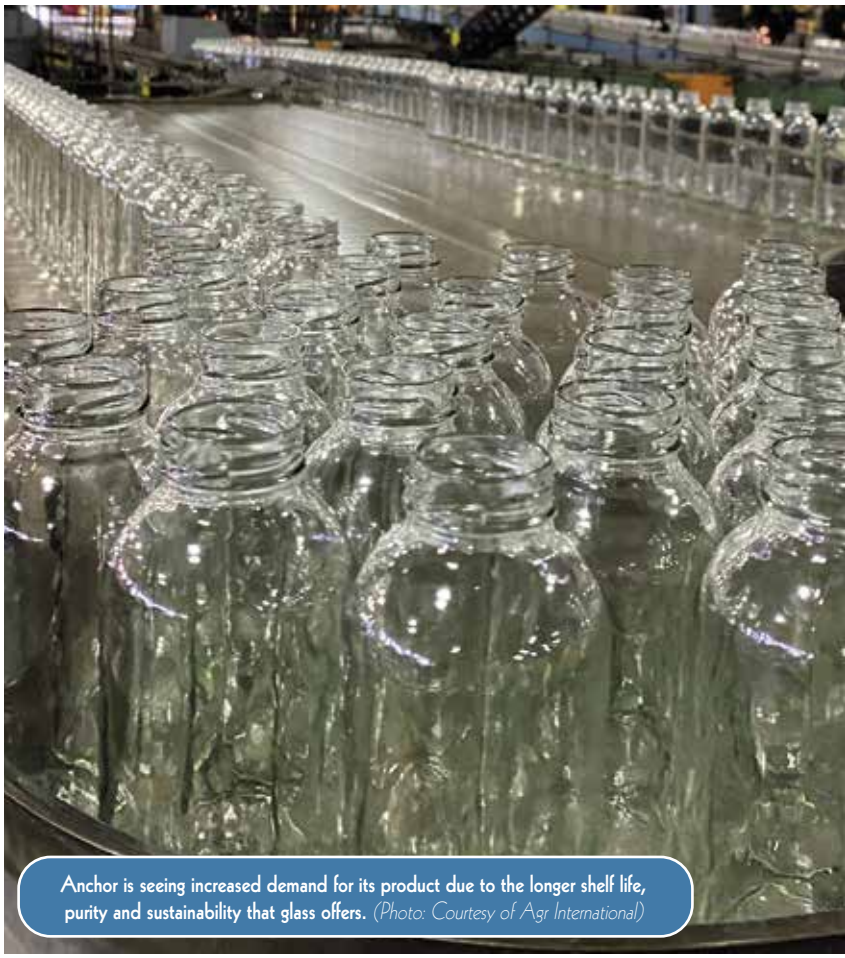
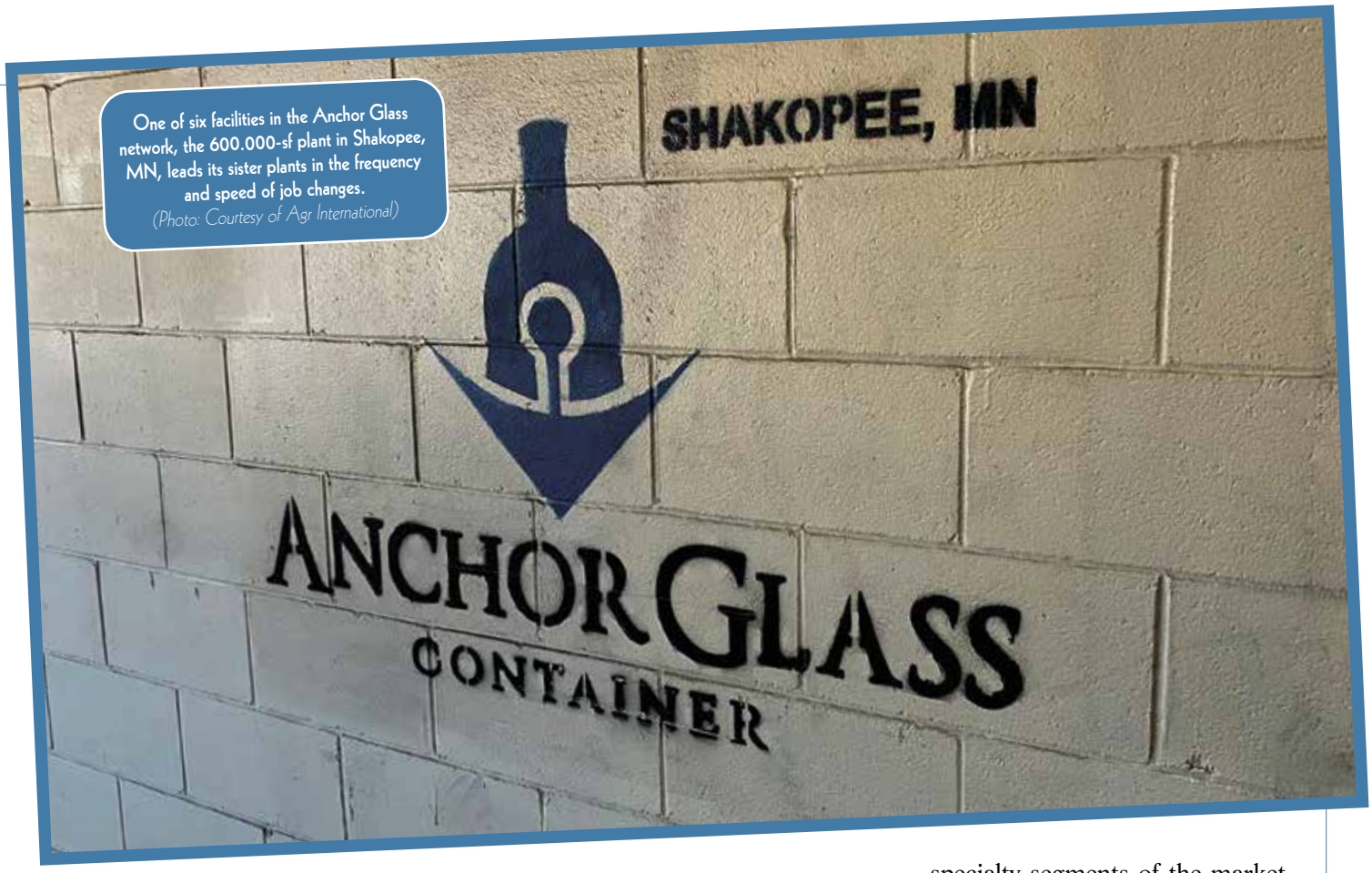
AGR Gawis4Glass® Automated Measurement System elevates ANCHOR's Quality Assurance

