Monitoring flour production more reliably with VEGAPULS 80-GHz radar sensors

Without wheat mills, the Mexican cornucopia of delicious baked goods, such as tortillas, tortas or breads, would be much skimpier. In the country better known for corn, wheat actually plays a major role, having been cultivated there since the 16th century. Since then, the two cereals have complemented each other perfectly: Wheat thrives on moist valley floors – corn, on the other hand, at high altitudes. Also, the planting and harvesting of these two crops takes place in different months. Those who grow both, and are thus able to harvest all year round, have a big advantage.

Harinas Elizondo supplies more than 7,000 baked goods manufacturers, from small bakeries to large industrial customers, with customised wheat products. Its product range includes special flour varieties for tortillas, pizzas and baguettes as well as puff pastry, biscuit and cakes. Product names like “Maite”, “Osasuna” or “Hoja de Plata” are well-known on the market as coarse, dark or white, or extremely fine grades. Top quality, plant safety and optimal productivity are the main concerns at the company’s headquarters in Mexico City. That’s why product levels are measured with 80-GHz VEGAPULS 69 radar sensors. High up on the silos, they measure without contact with the medium. This makes them the first choice for hygienic applications, and they also score points due to their high accuracy. Victor Modesto Menchaca Ortiz, electrical project manager at the plant, sees the radar measuring instruments as an optimal solution: “Flour production processes take place in a dusty environment. They therefore place extremely high demands on the capabilities of the measuring instruments.” With its high frequency of 80 GHz and unique dynamics, the VEGAPULS 69 radar sensor performs the difficult measuring task with flying colours. It can easily cope with intense dust generation, as occurs during the filling of flour, cement or other fine powders.

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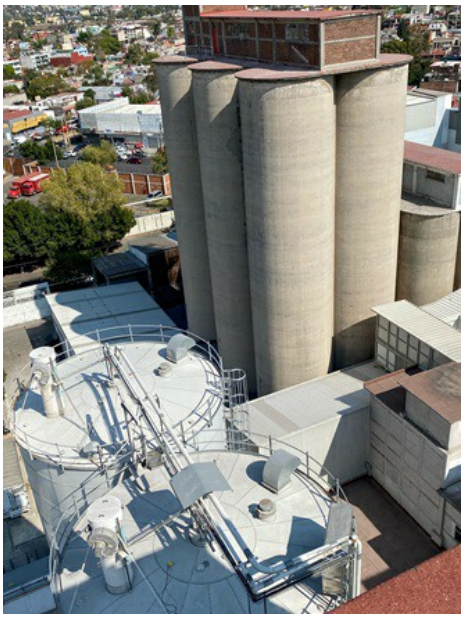
Good visibility despite dust and internal fixtures



VEGA sensors measure the contents of the silos with no difficulty, even while the just-delivered grain is raining down into the silos for minutes on end. And in the mill itself, where fine flour dust continuously collects on the instruments, measurement remains unaffected. Since they are maintenance-free, they require neither special cleaning nor special dust protection.
But inside tall, slender silos, the necessary installations and struts can cause problems for non-contact sensors during measurement. This is where the special feature of VEGAPULS 69 sensors makes the difference: its precision focusing helps separate the measuring signal from interference signals. With an aperture angle of only 3.5 degrees, the measuring beam flies right past obstacles.
Thanks to the reliable measurement data, the technicians and milling specialists in the three production facilities of Harinas Elizondo understand much better what's going on inside the various processes. This helps them improve process reliability, increase plant availability and ensure reproducible product quality.

High quality at every step: from raw material to finished product

From grain delivery to flour loading, there are a multitude of measuring tasks that contribute to a safe and smooth production process. Harinas Elizondo has been using a wide variety of VEGA radar sensors since 2012, deploying them for bulk solids and liquids, depending on the respective requirements: The new, economical VEGAPULS C 23 radar sensors were added last year for simple, standard applications. The selection of sensors used by the flour producer ranges from compact to highly accurate and robust. And because efficiency is always a question of price, VEGA's complete portfolio for level and pressure monitoring offers graduated solutions that make economic sense.

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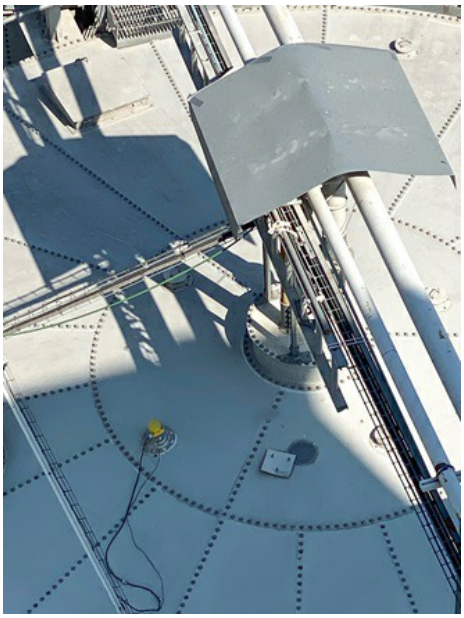
Customers rely on it



When measuring inside the tall, slender silos, anything that gets in the way, like internal fixtures and struts, are a big challenge. The precise focussing of VEGAPULS 69 sensors helps separate the measuring signal from interference signals.

