

/ High-Speed Weighing Technology for Wafers and Cereal Bars



With a tradition reaching back more than 80 years, the company is a leading producer of wafers, and more recently also cereal bar specialities, for trade and industry. **Otto Beier Waffelfabrik GmbH** in Miltach is one of Germany's largest and most prestigious manufacturers of the finest wafers. The most recent addition to the quality assurance section is an HC-A-FL double scale from Wipotec. After a series of investigations, it turned out to be the only one that could weigh reliably and safely in calibrated mode in this speed range and weight class.

/ Otto Beier Waffelfabrik GmbH in Miltach

In the last few years specifically, the company has achieved impressive development with apparently boundless dynamism. As in the previous year, another topping out ceremony took place in 2017, adding a further 1,600 m² for a raw materials warehouse and additional premises for product development. Expansion is also proceeding with regard to inspection technology for the company's own products. Six certified scales from Wipotec are now integrated in various production lines. ▲



Otto Beier Waffelfabrik GmbH, Miltach (Germany)
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/ Random samples are frowned upon – every individual product is weighed

In cereal bar production, speed comes next to quality in terms of importance. This should come as no surprise when there are 50 million bars a year at stake. Fruit bars, which have now become the second mainstay after wafers, have only been produced in Miltach since 2008.

What initially appears to be a leisurely pace as the cut bars leave the cutting unit in an orderly fashion, twelve to a row on the conveyor belt, very shortly becomes a race at the end of the product line as up to 500 ready-packaged products a

minute hurtle down the track one after another and have to be weighed. At these speeds, air resistance and therefore product handling during weighing play a significant role, especially when the products to be weighed are sometimes as light as 12.5 g. They spend only fractions of a second above the weigh cell in each case and during this time, after the shortest possible settling phase, the weigh cell must have come to a complete rest so that it can weigh reliably and accurately. If weighing such light-weight products at high-speeds in the wafer factory were to >>

be unsuccessful, it would be necessary to take random samples, and there would still be no certainty that the products would actually be within the company's own specifications or those of the prepackage directive. To be on the safe side, it would be necessary to increase the average product weight, which would mean cutting the bars longer or increasing the carpet height (the not yet cut continuous mass). Both measures would reduce the efficiency of production.

The fastest weigh cells with Electro Magnetic Force Restoration

Weigh cells based on Electro Magnetic Force Restoration (EMFR) are used in all checkweighers from Wipotec. The crucial advantage of an EMFR weigh cell is its extremely short settling time. Compared to the weighing principle with strain gauges, this type of weigh cell provides very precise weights significantly faster, giving it huge advantages particularly in the field of dynamic weighing applications. The weigh cell also has no wear parts and so operates absolutely maintenance- and wear-free.

With its EMFR weigh cells, the HC-A-FL, a double scale from Wipotec, is able to weigh very light products with calibrated certainty even at high-speeds and can also safely eject underweight products with the aid of blow nozzles. This takes place at the end of each of three production lines which can be up to 40 metres long and with a further 15 metres of packaging line added. >>



No other scale was capable of weighing our products in this speed range with the required accuracy.

Markus Beier

Co-managing director
Otto Beier Waffelfabrik



Ultrasonically cut wafers, still moving at walking pace here. Later, in single lane operation, at more than ten times the speed

The double scale, however, owes its actual advantage to its construction principle. By combining two scales with different weighing belt lengths one behind the other in one machine, the double scale is able to weigh products at maximum speed while at the same time achieving the shortest possible product gap. The range of product lengths at the Otto Beier Waffelfabrik is extensive, starting with 3 centimetre long mini bars up to 40 centimetre long industrial wafers. Only a double scale with two different weighing belt lengths in the design described can offer this flexibility regarding the product range.

Co-managing director Markus Beier, responsible for purchasing and sales, explains that the company's own brands now make up the bulk of sales. The company has its own product development and its own department for declaration testing. Declaration testing is also carried out in-house. The factory produces approximately ten kilometres of wafers every day and processes between 1,600 and 1,700 tons of fruit a year. It supplies to over 40 countries worldwide.

What the Beier company particularly appreciates about Wipotec is the calibration support for all the machines installed in Miltach which is provided within the scope of the manufacturer's service. One of the company's service technicians accompanies the specialist from the Weights and Measures Office, makes adjustments and clarifies any questions as required. The decision to acquire the double scale was made at the end of a selection process. Markus Beier says, "No other scale was capable of weighing our products in this speed range with the required accuracy. Others were too slow and we would have had to take random samples."

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Cereal bars passing the double scale one behind the other at top speed



The technology of the HC-A-FL allows for the smallest product gaps

Future prospects

What plans are there for the future? Cereal bars in particular are on trend – now they're available sugar-free and calorie-reduced, organic, gluten-free and halal. The company currently produces 100 different bars. And it needs to be flexible: more than 800 samples are produced annually in Miltach. They give rise to more than 50 new products a year. Firstly, this means that the Otto Beier Waffelfabrik is planning a new production line with double the capacity of the existing line and with a throughput rate of 1,000 products a minute.

Secondly, due to the bundling of production processes, there are also plans to weigh the products once they are packed in cardboard boxes ready for shipping. This means that these units would also be checked for completeness using the weight of

the cardboard boxes before being delivered on pallets. Both projects offer a range of new, challenging applications for high-speed weighing technology. The production of cereal bars is less energy-intensive than that of wafers but nevertheless the company is placing greater focus on alternative energies; the waste heat of the company's own combined heat and power plant is used to heat all the buildings. An adsorption chiller converts excess heat into cold which is then used to air condition the production halls. And photovoltaic systems have also been installed to generate additional energy.

So at the Otto Beier Waffelfabrik in Miltach, which has been family-owned for generations, the sun could actually shine every day because it's always high season – seasonal fluctuations in production simply don't exist. ▲

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