With the recent installation of AGR INTERNATIONAL's Gawis4Glass® Automated Measurement System -which troubleshoots stopgap measure errors and saves time in dimensional measurement devices- ANCHOR can now perform swift job change and container tests with unmatched precision and repeatability.



Anchor is seeing increased demand for its product due to the longer shelf life, purity and sustainability that glass offers. *(Photo: Courtesy of Agr International)*



One of six facilities in the Anchor Glass network, the 600.000-sf plant in Shakopee, MN, leads its sister plants in the frequency and speed of job changes.
(Photo: Courtesy of Agr International)

Thanks to the improved accuracy and boost in throughput of its innovative AutoJob® feature, Agr International's Gawis4Glass® was chosen by Anchor after staff at the Anchor Quality Assurance Lab at Shakopee shifted to a manual job-change qualification process when an aging dimensional measurement device could no longer be repaired - all in a procedure that took as long as four hours to hand-measure a set of 30 bottles.

PLANT SETUP

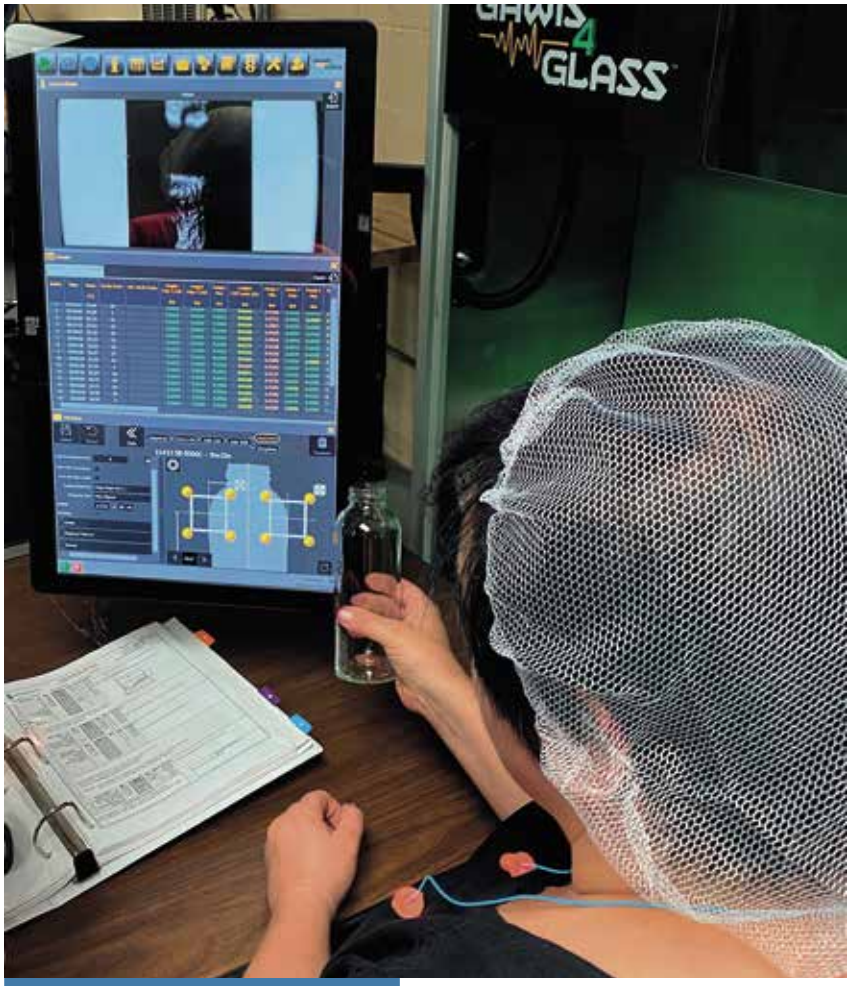
Located within the Twin Cities metro area, the Anchor plant is situated within a landscape rich in sandstone formations. The high purity level of the silica mined from these deposits is one of the factors that inspired Henry Ford to establish an auto glass factory near his St Paul assembly plant in the mid-1920s. The Ford glassworks closed down in 1959. One year later -and 45 minutes to the west- a different kind of glass facility opened its doors.

That operation was Anchor's new 600.000 square foot glass container factory in Shakopee. As it was originally, today's plant is equipped with two furnaces (of newer vintage), with capacities of 314 and 343 tons respectively. Each furnace feeds three IS (individual section) forming machines, four configured with 20 moulds and two with 30. A total of six shops on the hot-end feed into 20 lines on the cold-end, producing bottles as well as round and non-round jars of 4 to 20 oz. in size - all flint. Current output is evenly split between two market segments, food and ready-to-drink beverages - items like pickles, hot sauce, gravy, salad dressing, and kombucha. "We're seeing increased demand for our product due to the longer shelf life and purity that glass offers," observes Shakopee Quality Assurance manager Brandy Speikers. "Glass containers are also attracting more interest in response to sustainability concerns." The corporate focus is on the growing, premium specialty segments of the market, and as new food items continue to proliferate, "that's the way we want to go," she says.

