

► Wiegand Glas' Steinbach-am-Wald site in Germany.

Wiegand Glas's Production manager, Karl-Heinz Mann, and Production specialist, Konrad Neubauer, discuss the glassmaker's relationship with French inspection group Tiamo and the installation of its Hot lab systems



# Wiegand Glas approves

**W**iegand Glas is one of the top three container glass manufacturers in Germany. It produces more than eight million glass containers per day for the beverage (wine & beer) and food industries at its four plants in Steinbach am Wald, Großbreitenbach, Schleusingen and Ernstthal.

With recorded sales of €480 million for 2015, Nikolaus Wiegand and Oliver Wiegand are the fourth generation to run the family-owned company, and rely on tradition and modern technology at the same time.

The glassmaker has worked closely with Tiamo, the international real-time process and quality control company, since 1995. Among its acquisitions, Wiegand-Glas has equipped two of its production sites with Tiamo's HOT lab systems.

Tiamo HOT lab is designed to work in the hot end and collect dimensional measurement data such as container lean, ovality, glass thickness, weight, sunk and bulge and now internal bore diameters. This data would traditionally be provided from the cold end, thereby reducing informational dimensional feedback as there was a time delay of the annealing lehr length. Using basic go/no go gauges at the hot end is out dated, cumbersome, time consuming and does not provide 'real' measurement data.

## Interview with Wiegand Glas

**What routine tasks does the hot end operator undertake on a day-to-day basis? What key production parameters do they have to manage?**

Swabbing, watching for any ware handling issues and implementing small machine timing adjustments to ensure all bottles enter the lehr without falling over. The operator carries out routine mould changes and exchanges other forming equipment that becomes worn or damaged. Some of the parameters which the operator constantly verifies includes bottle weight, forming temperatures and various bottle dimensions including verticality and ovality. The operator is also responsible for correcting any reported quality issues received from the cold end via the plant information system.

**Can you tell us what main dimensional measurements were manually completed before installing the Tiamo HOT lab?**

None, we only had no go/go gauges which don't provide a measurement. If we wanted to verify the glass thickness we would have to break the bottle and visually look for thin spots, which can be a bit of hit or miss and subject to individual

interpretation of what they see.

**When did you invest in your first Tiamo HOT lab? What were your first motivations? Has the equipment been reliable?**

The first prototype machine was purchased during 2011. Wiegand Glass actually participated in the original development and financial contributed financially to cover some of the initial trial costs. Of course we experienced some small technical issues in the early stages of the product development, but now the machine is stable, requires little to no maintenance and is easy to use.

**Was it easy to integrate the Tiamo HOT lab on your existing production lines?**

Due to the compact size of the machine, it was easy to find a suitable location at the hot end for it. The design of the machine, which lowers the bottle into an enclosed measuring chamber, ensures the overall height of the system is kept to a minimal and does not obstruct the operators view.

**After a few weeks of experience with the first machine, what were the immediate bene-**

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# of Tiama HOT lab systems

## fits you could identify?

Reliable and repeatable measurements for height, diameter, all finish dimensions, finish tilt, verticality/bent neck and glass thickness. We no longer had to wait for the bottles to reach the Cold-End before measuring them. This meant when we were sampling a new article we were sure of the dimensional quality before putting the containers into the Lehr.

## Did the operators find it easier to use the Tiama HOT lab compared to manually measuring the bottles by hand?

Yes, very easy. All they must do is simply select which line they have brought the bottle from and press the green button.

## What are the benefits of having the precise dimensional results compared to the previous go/no go solutions?

We can now optimise the process based on real measurements made at the hot end and do not need to wait for the cold end to provide the data. The manual measurements never provided accurate values nor could they measure minimum ovality diameters or glass thickness.

## What is the immediate action taken if the glass thickness

## result for the shoulder area is too thin? How do you use this information to optimise the process?

The operator will sometimes alter the blank mould cooling time, on our machines we can do this independently for the left and right mold halves and for each cavity. Other occurrences it may be necessary to adjust the loading of the gob or even to change the forming equipment for that cavity. There are more parameters that could cause the problem, but the beauty of having the Tiama HOT lab is that we can immediately take a new

sample after adjusting one parameter and measure it again to see if we have resolved the problem or not.

## Concerning the general operation of the Tiama HOT lab:

### • How long does it take to train a hot end operator on the system?

Less than 10 minutes

### • How long does it take to set up a new article?

5 minutes

### • When conducting a job-change,

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Mr Konrad Neubauer next to a Tiama system.



