

The Siemens logo is displayed in a white box in the top left corner of the page. The background of the entire page is a photograph of a large-scale quarry or gravel processing plant, showing multiple levels of excavation, conveyor belts, and large piles of material.

Process Instrumentation

Retrofit under extreme conditions

That's easy!

The User

Since 1953 SWK Schotterwerk Kirchen GmbH & Co.KG. has been operating the Kirchen quarry in the Alb-Donau area, located between Kirchen and the Mochental castle.

In the Kirchen quarry, pure and high purity limestone is extracted from the horizontal lime layers of the Jura Mountain Range. The pure limestone is used for products in the area of road construction, river engineering and agriculture. The high purity limestone is used in industrial products, water treatment, glassworks, gas desulphurization, diverse chemical processes, and in the construction of building materials.

A gravel processing plant breaks down the limestone into five possible crushing stages. Then, the material is classified into different groups and stored in silos. The high purity limestone is processed in a modern grinding-drying plant until a grain size of 0 to 4 mm is reached and is then transported to nearby customers both within Germany and abroad.

Throughout the modernization and extension of the processing plants, numerous silos were equipped with monitoring and fill level measurement systems.

The Challenge

In spring 2012, the Kirchen gravel processing plant was modernized and the silo plant was extended. These silos contain sand, gravel, and white Jura meal with grain sizes ranging from 0 to 56 mm. In the past, only point level sensors and mechanical plumb line systems were implemented to determine fill levels. These technologies, however, cannot provide continuous measurements and are product intrusive, which implies higher maintenance requirements in comparison to non-intrusive technologies. Furthermore, this prevents fill level measurement at one of the most critical points in the process: silo filling, because if the plumb line gets trapped under product it can be damaged or torn off.

For more accurate stocktaking, SWK needed a continuous, non-intrusive fill level measurement solution for both its existing and newly constructed silos. An easily installable, low maintenance system was required to increase overall silo transparency.



Fig. 1: SITRANS LR560 on the narrow limestone-meal silo. With its narrow 4° opening and 78 GHz frequency, the radar fill level transmitter is easy to operate

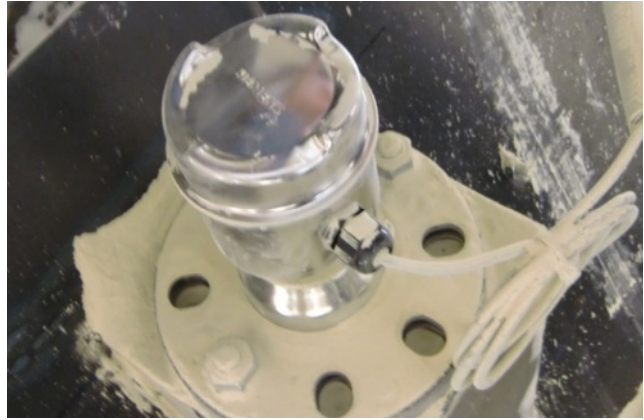


Fig. 2: Because of its robust stainless steel body, the SITRANS LR560 is perfect for rough and dusty surfaces.

The Solution

The benefits of the SITRANS LR560, our newest generation of radar level measurement devices, were convincing:

- Easy commissioning, thanks to the Quick Start Wizard
- Unique measurement frequency of 78 GHz with a beam of 4°
- Novel lens antenna, which makes a horn antenna unnecessary
- Robust stainless steel body and a compact design
- Attractive price-performance ratio

And the commissioning really was easy: After a few short minutes, the customer had the first measurement results. It quickly became clear that the SITRANS LR560 would be implemented in all ten silos.

Siemens point level sensors were also implemented as an additional overflow protection mechanism. The selected products were the Siemens Milltronics Tilt Switch and two SITRANS LVS 100 Vibration Switches for a filtration system.

The Benefit

Since their commissioning on the different silos, the SITRANS LR560 products have been measuring fill level continuously and without interruption. Despite their dust-intensive environment, the devices consistently deliver reliable results. Thanks to the easy installation, programming, and alignment of the devices, the user was able to conduct the commissioning without a service technician.

The SITRANS LR560 is a non-contacting measurement device without any moving parts. The result is a significant reduction of maintenance costs. "I never thought continuous measurement could be this simple and reliable" Mr. Minst, Junior Manager of SWK Schotterwerk Kirchen GmbH & Co. KG commented.