting into the hands of their customers. The OLT gave the bottle maker >



Agr SPT2 offers precision volume measurement and pressure testing for glass containers in a single, compact system.



The Agr OmniLab testing system performs critical bottle measurements and pressure testing in a single, automated system.

a new level of confidence.

Container lightweighting was then possible, since it was no longer necessary to over-design the bottles and include extra material for 'safety'. The OLT eliminated this need. The rest is history. Over the years, thousands of Agr OLTs have been installed on production lines to monitor wall thickness. In combination with improved forming technology, the equipment has played a key role in the weight savings realised in glass bottles over the last 40 years. Versions are currently in operation on hundreds of production lines, helping manufacturers produce bottles that are light, strong and safe.

**BOTTLE SAFETY AND PREVENTING PRESSURE BREAKS**

One of the earliest testing devices introduced by Preston Laboratories in the late 1930s was the first available commercial pressure tester. The introduction of this device gave bottle makers a means to address and prevent liability issues due to bursting bottles. With a pressure tester in plant, bottle producers could sample and test production ware and identify potential pressure deficiencies.

Over the last 50 years, Agr has innovated and evolved the art of pressure testing. As part of this evolution, the company introduced the Sampling Pressure Tester (SPT) in 1979. The SPT pioneered the concept of automatically sampling containers from the production line and testing them for pressure strength on a regularly scheduled basis. This development made it possible to continuously monitor the pressure strength of bottles produced and provide a statistically significant level of sampling that was impossible with laboratory-based testing. Agr pressure testers have been relied upon by manufacturers to ensure that pressure ware is safe and bottles perform as expected. In the wake of increased lightweighting, pressure testing plays an even more vital role.

**EXPANDED CAPABILITIES**

In the late 1980s, American Glass Research expanded its portfolio of products to include equipment for testing other packaging types, in addition to glass containers. In light of this evolution, the company was re-organised and the name was changed to Agr International Inc. The research and testing portion of the company retained the name

American Glass Research and continues as an integral part of the Agr International family.

**TOWARDS GREATER AUTOMATION**

Agr continues to innovate, develop and provide products and services that are in-line with the needs of the global packaging industry. Some of the most recent developments include products that incorporate robotics, advanced sensors, vision and computer technology in the testing and measurement process to further support the quality management of very light, high performance containers. With today's high efficiency container making operations, precision, throughput and efficiencies are equally important for testing and quality management as they are for the production lines themselves. Agr is totally committed to providing the best, most accurate and efficient products to support these needs.

The SPT2 automated pressure and volume measurement system is the latest generation of Agr automated sampling pressure testing systems. It is two measurement systems in one; a high precision volume measurement system and an automated pressure tester. The SPT2 incorporates advanced pressure management technology for precise pressure application and positive displacement technology for accurate and repeatable volume measurement. The system also features a high throughput rate, dynamic bottle handling for bottles of different finishes, shapes and sizes and multiple line compatibility.

OmniLab is another innovative product developed to support the evolving needs of glass container manufacturers. It is an automated, high precision measurement system that performs a number of critical bottle measurements automatically, without the need for operator interaction. The OmniLab incorporates a robotic handling system for precise bottle placement throughout each of its measurement stations. It can be configured for laboratory operation or installed on a sampling line to automatically receive and test bottles, unattended, 24/7. When coupled with Agr's SPT2 pressure and volume measurement system, the system can provide detailed, mould-correlated reports that include weight, comprehensive finish and body dimensioning, push-up, bore, thickness, pressure and volume.



American Glass Research offers expert research and testing laboratory services for the glass container industry.

**RESEARCH AND TESTING GROWTH**

Like Agr International, American Glass Research continues to grow and innovate as a full service, independent research and testing laboratory. The company is globally recognised for its expertise in glass testing, design, analysis, consulting, training, inspections, product liability and auditing services. The organisation currently maintains a staff of over 25 scientists, engineers and technicians, dedicated to providing testing and research services to the glass industry.

Its training seminars have been a staple to glass companies for decades and include topics such as fracture analysis, design evaluation, coating technology and batch and furnace. The seminars are not only offered at its main location in Butler but are now held on a regular basis in Krakow (Poland), Munich (Germany) and Bangkok (Thailand), as well as in-plant at glass container facilities around the world. Seminars are continually being updated and developed. The latest addition is the Audit of Glass Plant Operations, which was launched in 2015.

American Glass Research's laboratory testing offerings have been enhanced with the acquisition of West Analytical Laboratories. This acquisition further extended testing and analysis capabilities to include heavy metal analysis, glass composition, raw material composition analysis, USP/EP testing and more. The acquisition brought with it a modern, fully equipped ISO 17025 accredited analytical laboratory and a staff with experience in a number of disciplines that complement the traditional capabilities of American Glass Research.

**AGR TODAY**

Today, Agr's operations span the globe, employing over 200 people. Its headquarters and main manufacturing facility sit on a large campus in Butler, Pennsylvania, with sales and services offices in a number of European cities, Mexico, Thailand and China. American Glass Research laboratory facilities are maintained on the Butler campus and in Maumee, Ohio. ■

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**FURTHER INFORMATION:**

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