Before the purchased grain is released for production, it undergoes strict quality controls at Harinas Elizondo. Inspections begin with the delivered grain and end with the finished goods, always with the same diligence and effort. Among other things, the silos are checked to ensure that they are completely empty before each refilling and that no batches are “carried over”. Unbroken documentation and regular audits effectively complement the company’s standard operating procedure. All this, and the numerous certifications earned over the years, create confidence among customers.
With the same thoroughness it applies in monitoring product quality, the mill subjected the VEGA sensors to a tough practical test before deciding to implement them in production. “We wanted to be absolutely sure that the sensors could live up to our high standards,” recalls Victor Menchaca Ortiz. And that was because the company had previously tried sensors, including guided radars, from other manufacturers and had been disappointed, as they were simply not as reliable as expected. Today, the project planner is convinced that he has found the right solution. He’s quite enthusiastic about the accuracy of his numerous measuring points. The simplicity of integration also exceeded his expectations: “Everything on the sensors can be easily replaced if it should ever be necessary. After installation, I was able to set the parameters handily via Bluetooth. This saved me having to climb up to the top of the silo again.”

Orders of all sizes

To be able to fulfil orders of any size quickly and accurately, the Mexican mill operator decided a few years ago to manage its processes decentrally with the help of a modern control and visualisation system. This investment paid off and has been leading the way ever since. Transparent as well as profitable and efficient flour production has become a reality through flexible and highly networked processes. Instrumentation with VEGA measuring instruments fits in with this concept perfectly. Using VEGASCAN 693 controllers, the Polanco plant communicates its process measurement data via Ethernet to the decentralised control system, and thus controls all incoming and outgoing stocks at all times. In addition, the Bluetooth configuration enables remote visualisation and management of all measuring points via mobile phone or tablet.
Despite all the automation, engineer Menchaca Ortiz is of the opinion that “the human factor” must definitely not be overlooked. He’s convinced that the skills and experience of the employees are still the most important resource at Harinas Elizondo. He also values personal consulting and support highly. Besides perfect measurement technology, an honourable service philosophy is what makes the difference for him. “VEGA’s technical support is not only fast and extremely efficient, it’s performed with just as much passion as we have for our work.”

Related industries

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Anwendungen

Level measurement in the flour silo

The different varieties of flour are most often stored in tall silos with very narrow chambers. Filling takes place regularly and is done pneumatically from the top. In order to produce the desired blend of different varieties at any time, a reliable level measurement in the individual silos is essential, even during filling. The process challenges include dust generation, strong air movement and a poorly reflecting product surface.

Measuring task

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Level measurement

Measuring point
Tank

Measuring range up to
30 m

Medium
Flour

Process temperature
-40 … +50 °C

Process pressure
0 … 0 bar

Special challenges
Dust, buildup

Reliable

Non-contact measurement, no wear and tear

Cost effective

One sensor for all silo heights

User friendly

Integrated cleaning system

See all recommended products

Level measurement and point level detection in the grain silo

Barley is stored in malt houses in silos up to 20 metres high before it is processed into malt for production of beer. Filling the silos generates a lot of dust and the material cone geometry constantly changes during the filling and emptying process. A reliable indication of the level ensures the smooth operation by sending signals corresponding to the level or possible limit levels of the grain.

Measuring task

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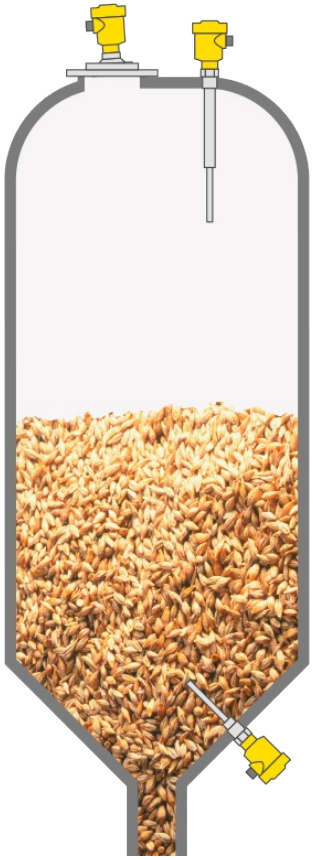

Level measurement and point level detection

Measuring point
Silo

Measuring range up to
20 m

Medium
Grain

Process temperature
-40 … +50 °C

Process pressure
0 … 0 bar

Special challenges
Strong dust generation during filling, tank geometry, bulk solid surface geometry

Reliable

Reliable measurement independent of the medium

Cost effective

Better utilisation of silo capacity and product through reliable measurement

User friendly

Simple calibration

See all recommended products

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