Considered a 'job-change' plant, Shakopee produces long and short runs of many different container types. This varied line-up means that job changes occur four to five times per week. Staffed by a workforce of 265 employees across four crews and three rotating shifts, the plant runs around the clock all year through, and production schedules are prepared monthly.

GAWIS4GLASS QUALIFIES PRODUCTION

While the Shakopee plant leads the Anchor organization in the quantity and speed of its job changes, it's still a process that involves many sequential steps. On the hot-end, technicians in fireproof suits replace the moulds in the forming machine in roughly half an hour. On the cold-end, it can take almost an hour for workers to reconfigure conveyors and other devices before the line



The large touch panel display on the Gawis4Glass allows operators to view the container as it's being scanned, then calls up dimensional values in a separate window on the same screen.
(Photo: Courtesy of Agr International)

is ready to run again, gradually ramping up its pace.

Within two hours of each job start, a full set-out of containers (20 or 30, depending upon the number of moulds in the IS machine) is taken from the line and delivered to the QA lab for dimensional measuring. This inspection step is essential to qualifying production - thus confirming that the forming process is under control and customer specifications are being met. It's also labour intensive. Given the plant's high frequency of job changes, the task has to be repeated almost daily. Performing the qualification measurements by hand easily consumes 15 to 20 hours of lab technician time every week.

WHY GAWIS4GLASS?

The latest generation in Agr's long line of automated measurement systems for glass containers, Gawis4Glass provides fast, accurate, non-destructive measurement of critical dimensional attributes. Designed specifically for the quality control lab in a production environment, it simplifies container measurement operations and improves efficiency and testing throughput by integrating multiple measurements into a single automated operation. Measurement on every sample is performed exactly the same way, with complete dimensional analysis available in a matter of seconds.

The powerful quality control tool is built on a completely new measurement platform, incorporating advances in vision technology like high-resolution USB 3 camera components, optimized lensing, and telecentric optics with 360° imaging to provide documented details on physical dimensions over 100 percent of the bottle. Sophisticated optical gauging capabilities work in combination with Agr's proprietary control systems and intuitive operational software to deliver unmatched precision and repeatability with results that exceed all relevant international standards. In addition, the device is equipped with Industry 4.0 compatibility for the fast and easy transfer of data to the corporate network.

AUTOJOB®

The breakthrough Gawis4Glass feature that really got Speikers' attention was AutoJob®. One of the biggest challenges posed by the multitude of job changes is job setup for the measurement system. Most measurement systems need to be told what and how to measure each job brought into the lab. It takes a considerable amount of time to identify the measurements, locations, and tolerances for each. In contrast, Agr's innovative AutoJob capability incorporates all GPI finish standards in the system to dramatically streamline job setup. Gawis4Glass scans the sample, identifies its standard finish measurements and then adds these to the job within a matter of seconds.

"The AutoJob feature is great to remove human error in setting up the finish dimensions," says Speikers. "All GPI standards are in there, so the acceptable limits are already in place for the various attributes. You only have to input specifications for the body - and, once you do, the history is locked in and can be recalled when that job is in production again. With all our job changes, that's a big advantage."

The myriad of containers Anchor produces have specific design parameters. For example, a customer job where the T and E specs must be modified for a smaller closure. Gawis4Glass gives the lab technicians the flexibility to adjust the finish measurement standards accordingly, even when selecting a single measurement or combination of measurements for a particular job. Once a customer's custom requirements are entered into jobs, they can be saved as templates for future use in others. As with the individual selectable routines, setup for these custom tests is straightforward and intuitive.

Before committing to the Gawis4Glass purchase, the Anchor team watched a live demonstration using a batch of their sample bottles. "We saw how easily machine setup was - just a few seconds and it was complete," says Speikers. "This was one of the many selling factors in our decisions in obtaining this machine."

MONITORING THE PROCESS

Even with Shakopee's long history of stable operations, the variability of the plant's output makes it essential to have a high-level quality assurance programme to confirm the process is under control. Gawis4Glass's comprehensive dimensional gauging capabilities cover the gamut of finish attributes, diameter and body measurements, container height, and push-up - all with an optimum precision respecting container design specifications.