**how long does it take to swap between existing different articles?**

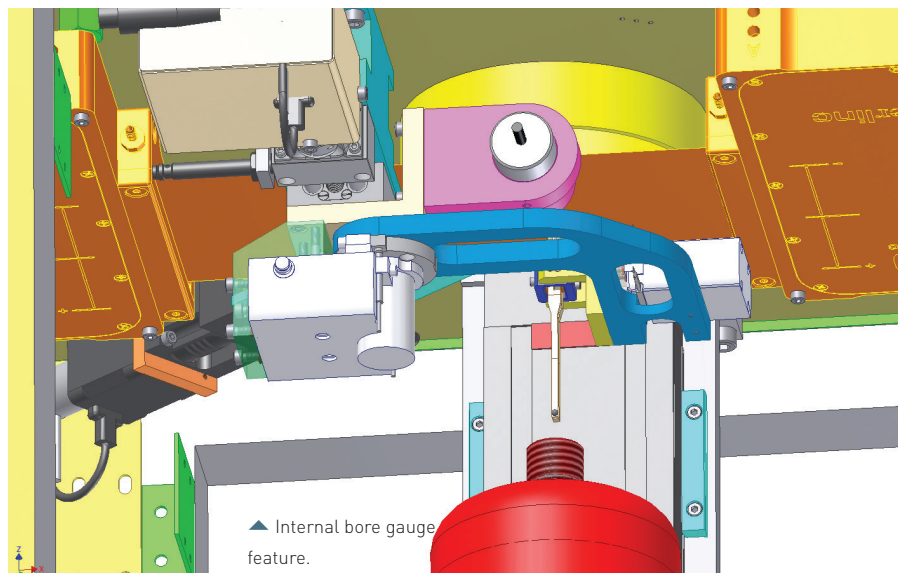
10 seconds, and that is only because I have to enter and sometimes forget the password (small joke). As mentioned earlier in the interview, the operator requires virtually no time at all. He just selects which line he has come from and presses the green button. The current article associated to his line is immediately activated requiring zero job change time, even when one line is running a 25cl beer and the other a 1L wine bottle.

Already in 2016, Tiamo has added additional features to its Tiamo HOT lab systems. Wiegand Glas has already benefitted from these latest developments. In order to reduce the operator's time spent at the machine, Tiamo now offers a

**ic loading option provided the operator with?**

Although the initial Tiamo HOT lab without the automatic loading was useful, we now have the opportunity to measure all cavities without the operator having to be with the machine. This means the operator can concentrate on other, more demanding, tasks and ensure the quality of the process is kept at the highest level.

Measuring the internal bore diameter/profile of hot bottles, especially for those which use a cork for the closure, is now possible with the Tiamo HOT lab. The integrated device is automatically inserted into the bottle and measures the internal bore diameter and inner profile.



universal automatic loading solution. The solution employs a collaborative six axis robot with an intelligent gripper which not only accommodates for a 90mm range in finish sizes but also detects the exact position of the bottles to be loaded into the machine.

**Why is automation important at Wiegand Glas?**

As with most European factories, we simply don't have many people working in the production area. For example on our furnace number 4 in Steinbach, where one of the Tiamo HOT labs is located, we only have four hot end operators per shift to look after three large IS machines. Automation provides repeatability which allows us to reach high pack-to-melt ratios, which at Wiegand Glas is typically above 90%.

**What benefits has the automat-**

**What benefits has the availability of this new measurement brought to your process?**

Previously we would have to either wait for the results from the cold end or manually measure this at the hot end with a mechanical device which is difficult to obtain repeatable and correct results with. The Tiamo HOT lab internal bore gauge is repeatable, accurate and requires no mechanical adjustment.

Within the next few months, the Tiamo HOT lab is going to be upgraded with another new feature. This feature will provide the ability to connect the Tiamo HOT lab to a plant supervision system allowing it to send all measurement results to that system as well.

**What advantages will this provide?**

Assuming it will also include the mould number, it will provide us with

traceability. This is important if we ever have a production recall.

Wiegand Glas is currently equipped with three Tiamo HOT lab units: two in Steinbach & one at Großbretzbach.

**How many Tiamo HOT labs do you think Wiegand Glas will require in the future?**

We would like to equip each furnace with one Tiamo HOT lab machine. We currently have 10 furnaces within the Wiegand group.

**Are you satisfied with the after sales service, support and continuous development of new features?**

Yes, Tiamo has managed this area very well and we are also lucky to have certain individuals working for Tiamo who maintain a close relationship with us. Although the product is stable and we rarely have any issues, it's still comfortable to know we can get a quick response if we ever need it. It has also been good to see Tiamo continue to develop new features/options for the machine, which we are now finding very useful to have.

**Already having purchased three systems, and hopefully you will be buying more, how does Wiegand Glas quantify a return on investment (ROI) for the equipment?**

Yes, we are currently considering buying more systems. To give an exact figure in months or years for an exact ROI is difficult to calculate. What we can confirm is that without the Tiamo HOT lab we have no method of measuring the quality at the hot end which means we have to wait for the cold end and the delay in time is money. Using the robot to carry out regular measurements on a shift basis, we are able to catch process drifts before they reach a reject limit.

If an outlier is detected during a routine measurement of all the cavities, the operator can quickly react, implement the necessary corrective action and then verify whether he has fixed the problem by measuring another bottle from that cavity. All of this data is saved and we have a quality timestamp of the process. ■

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