

SIEMENS

SITRANS LR560

One solids radar transmitter, a world of applications



Standing at the top of a 28-meter silo, Thomas Baptista unzips his backpack.

The backpack has been getting a lot of use lately, since Thomas, in Holcim Zementwerk Untervaz's Department MSR (Measurement/System/Control), is on his sixth installation of high-frequency radar on the company's solids material silos.

"Rucksack Fahig," a German term which translates to "backpack compatible," is a description used by many to describe Siemens SITRANS LR560 radar transmitter for solids level measurement. Small enough for Thomas to fit it his backpack, but powerful enough to perform well in a variety of different solids applications.

Located in Untervaz, Switzerland, Holcim Zementwerk Untervaz produces 800,000 tons of Portland cement each year. Efficient production requires accurate and reliable knowledge of raw materials such as bone meal, iron sulfate, and limestone, among others. As well, tracking material used in energy production is an important piece of a cement plant's operations.

So, how does Holcim measure each of these materials?

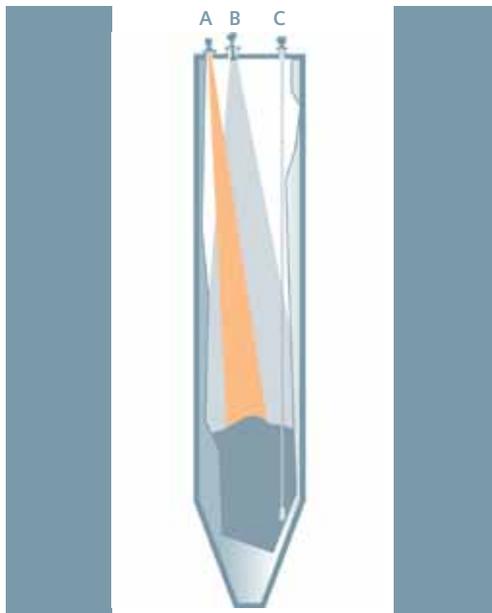
Radar for raw meal

Raw meal is a mix of all of the ground materials before they are heated to make clinker. Stored in a 28-meter silo, the raw

[siemens.com/sitransLR560](https://www.siemens.com/sitransLR560)



Even six different filling points are no challenge for the 78 GHz SITRANS LR560.



With its narrow 4-degree beam, SITRANS LR560 (A) can measure material even in a silo's cone area, unlike radar transmitters with wider beams (B). It also doesn't experience the maintenance issues of contacting technologies (C).



Small in size, big in performance. The SITRANS LR560 can be easily installed on any available nozzle

meal materials enter the silo through six filling points, which are varied to improve homogenization of the meal.

Previously, Holcim used a lower-frequency radar transmitter to measure the level in this silo. However, with these six filling points operating at different times, the microwave signal would sometimes get lost in the incoming material, with the transmitter unable to read the signal.

Operators easily installed SITRANS LR560 and programmed it themselves using the Quick Start Wizard – no specialized engineering needed. Operators also did not have to aim the device, but simply chose an installation point that took advantage of the transmitter's narrow, 4-degree beam, which easily avoided the filling points.

Limestone level simplicity

Holcim's quarry features a limestone pass, a vertical shaft through the mountain. The pass is filled with crushed limestone, which acts as a buffer to ensure continuous feed of raw materials. Eighty meters high and quite narrow, this area's walls are not straight, posing a challenge to any type of level measurement.

The previous radar transmitter had difficulties with these walls, and operators attempted to aim the device so that it pointed at material without reflecting off the sides of the limestone pass. Reliable inventory management is crucial in this area. The cement plant operates twenty-four hours a day, so there must be sufficient limestone in the pass for continuous operation. If there is an inaccurate level reading, such as a high level reading while the actual material

level is low, workers can run out of raw material, causing a costly delay in production.

However, after trading this unreliable transmitter for SITRANS LR560, operators immediately saw a difference in measurements. The narrow beam is perfectly suited for complex geometry such as that in the limestone pass, and provides reliable and accurate level readings.

Non-contact measurement for bone meal

In a ten-meter steel silo, Holcim stores bone meal, an alternative source of energy for cement production. The company uses this environmentally sustainable fuel source in its cement kiln, the area consuming the most energy in the production process.

Guided wave radar first measured the level of bone meal in this silo. Ongoing maintenance with buildup on this transmitter's cable meant that operators needed to clean the device regularly; otherwise, level readings would be unreliable. With buildup on the cable, measurements would show a higher level than the actual material level, so there would be a significant risk of running out of product. If that happened, the operator would then have to change to another fuel, disturbing the continuity and stability of the process.

The solution? SITRANS LR560 non-contacting radar transmitter. Again, Holcim installed and set up SITRANS LR560 themselves in a matter of minutes. No buildup plagues this device, and operators do not need to spend any time cleaning it.



Need to carry your level measurement device 30 meters upwards? Just put it in your backpack and take it up there without any effort.



SITRANS LR560's highly durable polyetheramide lens antenna can tolerate significant buildup.

The possibilities are endless

"SITRANS LR560 works on application where we couldn't find anything else reliable before," says Thomas Baptista.

In addition to the company's raw meal, bone meal, and limestone applications, Thomas has installed SITRANS LR560 in numerous locations at Holcim Untervaz, including:

- Finished cement silos: A very narrow space, so guided wave radar was challenging to install correctly, whereas SITRANS LR560's narrow beam works well in this tight silo.
- Iron sulfate silo: Only manual measurements – an operator lowering a rope into the silo to read the level – have worked in this silo so far due to the dusty, sticky environment. SITRANS LR560 provides reliable level measurements in this application, as the dust and sticky materials do not affect this transmitter's performance.
- Dry sewage sludge silo: A low-frequency radar transmitter measured the level of dry sludge, another alternative fuel source. However, the device needed to be cleaned every two months. SITRANS LR560 has been installed for over six months and has not required any cleaning.

An easy-to-install, accurate, reliable radar transmitter for a world of applications: quite a bit to fit into one backpack.

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