As Speikers points out: "The equipment in the customer plant is set up for a particular bottle design. It's key for us to meet their bottle specifications. The data from the Gawis4Glass allows us to make sure that our process is under control and on target."

MANAGING CHALLENGING SHAPES

Speikers also speaks of Gawis4Glass' delivery of the same high degree of accuracy when it comes to challenging shapes. In addition to a wide variety of round containers, the Shakopee plant runs an array of non-round containers throughout the year, with jobs that always require extra attention.

"Non-rounds are very difficult," she observes. "They don't like to go down lines and their angles are hard to measure."

Before Gawis4Glass, lab technicians used an optical comparator to measure angles, an imperfect method that took a lot of time. Results lacked repeatability due to differences in the individual's depth perception when measuring. Here Gawis4Glass automation turned the situation around.

"Precision and repeatability for angular measurements is spot on, much better than with our other equipment," relates Speikers. "We're seeing a marked improvement in time, too, along with new capabilities such as measuring locking angles and knock-outs."

Anchor lab technician Evelina Gerulis is especially pleased with the Gawis4Glass user interface - a large, high-resolution touch panel with swipe and zoom navigation and easy-to-understand icons for selecting measurement routines. Gerulis can access all operations, information and data from the main screen - and multiple windows can be displayed at once, including live image, measurement results, job and sample details. The visibility of the live image inspection on the large screen is particularly helpful. "You can watch the scan and then call up the values in a different frame on the same screen," she points out. Comparing her work today to previous routines, she notes: "After the old machine broke down, I took all the measurements by hand with calipers. It used to take three or four hours for a set of 20 or 30 containers. Now with the Gawis4Glass I can do the job in 45 minutes or less."

ONE ANCHOR

Under the corporate vision "Value Creation for All," Anchor Glass has identified "flawless customer experience" as one of its three strategic pillars. Behind this

Quality Assurance manager Brandy Speikers reports that Gawis4Glass performance is spot-on when it comes to hard-to-measure angles on non-round containers.
(Photo: Courtesy of Agr International)

Gawis4Glass's ease of use and time-saving AutoJob were the features that really sold Anchor on the automated system. *(Photo: Courtesy of Agr International)*

commitment is the recognition of the critical role its containers play both for a customer's product integrity and packaging line. To maintain the same level of performance across Shakopee's five sister plants (in Henrietta, OK; Jacksonville, FL; Warner Robbins, GA; Lawrenceburg, IN; and Elmira, NY), the company developed the One Anchor Standard.

"'One Anchor' means that the quality assurance department operates in the same way in each facility," says Speikers. "Down the road, we expect to have the same equipment in all other facilities."

Another expectation, much closer on the horizon, is adding Agr's AutoFeed option to the Gawis4Glass. The robotic component significantly increases throughput, enabling lab technicians to set up the system to test and measure up to 40 samples in a single walk-away operation. The time saved will allow Anchor to move the task of taking 'no-go' bottle measurements from the production floor to the QA lab. The results can be input into Gawis4Glass' data gathering capability to produce detailed process monitoring reports that serve as instant indicators that adjustments are necessary on the hot-end.

"Once we get the AutoFeed system we'll begin to measure bottle rounds every two hours," says Speikers. "If we can automate no-go testing on the Gawis4Glass, that frees up labour to look more frequently for measurement errors."

MORE BOTTLES INTO OUTPUT

Anchor's new Gawis4Glass has been up and running since March. Reflecting on its impact, Speikers comments that it's been "like night and day," adding that "the switch from a manual to an automated process is a major leap forward, saving labour, improving accuracy, reducing downtime and waste."

"We want to put more bottles into output and less into cullet. Here our purpose is to render our process lean. Automating dimensional measurement for job qualification enables us to be more proactive. she concludes: "For us, the container is the golden egg." ■